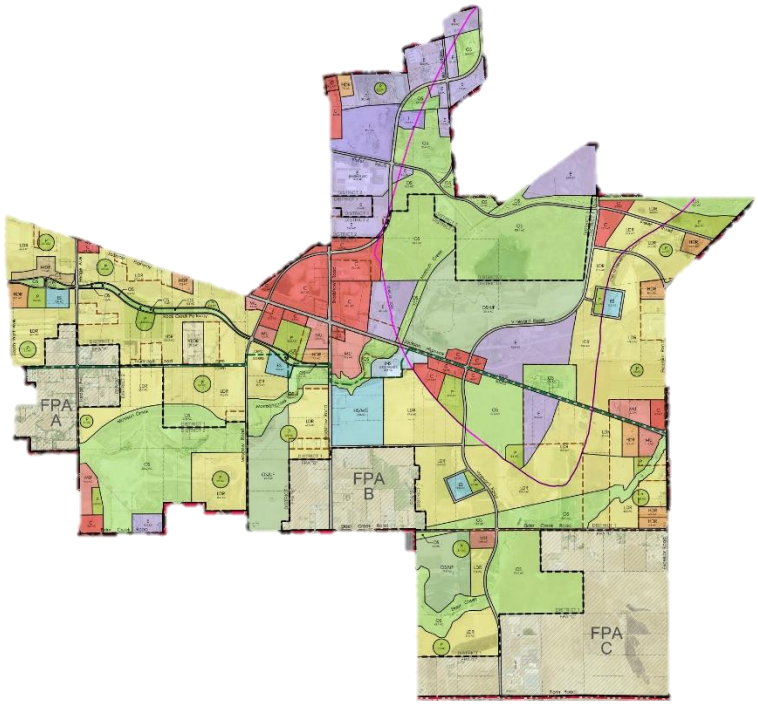
DRAFT ENVIRONMENTAL IMPACT REPORT

WEST JACKSON HIGHWAY MASTER PLAN



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COUNTY OF SACRAMENTO

DEPARTMENT OF COMMUNITY DEVELOPMENT
PLANNING AND ENVIRONMENTAL REVIEW
827 7TH STREET, ROOM 225
SACRAMENTO, CALIFORNIA 95814

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Planning and Environmental Review Division

With Assistance From

Ascent

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This Environmental Impact Report has been prepared pursuant to the California Environmental Quality Act of 1970 (Public Resources Code Division 13). An Environmental Impact Report is an informational document which, when this Office requires its preparation, shall be considered by every public agency prior to its approval or disapproval of a project. The purpose of an Environmental Impact Report is to provide public agencies with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which any adverse effects of such a project might be minimized; and to suggest alternatives to such a project.

Prepared by the
COUNTY OF SACRAMENTO
DEPARMENT OF COMMUNITY DEVELOPMENT
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827 7TH STREET, ROOM 225
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EXECUTIVE SUMMARY

This draft environmental impact report (Draft EIR) describes the potential environmental impacts of developing the West Jackson Highway Master Plan (WJHMP or project). The purpose of an EIR is to evaluate the project's effects on environmental resources, both singularly and in a cumulative context, to examine alternatives to the project as proposed, and identify mitigation measures to reduce or avoid potentially significant effects. This document has been prepared in compliance with the California Environmental Quality Act (CEQA) (Sections 21000-21189 of the Public Resources Code) and the State CEQA Guidelines (Title 14, Sections 15000-15387 of the California Code of Regulations).

SUMMARY OF THE PROPOSED PROJECT

The WJHMP establishes a framework and strategy for future land use development of approximately 5,913 acres in unincorporated Sacramento County (referred to herein as the plan area). It includes proposed land use designations and policies, as well as planning for infrastructure and public services. Implementing the WJHMP would provide a mixture of residential, commercial, industrial, recreational, farming, employment, and educational nodes within two districts and three future planning areas.

PROJECT ALTERNATIVES

Chapter 3, "Alternatives," includes evaluation of three alternatives:

- **Alternative 1: No Project Alternative**. This alternative assumes that the project is not approved and development occurs in a manner consistent with adopted land use designations and zoning.
- **Alternative 2: Reduced Footprint Alternative.** This alternative would remove approximately 2,000 acres of land east of Bradshaw Road and south of State Route 16 from the plan area.
- **Alternative 3: Development of Reclamation Lands Alternative.** With this alternative, development would occur only on the aggregate mining properties that are owned by the Project Applicants which will have been reclaimed.

ORGANIZATION OF THIS DRAFT ENVIRONMENTAL IMPACT REPORT

The remainder of this document includes a detailed description of the project, analysis of potential environmental impacts that could result from project implementation, discussion of cumulative and growth-inducing impacts, and evaluation of potential alternatives to the project. This information is organized as detailed below.

Chapter 1, “Introduction,” provides important context, including the purpose and scope of this EIR; an overview of the public and environmental review process; and an outline of the intended use of this EIR.

Chapter 2, “Project Description,” describes the location of the project, project background, existing conditions in the plan area, and the nature and location of specific elements of the project.

Chapter 3, “Alternatives,” describes feasible alternatives to the project, including the no project alternative, describing the consequences of taking no action.

Chapters 4–20 include a topic-by-topic analysis of impacts that would or could result from project implementation. Each chapter includes a discussion of the environmental and regulatory setting, impact analysis, and mitigation measures.

Chapter 21, “Summary of Impacts and Their Disposition,” provides an overview of the environmental evaluation, including impact conclusions and cumulative impacts.

Chapter 22, “Bibliography,” lists all the resources used to prepare this Draft EIR.

Chapter 23, “Acknowledgments,” identifies the preparers of this Draft EIR.

The appendices contain several reference items providing support and documentation of the analyses performed for this EIR.

SCOPING COMMENTS AND AREAS OF CONTROVERSY

The scope and content of this EIR has been informed by comments received from other agencies in response to the revised notice of preparation released in April 2017 (see Appendix A). Generally, concerns raised in response to noticing included:

- location of residences and schools in proximity to established agricultural uses,
- potential to increase vehicle miles traveled on State Route 16,
- potential for project-generated traffic to disrupt interregional travel,
- provision of public transit and opportunities to improve bicycle and pedestrian facilities,
- consistency with the City of Sacramento’s planned transportation infrastructure and the transportation diagram in the Sacramento Area Council of Governments’ adopted Metropolitan Transportation Plan,
- the appropriate mix of residential densities,
- dedication of adequate community park lands,
- potential for off-site impacts associated with the extension of infrastructure, and
- necessary electrical infrastructure.

Expansion of the Urban Policy Area and contemplation of development that is not within identified infill areas has been an area of controversy since the County adopted the 2030 General Plan in 2011. Other key areas of concern identified during the outreach process for this project have related to traffic generation and congestion, and associated greenhouse gas emissions, as well as consistency with the Airport Land Use Plan for Mather Airport.

In addition to their discretion as the lead agency with respect to the requested project entitlements, issues to be resolved by the Board of Supervisors include the choice among alternatives and whether to adopt the mitigation measures identified in this EIR to address the significant effects of the project.

TERMINOLOGY USED IN THIS EIR

This Draft EIR uses the following terminology to describe environmental effects of the project.

Significance Criteria. A set of criteria used by the lead agency to determine at what level, or "threshold," an impact would be considered significant. Significance criteria used in this EIR include those that are set forth in the CEQA Guidelines, or can be discerned from the CEQA Guidelines; criteria based on factual or scientific information; criteria based on regulatory standards of local, state, and federal agencies; and criteria based on goals and policies identified in the Sacramento County General Plan.

Less-than-Significant Impact. A project impact is considered less than significant when it does not reach the standard of significance and would therefore cause no substantial change in the environment. No mitigation is required for less-than-significant impacts.

Potentially Significant Impact. A potentially significant impact is a substantial, or potentially substantial, adverse change in the environment. Physical conditions which exist within the area will be directly or indirectly affected by the proposed project. Impacts may also be short-term or long-term. A project impact is considered significant if it reaches the threshold of significance identified in the EIR. Mitigation measures may reduce a potentially significant impact to a less-than-significant level.

Significant Unavoidable Impact. A project impact is considered significant and unavoidable if it is significant and cannot be avoided or mitigated to a less-than-significant level once the project is implemented.

Cumulative Significant Impact. A cumulative impact can result when a change in the environment results from the incremental impact of a project when added to other related past, present or reasonably foreseeable future projects. Significant cumulative impacts may result from individually minor but collectively significant projects.

Mitigation. Mitigation measures are revisions to the project that would minimize, avoid, or reduce a significant effect on the environment. CEQA Guidelines Section 15370 identifies the following five types of mitigation:

a) Avoiding the impact altogether by not taking a certain action or parts of an action.

b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.

d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

e) Compensating for the impact by replacing or providing substitute resources or environments.

MITIGATION MONITORING AND REPORTING PROGRAM

It shall be the responsibility of the future project applicants/property owners to comply with the Mitigation Monitoring and Reporting Program (MMRP) for this project and to reimburse the County for all expenses incurred in the implementation of the MMRP, including any necessary enforcement actions. The future project applicants/property owners shall pay an initial deposit to be determined upon subsequent application review, including administrative costs, which must be paid to the Department of Community Development, Planning and Environmental Review Division prior to recordation of the MMRP and prior to recordation of any final parcel or subdivision map. The remaining balance will be due prior to review of any plans by the Environmental Coordinator or issuance of any building, grading, work authorization, occupancy or other project-related permits. Over the course of the project, the Department of Community Development, Planning and Environmental Review Division will regularly conduct cost accountings and submit invoices to the future project applicants/property owners when the County monitoring costs exceed the initial deposit.

SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

The following environmental impact and mitigation summary table (Table ES-1) briefly describes the project impacts and the mitigation measures recommended to eliminate or reduce the impacts. The residual impact after mitigation is also identified. Immediately following the summary table is a list of recommendations/requirements of various agencies pertaining to the project, and a description of mandated mitigation monitoring requirements. Detailed discussions of each of the identified impacts and mitigation measures, including pertinent support data, can be found in the specific topic chapters in the remainder of this report.

Table ES-1 Executive Summary of Impacts and Mitigation

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
AESTHETICS			
Impact AE-1: Degradation of Existing Character or Quality of Public Views of the Plan Area and Its Surroundings	S	No mitigation is available.	SU
Impact AE-2: New Sources of Light or Glare	S	**Mitigation Measure AE-2: Lighting Standards** The WJHMP shall be amended to require all lighting applications subject to the 2022 Building Efficiency Standards Section 140.7 during buildout, and as amended thereafter, to use fixtures approved by the International Dark Sky Association.	SU
AGRICULTURAL RESOURCES			
Impact AR-1: Convert Farmland to Non-Agricultural Uses	S	**Mitigation Measure AR-1: Preservation of Farmland** Prior to Sacramento County's approval of onsite grading permits or improvement plans within the portion of the Plan Area where Prime or Local Importance Farmland is impacted, whichever occurs first, the developers of the master plan shall demonstrate that adequate land has been set aside through participation in the South Sacramento Habitat Conservation Plan to offset the loss of Important Farmland within the portion of the Plan Area proposed for development. Acreage of land preserved shall, at a minimum, result in a 1:1 preservation ratio for the portion of the Plan Area under consideration. Farmland preservation can also be achieved through developing urban farms meeting the requirements identified in Sacramento County 2030 General Plan Policy AG-6.	SU

[1] PS = Potentially Significant S = Significant SU = Significant and Unavoidable LS = Less Than Significant

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
Impact AR-2: Result in Conversion of Farmland to Non-Agricultural Use Due to Conflict With Existing, Adjacent Agricultural Use and Zoning	S	**Mitigation Measure AR-2: Provide Right-To-Farm Notification** Prior to the settlement of the real estate transactions, properties sellers and/or agents shall provide a notice to the prospective buyers of properties within 500 feet of existing pasture, cropland, orchards or nurseries. The notice shall appear in the Title Report that they could be subject to inconvenience or discomfort resulting from accepted farming activities as per provisions of the County Right-To-Farm Ordinance.	LTS
AIR QUALITY			
Impact AIR-1: Generate Construction Emissions of Criteria Air Pollutants and Precursors (ROG, NO_X, PM_{10}, AND $PM_{2.5}$) that Exceed Standards	S	**Mitigation Measure AIR-1A: SMAQMD'S Basic Construction Emission Control Practices** For all future land use development applications processed within the plan area, future project applicants, its designee, or subsequent developer(s), shall require its construction contractors to implement SMAQMD's Basic Construction Emission Control Practices in place at the time of construction, which currently include the following: • water all exposed surfaces two times daily (exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads); • cover or maintain at least 2 feet or free board space on haul trucks transporting soil, sand, or other loose material on the site and cover any haul trucks traveling along freeways or major roadways; • use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day (note: use of dry power sweeping is prohibited); • limit vehicle speeds on unpaved roads to 15 miles per hour (mph);	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• complete construction of all roadways, driveways, sidewalks, parking lots as soon as possible; • building pads should be laid as soon as possible after grading unless seeding or soil binders are used; • provide clear signage the entrances to construction sites that posts the requirement to minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]; and • maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated. These measures shall be included in project improvement plans as a condition of approval. **Mitigation Measure AIR-1B: SMAQMD'S Enhanced Exhaust Control Practices for NO_X and Exhaust PM** For all future land use development applications processed within the plan area, future project applicants, their designee, or subsequent developer(s), shall implement SMAQMD's Enhanced Exhaust Control Practices for NO_X and exhaust PM emissions. Before the issuance of grading and/or building permits, future project applicants, or its designee, shall submit to the County and SMAQMD an initial report of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used 8 hours or more during any portion of the construction project before any grading activities. The initial report shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. Future project applicants shall provide the anticipated construction timeline including start date, and	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		name and phone number of the project manager and on-site foreman. The information shall be submitted at least four business days before the use of subject heavy-duty off-road equipment. The report shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. • Before any grading activities, future project applicants, or its designee, shall provide a plan for approval by the County and SMAQMD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet-average of 10 percent NO_X reduction (depending on available technology and engine Tier) compared to the most recent CARB fleet average. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. If achievement of the aforementioned reductions over the statewide average are deemed infeasible by the County, SMAQMD, or construction contractor, the future project applicants shall ensure the construction fleet meets the lowest fleetwide emissions average possible, through the use of all available on-site emissions reduction measures (e.g., highest tier engines, emission control devices, cleaner burning fuel). • The future project applicants, or its designee, shall submit a final report at the end of the job, phase, or calendar year, as pre-arranged with SMAQMD staff and documented in the approval letter, to demonstrate continued project compliance. If modeled construction-generated emissions of NO_X are not reduced to a level below SMAQMD's thresholds of significance by the	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		application of the aforementioned mitigation measures, then the project developer must pay a mitigation fee into SMAQMD's off-site mitigation program. • Once initial construction activities are finalized by the developer and all on-site mitigation has been exhausted, and before the issuance of grading and/or building permits, quantification of construction-related emissions shall be verified at the project level. As each project-level construction phase is finalized throughout the duration of the project buildout, the mitigation fee shall be calculated based on current information, available construction equipment, and proposed construction activities. As construction activities occur over the buildout period, the developer shall work with SMAQMD to continually update mitigation fees based on actual on-the-ground emissions. The final mitigation fees shall be based on the contractor equipment report provided by the developer to SMAQMD and shall reconcile any fee discrepancies due to schedule adjustments and increased or decreased equipment inventories. Equipment inventories and NO_X emission estimates for subsequent construction phases shall be coordinated with SMAQMD, and the off-site mitigation fee measure shall be assessed to any construction phase that would result in an exceedance of SMAQMD's mass emission threshold for NO_X.	
Impact AIR-2: Generate Long-Term Operational Emissions of Criteria Air Pollutants and Ozone Precursors (ROG, NO_X, PM_{10}, AND $PM_{2.5}$) that Exceed Standards	S	**Mitigation Measure AIR-2: Air Quality Management Plan Reduction Measures** The project shall include the following quantifiable reduction measures included in the AQMP prepared for the project (Appendix B of the EIR), which would reduce the project's operational criteria air pollutants and ozone precursors by, at a minimum, 35 percent in comparison to the "unmitigated" project, as conditions of approval.	SU

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		Electric Vehicle Charing Infrastructure Prior to the issuance of a certificate of occupancy for any project structure with parking, the future project applicants shall demonstrate compliance with the most recently adopted version of the California Green Building Standards (CALGreen Code) Tier 2 voluntary electric vehicle (EV) charging requirements or the mandatory requirements of the most recently adopted version of the County of Sacramento building code, whichever is more stringent. The installation of all EV charging equipment shall be included on the project drawings submitted for the construction-related permit(s) demonstrating the future development is meeting the Tier 2 voluntary EV requirements of the most recent version of the CalGreen code as verified by the County. **Operational Truck Emissions Reductions** The project applicants shall incorporate the following measures into the project contracts (as applicable) to reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with operational on-road trucks, along with the potential health risk caused by exposure to toxic air contaminants from operational on-road trucks. These features shall be submitted to the County for review and approval prior to the issuance of building permits and shall be included on the project drawings submitted for the construction-related permit or on other documentation submitted to Planning and Environmental Review. ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions from project-related operational diesel trucks shall be reduced by implementing the following measures: • Equip all truck delivery bays with electrical hook-ups for diesel trucks at loading docks to accommodate plug-in electric truck transport refrigeration units (TRUs) or auxiliary power units during project operations.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Provide a notice on the lease to all new tenants or owners of the project or any portion thereof requiring any truck-intensive uses on the site, such as large grocery stores or distribution facilities with their own fleet of trucks, to use TRUs and auxiliary power units that are electric plug-in capable and trucks that use advanced exhaust technology (e.g., hybrid) or alternative fuels. This shall be enforced through oversight by the County and shall be included as part of contractual lease agreement language to ensure the tenants/lessees are informed of all ongoing operational responsibilities. • Prohibit TRUs from operating at loading docks for more than thirty minutes, and post signs at each loading dock presenting this TRU limit. • All newly constructed loading docks that are on a commercial or industrial property and can accommodate trucks with TRUs shall be equipped with electric vehicle (EV) charging equipment for heavy-duty trucks. This measure does not apply to temporary street parking for loading or unloading. • Prohibit trucks from idling for more than two minutes, and post "no idling" signs at the site entry point, at all loading locations, and throughout the project site. **Best Available Emissions Controls for Stationary Emergency Generators** To reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with operation of any emergency generators that would be installed in the plan area, the future project applicants shall implement the following measures. These features shall be submitted to County Planning and Environmental Review for review and approval, and shall be included on the project drawings submitted for the construction-related permit(s) or on other documentation submitted to the lead agency prior to the issuance of any building permits:	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Permanent stationary emergency generators installed on-site shall have engines that meet or exceed CARB Tier 4 Off-Road Compression Ignition Engine Standards (California Code of Regulations Title 13, Section 2423). If the CARB adopts future emissions standards that exceed the Tier 4 requirement, the emissions standards resulting in the lowest ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions shall apply. • As non-diesel-fueled emergency generator technology becomes commercially available, and subject to the review and approval of the County of Sacramento fire department for safety purposes, non-diesel-fueled generators shall be installed in new buildings, provided that alternative fuels used in generators, such as biodiesel, renewable diesel, natural gas, or other biofuels or other non-diesel emergency power systems, are demonstrated to reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions compared to diesel fuel. • For each new diesel backup generator permit submitted to air district for the proposed project, the future project applicants shall submit the anticipated location and engine specifications to the lead agency for review and approval prior to issuance of a permit for the generator. Once operational, all diesel backup generators shall be maintained in good working order for the life of the equipment, and any future replacement of the diesel backup generators must be consistent with these emissions specifications. The operator of the facility at which the generator is located shall maintain records of the testing schedule and emergency operations for each diesel backup generator for the life of that diesel backup generator and shall provide this information for review to the County within three months of requesting such information.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• A non-diesel-fueled emergency generator shall ordinarily be considered commercially available if the generator is capable of serving the intended purpose, is approved by the local fire department, and is available for commercial purchase and installation within California. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such generators are commercially unavailable, the operator must submit documentation from a minimum of three (3) non-diesel-fueled emergency generator dealers demonstrating the inability to obtain the required non-diesel-fueled emergency generators needed within 6 months.	
Impact AIR-3: Conflict With an Air Quality Plan	S	Implement Mitigation Measure AIR-2	SU
Impact AIR-4: Result in Substantial Mobile-Source CO Concentrations	LTS	No mitigation is required.	LTS
Impact AIR-5: Exposure of Sensitive Receptors to TACs	S	**Mitigation Measure AIR-5A: CARB Land Use Siting Standards** The design guidelines and development standards of the Master Plan shall include consideration of CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* recommendations in land use siting. These include the following. • Prohibit siting new sensitive land uses within 500 feet of urban roads carrying 100,000 vehicles per day. • Prohibit siting new sensitive land uses within 300 feet of a large gasoline station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gasoline-dispensing facilities.	SU

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Prohibit siting new sensitive land uses within 300 feet of any dry-cleaning operation using perchloroethylene. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult the local air district. Do not site new sensitive land uses in the same building with dry-cleaning operations that use perchloroethylene. • Obtain facility-specific information from SMAQMD where there are questions about siting a sensitive land use close to an industrial facility, including the amount of pollutant emitted and its toxicity, distance to nearby receptors, and types of emissions controls in place. **Mitigation Measure AIR-5B: Project-Level Construction and Operational Health Risk Assessment** Future project applicants shall prepare construction and operational health risk assessments (HRAs) specific to each proposed development in the plan area. For projects that do not introduce a new stationary source of TACs (i.e., residential development), an operational HRA need not be prepared. The HRAs shall be prepared by a qualified air quality analyst and submitted to the County of Sacramento for review and approval prior to project approval as a component of an initial entitle application package. The HRAs shall be prepared based on the latest methodology recommended by the Office of Environmental Health Hazard Assessment (OEHHA) and the Sacramento Metropolitan Air Quality Management District (SMAQMD). The HRAs shall evaluate the development's potential health risk impacts pursuant to SMAQMD CEQA guidelines and thresholds. Specifically, each HRAs must evaluate the development's incremental increase in cancer risk, acute hazard index, chronic hazard index, and annual average concentrations of particulate matter in size fractions of 2.5 microns or less	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		in diameter ($PM_{2.5}$) associated with the development's TAC emissions at all sensitive receptor locations within 1,000 feet of the development's boundaries. Impacts shall be identified by comparing health risks to the SMAQMD's current CEQA health risk thresholds (the current thresholds as of April 2024 are an incremental increase in cancer risk greater than 10 in one million or a hazard index greater than 1). The HRAs must also identify all feasible mitigation measures to reduce the development's potentially significant impacts to less-than-significant levels. Any mitigation measures reported in the HRAs shall be implemented by the applicants and enforced by the County of Sacramento.
		
		Mitigation Measure AIR-5C: Clean Off-Road Construction Equipment
		
		In order to reduce the impact of PM10 off-road equipment exhaust emissions during construction, the applicant shall ensure that all construction contracts stipulate the following as a component of the project's construction plans:
		
		• Engine Requirements:
		  • All portable engines, such as generators, shall be electric. If grid electricity is not available, propane or natural gas generators shall be used.
		  • Electric engines shall be used for all equipment that is commercially available as plug-in or battery-electric equipment, to the maximum extent feasible during each construction phase and activity. Portable equipment shall be powered by grid electricity if available. Electric equipment shall include, but is not limited to, concrete/industrial saws, sweepers/scrubbers, aerial lifts, welders, air compressors, fixed cranes, forklifts, and cement and mortar mixers, pressure washers, and pumps. To qualify for an exception, future project applicants	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		shall provide the County with evidence supporting its conclusion that electric equipment is not commercially available and shall use the next cleanest piece of off-road equipment in terms of diesel PM and $PM_{2.5}$. • Engines that cannot be electrically powered must meet or exceed either EPA or CARB Tier 4 Final or cleaner engines. Exceptions to the requirement for engines that meet Tier 4 Final emission standards shall include only select pieces of specialty equipment, such as those specified below, for which such engines may not be commercially available at the start of a construction phase requiring that equipment. Exceptions may be granted for certain pieces of equipment; examples include bore/drill rigs required for grading/shoring/excavation and for mobile cranes required for building construction. To qualify for an exception, future project applicants shall provide the County with evidence supporting its conclusion that equipment meeting Tier 4 Final standards is not commercially available and shall use the next cleanest piece of off-road equipment in terms of diesel PM and $PM_{2.5}$. • Engines shall be fueled with alternative fuels, including natural gas, propane, hydrogen fuel cell, and electricity, as commercially available and to the maximum extent feasible during each construction phase and activity. • Any other best technology available in the future may be included in the construction emissions minimization plan as substitutions for the above items a–d, provided that the project sponsor submits documentation to the lead agency demonstrating that (1) the technology would result in comparable ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions reductions and (2) it would not increase other pollutant emissions or exacerbate other impacts, such as	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		noise. This may include new alternative fuels or engine technology for off-road equipment (such as electric or hydrogen fuel cell equipment) that is not available as of 2024. • Idling time for off-road equipment shall be limited to 2 minutes, except as provided in exceptions to the applicable state regulations regarding idling for offroad equipment. Documentation shall be provided to equipment operators in multiple languages (e.g., English, Spanish, Chinese) to remind operators of the 2-minute idling limit. • Construction operators shall be required to properly maintain and tune equipment in accordance with manufacturer specifications. For the purpose of this mitigation measure, "not commercially available" is defined as either: (1) not being used for other large-scale projects in Sacramento County occurring at the same time; (2) cannot be obtained without significant delays to critical-path timing of construction; or (3) not available within the larger northern California region. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. For the County to make a determination that such equipment is commercially unavailable, the operator must submit documentation from a minimum of three (3) electric offroad equipment dealers demonstrating the inability to obtain the required electric equipment needed within 6 months. **Mitigation Measure AIR-5D: Clean On-Road Construction Trucks** Heavy-duty on-road construction trucks shall comply with the following, which would reduce PM_{10} and $PM_{2.5}$ emissions:	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		• Engine Requirements:
		  • All on-road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used at the plan area (such as haul trucks, water trucks, dump trucks, concrete trucks, and vendor trucks) shall be model year 2020 or newer.
		  • Use alternative fuels as commercially available, such as natural gas, propane, hydrogen fuel cell, and electric vehicles or other fuels where the future project applicants can provide evidence which suggests that PM_{10} and $PM_{2.5}$ emissions would be reduced compared to conventional diesel fuel.
		  • Any other best technology available in the future (i.e., not available as of 2023) may be used in lieu of or in addition to the above items, provided that the project sponsor submits documentation to the County demonstrating that (1) the technology would result in comparable PM_{10} and $PM_{2.5}$ emissions reductions and (2) that such measures would not increase other pollutant emissions or result in other impacts, such as noise. This may include new alternative fuels for on-road trucks.
		  • An alternative-fueled and ZEV truck shall ordinarily be considered commercially available if the vehicle is capable of serving the intended purpose and is included in California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, https://californiahvip.org/ or listed as available in the US on the Global Commercial Vehicle Drive to Zero inventory, https://globaldrivetozero.org/. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such vehicles are commercially unavailable, the	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		operator must submit documentation from a minimum of three ZEV dealers identified on the californiahvip.org website demonstrating the inability to obtain the required ZEVs or equipment needed within 6 months. This shall be enforced through oversight by the County and shall be included as part of contractual lease agreement language to ensure the tenants/lessees are informed of all ongoing operational responsibilities. • Require the idling time for on-road vehicles be limited to 2 minutes, except as provided in exceptions to the applicable state regulations regarding idling for on-road vehicles. Documentation shall be provided to truck drivers in multiple languages (e.g., English, Spanish, Chinese) to remind operators of the 2-minute idling limit.	
Impact AIR-6: Exposure to Odors Affecting A Substantial Number of People	LTS	No mitigation is required.	LTS
AIRPORT COMPATIBILITY			
Impact AC-1: Result in a Safety Hazard to People Living and Working in the Vicinity of an Airport	LTS	No mitigation is required.	LTS
Impact AC-2: Result in Exposure to Excessive Noise Levels Associated With Airport Operations	S	**Mitigation Measure AC-2A: Noise Mitigation Within the Mather Airport 60 CNEL Noise Contours** All residential development proposed within the Mather Airport 60 CNEL noise contours shall include sufficient noise mitigation to satisfy the requirements of Sacramento County General Plan Policies NO-2, NO-3, and NO-4, including the footnotes to General Plan Noise Element Table 4.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		Mitigation Measure AC-2B: Acoustical Testing Plan for Residences Within the 60-65 DB CNEL Mather Airport Noise Contours Implement the Acoustical Testing Plan for Mather Airport for residences proposed within the 60-65 dB CNEL Mather Airport noise contours (HMMH 2022). This testing plan shall be followed to ensure satisfaction of the County General Plan policies pertaining to Mather Airport noise exposure within new residential developments. The following measures, which shall be implemented for homes constructed between the 60 and 65 dB CNEL contours (Bollard Acoustical Consultants 2022): 1. The master permit plan set for each floorplan type to be built between the 60 and 65 dB CNEL contours shall include the following: a. All exterior door and window assemblies of each residence shall provide a minimum sound transmission class rating of 32 and a minimum outdoor-indoor transmission class (OITC) rating of 28, respectively. b. The exterior structural façade elements shall satisfy an OITC rating of at least 28. For example, exterior walls should achieve OITC 28 via an insulated 2x4 construction with gypsum board on the interior and siding over sheathing on the exterior. c. All structural façade elements should be properly installed to prevent any noise leakage. Construction plans shall include notes stating that exterior doors shall compress the seals when fully closed and locked with a deadbolt. d. Residential structures shall include positive flow ventilation systems designed to provide adequate fresh air circulation to allow all of the exterior	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		windows and doors to remain closed to achieve the noise level reduction from aircraft operations. 2. The master permit plan set for each floorplan type to be built between the 60 and 65 dB CNEL contours, shall be reviewed by an acoustical consultant to ensure the designs will provide a minimum OITC rating of 25 for the exterior facades of habitable spaces of the residence. The findings of this review shall be provided to the County of Sacramento as a condition to issuance of building permits for homes conforming to a master permit set for a floorplan type. 3. In order to verify that homes are constructed in substantial conformance to a particular master permit plan set for a floorplan type and satisfy the design goal of achieving 25 dB noise level reduction (NLR), post-construction acoustical testing shall be conducted in conformance with the methodology prescribed in the Acoustical Testing Plan for Mather Airport (HMMH 2022). 4. Appropriate solar power capacity shall be provided to ensure compliance with Title 24 to account for the need to keep windows closed for acoustic isolation.	
Impact AC-3: Result in Effects on Safe and Efficient Use of Navigable Airspace	LTS	No mitigation is required.	LTS
BIOLOGICAL RESOURCES			
Impact BR-1: Result in Loss of Wetlands and Surface Waters	S	**Mitigation Measure BR-1a: Site Specific Biological Reports** Prior to an entitlement application being deemed complete, future projects within the WJHMP area shall prepare a site specific biological resources assessment in accordance with the Sacramento County Guidelines for SSHCP Biological Resources Reports. The report shall contain information that documents existing landcover	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		habitats as defined in the SSHCP and an assessment of species occurrences and potential habitat for SSHCP covered species. If potentially state or federal jurisdictional waters occur onsite, then an aquatic resources delineation shall also be prepared. **Mitigation Measure BR-1b: South Sacramento Habitat Conservation Plan Participation** Future project applicants shall participate in the South Sacramento Habitat Conservation Plan (SSHCP). Prior to the approval of grading permits, civil improvement plans, or building permits (whichever occurs first): • project applicants shall prepare project plans in accordance with the SSHCP, and follow all avoidance and minimization measures (AMMs) outlined in the SSHCP. To compensate for the permanent loss of terrestrial and aquatic SSHCP landcover types, project applicants shall complete payment of all SSHCP landcover mitigation fees pursuant to the current fee schedule, or land dedications to compensate for losses of terrestrial and aquatic landcovers AMMs currently provided in the SSHCP are included in Appendix F. Species specific AMMs include compliance with the following, as applicable and identified in project level biological surveys per Mitigation Measure BR-1a. • Ahart's dwarf rush, • Boggs lake hedge-hyssop, • legenere, • dwarf downingia, • pin cushion navarretia, • Sacramento orcutt grass, • saline clover, • Sanford's arrowhead, • slender orcutt grass,	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Crotch bumble bee, • midvalley fairy shrimp, • vernal pool tadpole shrimp, • vernal pool fairy shrimp, • Ricksecker's scavenger beetle, • valley elderberry longhorn beetle, • western spadefoot, • giant garter snake, • western pond turtle, • Cooper's hawk, • tricolored blackbird, • western burrowing owl, • golden eagle, • ferruginous hawk, • Swainson's hawk, • northern harrier, • white-tailed kite, • loggerhead shrike, • western red bat, and • American badger.	
Impact BR-2: Have a Substantial Adverse Effect on Special-Status Mammals	S	Implement Mitigation Measures BR-1a and BR-1b. **Mitigation Measure BR-2: Conduct American Badger Surveys and Avoid Active Dens** Before construction activities within suitable habitat for American badger, a qualified biologist shall conduct surveys to identify any American badger burrows/dens. These surveys shall be conducted not more than 15 days before the start of construction. If occupied burrows are not found, further mitigation will not be required. If occupied burrows are found, CDFW shall be notified and	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		impacts to active badger dens shall be avoided by establishing exclusion zones around all active badger dens, within which construction-related activities shall be prohibited until denning activities are complete or the den is abandoned. A qualified biologist shall monitor each den once per week to track the status of the den and to determine when a den area has been cleared for construction.	
Impact BR-3: Have a Substantial Adverse Effect on Special-Status Birds	S	Implement Mitigation Measures BR-1a and BR-1b. **Mitigation Measure BR-3: Common Bird (Including Raptors) Nesting Surveys and Active Nest Avoidance** Tree removal and tree trimming activities shall be confined between September 1 and the end of February. If tree removal or tree trimming occurs between November 15 and the end of February, a pre-activity survey for nesting great-horned owl shall take place as they tend to start nesting in mid-November in our region. To minimize potential loss or disturbance of raptors and active common bird nests, project activities, including removal of ground vegetation, shall occur during the non-breeding season. If all suitable nesting habitat is removed during the non-breeding season, no further mitigation is required. If it is not feasible to remove vegetation prior to the breeding season (March 1-August 31), the project proponent will retain a qualified biologist to conduct pre-activity surveys for nesting birds on and within 500 feet of disturbance activities. The surveys will be conducted no more than 7 days before ground disturbance activities commence (including vegetation removal). If active bird nests are found, the qualified biologist shall establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely affected by construction. Buffers around active	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		common bird nests will be a minimum of 50 feet. Buffers around raptor nests, besides Swainson's hawk, will be a minimum of 500 feet, unless the qualified biologist determines that smaller buffers would be sufficient or greater buffers are needed to avoid impacts to nesting birds. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until young have fledged or the nests become inactive.	
Impact BR-4: Have a Substantial Adverse Effect on Special-Status Reptiles	S	Implement Mitigation Measures BR-1a and BR-1b.	LTS
Impact BR-5: Have a Substantial Adverse Effect on Special-Status Amphibians	S	Implement Mitigation Measures BR-1a and BR-1b.	LTS
Impact BR-6: Have a Substantial Adverse Effect on Special-Status Invertebrates	S	Implement Mitigation Measures BR-1a and BR-1b. **Mitigation Measure BR-6A: Habitat Assessment for Crotch's Bumble Bee Habitat** For areas that have potential to provide foraging, nesting, or overwintering habitat for Crotch's bumble bees (i.e., most areas that do not solely contain developed land covers, including gardens and some other urban landscaping in otherwise developed areas): • A qualified biologist shall assess the WJHMP area through a desktop analysis and site visit to determine whether the WJHMP area contains foraging, nesting, or overwintering habitat for Crotch's bumble bee. If the site visit does not occur during the blooming season for most flowering plants, historic aerial imagery will be referenced and a conservative approach will be used to determine whether potential foraging habitat for the species is present.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• If habitat suitable for Crotch's bumble bee is determined not to be present on the WJHMP area, then further mitigation would not be required. • If habitat suitable for Crotch's bumble bee is determined to be present on the WJHMP area, then Mitigation Measure BR-6b and Mitigation Measure BR-6c shall be implemented. **Mitigation Measure BR-6B: Limited Operating Period During the Crotch's Bumble Bee Colony Active Period** For WJHMP areas that contain foraging habitat only, or foraging habitat and nesting habitat for Crotch's bumble bee (i.e., no overwintering habitat), initial ground-disturbing work (e.g., grading, vegetation removal, staging) shall take place between August 15 and March 15, if feasible, to avoid impacts on nesting Crotch's bumble bees. If this limited operating period is determined to be infeasible, Mitigation Measure BR-6c shall be implemented. **Mitigation Measure BR-6C: Focused Surveys and Avoidance Measures for Crotch's Bumble Bee** WJHMP areas that contain overwintering habitat likely also contain foraging and nesting habitat. Therefore, Crotch's bumble bees may be present in these WJHMP areas year-round, there is no limited operating period that would completely avoid impacts on Crotch's bumble bee. If the limited operating period for WJHMP areas that contain foraging habitat only or foraging habitat and nesting habitat (i.e., no overwintering habitat) is determined to be infeasible, or for WJHMP areas that contain overwintering habitat, the following shall be implemented:	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		• Future project applicants shall retain a qualified biologist familiar with bumble bees of California and experienced using survey methods for bumble bees. The qualified biologist shall conduct a habitat assessment and focused survey for Crotch's bumble bee before the start of any ground-disturbing activities. Surveys shall be performed when Crotch's bumble bee is most likely to be identified, typically from April through August when floral resources and ideal weather conditions are present, and shall follow the methods in Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (CDFW 2023) or any subsequent protocol approved by CDFW.
		• Future project applicants shall submit a survey report to CDFW within 1 month of survey completion and shall notify CDFW within 24 hours if Crotch's bumble bees are detected.
		• If Crotch's bumble bees are detected during the focused survey, appropriate avoidance measures shall be implemented. Avoidance measures may include, but not be limited to, the following:
		  • Protective buffers shall be implemented around active nesting colonies or overwintering queens until these sites are no longer active. A qualified biologist, in consultation with CDFW, shall determine the appropriate buffer size to protect nesting colonies or overwintering queens.
		  • If impacts on Crotch's bumble bee cannot be avoided, future project applicants shall obtain an incidental take permit (ITP) from CDFW and shall implement all avoidance measures included in the ITP and will provide compensatory mitigation for loss of Crotch's bumble bee habitat as specified in the terms of the ITP. While Crotch's bumble bee is not	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		covered by the SSHCP; participation in the SSHCP would result in preservation of grassland habitat to offset the loss of Swainson's hawk foraging habitat, which could simultaneously offset the loss of habitat for Crotch's bumble bee.	
Impact BR-7: Have a Substantial Adverse Effect on Special-Status Plants	S	Implement Mitigation Measures BR-1a and BR-1b.	LTS
Impact BR-8: Result in the Loss of Trees	S	**Mitigation Measure BR-8A: Arborist Report and Native Tree Protection** i. Project proponents of subsequent development projects within the WJHMP area shall submit an arborist report for the project impact areas when appropriate habitat exists. The report shall include the species, diameter at breast height (dbh), dripline, and health of the trees present, and shall be prepared by an ISA certified arborist. The report shall include an exhibit that shows the trees and their driplines in proximity to the project improvements. The report shall identify any tree proposed for removal and shall quantify any encroachment from project equipment or facilities within driplines of native trees. ii. The removal of native trees shall be compensated for by planting in-kind native trees equivalent to the dbh inches lost, based on the ratios listed below, at locations that are authorized by the Environmental Coordinator. On-site preservation of native trees that are less than 6 inches dbh may also be used to meet this compensation requirement. Replacement tree planting shall be completed prior to approval of grading or improvement plans, whichever comes first. Equivalent compensation based on the following ratio is required:	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• one preserved native tree < 6 inches dbh on-site = 1 inch dbh, • one D-pot seedling (40 cubic inches or larger) = 1 inch dbh, • one 15-gallon tree = 1 inch dbh, • one 24-inch box tree = 2 inches dbh, and • one 36-inch box tree = 3 inches dbh. Prior to the approval of Improvement Plans or Building Permits, whichever occurs first, a Replacement Tree Planting Plan shall be prepared by a certified arborist or licensed landscape architect and shall be submitted to the Environmental Coordinator for approval. The Replacement Tree Planting Plan(s) shall include the following minimum elements: 1. species, size and locations of all replacement plantings and < 6-inch dbh trees to be preserved; 2. method of irrigation; 3. if planting in soils with a hardpan/duripan or claypan layer, include the Sacramento County Standard Tree Planting Detail L-1, including the 10-foot deep boring hole to provide for adequate drainage; 4. planting, irrigation, and maintenance schedules; 5. identification of the maintenance entity and a written agreement with that entity to provide care and irrigation of the trees for a 3-year establishment period, and to replace any of the replacement trees which do not survive during that period; and 6. designation of 20-foot root zone radius and landscaping to occur within the radius of trees < 6 inches dbh to be preserved on-site. No replacement tree shall be planted within 15 feet of the driplines of existing native trees or landmark size trees that are retained on-site, or within 15 feet of a building	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		foundation or swimming pool excavation. The minimum spacing for replacement native trees shall be 20 feet on-center. Examples of acceptable planting locations are publicly owned lands, common areas, and landscaped frontages (with adequate spacing). Generally unacceptable locations are utility easements, under overhead utility lines, private yards of single-family lots (including front yards), and roadway medians. Native trees <6 inches dbh to be retained on-site shall have at least a 20-foot radius suitable root zone. The suitable root zone shall not have impermeable surfaces, turf/lawn, dense plantings, soil compaction, drainage conditions that create ponding (in the case of oak trees), utility easements, or other overstory tree(s) within 20 feet of the tree to be preserved. Trees to be retained shall be determined to be healthy and structurally sound for future growth by an ISA Certified Arborist subject to Environmental Coordinator approval. If tree replacement plantings are demonstrated to the satisfaction of the Environmental Coordinator to be infeasible for any or all trees removed, then compensation shall be through payment into the County Tree Preservation Fund. Payment shall be made at a rate of $325.00 per dbh inch removed but not otherwise compensated, or at the prevailing rate at the time payment into the fund is made. **Mitigation Measure BR-8B: Native Tree Construction Protection** a) With the exception of the native trees removed and compensated for through Mitigation Measure BR-8a, all healthy native trees that are 6 inches dbh or larger on the WJHMP area, all portions of adjacent off-site healthy native trees that are 6 inches dbh or larger and have driplines that extend onto the WJHMP area, and all off-site healthy native trees that are 6 inches dbh or	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		larger and could be damaged by utility installation and/or improvements associated with this project, shall be preserved and protected as follows: 1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb shall constitute the dripline protection area of the tree. Limbs shall not be cut back to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area to sustain the tree. Removing limbs which make up the dripline does not change the protected area. 2. Chain link fencing or a similar protective barrier shall be installed one foot outside the driplines of the native trees prior to initiating project construction to avoid damage to the trees and their root systems. 3. No signs, ropes, cables (except cables which may be installed by a certified arborist to provide limb support) or any other items shall be attached to the native trees. 4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities shall be driven, parked, stockpiled or located within the driplines of the native trees. 5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an ISA Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines. 6. All underground utilities and drain or irrigation lines shall be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist. 7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of six inches of mulch or gravel shall be created to protect the root zone. The roadbed shall be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material shall be replenished as necessary to maintain a 6-inch depth. 8. Drainage patterns on the site shall not be modified so that water collects or stands within, or is diverted across, the dripline of oak trees. 9. No sprinkler or irrigation system shall be installed in such a manner that it sprays water within the driplines of the oak trees. 10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute (ANSI) A300 pruning standards and the International Society of Arboriculture (ISA) “Tree Pruning Guidelines”. 11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, and non-compacted decomposed granite. Landscape materials shall be kept 2 feet away from the base of the trunk. The only plant species which shall be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		12. Any fence/wall that will encroach into the dripline protection area of any protected tree shall be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers shall be spaced in such a manner as to maximize the separation between the tree trunks and the posts or piers in order to reduce impacts to the trees. 13. For a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least 1 foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at least an hour or two to resume watering (provided that the sprinkler is not wetting the tree's trunk). Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1 inch or more.	
Impact BR-9: Disturb Riparian Habitats	S	Implement Mitigation Measures BR-1a and BR-1b.	LTS
Impact BR-10: Interfere With the Movement of any Native Resident or Migratory Species or Impede the Use of Native Wildlife Nursery Sites	S	Implement Mitigation Measures BR-1a, BR-1b, and BR-3.	LTS
Impact BR-11: Result in Potential Inconsistency With the South Sacramento Habitat Conservation Plan	LTS	No mitigation is required.	LTS
CLIMATE CHANGE			
Impact CC-1: Result in Project-Generated GHG Emissions and Potential Inconsistency with Plans and Regulations	S	Implement Mitigation Measures AQ-1a, AQ-1b, AQ-1d, AQ-1e, AQ-1f, AQ-2a, AQ-2b, and AQ-3c.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		Mitigation Measure CC-1A: Construction GHG Emissions Reduction
		County approval of any grading or improvement plans shall include the following SMAQMD Construction GHG Emissions Reduction Measures:
		• Improve fuel efficiency from construction equipment:
		  • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 2 minutes (5-minute limit is required by the state airborne toxics control measure [Title 13, Sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
		  • Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
		  • Train equipment operators in proper use of equipment.
		• Perform on-site material hauling with trucks equipped with on-road engines.
		• Use alternative fuels for generators at construction sites such as propane or solar, or
		• Use electrical power, as feasible for each construction site and development project.
		• Use a CARB-approved low carbon fuel for construction equipment, such as renewable diesel, if commercially available and feasible for use, in construction equipment for each construction site and development project (NOx emissions from the use of low carbon fuel must be reviewed and any increases in NOx through the use of low carbon fuel must be mitigated.)	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes. • Reduce electricity use in the construction office by using compact fluorescent bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones. • Recycle or salvage non-hazardous construction and demolition debris (goal of at least 75 percent by weight). • Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials, and based on volume for roadway, parking lot, sidewalk and curb materials). Wood products utilized should be certified through a sustainable forestry program. • Minimize the amount of concrete for paved surfaces or utilize a low carbon concrete option. • Produce concrete on-site if determined to be less emissive than transporting ready mix and if feasible for each construction site and development project. • Use SmartWay certified trucks for deliveries and equipment transport. • Develop a plan to efficiently use water for adequate dust control. **Mitigation Measure CC-1B: Refrigerant Emissions** Prior to the issuance of building permits, the future project applicants shall demonstrate to the County that low-global warming potential refrigerants in heat pumps shall be installed in residential and nonresidential buildings, such as for HVAC systems, water heaters, and refrigeration.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		Mitigation Measure CC-1c: Greenhouse Gas Reduction Plan
		Prior to the approval of entitlements, improvement plans, or grading permits, each future nonresidential or mixed-use development project implemented under the plan area buildout shall prepare a GHG Reduction Plan meeting the requirements stipulated in Appendix B of this Draft EIR. Future nonresidential development must demonstrate that additional measures contribute its "fair share" toward reducing project-wide GHG emissions 18,234 $MTCO_2e$ per year or 1.02 $MTCO_2e$ per year per 1,000 square feet of non-residential development. Considering the total development area, a hypothetical 100,000 square foot nonresidential project would represent 0.56 percent of the total nonresidential development area and would be required to show a GHG emissions reduction or savings of 102 $MTCO_2e$ per year, which would represent 0.56 percent of the 18,234 $MTCO_2e$ per year reduction required for the nonresidential development in the plan area.
		The following mechanisms may be used to demonstrate compliance with the project's reduction targets:
		• *Compliance with the Sacramento County Communitywide Climate Action Plan (CAP)*. If Sacramento County has adopted a Revised CAP that aligns with the long-term targets of AB 1279, compliance with provisions of the CAP may be applied.
		• *Reduce Vehicle Miles Traveled*. Reduce VMT traveled by project residents and employes through the implementation of reasonable design measures such as:
		  • improve or increase access to transit;
		  • increase access to common goods and services, such as groceries, schools, and daycare;	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• incorporate affordable housing into the project; • orient the project toward transit, bicycle and pedestrian facilities; • improve pedestrian or bicycle networks, or transit service; • provide traffic calming; • provide bicycle parking; • limit or eliminate parking supply; • unbundle parking costs; • provide parking cash-out programs; • implement roadway pricing; • implement or provide access to a commute reduction program; • provide car-sharing, bike sharing, and ride-sharing programs; • provide transit passes; • shift single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services; • provide telework options; • provide incentives or subsidies that increase the use of modes other than single-occupancy vehicle; • provide on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms; • provide employee transportation coordinators at employment sites; and • provide a guaranteed ride home service to users of non-auto modes.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		• *Promote Electric and Alternative-Fuel Vehicles*. Promote the use of alternative fuel and electric vehicles through implementation of reasonable and feasible design measures, such as:
		  • develop and implement electric vehicle charging infrastructure plan;
		  • install electric vehicle charging stations at residential and commercial buildings; and
		  • install electric vehicle charging and natural gas fueling stations at public facilities, such as at parking lots and retail centers.
		• *Minimize Energy Demand*. Construct and operate an environmentally sound project that minimizes electricity demand through implementation of reasonable and feasible design measures, such as:
		  • exceed 2022 Title 24 Energy Efficiency requirements;
		  • electrify loading docks to reduce emission from engine idling of transport refrigeration units;
		  • install all-electric appliances, including water heaters and heating, ventilation, and air conditioning (HVAC) systems;
		  • implement indoor water use efficiency;
		  • use energy efficient street lighting fixtures;
		  • include of electric vehicle parking infrastructure;
		  • institute a composting and recycling program in excess of local standards; and
		  • implement an Urban Forestry Management Plan to reduce the urban heat island effect.
		• *On-Site Renewable Energy Use*. During the design phase, conduct analysis to optimize on-site renewable energy use to reduce further reduce project GHG emissions, based on the site layout, environmental	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		factors, and viable technology available as confirmed in a formal report submitted for County approval. Specific actions may include: • On-site carbon-zero renewable energy capable of serving energy needs of any urban development in the plan area, including energy needed for streetlights, sewer pumps, drainage pumps, traffic signals, and water pumps. • Residential photovoltaic systems designed to be scalable over time to accommodate varying energy demands. • *Renewable Power Purchase Agreement*. Procure renewable energy from off-site sources within California via purchases from one or more of the following, depending on regulatory feasibility and availability: (a) Sacramento Municipal Utility District (SMUD); (b) a community choice aggregator such as the joint SMUD agreement with Valley Clean Energy and the East Bay Community Energy; or (c) other renewable energy provider. • *Renewable Energy Certificates*. Procure and retire Renewable Energy Certificates (also known as RECs, green tags, Renewable Energy Credits, Renewable Electricity Certificates, or Tradable Renewable Certificates) for projects or activities located in California as confirmed in a formal report submitted for County approval. • *Purchase Real, Quantifiable, Permanent, Verifiable, Enforceable, and Additional Carbon Offsets.* If, following the application of all feasible on-site GHG reduction measures listed above would continue to generate GHG emissions exceeding the nonresidential target of 102 $MTCO_2e$ per year per 1,000 square feet, the future project applicants shall offset the remaining GHG emissions by funding activities that directly reduce or	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		sequester GHG emissions or by purchasing and retiring carbon credits as confirmed in a formal report submitted for County approval. To the degree that a project relies on GHG mitigation measures, Sacramento County, SMAQMD, and CARB recommend that project applicants prioritize on-site design features, such as those listed under above and direct investments in GHG reductions within the vicinity of the plan area to provide potential air quality and economic co-benefits locally. While emissions of GHGs and their contribution to climate change is a global problem, emissions of air pollutants, which have an adverse localized effect, are often emitted from similar activities that generate GHG emissions (i.e., mobile, energy, and area sources). For example, direct investment in a local building retrofit program could pay for cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting, energy efficient appliances, energy efficient windows, insulation, and water conservation measures for homes in the plan area. Other examples of local direct investments include financing installation of regional electric vehicle charging stations, paying for electrification of public school buses, and investing in local urban forests. These investments would not only achieve GHG reductions, but would also directly improve regional and local ambient air quality. However, to adequately mitigate GHG emissions 102 $MTCO_2e$ per year per 1,000 square feet, it is critical that any such investments in actions to reduce GHG emissions meet the criteria of being real, quantifiable, permanent, verifiable, enforceable, and additional, consistent with the standards set forth in Health and Safety Code Section 38562, subdivisions (d)(1) and (d)(2) through the submittal of a formal report for	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		County approval demonstrating that offsets meet these criteria. Such credits shall be based on protocols approved by CARB, consistent with Section 95972 of Title 17 of the California Code of Regulations. The future project applicants shall not use offset projects originating outside of California, except to the extent that the quality of the offsets, and their sufficiency under the standards set forth herein, can be verified by the County or SMAQMD. Such credits must be purchased through one of the following: (i) a CARB-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard; (ii) any registry approved by CARB to act as a registry under the California Cap and Trade program; or (iii) through the California Air Pollution Control Officers Association's (CAPCOA's) GHG Rx and SMAQMD.	
CULTURAL RESOURCES			
Impact CR-1: Cause a Substantial Adverse Change in the Significance of a Built-Environment Historical Resource	S	**Mitigation Measure CR-1: Historic Resource Surveys on Non-Participant Properties Prior to Development** Prior to the development or redevelopment of non-participant properties, during the entitlement phase or design review, whichever is first, intensive historic resources surveys will be required for all historic-age buildings and structures. Buildings or structures 50 years old or older will be documented on a California Department of Parks and Recreation 523 forms and their significance shall be assessed by a qualified architectural historian and evaluated against National Register of Historic Places and California Register of Historical Resources criteria. For buildings or structures that do not meet significance and integrity criteria, no further mitigation is required.	SU

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		If historical resources are determined to be present, then the potential impacts of any proposed future projects must be determined and all appropriate measures will be implemented. If the project cannot avoid modifications to a historic building or structure, the following protocol shall be followed: (i) If the building or structure can be preserved on-site, but remodeling, renovation or other alterations are required, this work shall be conducted in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. (ii) If a significant historic building or structure is proposed for major alteration or renovation, or to be moved and/or demolished, a qualified architectural historian shall thoroughly document the building and associated landscaping and setting. Documentation shall include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey or Historic American Engineering Record, including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site specific and comparative archival research, and oral history collection as appropriate. A copy of the record shall be provided to the appropriate repositories, which could include the Center for Sacramento History and the North Central Information Center.	
Impact CR-2: Cause a Substantial Adverse Change to an Archaeological Resource	S	**Mitigation Measure CR-2A: Archaeological Surveys**	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		If ground disturbing activities are planned within areas that have not been surveyed for archaeological resources within 5 years, the following shall be required: 1. Future project applicants shall retain an archaeologist meeting the Secretary of the Interior's Professional Standards to conduct intensive archaeological surveys of the site. If archaeological material is discovered, the archaeologist shall prepare a site record, and determine whether it qualifies as a historical resource or a unique archaeological resource under the criteria of CEQA Guidelines Section 15064.5. If the archaeological site does not qualify, or if no resource is present within the project's area of effects, no further mitigation is required. Following field investigations, a technical report describing the survey should be prepared and filed with the appropriate Information Center of the California Historical Resources Information System. 2. Based on this review, if deemed necessary by the qualified professional archaeologist appropriate, a subsurface testing program will be developed and implemented to determine if the property meets criteria to be listed on the CRHR and/or the NRHP. The course of the testing program should be clearly delineated in a research design which outlines prehistory of the area; research domains, questions, and data requirements; research methods inclusive of field and laboratory studies; report preparation; and significance criteria. 3. If, based on the results of field investigations, resources were identified as being significant the following mitigation would apply: a. Total Avoidance: Redesign the proposed project to preserve and protect all significant cultural	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		resources. This would reduce impacts to less than significant levels. OR, if a redesign is determined infeasible by the Environmental Coordinator, then, b. Data Recovery: After all design options have been exhausted that would result in the preservation of significant resources, institute a data recovery program to the satisfaction of the Environmental Coordinator. **Mitigation Measure CR-2B: Archaeological Monitoring by an SOI-Qualified Archaeologist** A cultural resources awareness training program will be provided to all construction personnel active on the project site during earth moving activities. The first training will be provided prior to the initiation of ground disturbing activities. The training will be developed and conducted in coordination with a qualified archaeologist meeting the United States Secretary of Interior guidelines for professional archaeologists. The program will include relevant information regarding sensitive cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The worker cultural resources awareness program will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site and will outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered. For all initial ground disturbing activities, a qualified archaeologist meeting the United States Secretary of Interior guidelines for professional archaeologists will monitor ground- disturbing activities. The monitor shall complete daily monitoring logs that describe each day's activities, including construction activities, locations, soil, and any cultural materials identified.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		Mitigation Measure CR-2C: Inadvertent Discoveries If subsurface deposits believed to be cultural in origin are discovered during construction, then all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for precontact and historic-period archaeology, shall be retained at the expense of future project applicants to evaluate the significance of the find. If it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the future project applicants' expense. Work cannot continue within the 100-foot radius of the discovery site until the archaeologist conducts sufficient research and data collection to make a determination that the resource is either 1) not cultural in origin; or 2) not potentially eligible for listing on the National Register of Historic Places or California Register of Historical Resources. If a potentially eligible resource is encountered, then the archaeologist, Sacramento County, and the future project applicants shall arrange for either 1) total avoidance of the resource, if possible; or 2) test excavations or total data recovery as mitigation. The determination shall be formally documented in writing and submitted to Sacramento County Planning and Environmental Review as verification that the provisions of CEQA for managing unanticipated discoveries have been met.	
Impact CR-3: Disturb Human Remains	LTS	No mitigation is required.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
ENERGY			
Impact EN-1: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy	LTS	No mitigation is required.	LTS
Impact EN-2: Conflict With or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency	LTS	No mitigation is required.	LTS
GEOLOGY, SOILS, AND MINERAL RESOURCES			
Impact GS-1: Exacerbate Unstable Soil Conditions	S	**Mitigation Measure GS-1: Liquefaction Remediation of Wash Water Ponds** Prior to development in areas that have sediment from wash water ponds future project applicants or their designee shall prepare a technical study to identify the liquefaction potential of the area. The technical study shall include all necessary measures to provide sufficient stability to resist soil liquefaction. A technical report documenting the effectiveness of such measures in eliminating soil liquefaction shall be provided to the County prior to approval of a grading or building permit.	LTS
Impact GS-2: Result in Substantial Soil Erosion	LTS	No mitigation is required.	LTS
Impact GS-3: Result in Soil Subsidence	LTS	No mitigation is required.	LTS
Impact GS-4: Exposure to Landslides	S	**Mitigation Measure GS-4: Erosion Protection on Exposed Slopes** To prevent erosion and shallow surface instability, there shall be a condition of approval for the project that slope stabilization features such as landscaping and/or slope armor (such as rip rap) shall be installed on all exposed slopes of 1.5:1 or steeper during construction of urban development. Conditions of approval for the project shall also require the project applicant to provide routine maintenance of the landscaping and slope armor.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
Impact GS-5: Exposure to Expansive Soils	LTS	No mitigation is required.	LTS
Impact GS-6: Potential Destruction of Buried Paleontological Resources	S	**Mitigation Measure GS-6: On-Site Training for Paleontological Resources** Future project applicants, subsequent developers, or their designee, shall retain a qualified paleontologist to conduct an on-site training that will alert all construction personnel and operational staff about the possibility of encountering fossils. The appearance and types of fossils likely to be seen during construction will be described. Construction personnel shall be trained in the proper notification procedures should fossils be encountered. If paleontological resources are discovered during earthmoving activities, operations shall immediately be immediately halted within 100 feet of the find and the County Environmental Coordinator shall be notified. Future project applicants, subsequent developers, or their designee, shall retain a qualified paleontologist for identification and salvage of fossils so that construction delays can be minimized. If large specimens are discovered, the paleontologist shall have the authority to halt or divert grading and construction equipment while the finds are removed. The paleontologist shall be responsible for implementing all tasks summarized below: • In the event of discovery, salvage of unearthed fossil remains, typically involving simple excavation of the exposed specimen but possibly also plaster-jacketing of large and/or fragile specimens, or more elaborate quarry excavations of richly fossiliferous deposits. • Recovery of stratigraphic and geologic data to provide a context for the recovered fossil remains, typically including description of lithologies of fossil-bearing strata, measurement and description of the overall stratigraphic section, and photographic documentation of the geologic setting.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Laboratory preparation (cleaning and repair) of collected fossil remains to a point of curation, generally involving removal of enclosing rock material, stabilization of fragile specimens (using glues and other hardeners), and repair of broken specimens. • Cataloging and identification of prepared fossil remains, typically involving scientific identification of specimens, inventory of specimens, assignment of catalog numbers, and entry of data into an inventory database. • Preparation of a final report summarizing the field and laboratory methods used, the stratigraphic units inspected, the types of fossils recovered, and the significance of the curated collection.	
Impact GS-7: Obstruction of Access to Mineral Resources	LTS	No mitigation is required.	LTS
HAZARDS AND HAZARDOUS MATERIALS			
Impact HAZ-1: Accidental Release Due to Transport, use, or Disposal of Hazardous Materials	LTS	No mitigation is required.	LTS
Impact HAZ-2: Potential for Release of Hazardous Materials From Undocumented or Documented Sites of Contamination	S	**Mitigation Measure HAZ-2A: Phase I Environmental Site Assessment** Prior to approval of projects plans, grading permits, and/or demolition permits for properties in the plan area that have not already been evaluated for the presence of hazardous materials and hazardous conditions, Phase I Environmental Site Assessments (ESAs) shall be prepared by a qualified professional. Each Phase I ESA shall assess the potential for hazards and provide recommendations whether additional investigation (Phase II ESA, see Mitigation Measures HAZ-2B) should be completed. The County shall not issue a grading or building permit for a site where contamination has been	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		identified until remediation or effective site management controls appropriate for the site use have been completed consistent with applicable regulations and to the satisfaction of the Sacramento County Planning and Environmental Review Division, the California Department of Substances Control, and/or Central Valley Regional Water Quality Control Board, as appropriate. All applicable recommendations from the Phase I ESA shall be incorporated into the future project as required conditions of approval. If the Phase I ESA determines there are no recognized environmental conditions, no further action is required. However, the County shall ensure any grading or project plan or building permit includes a statement that if hazardous materials contamination is discovered or suspected during construction activities, all work in the vicinity of the contamination shall stop immediately until a qualified professional has evaluated the site and determined an appropriate course of action. **Mitigation Measure HAZ-2B: Phase II Environmental Site Assessment** If determined necessary, a Phase II ESA shall be conducted to determine the lateral and vertical extent of soil, groundwater, and/or soil vapor contamination, as recommended by the Phase I ESA. The Phase II ESA shall be prepared by the project applicant prior to issuance of grading or building permit. The Phase II shall include recommendations for remediation activities if contaminants are detected in the subsurface at the project site and/or contaminants are present at concentrations exceeding hazardous waste screening thresholds for contaminants in soil and/or groundwater (CCR Title 22, Section 66261.24 Characteristics of Toxicity).	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		All recommendations for remediation activities and additional studies from the Phase II ESA shall be incorporated into the future project as required conditions of approval. **Mitigation Measure HAZ-2C: Hazardous Materials Contingency Plan** Prior to issuance of a grading or building permit, the County shall require that the applicant provide a hazardous materials contingency plan to Sacramento County EMD. The plan will describe the necessary actions that would be taken if evidence of contaminated soil or groundwater is encountered during construction. The contingency plan shall identify conditions that could indicate potential hazardous materials contamination, including soil discoloration, petroleum or chemical odors, and presence of underground storage tanks or buried building material. The plan shall include the provision that, if at any time during the course of constructing the project, evidence of soil and/or groundwater contamination with hazardous material is encountered, the contractor, future project applicants, or their designee, shall immediately halt construction and contact Sacramento County EMD. Work shall not recommence until the discovery has been assessed/treated appropriately (through such mechanisms as soil or groundwater sampling and remediation if potentially hazardous materials are detected above threshold levels) to the satisfaction of Sacramento County EMD, RWQCB, and DTSC (as applicable). The plan, and obligations to abide by and implement the plan, shall be incorporated into the construction and contract specifications of the project.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
Impact HAZ-3: Result in Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste Within 0.25 Mile Within an Existing or Proposed School	LTS	No mitigation is required.	LTS
Impact HAZ-4: Impair Implementation of or Physically Interfere With an Adopted Emergency Response Plan or Emergency Evacuation Plan	LTS	No mitigation is required.	LTS
Impact HAZ-5: Expose People or Structures to Wildland Fires	LTS	No mitigation is required.	LTS
HYDROLOGY, DRAINAGE, AND WATER QUALITY			
Impact HYD-1: Violate Water Quality Standards	LTS	No mitigation is required.	LTS
Impact HYD-2: Substantially Decrease Groundwater Supplies or Interfere Substantially With Groundwater Recharge	LTS	No mitigation is required.	LTS
Impact HYD-3: Substantially Alter the Existing Drainage Pattern of the Plan Area Such That Substantial Erosion, Flooding, or Polluted Runoff Could Occur	S	**Mitigation Measure HYD-3A: Project-Level Drainage Studies** Before approval of future tentative maps, the Project Applicant(s) or future developer(s) shall submit a drainage study in accordance with the requirements outlined in the Sacramento Stormwater Quality Partnership's 2018 Stormwater Quality Design Manual (or subsequent updates) and Sacramento County's Hydromodification Management Plan. Project-level studies must identify the applicable watersheds and associated basins and pumping features described in the Master Drainage & Flood Control Study. The study shall describe permanent stormwater quality treatment facilities and low-impact design techniques that will be	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		incorporated and provide evidence that the techniques satisfy the assumptions in the Master Drainage & Flood Control Study prepared for the project and ensure no exceedance of existing discharge rates. **Mitigation Measure HYD-3B: Detailed Drainage Designs** Prior to construction of all drainage improvements, detailed plans for the design of the improvements that demonstrate the proposed improvements will achieve the primary functions of flood conveyance and stormwater quality treatment while minimizing maintenance requirements shall be submitted to the County DWR for review and approval.	
Impact HYD-4: Risk Release of Pollutants Due to Inundation in Flood Hazard Zones	S	**Mitigation Measure HYD-4: Conditional Letter of Map Revision** Prior to any modification of the existing FEMA mapped floodplain in the Morrison Creek and Elder Creek watersheds in the plan area, the Project Applicant(s) or subsequent developer(s) shall obtain approval of a Conditional Letter of Map Revision (CLOMR) from FEMA. In addition, the Project Applicant(s) or subsequent developer(s) shall provide in-kind replacement for any loss in flood storage capacity resulting from floodplain modifications.	LTS
Impact HYD-5: Conflict With a Water Quality Control Plan or Sustainable Groundwater Management Plan	LTS	No mitigation is required.	LTS
Impact HYD-6: Result in Potential Climate Change Effects on the Project	NA	**Mitigation Measure HYD-6: Hydrologic Analysis for a Climate Change Scenario** At the time of submittal of backbone infrastructure plans, the Project Applicant or subsequent developers of the master plan shall submit a hydrologic analysis that is based upon adopted County guidance regarding a	NA

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		reasonably foreseeable climate change scenario. Based on the results of the hydrologic analysis and if impacts are identified, the Project Applicant shall implement all feasible design measures within the Project's drainage system to adequately maintain pre-project flows with consideration of climate change effects. Potential improvements could include larger and additional culverts at roadway crossings and deepening the existing basin(s) within the Plan Area that would be subject to over-topping. Basin deepening would require minimal construction-related impacts including excavation and hauling of an additional increment of soil from the site. These construction-related impacts have been evaluated throughout this EIR. Alternatively, if the County has adopted a regional solution for flooding related to climate-change, the Project Applicant or subsequent developers of the master plan plan shall contribute its fair share towards funding the construction of the regional solution. If the County has not developed a regional solution or has not adopted guidance for evaluating hydrologic climate-related impacts, the Project Applicant or subsequent developers of the master plan shall prepare and submit a hydrologic analysis that is based on the best available technical information at that time, in consultation with the County's Department of Water Resources and the Office of Planning and Environmental Review.	
Impact HYD-7: Contribute to Flooding of Beach Stone Lakes	S	***Mitigation Measure HYD-7: Beach Stone Lake Mitigation*** The Project Applicant(s) and subsequent developer(s) shall mitigate downstream impacts by either of the following options: a. Payment of the Beach Stone Lakes Mitigation Fee (Sacramento County Water Agency Zone 11A).	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		b. Ensuring no net project-related increase in volume in Beach Stone Lakes by metering outflow from the plan area, increasing storage capacity of onsite facilities, directing drainage into downstream facilities offsite, or other regional drainage solutions as determined by the County Department of Water Resources.	
LAND USE, POPULATION, AND HOUSING			
Impact LU-1: Physically Divide an Established Community	LTS	No mitigation is required.	LTS
Impact LU-2: Cause a Significant Environmental Impact Due to a Conflict With any Land Use Plan, Policy, or Regulation Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect	LTS	No mitigation is required.	LTS
Impact LU-3: Induce Substantial Unplanned Population Growth	LTS	No mitigation is required.	LTS
Impact LU-4: Displace Substantial Numbers of Existing People or Housing, Necessitating the Construction of Replacement Housing Elsewhere	LTS	No mitigation is required.	LTS
NOISE			
Impact NO-1: Exceed County Standards During Construction	S	**Mitigation Measure NO-1: Nighttime Construction Noise Control Plan** This mitigation measure shall apply to sites where construction would take place outside of the timeframes exempt from County Code noise standards as defined in Section 8.68.090 of the County Code (i.e., between 8:00 p.m. and 6:00 a.m. Monday through Friday and between the hours of 8:00 p.m. and 7:00 a.m. Saturday and Sunday), and within 1,500 feet of a sensitive receptor. Prior to commencement of any nighttime construction	SU

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		activity, the future project applicants, in coordination with selected construction contractors, and a qualified acoustical professional, shall prepare a nighttime construction noise control plan based on finalized project-specific information (e.g., specific equipment, construction location). This plan shall be submitted to the County for review prior to project construction. The plan shall include: • a detailed description of the proposed nighttime construction activities. • a list of equipment used during all nighttime construction activities. • projected noise levels generated during the nighttime construction activities at surrounding noise-sensitive land uses. • location(s) of sensitive receptors in relation to the proposed nighttime construction activities, and • designation of a disturbance coordinator. The following noise control measures (or other equally effective measures approved by the County) shall be included in the plan as necessary to reduce noise levels to the appropriate threshold (i.e., 50 dB L_{eq}), to the extent feasible, at the nearest sensitive receptor. • For construction activity that would occur within a clear line-of-sight of offsite sensitive receptors, temporary noise curtains shall be installed as close as possible to the noise-generating activity such that the curtains obstruct the direct line of sight between the noise-generating construction activity and the nearby sensitive receptors. Temporary noise curtains shall consist of durable, flexible composite material featuring a noise barrier layer bound to sound-absorptive material on one side. The noise barrier layer shall consist of rugged, impervious, material with a surface	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		weight of at least one pound per square foot and be designed to result in a 10-dB reduction at the sensitive receptor location. • Noise-reducing enclosures and techniques shall be used around stationary noise-generating equipment (e.g., concrete mixers, generators, compressors) to break the line of sight between the noise source and receiver. Techniques used could greatly vary depending on equipment type and project-specific information. • Heavy-duty equipment shall be operated at the lowest operating power possible and shall be restricted in close proximity to sensitive receptors. • All heavy construction equipment and all stationary noise sources shall have manufacturer-installed mufflers. Mufflers and noise suppressors shall be properly maintained and tuned to ensure proper fit, function, and minimization of noise. • Where available and feasible, equipment with back-up alarms shall be equipped with either audible self-adjusting backup alarms or alarms that only sound when an object is detected. Self-adjusting backup alarms shall automatically adjust to 5 dB over the surrounding background levels. All non-self-adjusting backup alarms shall be set to the lowest setting required to be audible above the surrounding noise levels. • Construction scheduling and phasing shall be designed so that impact equipment (e.g., pile drivers) is not used between 8:00 p.m. and 6:00 a.m. on Monday through Friday or between 8:00 p.m. and 7:00 a.m. on Saturday and Sunday.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
Impact NO-2: Generate Excessive Construction Vibration	S	**Mitigation Measure NO-2: Vibration Control Plan** This mitigation measure would apply to construction activity involving pile driving located within 97 feet of any building, to reduce the potential for structural damage, and within 537 feet of an occupied residence or building, to minimize the disturbance from pile-driving activities; or vibratory roller activities located within 26 feet of any building in order to reduce the potential for structural damage, and within 96 feet of an occupied residence or building to minimize the disturbance from vibratory roller activities. A vibration control plan shall be developed by the construction contractor(s) to be submitted to and approved by Sacramento County before issuance of any improvement plans or grading permits for the project. The plan shall consider all potential vibration-inducing activities that would occur within the distance parameters described above and include various measures, setback distances, precautions, monitoring programs, and alternative methods to traditional pile driving or other vibration intensive activities with the potential to result in structural damage or adverse impacts to sensitive receptors. The following vibration control measures (or other equally effective measures approved by the County) shall be included in the plan: • To prevent structural damage minimum setback requirements for different types of ground vibration-producing activities (e.g., pile driving, vibratory roller) for the purpose of preventing damage to nearby structures shall be established based on the proposed pile-driving activities and locations, once determined. Factors to be considered include the specific nature of the vibration producing activity (e.g., type and duration of pile driving), local soil conditions, and the fragility/resiliency of the nearby structures as	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		determined by a site-specific building survey, documentation related to building integrity, or other appropriate methods determined by a qualified engineer. Established setback requirements (e.g., 97 feet) can be breached if a project-specific, site-specific analysis is conducted by a qualified geotechnical engineer or ground vibration specialist that indicates that no structural damage would occur at nearby buildings or structures. • To prevent disturbance for sensitive land uses, minimum setback requirements for different types of ground vibration producing activities (e.g., pile driving, vibratory roller) shall be established based on the proposed activities and locations, once determined. Established setback requirements (e.g., 537 feet) can be breached only if a project-specific, site-specific, technical adequate ground vibration study indicates that the buildings would not be exposed to ground vibration levels in excess of 72 VdB, and ground vibration measurements performed during the construction activity confirm that the buildings are not being exposed to levels in excess of 72 VdB. • All vibration-inducing activity within the distance parameters described above shall be monitored and documented for ground vibration noise and vibration noise levels at the nearest sensitive land use and associated recorded data submitted to Sacramento County so as not to exceed the recommended vibration damage and annoyance standards, respectively. • Alternatives to traditional pile driving (e.g., sonic pile driving, jetting, cast-in-place or auger cast piles, non-displacement piles, pile cushioning, torque or hydraulic piles) shall be considered and implemented where feasible to reduce vibration levels.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Limit vibration-inducing vibratory and impact activities (e.g., pile driving, vibratory rollers, jackhammers) to the daytime hours between 6:00 a.m. and 8:00 p.m. Monday through Friday and between 8:00 a.m. and 8:00 p.m. on Saturday and Sunday. • Operate all vibration inducing impact equipment as far away from vibration-sensitive sites as reasonably possible. • Phase pile-driving and high-impact activities so as not to occur simultaneously with other construction activities, to the extent feasible. The total vibration level produced could be significantly less when each vibration source is operated at separate times.	
Impact NO-3: Generate a Substantial Permanent Increase in Traffic Noise Levels	S	**Mitigation Measure NO-3A: Rubberized Asphalt** The County shall require the use of rubberized asphalt rubberized hot-mix asphalt (RHMA) or another equally effective type of noise-reducing pavement along (a) future roadway construction within the WJHMP and (b) at the time of the next repaving of the roadway segment. The RHMA overlay shall be designed with appropriate thickness and rubber component quantity (typically 15 percent by weight of the total blend), such that traffic noise levels are reduced by an average of 4 to 6 dB (noise levels vary depending on travel speeds, meteorological conditions, and pavement quality) as compared to noise levels generated by vehicle traffic traveling on standard asphalt. **Mitigation Measure NO-3B: New, Expanded, or Extended Roadway Noise Reduction** Before finalizing roadway design for roadway expansion or new roadway construction associated with the WJHMP, a design-level acoustical analysis shall be prepared to identify specific roadway design considerations, which shall be incorporated into final road	SU

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		design and approved by Sacramento County for roadways identified in Table 16-19 that result in a substantial increase in noise. The following design features shall be considered: • Roadway design shall provide sufficient setback between any occupied structures or planned future structures that are defined as sensitive land uses by Sacramento County and the roadway to minimize noise exposure and meet County noise standards. • In locations where setback is not feasible to reduce noise levels at existing sensitive receptors from new or expanded roadways, the County shall coordinate with property owners of the existing sensitive receptors regarding installation of sound barriers along property lines to minimize traffic noise to meet applicable County exterior noise standards and, if necessary, interior noise standards. **Mitigation Measure NO-3C: Acoustical Assessments for All New Land Developments** The County shall require a design-level acoustical assessment to be prepared and submitted alongside the project application for all new land use development projects associated with the WJHMP that would be located within the noise contours defined under General Plan Policy NO-1 and identified in Table 16-12 of this EIR. Specifically, for all new land use developments, except for "playgrounds, parks, etc.," located within the 65 dB Ldn traffic noise contour; and for "playgrounds, parks, etc.," located within the 70 dB Ldn traffic noise contour the County shall require an acoustical assessment to be prepared. The acoustical assessment shall evaluate the compatibility of the proposed development in comparison to applicable County noise standards and provide recommendations to achieve acceptable interior noise levels appropriate to the land use. Noise control	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		measures may include building façade improvements; mechanical ventilation for all schools and residences; increased vegetation; roadway pavement improvements and maintenance; and site design features. If such measures are not sufficient to reduce noise levels and there are no other feasible alternatives that could be implemented, a sound barrier may be constructed.	
Impact NO-4: Expose New or Existing Sensitive Receptors to New Stationary Noise Sources	S	**Mitigation Measure NO-4A: Design Strategies for Proposed Sensitive Land Uses** This mitigation measure would apply to noise sensitive land uses developed as part of the WJHMP that would be located within 1,000 feet of existing or proposed industrial land uses. To prevent future noise sensitive receptors from disturbance associated with existing and proposed industrial land uses within the WJHMP, design principles and strategies shall be used to reduce noise exposure to sensitive land uses in compliance with the WJHMP Design Guidelines, County Design Guidelines, and County noise standards. Common design principles to reduce noise exposure to sensitive land uses that shall be considered during the site design process include: • increasing the distance between the noise source and the receiver, • locating barrier-type buildings parallel to the noise source, • orienting the residences and outdoor activity areas for those residences away from the noise source, and • arranging the site plan to use buildings as noise barriers. Upon application for entitlements, all future project applicants proposing a noise-sensitive land use within 1,000 feet of an existing or proposed industrial land use	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		shall provide to the County a site-specific noise study prepared by a qualified acoustical professional/engineer addressing exterior noise levels for applicable noise sensitive land uses and interior noise levels in residential units. The noise study shall confirm, using approved calculation methodologies, that building design (e.g., building orientation) and building materials as well as exterior design features (e.g., fences, walls, and landscaping features) are sufficient to maintain, consistent with Sacramento County non-transportation noise standards, exterior noise levels of 55 L50 and 75 L_{max} during the daytime and 50 L50 and 70 L_{max} during the nighttime. If the study shows such standards would not be met with the site design as proposed, the future project applicants or subsequent developers shall implement recommendations of the study that are shown to achieve the standards. **Mitigation Measure NO-4B: Noise Attenuation Features for Proposed Commercial, Employment, and Industrial Land Uses** Land use developments proposed under the WJHMP that include substantial truck activity (e.g., warehouses, grocery stores, repair facilities, storage yards, and truck terminals) and are proposed within 325 feet of existing or proposed residential developments shall be required to provide noise attenuation features to reduce noise generated by on-site truck and delivery activity to levels that are below County daytime residential noise standards (i.e., 55 dB L50). These features may include: • site design features, including buildings and soundwalls, sited between the noise-generating activity and the residential land; and	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• vegetative screening that fully restricts the line of sight between the noise-generating activity and the residences; or • setbacks between the noise-generating activity and the residences. The proposed noise attenuation features shall be demonstrated to reduce noise exposure such that the median daytime noise level on the nearest point of the residential parcel does not exceed the median daytime noise level (L50) of 55 dB. Future project applicants shall be required to demonstrate compliance with these requirements at the time of application for subsequent tentative maps or development applications.	
PUBLIC SERVICES			
Impact PS-1: Result in Substantial Adverse Physical Impacts Associated With the provision of Fire Protection and Emergency Services	LTS	No mitigation is required.	LTS
Impact PS-2: Result in Substantial Adverse Physical Impacts Associated With the Provision of Law Enforcement	LTS	No mitigation is required.	LTS
Impact PS-3: Result in Substantial Adverse Physical Impacts Associated With the Provision of Schools	LTS	No mitigation is required.	LTS
Impact PS-4: Result in Substantial Adverse Physical Impacts Associated With the Provision of Parks and Recreation Services or Substantial Physical Deterioration of an Existing Facility	LTS	No mitigation is required.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
Impact PS-5: Result in Substantial Adverse Physical Impacts Associated With the Provision of Libraries	LTS	No mitigation is required.	LTS
PUBLIC UTILITIES			
Impact PU-1: Result in adverse Effects Associated With Construction of Expanded Wastewater Treatment Infrastructure	LTS	No mitigation is required.	LTS
Impact PU-2: Result in Adverse Effects Associated With Construction of Stormwater Infrastructure	LTS	No mitigation is required.	LTS
Impact PU-3: Result in Adverse Effects Associated With Construction of Electric Power and Telecommunications Facilities	LTS	No mitigation is required.	LTS
Impact PU-4: Exceed the Capacity of the Wastewater Treatment Provider	LTS	No mitigation is required.	LTS
Impact PU-5: Generate Solid Waste in Excess of State Standards or in Excess of the Capacity of Local Infrastructure	LTS	No mitigation is required.	LTS
TRANSPORTATION			
Impact TR-1: Adversely Affect an Existing Bicycle and Pedestrian Facility, Interfere With the Implementation of a Planned Bikeway, or Result in Unsafe Conditions for Bicyclists or Pedestrians	LTS	No mitigation is required.	LTS
Impact TR-2: Adversely Affect Public Transit Operations or Fail to Provide Access to Transit	LTS	No mitigation is required.	LTS
Impact TR-3: Generate VMT That Exceeds County Standards	LTS	No mitigation is required.	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
Impact TR-4: Substantially Increase Hazards Due to a Geometric Design Feature or Incompatible Uses	S	**Mitigation Measure TR-4A: Install Traffic Signals Throughout WJHMP Area** If the County determines, through application of the Dynamic Implementation Tool or similar means, that any subsequent entitlement would result in roadway design deficiencies, the applicant for the development shall be required to construct or fund the improvement. Required traffic signal installations will include the following improvements proposed in the Local Traffic Study, as determined appropriate by the County: • Hedge Avenue and Florin Road • Happy Lane and Old Placerville Road • Excelsior Road and Gerber Road • Eagles Nest Road and Jackson Road • Excelsior Road and Calvine Road • Douglas Extension/Douglas Road and Mather Road • Mayhew Road and Rock Creek Parkway eastbound and westbound **Mitigation Measure TR-4B: Roadway Design Improvements** If the County determines, through application of the Dynamic Implementation Tool or similar means, that any subsequent entitlement would result in roadway design deficiencies, the applicant shall be required to construct or fund the improvement. Required physical roadway modifications will include the following improvements proposed in the Local Traffic Study, as determined appropriate by the County: • **Watt Avenue and Folsom Boulevard:** Configuration involving grade separation of the northbound and southbound through movements of Watt Avenue. Access to and from Folsom Boulevard would be accomplished via on and off ramps from the left lanes	SU

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		of Watt Avenue to a single signalized intersection. A bus rapid transit lane along Watt Avenue would also intersect Folsom Boulevard at the traffic signal.
		• **Watt Avenue and Kiefer Boulevard:** The ultimate improvement would involve a tight diamond interchange. The through movements (and bus rapid transit lane) on Watt Avenue would be grade separated from Kiefer Boulevard. Access to and from Kiefer Boulevard would be accomplished via on and off-ramps at two signalized intersections along Kiefer Boulevard.
		• **Watt Avenue and Jackson Road:** Improvements would include the implementation of a standard six-by-six signalized intersection (two left-turn lanes, three through lanes, and one right-turn lane, on each approach) with three modifications.
		  • The southbound left-turn movement would be grade separated;
		  • The westbound right-turn movement would be grade separated; and
		  • Three northbound left-turn lanes.
		• **Bradshaw Road and Jackson Road:** Improvements would involve grade separating the northbound and southbound through movements.
		• **Grant Line Road and Prairie City Road, White Rock Road, Douglas Road, Kiefer Boulevard, Jackson Road, and Sunrise Boulevard:** Implementation of grade separated intersections.
		Each of these intersections have unique travel movements, volumes and existing context sensitive conditions (potential environmental issues, right-of-way, physical constraints), and the special treatments utilized at each location shall be studied to select the treatments that address the operational deficiency as it relates to safety, while avoiding or minimizing other operational or	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		environmental implications. Other equivalent treatments may be selected to the satisfaction of the Department of Transportation to mitigate safety impacts. **Mitigation Measure TR-4C: Bus Queue Jumps** The responsible project applicant(s), County, and Sacramento Regional Transit District (SacRT) shall work in coordination to implement bus queue jump lanes at signalized intersections to provide dedicated channelization for buses that allow buses to approach and traverse an intersection in priority position as deemed necessary. Bus queue jumps are only recommended where volume of right-turning vehicles would not cause significant interference with transit operations; locations where right turn volumes are less than 200 vehicles per hour per lane would meet this criteria (DKS Associates 2024: 142). Bus queue jumps shall meet the following infrastructure and geometric improvements unless otherwise agreed upon by the County and SacRT: • Extend the right turn pocket on the approach (or construct a right turn pocket if one has not previously been identified) long enough to extend past the end of queue for the adjacent through travel lanes; • Install signal heads for the right turn lane to allow for dedicated right turn phase and bus through phase; • Build a dedicated receiving lane and far-side bus stop for intersections where a nearby bus stop is desired; and • Install “No Right turn on red” blank out signs on the perpendicular approaches to the transit queue jump which would be activated based on bus calls for the queue jump. As identified in the Local Traffic Analysis, at a minimum, the following locations for bus queue jump lanes shall be considered:	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		• Jackson Road and Excelsior Road (southbound, westbound, and eastbound) • Vineyard Road and Jackson Road (southbound and westbound) • Mayhew Road and Jackson Road (all directions of travel) • South Watt Avenue and Jackson Road (northbound) • South Watt Avenue and Kiefer Boulevard (southbound)	
Impact TR-5: Result in Inadequate Emergency Access	LTS	No mitigation is required.	LTS
WATER SUPPLY			
Impact WS-1: Environmental Effects Due to the Construction of New or the Expansion of Existing Water Facilities	LTS	No mitigation is required.	LTS
Impact WS-2: Result in Demand for Water that cannot be Met by Existing or Reasonably Foreseeable Future Service Capacity	LTS	No mitigation is required.	LTS
Impact WS-3: Contribute to Groundwater Pumping Such That the Average Annual Sustainable Yield for the South American Subbasin Basin is Exceeded	LTS	No mitigation is required.	LTS
TRIBAL CULTURAL RESOURCES			
Impact TCR-1: Cause a Change in Significance of a Tribal Cultural Resource	S	**Mitigation Measure TCR-1a: Inventory and Significance Evaluation of Tribal Cultural Resources** Upon submittal of subsequent development applications, the Project Applicant(s) or subsequent developer(s) shall coordinate with the County and consulting Native American tribes (tribes) for each project-specific area. The tribes shall be offered the opportunity to identify	LTS

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		portions of the project site that could be sensitive or potentially sensitive for tribal cultural resources. Tribes may request additional testing and boundary delineation prior to the disturbance of any potential tribal cultural resource site. In consultation with County, the treatment plan may include identification methods including, but not limited to, canine forensic surveys, ground penetrating radar, vegetation clearing for surface visibility, and/or subsurface testing. When subsequent development applications are deemed complete, the tribes shall be provided the following information for each subsequent notification to assist in their determination of the potential to impact tribal cultural resources: • map(s) and verbal description of the project-specific area that delineates both the horizontal and vertical extents of where a project could result in impacts, including both direct and indirect, on tribal cultural resources; • descriptions of proposed ground disturbances and construction activities; • the results of an updated records search of the project-specific area from the Northwest Information Center of the California Historical Resources Information System; • the results of an archaeological sensitivity analysis to assess the potential for buried archaeological resources using geologic and historic maps, soils data, and other sources; and • the results of an archaeological field survey. Tribes may also request separate tribal cultural surveys. If the consulting Native American tribe(s) determine that a tribal cultural monitor is warranted for a project, the tribe(s) shall be offered the opportunity to engage in compensated construction monitoring. Tribes must be	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation

		contacted for the opportunity to monitor each separate development stage. For monitoring, the provisions of Mitigation Measure CUL-2b will be followed.
		If potentially significant impacts on tribal cultural resources that qualify as historical resources (per State CEQA Guidelines Section 15064.5) are identified, a treatment plan for avoiding or minimizing such impacts shall be developed, in coordination with tribes. Measures for avoiding or minimizing impacts include:
		• avoidance and preservation of the resources in place, including planning and construction to avoid the resources and protect the cultural and natural context or planning greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria;
		• treating the resource with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including:
		  • protecting the cultural character and integrity of the resource;
		  • protecting the traditional use of the resource;
		  • protecting the confidentiality of the resource;
		  • permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places; or
		  • protecting the resource.
		The consultation shall be considered concluded when (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.	

Impacts	Level of Significance before Mitigation [1]	Mitigation Measure	Level of Significance after Mitigation
		Mitigation Measure TCR-1b: Tribal Repatriations In the event that remain-in-place measures are infeasible for disturbed human remains, the Project Applicant(s) or subsequent developer(s), in consultation with tribal and County representatives, shall identify an on-site repatriation location with conservation easement. This shall include an agreement to maintain resource location confidentiality. Tribes may request additional materials and monitoring in the event of human remains discovery. This may include, but is not limited to, on-site storage of remains in a locked, air-conditioned facility with access controlled by tribal monitors, materials required for appropriate recovery and reinternment, and physical control mechanisms such as subsurface coverings and above-ground deterrents such as site fencing.	

Notes: PS = Potentially Significant S = Significant SU = Significant and Unavoidable LS = Less Than Significant

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1 INTRODUCTION

SUMMARY OF THE PROPOSED PROJECT

The West Jackson Highway Master Plan (WJHMP or project) establishes a framework and strategy for future land use development of approximately 5,913 acres in unincorporated Sacramento County (referred to herein as the plan area). The WJHMP includes proposed land use designations and policies, as well as planning for infrastructure and public services. The WJHMP would provide a mixture of residential, commercial, industrial, recreational, farming, employment, and educational nodes within two districts and three future planning areas.

ENVIRONMENTAL IMPACT REPORT SCOPE AND PROCESS

PURPOSE OF THIS ENVIRONMENTAL IMPACT REPORT

This environmental impact report (EIR) evaluates the potential environmental impacts associated with implementation of the WJHMP. This EIR has been prepared under the direction of Sacramento County in accordance with the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations [CCR] Title 14. Natural Resources Division 6 Section 15000 et seq.). An EIR discloses known or possible impacts on the environment that may result from a project, alternatives to the project, and measures to mitigate those impacts to decision makers (e.g., the Sacramento County Board of Supervisors), public agencies, and the general public. The intent of the EIR is to provide objective information to allow the Sacramento County Board of Supervisors to make an informed decision when considering whether to approve or deny the project. The EIR does not comment on the merits of the project and does not make a recommendation for or against its approval.

LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

Sacramento County is the Lead Agency under CEQA for this EIR because it has discretionary authority to determine whether or how to approve the project. Responsible Agencies are other agencies that are responsible for carrying out or implementing a specific component of the WJHMP or for approving a project (such as an annexation) that implements the goals and policies of the plan. Trustee agencies have jurisdiction over certain resources held in trust for the people of California, but do not have legal authority over approving or carrying out the project. Based on the potential effects known at this time, responsible agencies may include: US Army Corps of Engineers, US Fish and Wildlife Service, the California Department of Transportation, the California Department of Fish and Wildlife, the South Sacramento Conservation Agency, the Central Valley Regional Water Quality Control Board, Sacramento Municipal Utility District, Sacramento Area Sewer District, Sacramento County Water Authority, Cordova Recreation and Park

District, Southgate Recreation and Park District, Sacramento Metropolitan Air Quality Management District, the Elk Grove Unified School District (Elk Grove USD), the Central Valley Flood Protection Board, and California American Water.

TYPE OF ENVIRONMENTAL IMPACT REPORT

This EIR fulfills the requirements for a Program EIR. Although the legally required contents of a Program EIR are the same as those of a Project EIR, Program EIRs typically cover broad programs or large projects, such as a master plan, and contain a more general discussion of impacts, alternatives, and mitigation measures than a Project EIR. As provided in Section 15168 of the State CEQA Guidelines, a Program EIR may be prepared on a series of actions that could be characterized as one large project. Impacts may be generally characterized, and mitigation measures may include programs and performance standards that address the impacts. Use of a Program EIR provides the County (as Lead Agency) with the opportunity to consider broad policy alternatives and program-wide mitigation measures and greater flexibility to address environmental issues and/or cumulative impacts on a comprehensive basis. Agencies generally prepare Program EIRs for programs or a series of related actions that are linked geographically, are logical parts of a chain of contemplated events, rules, regulations, or plans that govern the conduct of a continuing program, or are individual activities carried out under the same authority and having generally similar environmental effects that can be mitigated in similar ways. By its nature, a Program EIR considers the overall effects of implementing a program and does not, and is not intended to, examine individual projects that may be implemented pursuant to the master plan.

Once a Program EIR has been prepared, subsequent activities within the program must be evaluated to determine if additional CEQA documentation is required to address the significant impacts of such activities. Subsequent activities could be found to be within the Program EIR scope and additional environmental documents may not be required (CEQA Guidelines Section 15168[c]). When a Program EIR is relied on for a subsequent activity, the Lead Agency must incorporate feasible mitigation measures and alternatives developed in the Program EIR into the subsequent activities (CEQA Guidelines Section 15168[c][3]). If a subsequent activity could result in effects not within the scope of the Program EIR, including new or more severe significant impacts than identified in the Program EIR, the Lead Agency must prepare a Negative Declaration, Mitigated Negative Declaration, or a project-level subsequent or supplemental EIR. The County's Initial Study Checklist is used to determine if a subsequent activity is within the scope of the Program EIR and if not, what type of CEQA document is needed to address its effects.

The process described above provides a road map for consideration of subsequent projects and the associated CEQA documentation. Future projects within the plan area that are consistent with the approved master plan and the analysis found in the Program EIR do not require additional CEQA review. If a future project within the plan area was not considered in this EIR, is inconsistent with the WJHMP, or may result in additional or more severe impacts or require more mitigation than is identified in this EIR, additional CEQA analysis will be required.

SCOPE OF THIS ENVIRONMENTAL IMPACT REPORT

Pursuant to CEQA and the State CEQA Guidelines, a lead agency shall focus the EIR's discussion on significant environmental effects and may limit discussion on other effects to brief explanations about why they are not significant (PRC Section 21002.1; State CEQA Guidelines Section 15128). Potentially significant impacts were identified based on review of comments received as part of the public scoping process (see Appendix A) and additional research and analysis of the relevant project data during preparation of this EIR.

The County has determined that the project has the potential to result in significant environmental impacts on the following resources, which are addressed in detail in this EIR:

- aesthetics;
- agricultural resources;
- air quality;
- airport compatibility;
- biological resources;
- climate change;
- cultural resources;
- energy;
- geology, soils, and mineral resources;
- hazards and hazardous materials;
- hydrology, drainage, and water quality;
- land use, population, and housing;
- noise;
- public services;
- public utilities;
- transportation;
- water supply; and
- tribal cultural resources.

Wildfire impacts have been omitted from detailed evaluation in this EIR because the plan area is not located in or near a state responsibility area or on lands classified as within very high fire hazard severity zones.

This Draft EIR also addresses other CEQA-mandated issues (e.g., cumulative impacts, growth-inducing impacts, significant unavoidable impacts, alternatives).

PUBLIC AND ENVIRONMENTAL REVIEW PROCESS

NOTICE OF PREPARATION

A Notice of Preparation (NOP) for the WJHMP was first published on September 10, 2013. The Project Applicants and County of Sacramento staff subsequently reviewed the results of several CEQA-related studies, consulted interested and affected parties, and had extensive conversations concerning how the original project might adversely affect the environment. As that information became available, the Project Applicants, in coordination with County staff, modified the original project to lessen its potential to result in environmental impacts. Specifically, the project was modified to reduce traffic and associated effects on air quality and climate change, improve transit, reduce effects on biological resources and increase open space, avoid potential noise effects, and improve groundwater recharge.

In 2013 and 2016, the County held four joint Vineyard and Cordova Community Planning Advisory Council (CPAC) workshops for the Jackson Highway Master Plans (which included the WJHMP) that covered: the planning and environmental review process for master plans; transportation planning in the area; water supply, sewer, and drainage in the area; and infrastructure financing.

Due to project revisions, a new NOP was issued in February 2017. In response to comments from Elk Grove USD requesting additional location specificity for possible sites of the proposed middle/high school, a revised NOP was subsequently released on April 26, 2017.

The NOP and copies of the comments received in response to the NOP are provided in Appendix A. All NOP comments were considered by the EIR preparers. The introduction of each environmental resource area chapter (Chapters 4 through 20) identifies NOP comment topics addressed in the respective chapter.

DRAFT ENVIRONMENTAL IMPACT REPORT

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, comments from agencies, as well as organizations and the general public, on environmental issues may be submitted to the County.

During the public review period, the Draft EIR is available for review between 8:30 a.m. and 4:30 p.m. Monday through Friday at the County Planning and Environmental Review Division located at:

827 7th Street, Room 225
Sacramento, CA 95814

The Draft EIR is also available online at:

> https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/WestJacksonHighwayMasterPlan.aspx.

All agencies, organizations, and interested parties, have the opportunity to comment on the Draft EIR during the public review period.

Written comments on this Draft EIR should be addressed to:

> Julie Newton, Environmental Coordinator
> Sacramento County
> Department of Community Development
> Planning and Environmental Review Division
> 827 7th Street, Room 225
> Sacramento, CA 95814

Written comments may also be submitted to CEQA@saccounty.gov.

Following the close of the public comment period, the County will prepare a Final EIR, which will include written responses to comments on the Draft EIR and will identify any changes to the EIR that may be required to address comments or new information, if applicable. Once the Final EIR is completed, the Board of Supervisors must certify the EIR and adopt Findings of Fact before it can approve the project. If the EIR finds that the project would result in any significant and unavoidable impacts, then the Board of Supervisors must also adopt a Statement of Overriding Considerations.

Intended Uses of This EIR

The Sacramento County Board of Supervisors will use the information contained in this EIR to evaluate the project and render a decision to approve or deny the requested entitlements (as described further in Chapter 2, “Project Description”).

The following responsible agencies may also use this EIR for planning or permitting purposes:

- US Army Corps of Engineers,
- US Fish and Wildlife Service,
- California Department of Transportation,
- California Department of Fish and Wildlife,
- South Sacramento Conservation Agency,
- Central Valley Regional Water Quality Control Board,
- Sacramento Area Sewer District,

- Sacramento Municipal Utility District,
- Sacramento County Water Authority,
- Cordova Recreation and Park District,
- Southgate Recreation and Park District,
- Sacramento Metropolitan Air Quality Management District,
- Elk Grove USD,
- Central Valley Flood Protection Board, and
- California American Water.

2 PROJECT DESCRIPTION

This chapter provides a detailed description of the WJHMP (project). The WJHMP establishes a framework and strategy for future land use within the WJHMP boundaries (referred to herein as the plan area). The WJHMP includes proposed land use designations and policies, as well as planning for infrastructure and public services. As described in greater detail below, the master plan would provide a mixture of residential, commercial, industrial, recreational, farming, employment, and institutional nodes within two districts and three future planning areas (FPAs).

PROJECT LOCATION

The plan area is located on approximately 5,913 acres adjacent to the eastern limits of the city of Sacramento and the southern boundary of Mather Airport, in unincorporated Sacramento County (Figure 2-1). The WJHMP boundaries are generally Jackson Highway (State Highway 16), Kiefer Boulevard, and Goethe Road to the north; portions of Elder Creek Road and Florin Road to the south; the city of Sacramento to the west; and Excelsior Road to the east (Figure 2-2).

ASSESSOR'S PARCEL NUMBERS

The plan area encompasses the following Assessor's Parcel Numbers:

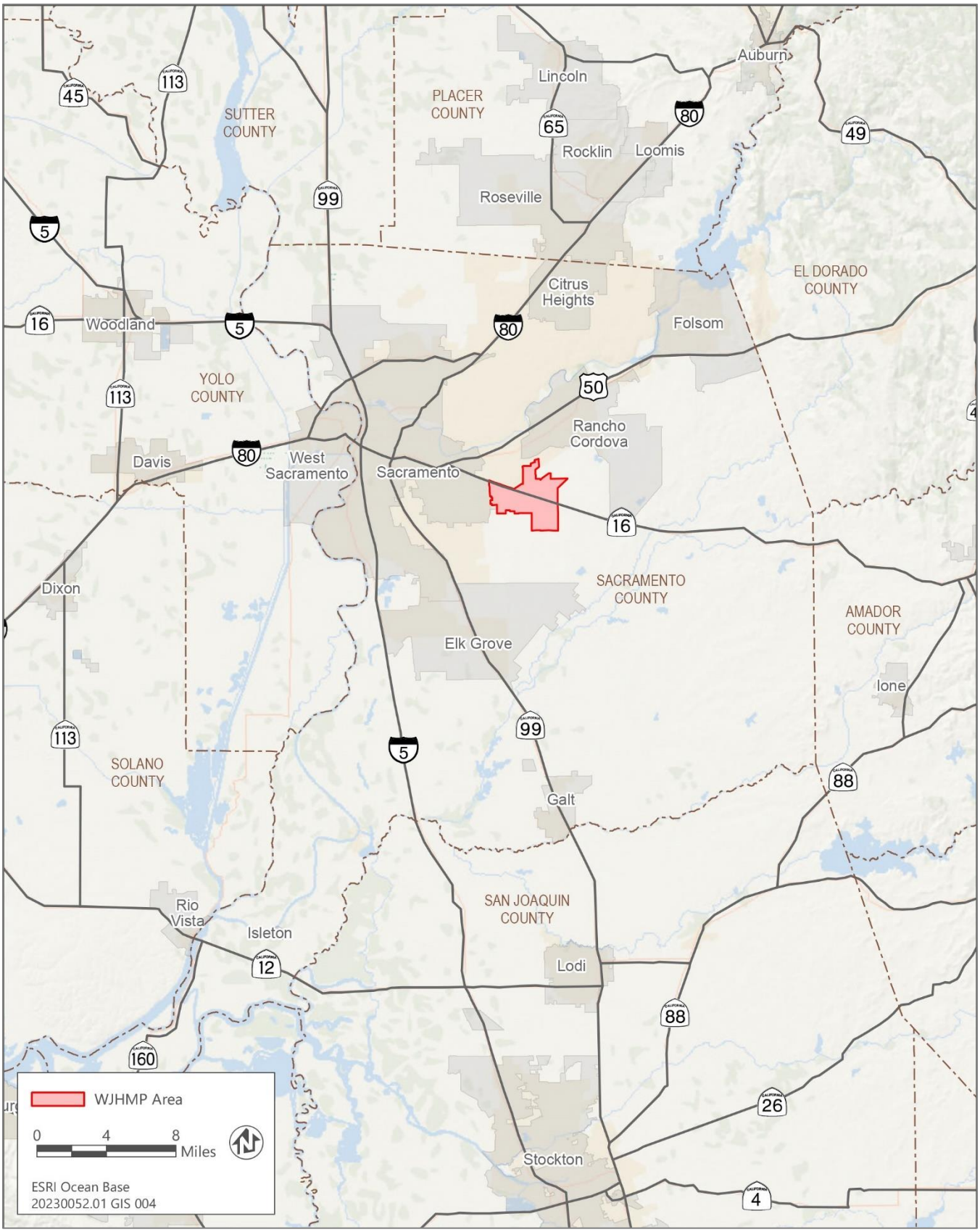
062-0030-004 through 030, 062-0041-003 through 027, 062-0042-018 through 028, 063-0012-025, 063-0013-002 through 023, 063-0030-005 through 018, 063-0040-029 through 061, 063-0051-008 through 023, 063-0052-001 through 033, 063-0060-011 through 051, 063-0070-004 through 028, 063-0080-001 through 027, 063-0090-013 through 014, 063-0100-018 through 028, 063-0110-010 through 013, 063-0130-006 through 023, 063-0150-002 through 034, 063-0170-003 through 019, 063-0180-009 through 029, 063-0190-039, 063-0200-001 through 012, 063-0260-015, 066-0030-004 through 020, 066-0050-011 through 015, 066-0060-001 through 014, 067-0150-024 through 057, 067-0160-011 through 098.

PROJECT PROPONENTS

PROJECT APPLICANTS

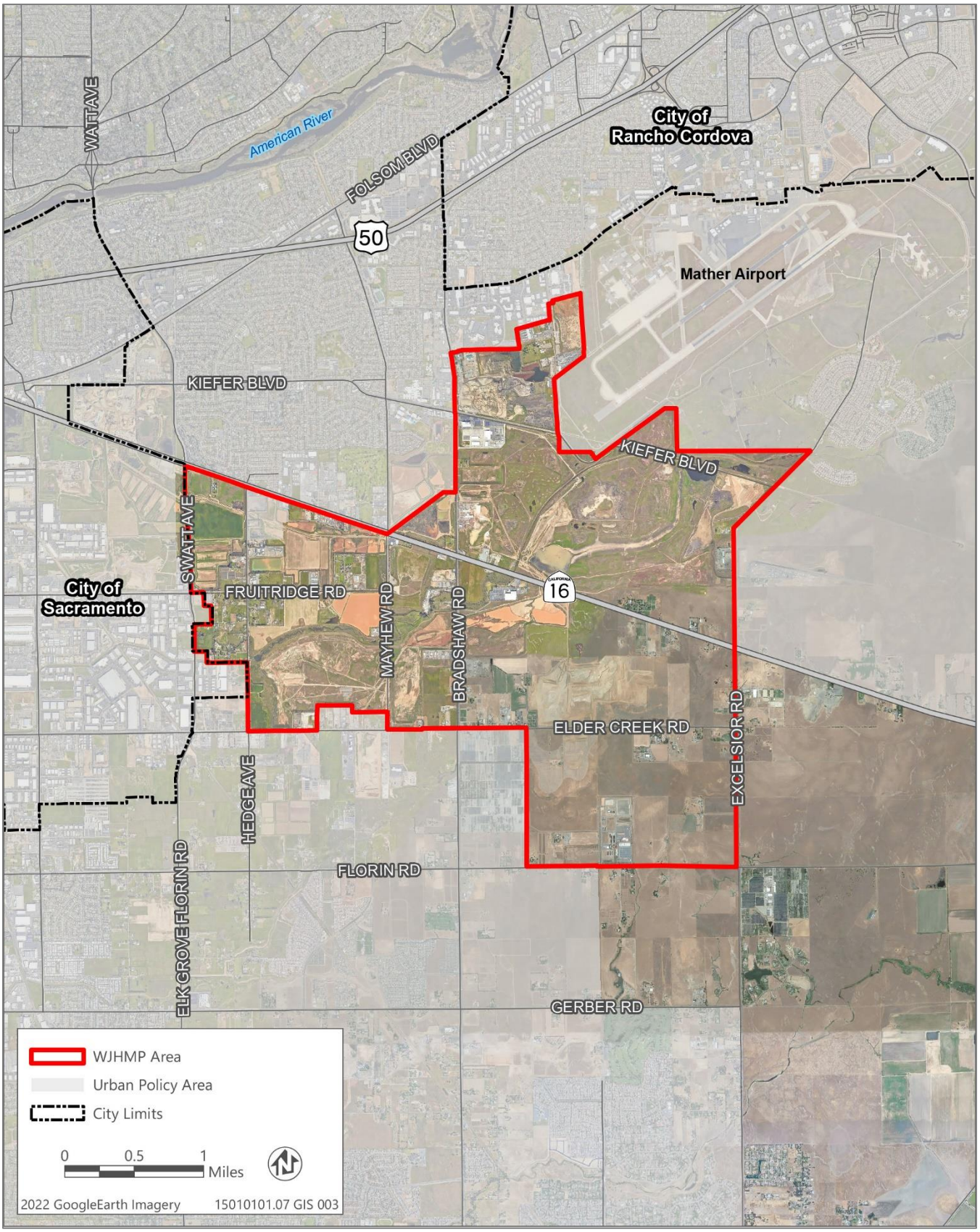
Teichert Land Company
Attn: Mike Isle

Granite Construction Company
Attn: Heather Lenhardt, Associate General Counsel, and Yasha Saber, Consulting Project Manager



Source: Adapted by Ascent in 2023.

Figure 2-1 Regional Location



Source: Adapted by Ascent in 2023.

Figure 2-2 West Jackson Highway Master Plan Area

EXISTING CONDITIONS

The Project Applicants separately own a total of approximately 4,079 acres of the plan area; with Teichert owning approximately 3,016 acres and Granite owning approximately 1,063 acres. In total, properties owned by the Project Applicants represent approximately 69 percent of the plan area. Properties owned by the Project Applicants primarily include aggregate mining sites used for sand and gravel extraction, many of which have been closed and reclaimed. Although most of the mining in the plan area is complete, considerable portions of the Project Applicants' properties still support various construction- and mining-related activities. For example, Granite operates an aggregate processing facility at the northeast corner of Bradshaw Road and Kiefer Boulevard, which includes an aggregate processing plant, construction materials recycle operation, and asphaltic concrete batch plant.

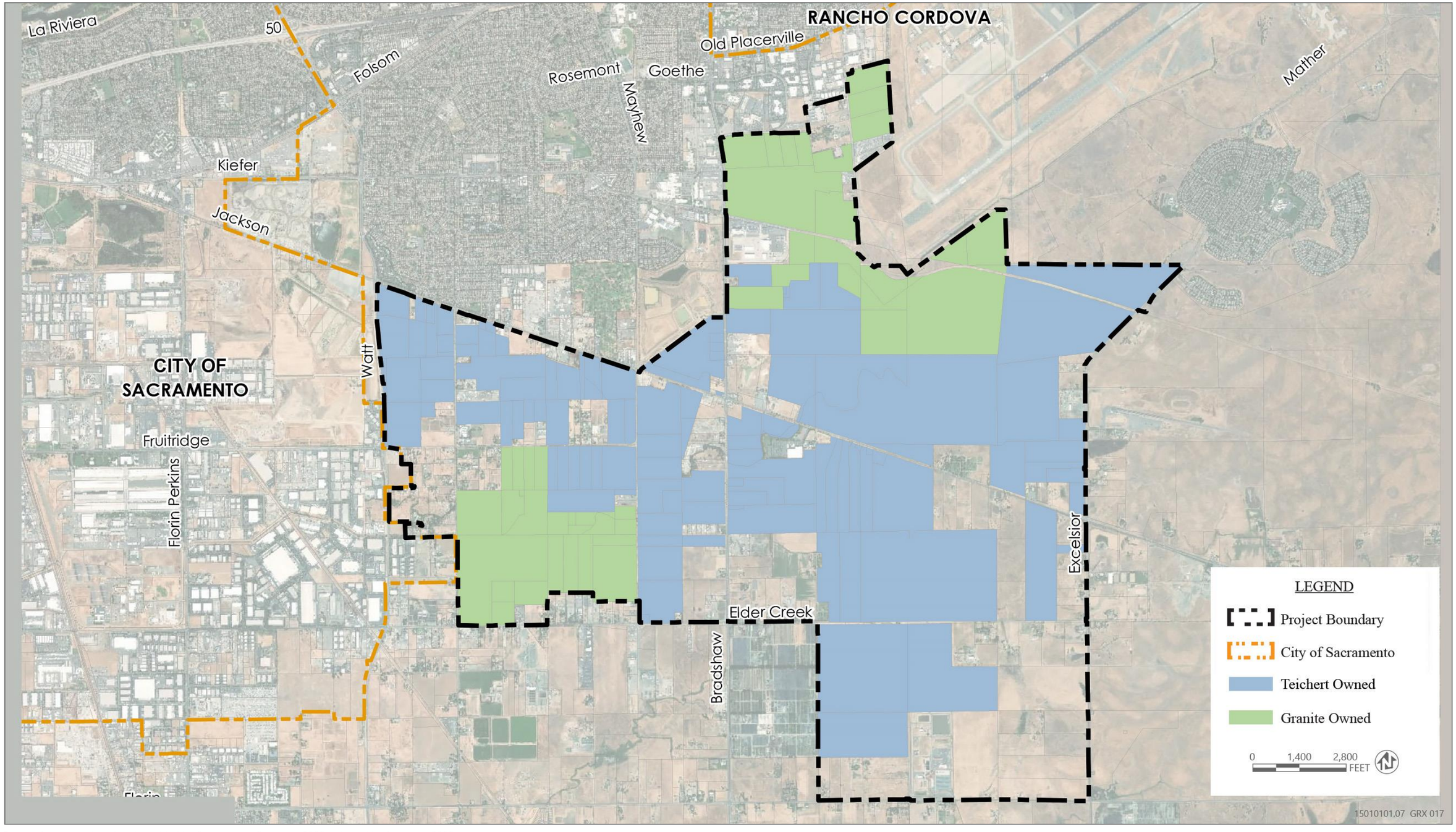
Besides mining, other developed areas include a SMUD Corporation Yard, Pacific Coast Building Products processing facility, the Bethany Slavic Missionary Church, assorted truck storage yards, warehouses, building and landscaping supply yards, and the Camellia Memorial Lawn cemetery. These land uses are mostly in the western and central portions of the WJHMP area, with the cemetery and building and landscaping supply businesses concentrated along Jackson Road. There are also small commercial and agricultural-residential areas that are distributed along major roads.

Properties not owned by the Project Applicants (referred to herein as non-participating properties) total approximately 1,834 acres and are included in the proposed master plan per Sacramento County 2030 General Plan requirements. The portion of the plan area not owned by the Project Applicants includes small rural residential parcels; parcels owned by institutional landowners, such as the Elk Grove Unified School District (Elk Grove USD); parcels owned by religious organizations, and parcels owned by various industrial users.

Figure 2-3 identifies the parcels owned by Teichert and Granite, as well as the non-participating properties within the plan area.

ENVIRONMENTAL SETTING

The plan area is traversed by two perennial waterways, which flow through the plan area from roughly the northeast to the southwest: Elder Creek and Morrison Creek. Rainfall and urban runoff collect in these creeks, which drain into the Beach-Stone Lakes area and ultimately flow into the Sacramento/San Joaquin Delta. Elder Creek flows from roughly the intersection of Jackson Highway and Excelsior Road at the eastern boundary of the plan area to the southwest. Morrison Creek extends from the southwest corner of Mather Airport, at Excelsior Road, crosses Jackson Highway east of Bradshaw Road, and flows towards the southwestern edge of the plan area. There is a small concentration of oak trees along undisturbed portions of Morrison Creek near the southeast intersection of Jackson Highway and Bradshaw Road, and there are oak mitigation plantings on the south side of Morrison Creek east of Bradshaw Road.



Source: Image produced and provided by Sacramento County in 2023, adapted by Ascent in 2023.

Figure 2-3 Participating and Non-Participating Parcels

Mining has been a prevalent land use in the plan area since the 1930s, and the natural topography of the plan area has been altered by the history of sand and gravel mining. Two reaches of Morrison Creek (one east of Jackson Highway and one west of Jackson Highway) were realigned within human-made channels constructed as part of the reclamation operations for the mines. In addition, the previously mined portions of the plan area are approximately 20–30 feet lower than the surrounding ground surface and the channel elevation of Morrison Creek is higher than the areas that have been mined. In these areas, the embankments function as levees (Langan Treadwell Rollo 2014). Although portions of the mined areas historically flowed to Morrison Creek, many of these areas now retain stormwater, and some are connected by conveyor tunnels at South Watt Avenue, Hedge Avenue, Bradshaw Road, Jackson Road, and Fruitridge Road. Upstream of Bradshaw Road, in the northeastern portion of the plan area, Morrison Creek spills over an approximately 800-foot-long weir structure during periods of high flow and the plan area detains runoff from the upstream watershed (Wood Rodgers 2022). The elevation of the plan area is shown in Figure 2-4.

Two open space areas in the plan area have vernal pools constructed for mitigation purposes: an approximately 150-acre area in the northern portion of the plan area created by Granite and Teichert to mitigate lost wetland habitat associated with mining in other parts of the plan area, and 24 acres of created vernal pools in Teichert's Aspen VI mining area. Neither of these mitigation sites are protected by a conservation easement at this time. There is also an 82-acre preserve located south of Jackson Highway and approximately 1 mile east of the intersection of Jackson Highway with Bradshaw Road. This property is under a conservation easement held by the California Department of Fish and Wildlife.

Existing Land Uses

Existing land uses within the plan area include a mixture of active and reclaimed surface mining sites; industrial properties such as storage, trucking, and rock processing and sales; and limited rural residential, commercial, institutional, and agricultural uses. In some areas, vegetative screens consisting of oleander, redwood, and cedar plantings buffer the plan area from adjacent roadways. Elk Grove USD currently operates an elementary school (Sierra Enterprise) within the plan area at the Hedge Avenue/Fruitridge Road intersection. There are three existing clusters of residential dwellings in the plan area, summarized below. Refer to Chapter 15, "Land Use," for further discussion of these existing land uses.

Adjacent Land Uses

West

The plan area is bound to the west by the city of Sacramento along South Watt Avenue, an area characterized by the presence of industrial facilities (warehouses, storage yards, manufacturing), employment centers, and mining sites. The City of Sacramento 2040 General Plan designates the area as Industrial Mixed-Use (City of Sacramento 2024).

The Teichert Land Company owns approximately 232 acres of land at the southwestern corner of Jackson Highway and South Watt Avenue in the city of Sacramento. This area is also a former mining site that is currently used for wash ponds, drying facilities, and a conveyor belt system that transports raw aggregate from nearby mining sites to the Teichert Perkins plant. The Teichert Land Company's Aspen 1- New Brighton development project, which was approved by the City of Sacramento in 2015, is planned for this site. The Aspen 1-New Brighton development consists of 232 acres designated for single-family residential, multi-family residential, an elementary school, and mixed-use; a 13-acre shopping center; 14 acres of parks and open space; and a 28-acre urban farm (City of Sacramento 2012). The Aspen 1-New Brighton project and the proposed project have been designed to be compatible with each other.

NORTH

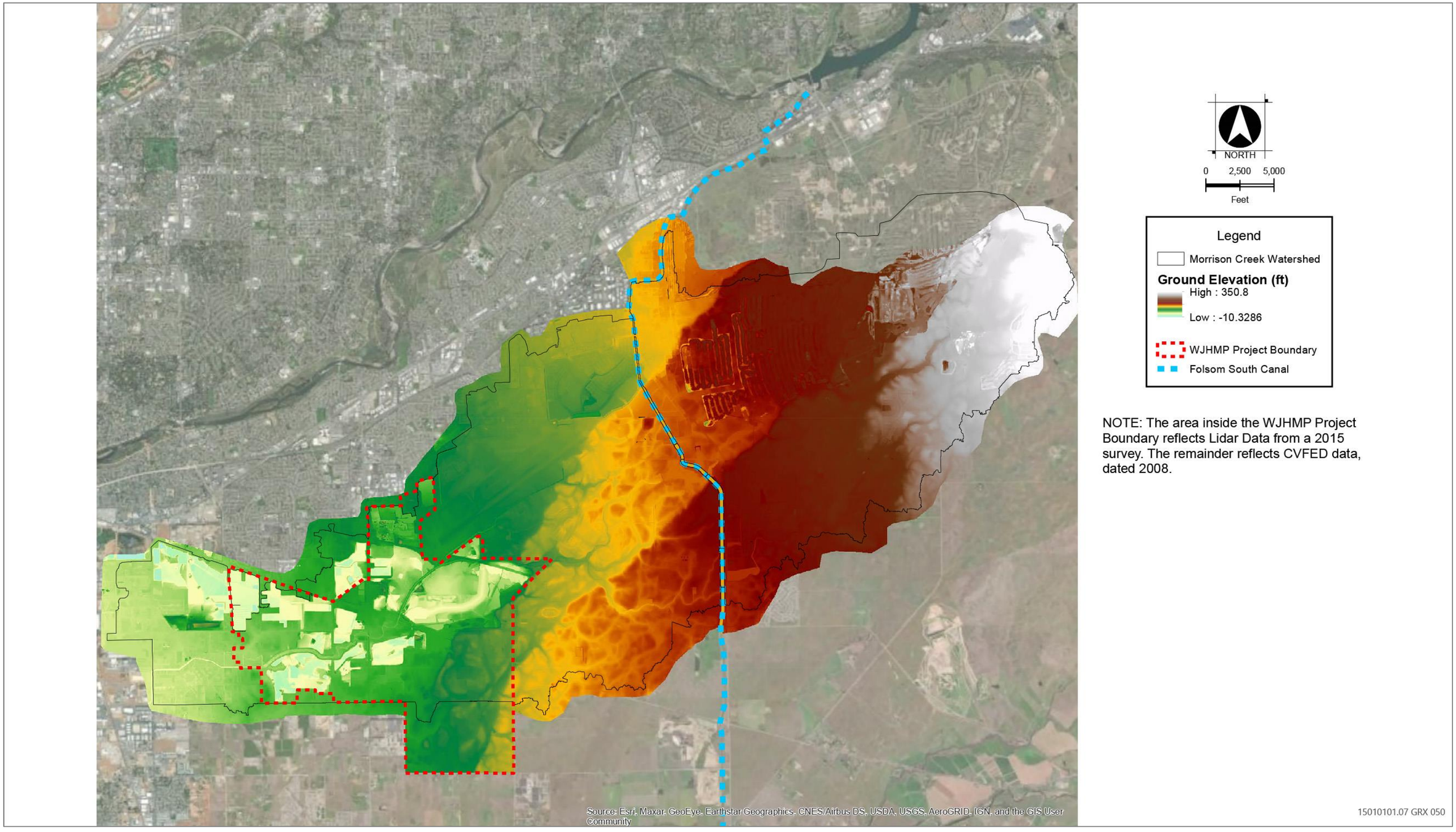
The existing, unincorporated community of Rosemont is located immediately north of the plan area. The community is comprised of predominantly lower density single-family neighborhoods and small neighborhood commercial centers. Additional land uses along the northern edge of the plan area include the Cordova Golf Course; a small assortment of industrial uses including Silverado Building Materials and Nursery, a large rock, stone, and retail nursery business; and Mather Airport. Mather Airport is the former Mather Air Force Base and is now primarily used as an air cargo facility and business park that provides predominately aviation services. A portion of the plan area is located within the Mather Airport 60 decibel (dB) community noise equivalent level (CNEL) noise contour line, which generally prohibits the location of certain types of sensitive land uses such as homes and schools. Sacramento City Unified School District (City USD) operates Rosemont High School, located adjacent to the plan area at the southwest corner of Kiefer Boulevard and Bradshaw Road.

EAST

Existing land uses along the eastern plan area boundary include agricultural and residential parcels. This area is planned for development as part of the approved Jackson Township Specific Plan (refer to Figure 2-5). The 1,391-acre Jackson Township Specific Plan is a master planned community that is planned to include up to 5,690 housing units; just over 2 million square feet of commercial, office and mixed-use development; schools; a fire station and community center; parks; and a large wetland preserve.

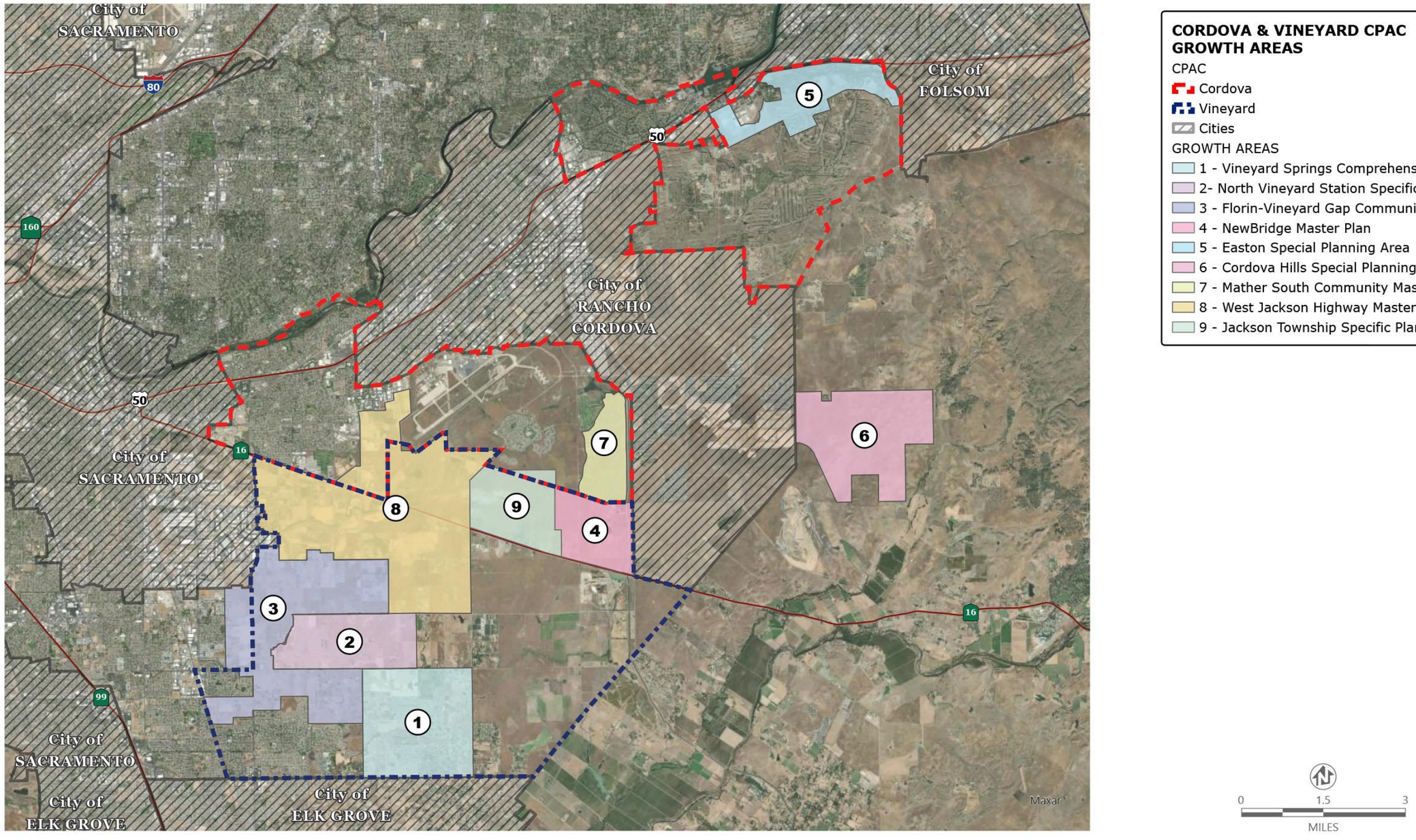
SOUTH

Properties south of the plan area include rural residential properties, agricultural land, and a commercial nursery. Some of this land is part of the approved Florin-Vineyard Community Plan area and the North Vineyard Station Specific Plan (refer to Figure 2-5). These communities are planned to support residential, commercial, and industrial land uses and are in the process of being built out.



Source: Image produced and provided by Wood Rodgers in 2022, adapted by Ascent in 2024.

Figure 2-4 Ground Elevation, Morrisson Creek Watershed



Source: Image produced and provided by Sacramento County in 2023, adapted by Ascent in 2023.

Figure 2-5 Regional Planning Context

EMPLOYMENT AND RECREATIONAL CENTERS

The plan area is geographically located within 5 miles of several employment centers, including Mather Airport, the city of Rancho Cordova; the Sacramento County Branch Center offices and transportation center; the Sacramento Municipal Utility District's (SMUD's) East County Operations Center and Corporation Yard; Depot Park (the former Sacramento Army Depot); California State University, Sacramento; the University of California, Davis Medical Center; Granite Business Park, and the Power Inn Road industrial area. Based on SACOG's 2020 data, there are approximately 243,234 jobs located within 5 miles of the WJHMP area (Navarro, pers. comm., 2024).

Currently, there are no major retail centers immediately serving the plan area except for neighborhood commercial centers along Bradshaw Road and Kiefer Boulevard in the Rosemont community and some neighborhood and community commercial centers in Rancho Cordova. Nearby recreational opportunities include the American River Parkway, Granite Regional Park, Cordova and Wildhawk golf courses, and trails along the Illa M. Collin Conservation Preserve near Mather Airport.

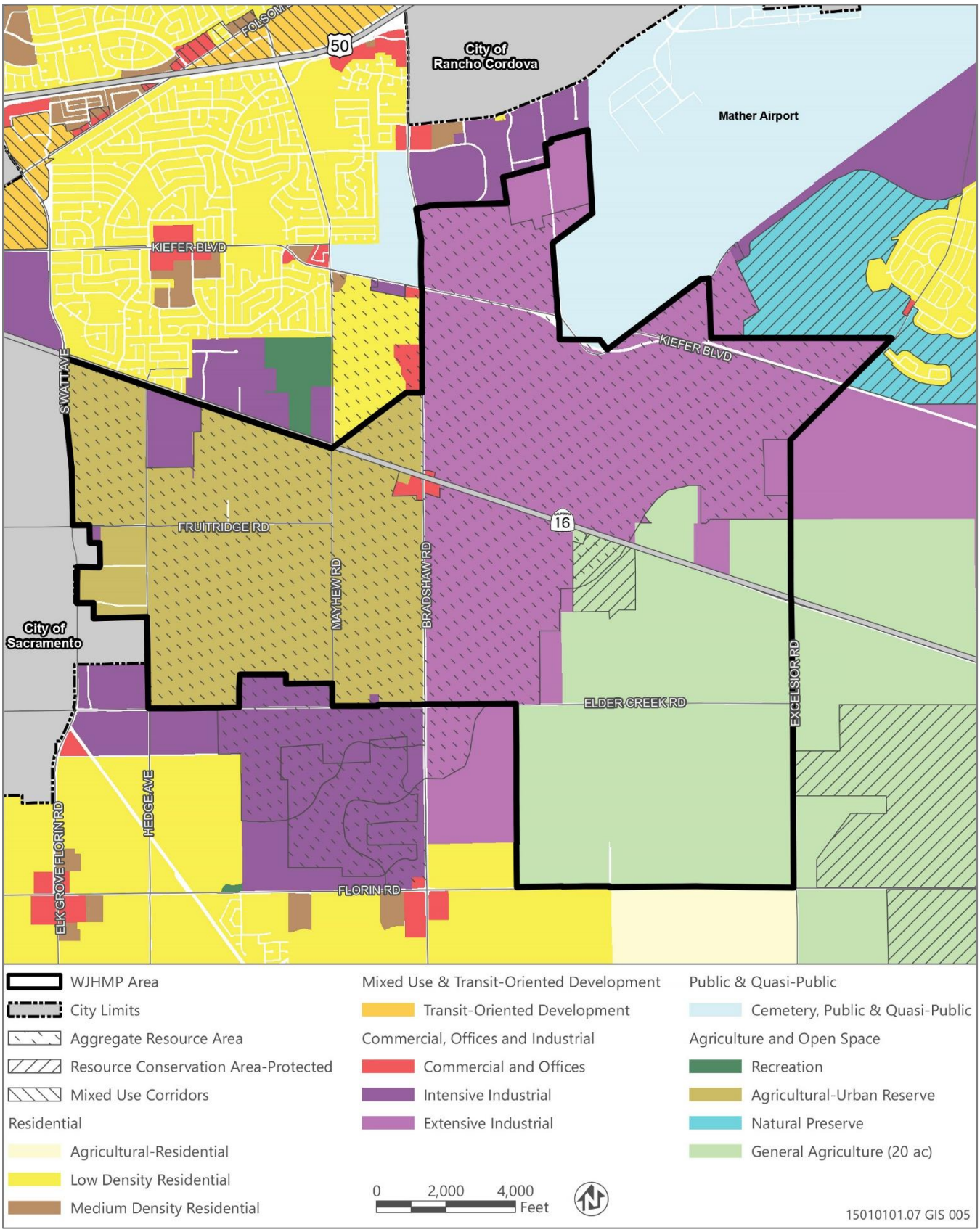
GENERAL PLAN LAND USE DESIGNATIONS

The plan area is currently designated by the Sacramento County General Plan as: General Agriculture (1,713 acres), Agricultural-Urban Reserve (1,722 acres), Extensive Industrial (2,385 acres), Intensive Industrial (72 acres), Commercial & Offices (17 acres), and Public/Quasi-Public (4 acres) (see Figure 2-6). In addition, portions of the plan area contain an aggregate resource area overlay. Pursuant to General Plan Policy CO-37, the County applies the aggregate resources combining land use category to areas determined to contain mineral resources that are appropriate for mining.

COMMUNITY PLAN LAND USE DESIGNATIONS

VINEYARD COMMUNITY PLAN

Lands within the plan area south of Jackson Highway and a portion north of Jackson Highway are within the Vineyard Community Plan area (see Figure 2-5). The Vineyard Community Plan was adopted in 1985 and was intended to be a guide for future growth and development in the Vineyard area. However, many of the Vineyard Community Plan's land use assumptions are now obsolete because of land use changes since its adoption. For example, the Vineyard Community Plan assumed that the Vineyard community would retain its rural character. Instead, large areas of the Vineyard Community Plan area developed after the County's 1993 General Plan opened the area to urban development. Another assumption was that Mather Air Force base would continue as a military facility and that its associated noise impacts would have a major influence on land uses in most of the Vineyard community. Subsequent to the Vineyard Community Plan adoption, however, the potential for noise impacts has been reduced because of the military base's closure and conversion to a civilian airfield and air cargo facility.



Sources: Data downloaded from the County of Sacramento in 2023; adapted by Ascent in 2023.

Figure 2-6 Existing General Plan Designations

COMMUNITY PLAN DESIGNATIONS

The WJHMP area is designated by the Vineyard and Cordova Community Plans with the following land use designations (see Figure 2-7):

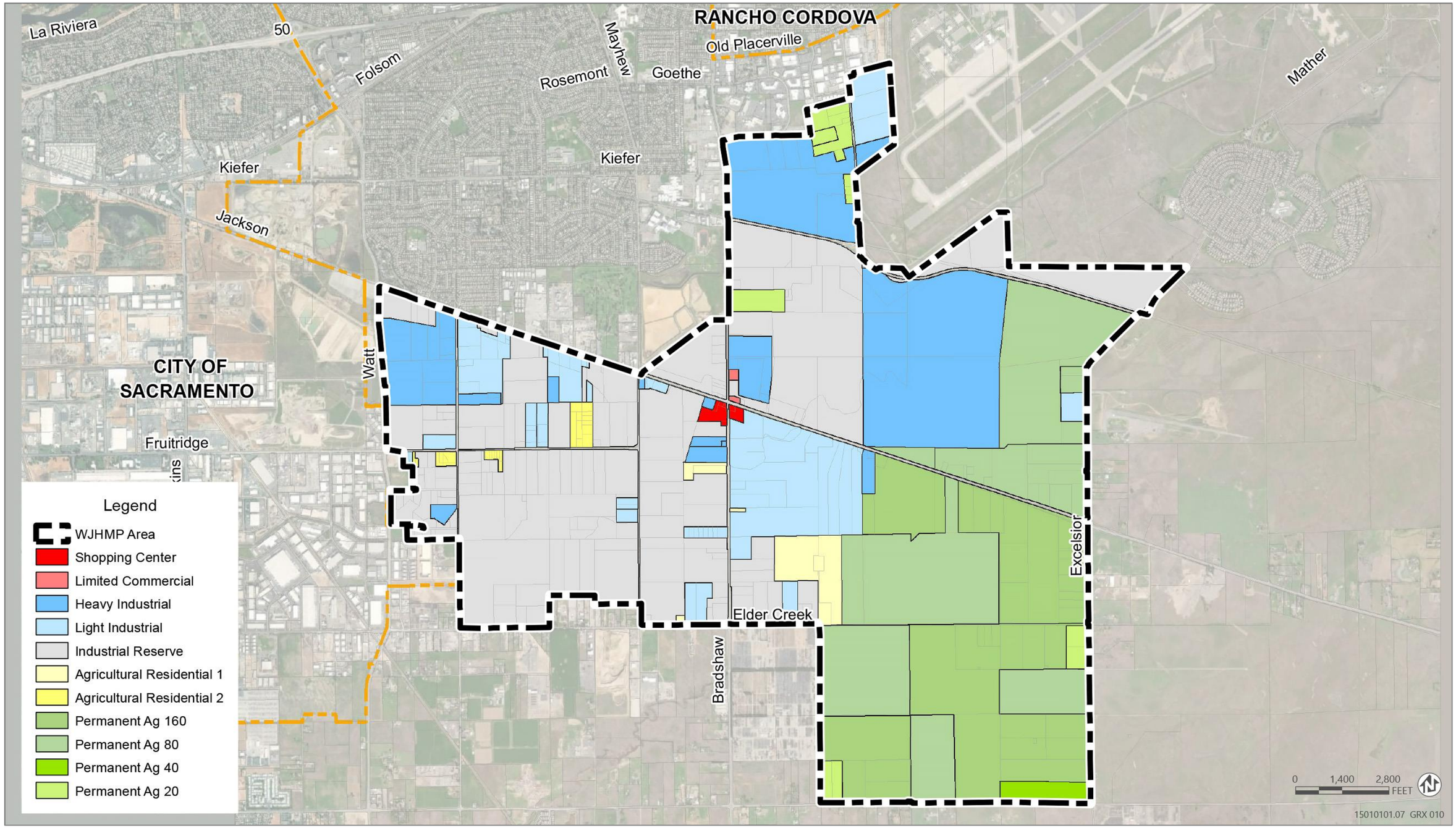
- Permanent Agriculture (AG-20)
- Permanent Agriculture (AG-40)
- Permanent Agriculture (AG-80)
- Permanent Agriculture (AG-160)
- Agricultural Residential 1
- Agricultural Residential 2
- Shopping Center
- Limited Commercial
- Light Industrial
- Heavy Industrial
- Industrial Reserve
- Major Roads

EXISTING ZONING

Existing zoning designations within the WJHMP area include the following (see Figure 2-8):

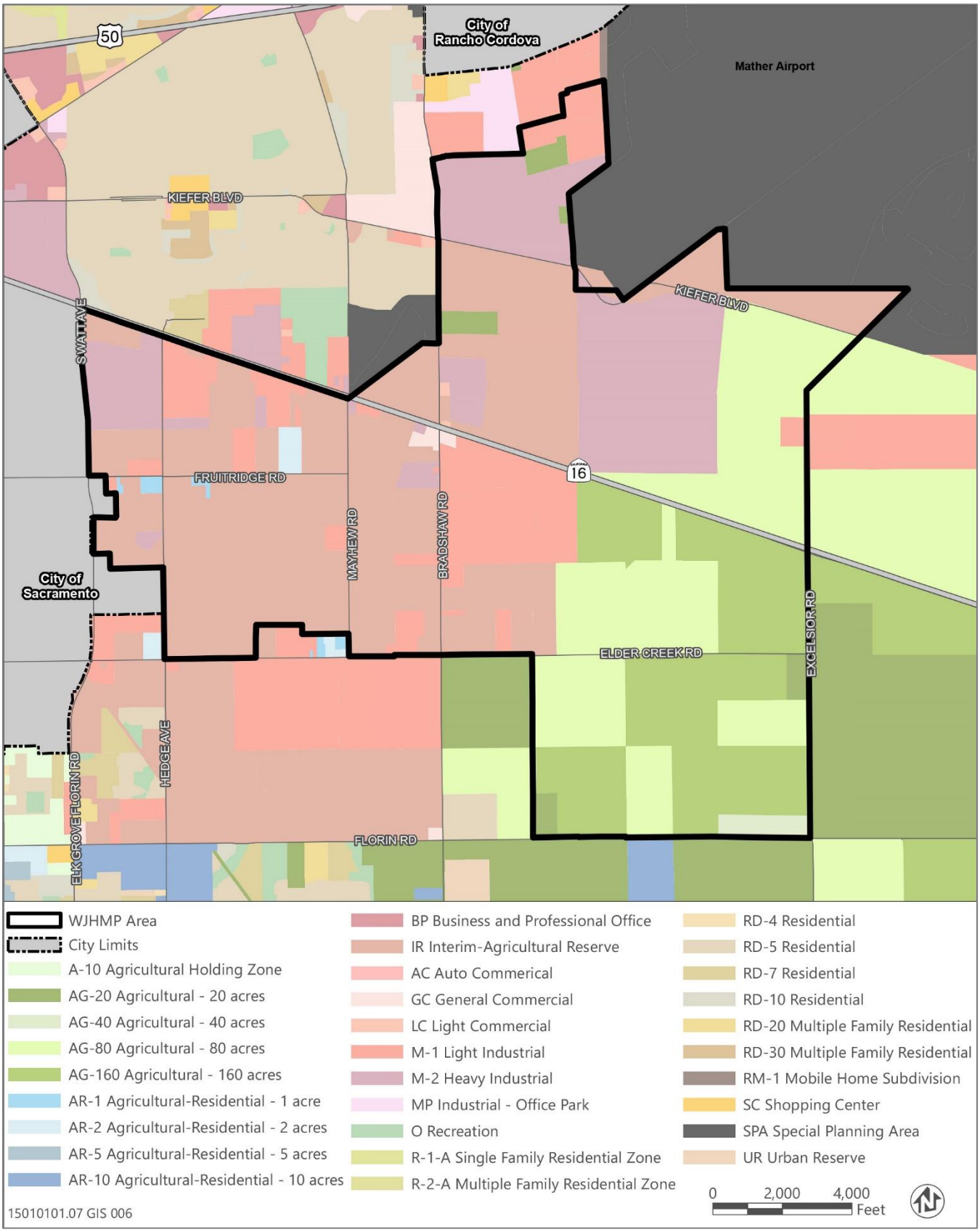
- AG-20: Agriculture-20 ac. Minimum
- AG-40: Agriculture-40 ac. Minimum
- AG-80: Agriculture-80 ac. Minimum
- AG-20(SM): Agriculture-20 ac. Minimum (Surface Mining)
- AG-80(SM): Agriculture-80 ac. Minimum (Surface Mining)
- AG-160: Agriculture-160 ac. Minimum
- AG-160(SM): Agriculture-160 ac. Minimum (Surface Mining)
- AR-1: Agricultural-Residential-1 ac. Minimum
- AR-2: Agricultural-Residential-2 ac. Minimum
- IR: Interim Agricultural Reserve
- IR(SM): Interim Agricultural Reserve (Surface Mining)

- LC(SM): Light Commercial (Surface Mining)
- GC: General Commercial
- M-1: Light Industrial
- M-1(SM): Light Industrial (Surface Mining)
- M-2: Heavy Industrial
- M-2(SM): Heavy Industrial (Surface Mining)



Source: Image produced and provided by Sacramento County in 2023, adapted by Ascent in 2023.

Figure 2-7 Existing Community Plan Land Use Designations



Sources: Data downloaded from the County of Sacramento in 2023; adapted by Ascent in 2023.

Figure 2-8 Existing Zoning Designations

BACKGROUND

REGIONAL GROWTH PROJECTIONS AND PLANNING CONTEXT

County staff prepared the Jackson Highway Visioning Study for approximately 12,000 acres in central Sacramento County along Jackson Road as part of the General Plan update process in the early 2000s. This study was initiated in response to the Sacramento Region Blueprint, which was adopted by the Sacramento Area Council of Governments (SACOG) in 2004. The Sacramento County 1993 General Plan had assumed the need for approximately 29,000 new residential units in the unincorporated county, but the Blueprint assumed nearly 100,000 new units, more than triple the previously assumed demand, amidst a housing boom in the region. The Jackson Highway Visioning Study (and a concurrent visioning study completed for 10,000 acres along Grant Line Road) were developed to provide a guide for long-term future growth, based on the Blueprint's housing demand projections. The Jackson Highway Visioning Study was completed in 2008; however, it was not adopted by the Board of Supervisors.

The housing boom ended in 2008, followed by a recession. During the same period, the State adopted several regulatory changes that required local governments to drastically change their approach to land use planning, including Assembly Bill (AB) 32 in 2006 and Senate Bill (SB) 375 in 2008. SACOG's regional growth projections were adjusted to reflect shifts in the economy and regulatory environment. By the time the 2030 General Plan was adopted in 2011, SACOG's growth demand projections for new housing for the unincorporated county had been reduced from nearly 100,000 to less than 50,000 during a 6-year period. This resulted in the need to change the County's approach to approving new growth. The revised approach to new growth areas incorporates strict criteria for growth based on smart growth principles that are intended to assist the County in meeting its obligations to reduce greenhouse gas emissions under AB 32 and SB 375. Additional information on this topic and the analysis of the project's ability to meet the criteria can be found in Chapter 15, "Land Use."

The most current SACOG growth forecast was created for the 2025 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), and adopted in February 2022. This forecast uses a 2020 base year estimate with projections to 2050 for housing units and employment. These projections estimate demand for 167,710 new residential units in unincorporated Sacramento County between 2020 and 2050 (SACOG 2022).

URBAN POLICY AREA AND URBAN SERVICES BOUNDARY

Urbanization in the unincorporated county is largely shaped by the Urban Policy Area (UPA) and Urban Services Boundary (USB). The UPA identifies the area in the county anticipated to accommodate projected near-term growth. The intent of the UPA is to direct growth in a logical manner and to identify areas where infrastructure requiring near-term large capital investments will be needed. The USB delineates the ultimate boundary of the urban area in the unincorporated county (beyond 25 years). It is intended to be a permanent growth boundary not subject to modification except under extraordinary circumstances.

The UPA and USB are the backbone of Sacramento County's urban planning philosophy. While the USB is intended to be a permanent boundary, the UPA is adjusted incrementally as needed to ensure that the county can accommodate anticipated growth over the next 25-year planning cycle. The area between the two lines is reserved for future urbanization and is only to be developed when lands within the existing UPA can no longer accommodate projected growth or the project meets expansion criteria pursuant to General Plan Policy LU-120.

A portion (approximately 69 acres) of the WJHMP area is within the UPA. Although most of the plan area is outside the UPA, most of the WJHMP boundary (approximately 87 percent) is immediately adjacent to the UPA (see Figure 2-2). The entire WJHMP area is within the USB.

South Sacramento Habitat Conservation Plan (SSHCP)

The SSHCP was developed through an iterative process that began in 1992. The current conservation plan concept was initiated in 2012 and adopted by the partner agencies in 2018. The SSHCP was developed as a collaborative effort to streamline permitting and protect covered species habitat. The SSHCP covers 28 different species of plants and wildlife, including 10 that are state and/or federally listed as threatened or endangered. The 50-year incidental take permit is currently being implemented and is valid through 2059.

The WJHMP is within the Urban Development Area (UDA) identified in the SSHCP, and the project is considered a Covered Activity. Covered Activities within the UDA include activities and projects related to urban development and associated infrastructure. Covered Activities are allowable under the SSHCP's Incidental Take Permits and can use the SSHCP to mitigate for impacts that result from implementation of the Covered Activity. Covered Activities must comply with all SSHCP requirements, including SSHCP avoidance and minimization measures (AMMs).

In addition to AMMs that pertain to the design and construction of specific developments in the plan area, there are several AMMs that influence the land use framework established in the WJHMP. For example, covered activities in the UDA must comply with AMM LID-3, which requires preservation of a site's natural aquatic features (such as creeks and streams) into project design to retain natural hydrologic patterns and to retain habitat that might be used by Covered Species, and AMM STREAM-2, which requires a minimum 100-foot setback from Morrison Creek. In addition, AMM STREAM-5 establishes design standards for stream channel re-routing.

Pursuant to AMM ROAD-1, roadways must be located in the least environmentally sensitive area to minimize impacts on Covered Species, Covered Species habitat, and waters of the United States, following existing roads, road easements, and rights-of-way, or be sited in disturbed areas to minimize habitat loss and additional habitat fragmentation. Roadway projects are also required to include wildlife crossing structures to provide for continued dispersal and movement of native wildlife throughout the SSHCP Plan Area (AMM ROAD-2). SSHCP wildlife crossing structures may include structures such as bridges, arches, or box and pipe culverts.

As described above, there is one existing preserve identified by the SSHCP within the WJHMP area located on the south side of Jackson Highway (APN 063-0170-023). Additional AMMs apply to development adjacent to SSHCP preserves, including EDGE-3, which requires that UDA Covered Activities constructed adjacent to existing or planned preserves establish a minimum 50-foot-wide setback from the boundary of any preserve.

MATHER AIRPORT LAND USE COMPATIBILITY PLAN

The Mather Airport Comprehensive Land Use Plan (CLUP) was adopted by SACOG in 1997 following the closure of Mather Air Force Base and its transition to Sacramento County ownership and operation as an airport in 1995. The 1997 Mather CLUP included aircraft noise contours based on anticipated operations at the time. In 2006, the Board of Supervisors adopted the theoretical capacity methodology for compatible land use planning for Mather Airport. This methodology has been utilized for planning documents, including the General Plan and master plans. In 2014, the Mather Airport Master Plan was adopted by the Board of Supervisors. The 2014 Mather Airport Master Plan Environmental Impact Report included mitigation requiring replacement of the 2006 CNEL theoretic capacity noise contour with a new CNEL contour to be adopted for land use compatibility planning and adoption in the Airport Land Use Compatibility Plan (ALUCP) and County General Plan. An updated 2018 theoretic capacity contour was released as part of the Mather Airport ALUCP update in 2020 and the CNEL contours in use are calculated using this methodology. The Mather ALUCP was updated and adopted by SACOG in August 2022. Sacramento County subsequently amended its General Plan Land Use and Noise Elements to incorporate the updated Mather ALUCP, including the new noise contours and safety zones. The General Plan Amendments were adopted in December 2022.

The most current theoretical capacity CNEL 60 – 65 dB noise contour overlaps with the northeast portion of the plan area. While most permanent housing is prohibited within this area, the CLUP identifies an array of compatible and conditionally compatible uses, including agricultural uses; open space and outdoor recreation; indoor assembly uses (e.g., event centers, places of worship); schools, commercial, office, and service uses; industrial uses and mining; and transportation, communication, and utility infrastructure. General Plan Policy NO-2 establishes that development proposals which may be affected by aircraft noise from Mather Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Mather Airport dated February 2021 (as well as applicable footnotes in General Plan Noise Element Table 4 (*Land Use Compatibility for Aircraft Noise*). Footnote 2 of General Plan Noise Element Table 4 provides that single family detached residential units within the 60-65 dB CNEL noise contours of the Mather Airport Policy Area may be considered a compatible use if: approved by the Board of Supervisors upon completion of Sacramento County's master plan process, including demonstration of compliance with General Plan Policies LU-119 and LU-120; and an evaluation of potential noise and safety impacts pursuant to CEQA has occurred and appropriate noise mitigation measures to reduce interior noise levels to 45 dB have been included in the environmental document and adopted as conditions of approval.

Concurrent Planning Processes

The WJHMP is one of four major planning applications for future urban growth along the Jackson Highway corridor, which are collectively referred to as the Jackson Highway Master Plans. The other three plans, the Jackson Township Specific Plan, the NewBridge Specific Plan, and the Mather South Community Master Plan, were approved by the County in December 2022, October 2020, and January 2020 respectively. The Jackson Township Specific Plan area is located just east of the WJHMP and includes approximately 1,391 acres located south of Mather Field, north of Jackson Road, east of Excelsior Road and generally west of Eagles Nest Road. The NewBridge Specific Plan area is located just east of the WJHMP and includes approximately 1,095 acres north of Jackson Highway. The Mather South Community Master Plan includes approximately 884 acres northeast of the WJHMP (refer to Figure 2-5).

In total, the four master plans cover approximately 9,250 acres and would provide for the development of more than 27,000 new housing units of varying densities; nearly 6.8 million square feet of commercial space, employment-generating uses, and mixed-use space; 12 schools; approximately 322 acres of developed parkland; and approximately 1,882 acres of designated open space and urban farm. The master plans were initiated at the request of each of the project applicants in response to long term growth projections and are anticipated to build out over several decades. Economic and market conditions would determine when future projects are built. These master plans are considered in the cumulative context and infrastructure planning for the project.

Application and Project Initiation

The master plan process was begun in February 2009 with a pre-submittal review process followed by a formal initiation in 2012 following the Sacramento County Board of Supervisors' review and acceptance of the application to expand the UPA pursuant to 2030 General Plan Policy LU-119.

CEQA Noticing and Public Involvement

A Notice of Preparation (NOP) for the WJHMP was first published on September 10, 2013. The Project Applicants and County of Sacramento staff subsequently reviewed the results of several CEQA-related studies, consulted interested and affected parties, and had extensive conversations concerning how the original project might adversely impact the environment. As that information became available, the Project Applicants, in coordination with County staff, modified the original project to lessen its potential to result in environmental impacts. Specifically, the project was modified to reduce traffic and associated effects on air quality and climate change, improve transit, reduce effects on biological resources and increase open space, avoid potential noise effects, and improve groundwater recharge.

In 2013 and 2016, the County held four joint Vineyard and Cordova Community Planning Advisory Council (CPAC) workshops for the Jackson Highway Master Plans that covered: the planning and environmental review process for master plans; transportation planning in the area; water supply, sewer, and drainage in the area; and infrastructure financing.

Due to project revisions that were made in response to these public hearings, a new NOP was issued in February of 2017. In response to comments from Elk Grove USD requesting additional location specificity for possible sites of the proposed middle/high school, a revised NOP was subsequently released on April 26, 2017. The April 2017 NOP identifies three "project options." In addition to the version of the WJHMP proposed at the time, Options 1, 2, and 3 (also referred to as Alternative 1-A, Alternative 1-B, and Alternative 1-C) were provided to assess variations in the project. Option 2 described a land use plan based on the 2014 Mather Airport Master Plan Forecast 60 dB CNEL line (instead of the Theoretic Capacity 60 dB CNEL line adopted at the time). This option plans residential uses at the geographic center of the project rather than employment uses. As described above, the Mather ALUCP, which updates the land use compatibility noise contours, was adopted by the SACOG Board of Directors and incorporated into the Sacramento County General Plan in 2022. With this update, the proposed project would include low density residential development within the 60 to 65 dB contour. The area within Mather Airport's 60 dB CNEL noise contour line, where residential uses are restricted, is proposed to contain major commercial, employment and industrial centers as well as large open space areas. Comments on the NOP are summarized in the applicable technical chapters of this EIR.

PROJECT OBJECTIVES

Outlined below are the primary objectives for the proposed WJHMP. The objectives identified for the project were developed in a manner consistent with Section 15124(b) of the State CEQA Guidelines and establish a "statement of the objectives sought by the proposed project." While the County's overarching goal is to accommodate projected population growth in the unincorporated county, as envisioned in the General Plan, the Project Applicants have established more specific objectives for the project.

1. Identify and redevelop former mining properties and properties formerly restricted by airport operations of Mather Air Force base into a vibrant master planned community.

2. Provide a broad mix of needed housing in close proximity to existing and future job centers, including affordable housing as required by the County's Inclusionary Housing Ordinance.

3. Support development located and designed to reduce the per capita vehicle miles traveled and greenhouse gas emissions relative to the Sacramento County regional average.

4. Achieve a Net Zero Greenhouse Gas community at buildout.

5. Provide commercial and recreational services that are connected to and serve adjacent communities.

6. Provide for the development and improvement of services that will serve Environmental Justice areas.

7. Provide equitable protection from environmental and health hazards for disadvantaged communities within the plan area.

8. Include a variety of land use types that will provide employment, commercial, industrial, recreational, and housing opportunities. Locate the different land uses within easy walking distance of each other.

9. Encourage health and wellness by providing an extensive system of trails and parks that are distributed throughout the community and are within easy walking and biking distance of residents. Provide also urban farms and community gardens that will be centrally located and will enable residents, as well as adjacent communities, to obtain locally grown produce and farm products.

10. Incorporate sustainable design practices through a variety of measures including energy efficient design, urban forests, and Low Impact Development (LID). These measures are intended to reduce the overall carbon footprint of the community.

11. Provide a high level of connectivity through an extensive network of streets and off-street trails. Provide bicycle and pedestrian trails that will allow connectivity up slope banks to key intersections, schools, or commercial centers in order to facilitate access options.

12. Provide infrastructure for a variety of transportation options, including roadways, bike trails, walking trails, electric vehicle (EV) charging, and public transportation.

13. Create distinctive community and neighborhood nodes that create a sense of place and opportunities for social and recreational activity.

14. Provide a range of housing choices that could include semi-rural, traditional single-family homes, condominiums/townhomes, apartments, active adult/seniors, and mixed-use development.

15. Develop a master plan within and consistent with the South Sacramento Habitat Conservation Plan.

16. Achieve an economically viable master planned development.

PLAN CHARACTERISTICS

The proposed WJHMP includes a wide variety of residential, commercial, office, industrial, agricultural, recreational, open space, public, and educational uses (Figure 2-9). The land use plan has been designed to reduce vehicle miles traveled and support the use of a variety of transportation alternatives within the plan area. A major feature of the master plan would be activity centers comprised of commercial, park and/or civic

uses with nearby high density residential. These activity centers would be connected to linear parkways with roadways and off-street trails. From the activity centers, there would be a gradual reduction in residential densities toward the eastern and southern extents of the plan area. The project would also include a variety of regional, community, and neighborhood retail centers; office uses; research facilities; employment centers; and a network of trails and public uses.

The WJHMP allows and promotes the continued operation of construction material production facilities (such as the existing Teichert Perkins Plant and the Granite Bradshaw aggregate processing plants) concurrent with the transition of the plan area to more urban uses. Implementation of the quarry's reclamation plans will result in developable lands consistent with County standards and the Surface Mining and Reclamation Act.

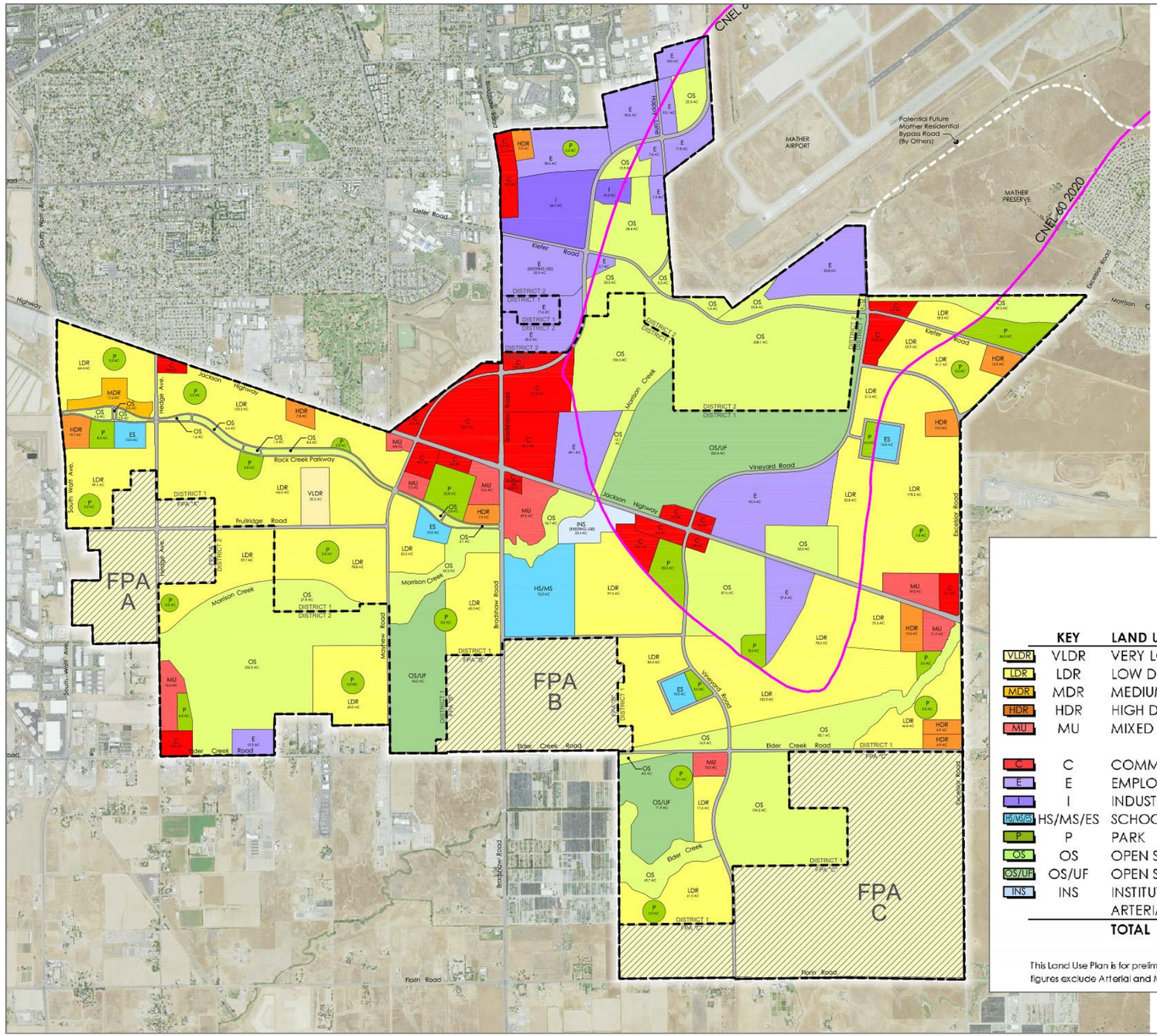
If adopted, the WJHMP would become an extension of the Sacramento County General Plan and serve as a planning and policy tool that refines and implements countywide goals, objectives, and policies. To facilitate the transition to the land uses envisioned in the WJHMP, the plan area has been divided into two districts (within which the Project Applicants are the majority landowners) and three FPAs. The WJHMP establishes land use designations, distribution, and intensity (density and/or floor area ratio) for the properties in the plan area.

Organization of the Plan

The master plan document is composed of 11 chapters. Chapters 1 through 3 provide introductory information related to regional and planning context, establish the vision and guiding goals of the plan, and characterize existing conditions. Chapter 4 establishes the land use plan and provides an overview of the proposed land uses. Chapters 5 through 8 describe elements of the WJHMP related to mobility, parks and open space, public infrastructure, and public services. Plan objectives related to environmental justice and climate change adaptation and resilience are provided in Chapters 9 and 10, respectively. Chapter 11 includes administrative details related to authority, implementation, future planning, plan revisions, and fees and financing.

Features of the Plan

The WJHMP is intended to build upon the existing assets and opportunities of the plan area and guide future development in a manner consistent with adjacent development and the General Plan’s goals and policies. The WJHMP is also designed to dovetail with surrounding recently adopted planning efforts, such as the adjacent Jackson Township Specific Plan.



LAND USE SUMMARY

KEY	LAND USE	AC±	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	1.0 - 4.0	2.0	230		
LDR	LOW DENSITY RESIDENTIAL	1,955.1	3.0 - 10.0	5.0	9,774		
MDR	MEDIUM DENSITY RESIDENTIAL	58.6	10.0 - 20.0	14.0	820		
HDR	HIGH DENSITY RESIDENTIAL	121.2	25.0 - 40.0	30.0	3,636		
MU	MIXED USE	112.5	25.0 - 35.0	30.0	*2,024		
			0.20 - 2.00 FAR			0.25	**1,225,125
C	COMMERCIAL	290.7	0.25 - 1.25 FAR			0.25	3,165,723
E	EMPLOYMENT	543.3	0.25 - 1.25 FAR			0.30	7,099,844
I	INDUSTRIAL	154.4	0.25 - 1.25 FAR			0.30	2,017,699
HS/MS/ES	SCHOOL	132.0					
P	PARK	219.3					
OS	OPEN SPACE (C) = Existing Cemetary (V) = Vernal Pools on-site	1,489.4					
OS/UF	OPEN SPACE/URBAN FARM	392.5					
INS	INSTITUTIONAL (church) = Existing Church	98.9					
	ARTERIAL/COLLECTOR ROADS	229.8					
	TOTAL	**5,913.3 AC**			**16,484 DU**		**13,508,392 SF**

* DWELLING UNIT NUMBER CALCULATED BY USING 60% OF MU ACREAGE

** SQUARE FOOTAGE CALCULATED BY USING 100% OF MU ACREAGE

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

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Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-9 WJHMP Land Use Diagram

DISTRICTS AND FUTURE PLANNING AREAS

As described further below, the WJHMP established logical planning boundaries and provides comprehensive land use and infrastructure planning for the entire plan area. Within the plan area, two districts and three FPAs are established to reflect existing land ownership. District 1 covers land primarily owned by Teichert, District 2 covers land primarily owned by Granite, and the FPAs are composed of three distinct geographic areas over which the Project Applicants do not have land use control.

DISTRICT 1

District 1 is 3,487 acres and is comprised primarily of lands owned or controlled by Teichert (3,016 acres), as well as several properties controlled by others not connected to Teichert (i.e., non-participating properties). District 1 is in the center of the plan area and spans both sides of Jackson Highway. District 1 includes a wide variety of residential, commercial, employment, mixed use, park, open space, schools, urban farm, industrial, and institutional land uses needed to support the community.

Within this district, commercial and mixed-use opportunities are identified along Jackson Highway, particularly at the intersection with Bradshaw Road. Land designated for employment is located along Jackson Highway in three locations east of Bradshaw Road. The district includes open space along Morrison Creek and an adjacent area (approximately 225 acres) designated for open space/urban farm. The remaining areas of District 1 are dominated by low density residential uses.

DISTRICT 2

District 2 is comprised of two distinct areas in the WJHMP: the northern areas and the southwest corner. District 2 is 1,203 acres and is comprised primarily of lands owned or controlled by Granite (1,063 acres). District 2 includes residential, commercial, employment, parks, open space, and industrial uses needed to support the community.

In the northern area, land is primarily designated for employment (approximately 284 acres) and open space (approximately 380 acres) uses that are generally consistent with existing land uses. The northwest corner of the plan area also provides open space (approximately 255 acres) associated with Morrison Creek. This area would also include parks (approximately 14 acres total) and low density residential (approximately 125 acres). Mixed use, commercial, and employment land uses (approximately 39 acres collectively) would be located along Hedge Avenue and Elder Creek Road.

FUTURE PLANNING AREAS

Originally intended to re-design, re-purpose, and reconnect current and former mining properties to the Rosemont and Vineyard Communities, the WJHMP was augmented during the project initiation phase to include a number of smaller non-participating parcels. This was done to establish a more logical planning boundary and a comprehensive vision for the 5,913-acre plan area.

The WJHMP land use map designates these areas for residential use for the purpose of resource planning and to ensure appropriate sizing of infrastructure. The West Jackson Master Plan Overlay would be applied to the FPAs; however, these areas would retain their current General Plan land use designations (General Agriculture – 20 acre minimum and Agricultural-Urban Reserve) with adoption of the WJHMP. In order to change existing land use designations and zoning in the FPAs, landowners of these areas would need to initiate amendment(s) to the WJHMP or prepare subsequent comprehensive planning documents. The FPAs are not currently planned in sufficient detail to allow development.

PROPOSED LAND USES

Table 2-1 summarizes the proposed land uses in the plan area, consistent with County zoning, and the growth potential of the plan area at full buildout. The plan area would be rezoned as a separate action subsequent to the master plan, if adopted.

Table 2-1 WJHMP Land Use Summary

WJHMP Land Use	Consistent County Zoning	Acres	Residential			Non-Residential	
			Density Range	Target Density	Estimated Dwelling Units	Estimated Floor Area Ratio	Estimated Square Feet
Very low density residential	RD-1, RD-2, RD-3, RD-4, SPA	115.6	1.0-4.0	2.0	230		
Low density residential	RD-3, RD-4, RD-5, RD-7, RD-10, SPA	1,955.1	3.0-10.0	5.0	9,774		
Medium density residential	RD-10, RD-15, RD-20, SPA	58.6	10.0-20.0	14.0	820		
High density residential	RD-25, RD-30, RD-40, SPA	121.2	25.0-40.0	30.0	3,636		
Mixed use	NMC .25-2.0, SPA	112.5	25.0-35.0	30.0	2,024	00.20-2.0 (commercial and/or office)	1,225,125
Commercial	NMC, BP, C-O, GC, LC, SPA	290.7				0.25-1.25	3,165,723
Employment	NMC, BP, C-O, GC, LC, SPA	543.3				0.25-1.25	7,099,844
Industrial	M-1, M-2, MP, SPA	154.4				0.25-1.25	2,017,699
School	RD-5 (PQP), RD-7, RD-10, SPA	132.0					

WJHMP Land Use	Consistent County Zoning	Acres	Residential			Non-Residential	
			Density Range	Target Density	Estimated Dwelling Units	Estimated Floor Area Ratio	Estimated Square Feet
Park	RD-1, RD-2, RD-3, RD-4, RD-5, RD-7, RD-10, RD-15, RD-20, RD-25, RD-30, RD-40, NMC, RR, O, SPA	219.3					
Open space	O, SPA	1,489.4					
Open space / urban farm	AG-20, AG-40, A-80, AG-160, SPA	392.5					
Institutional	M-1	98.9					
Arterial / collector roads	N/A	229.8					
Total		**5,913.3**			**16,484**		**13,508,392**

RESIDENTIAL AND MIXED USE

The proposed project includes a maximum of 16,484 residential units. Assuming 2.77 persons per household[1], the WJHMP would provide housing for approximately 45,661 residents. Table 2 summarizes the residential density ranges and the number of dwelling units that are proposed.

Table 2-2 Residential Unit Totals by Planning Area

District Area/Future Planning Area	Number of Units
District 1 (Teichert)	11,510
District 2 (Granite)	1,128
Future Planning Area “A”	662
Future Planning Area “B”	1,131
Future Planning Area “C”	2,053
Project Total	*16,484*

The WJHMP has been designed to provide a wide variety of housing options including apartments, condominiums, townhouses, and single-family detached homes. Neighborhood centers would have higher density residential developments, providing housing opportunities near essential services and transit. To further increase housing options, the provision of residential accessory dwellings such as a “granny flat” above

[1] Average persons per household in Sacramento County between 2017 and 2021 (US Census Bureau 2023).

garages, detached in-law structures, or multi-generational architecture is encouraged in all residential neighborhoods.

- Very Low Density Residential (VLDR) would be developed lands within a density range of up to four dwelling units per acre. The plan area contains 115.6 acres of VLDR. With a target density of two dwelling units per acre, the plan would result in 230 VLDR dwelling units.
- Low Density Residential (LDR) would be developed at a density range of three to 10 dwelling units per acre. The WJHMP area contains approximately 1,955 acres designated for LDR. With a target density of five dwelling units per acre, the plan would result in 9,774 LDR dwelling units.
- Medium Density Residential (MDR) would be developed with a density range of 10 to 20 dwelling units per acre. The WJHMP designates 58.6 acres of MDR. With a target density of 14 dwelling units per acre, the plan would result in 820 MDR dwelling units.
- High Density Residential (HDR) would be developed with a density range of 25 to 40 dwelling units per acre. The WJHMP designates 121.2 acres of HDR. With a target density of 30 dwelling units per acre, the plan would result in 3,636 HDR dwelling units.
- Mixed Use (MU) lands would be developed with a residential density range of 25 to 35 dwelling units per acre and/or commercial/employment uses with a Floor Area Ratio (FAR) of .20-2.00 FAR. The MU target density is 30 dwelling units per acre. The plan area contains 112.5 acres of MU. Assuming 60 percent of the MU acreage is developed with residential uses, the plan would result in 2,024 MU dwelling units, and 1,225,125 square feet of commercial/employment.

COMMERCIAL AND EMPLOYMENT

Retail and employment opportunities would be available in each of the districts, from small scale retail shops and professional offices in neighborhood centers, to chain stores and office complexes in the business districts. Employment centers would provide a mix of office and light-industrial uses, such as manufacturing, research, warehousing, aviation service industry, and equipment storage. Business parks would provide a mix of office uses such as banks, libraries, doctors' offices, general business offices, and other similar uses.

The project includes an estimated total of 3.2 million square feet of commercial use and another 1.2 million square feet of mixed-use. Most of this square footage would be located in District 1, where a large commercial area focused on the Bradshaw Road/Jackson Highway intersection is envisioned. It is likely that there would be a regional or community commercial center located in this area, containing a large array of retail types, including restaurants, movie theatres, bookstores, home supply stores, electronic stores, and other types of similar retail. There would be additional commercial areas at the Vineyard Road/Jackson Highway intersection as well as at the Excelsior Road/Jackson Highway intersection comprised of commercial and mixed-use acreage. There would also be neighborhood commercial and/or mixed-use centers distributed

throughout this district, all of which would be connected by off-street trails. These neighborhood-serving retail centers consist of grocery stores, dry cleaners, restaurants, and other retail stores that meet the daily needs of residents within the community.

The plan area also provides 543.3 acres for employment uses, which could support over 7 million square feet of employment space. Based upon an estimate of typical employment yields for planned land uses, the WJHMP is anticipated to generate approximately 29,233 jobs. Based on these numbers, the WJHMP would provide approximately 1.7 jobs per household. These job opportunities are anticipated to contribute to a reduction in overall vehicle miles traveled in the region by helping to correct the existing jobs imbalance in the vicinity of the plan area.

Industrial

The WJHMP incorporates industrial land uses for manufacturing, warehousing, distribution and assembly, research and development, and related uses. The plan contains 154.4 acres of land designated industrial, which could support over 2 million square feet of industrial space. This land is currently used for industrial- and construction-related activities including aggregate, asphalt concrete, and recycled material processing.

Offices and light-industrial uses that do not generate heavy truck traffic would be used to buffer residential uses from more intensive industrial land use types, as appropriate. To ensure there are no conflicts, uses that would allow for idling trucks such as repair facilities, storage yards or truck terminals would be prohibited unless adequate screening, setbacks, and landscaping are established.

School and Institutional Land Uses

The plan includes 132 acres for five school sites, which would be developed consistent with Elk Grove USD requirements. For planning purposes, total enrollment for grades Kindergarten through 12 is estimated at about 10,375 students, some of which would come from housing units outside of the plan area. The WJHMP also includes 98.9 acres of land designated Institutional, which is applied to land that is currently used for a church as well as the Sacramento County Vineyard Water Treatment Plan located within FPA C on Florin Road.

Recreation and Open Space

The WJHMP area straddles the Cordova Recreation and Park District (Cordova) and the Southgate Recreation and Park District (Southgate), which operate on the north and south sides of Fruitridge Road and Jackson Highway, respectively. Each of these districts would develop and maintain the proposed park systems within their respective jurisdiction.

The WJHMP proposes a mix of parks, open space, recreation, and non-vehicular circulation amenities, including a community park, neighborhood parks, pocket parks, linear parks, detention basin parks, open space, utility easements, drainage corridors, wetland avoidance areas, and a large trail network.

COMMUNITY AND NEIGHBORHOOD PARKS

Park lands within the plan area total 219.3 acres, consisting of 153.6 acres in District 1, 16.5 acres in District 2, 8.8 acres in FPA A, 14.7 acres in FPA B, and 25.7 acres in FPA C. Park acreage is based on the General Plan's requirement of 5 acres of improved parkland for every 1,000 residents.

Specific park locations are established for District 1 and District 2, as shown on Figure 2-9. Park locations are not identified for the FPAs. However, the WJHMP establishes the following parameters for future parks in these areas:

- FPA A shall have two parks, one east and one west of Hedge Avenue.
- FPA B shall have two parks, with at least one approximately 5-acre park located west of Bradshaw Road.
- FPA C shall have three parks, with one located west of Vineyard Road and two located east of Vineyard Road. One of the parks located east of Vineyard Road shall be a Community Park.

The park system within the plan area has been designed to include a network of community, neighborhood, and pocket parks that provide a range of activities serving a variety of needs for users within the neighborhood, including active sports fields, tot lots, and trailheads. As illustrated by Figure 2-9, the plan features a large community park facility located just west of Bradshaw Road and north of Rock Creek Parkway. This park is sited to provide various sports fields, passive recreational and picnic areas, access to the Morrison Creek and Rock Creek parkway trail systems, and a link to the planned transit system and bicycle lanes within Rock Creek Parkway.

Neighborhood parks would serve as recreational focal points for neighborhoods within the plan area. Where practical, neighborhood parks would connect with open space corridors, school sites, or trail systems. The type and size of parks would be dependent upon the projected needs within the neighborhood. Although approximate locations and minimum park acreages have been determined for neighborhood parks, the ultimate location and acreage of neighborhood park sites may vary based upon the actual number of residential units in individual development applications.

Where appropriate, neighborhood parks of 5 acres or more may be co-located with proposed schools in accordance with Elk Grove USD policy. Combined schools and parks may include sports fields, playgrounds, and lawns for recreational uses. A neighborhood park could also be the site of a community garden and/or limited commercial uses such as cafes and recreation-supportive uses, such as bicycle shops.

In addition to larger neighborhood parks of 5 acres or greater, the plan area may include smaller "pocket" parks that are approximately 2 acres in size. These parks are intended to establish unique recreational and theming opportunities within the plan area and are intended for more specialized purposes such as tot lots geared toward small children or enhanced medians and other spaces that contribute to the identity and character of neighborhoods (also referred to as "image parks").

Open Space

The WJHMP includes a network of approximately 1,489 acres of open space. Open space corridors within the plan area have been designed to protect streams and wetlands, and accommodate planned stormwater detention and drainage features, utility easements, and transit and trail corridors. Linear parkways would generally align with regional trail systems, including the Rock Creek Parkway and the Morrison and Elder Creek parkway systems, and would provide passive recreational opportunities.

The Open Space designation would also generally be applied to areas where wetlands have been constructed or preserved in conjunction with former and existing mining operations. There are also existing conservation easements on land within the Open Space designation that would continue to be protected in perpetuity. Modification of the adopted reclamation plan for Aspen VI (i.e., land owned by Teichert along Morrison Creek north of SR 16) would be necessary to increase the open space around the pond and remove the off-stream channel area.

Detention basins within the designated open space may provide recreational opportunities during the dry season. Detention basins are encouraged to include passive and active recreational facilities, such as archery ranges, equestrian centers, and nature/bird watching trails; however, no specific facilities have been designed. In addition, some open space lands may be used as urban forests, which can be achieved by planting region-appropriate tree species in multiple sizes to reach tree canopy coverage consistent with current County standards. New tree species would be selected using Sacramento Tree Foundation's "Shady 80" list and SMAQMD's "Landscaping Guidance for Improving Air Quality Near Roadways."

Urban Farms

In addition to land designated for Open Space, the WJHMP includes approximately 393 acres designated Open Space/Urban Farm. Urban farms are incorporated into the network of community spaces to provide access to fresh local produce and encourage educational opportunities related to agriculture and food production. As shown on Figure 2-9, there are three distinct areas designated for urban farming, each of which is adjacent to open space. In addition to farming, these areas can be developed with educational and agricultural processing facilities (e.g., olive oil press, canning machinery) per County code. All processing of agricultural products would be 5 acres or less in total area and adhere to a minimum setback of 200 feet from any residential uses.

Infrastructure Improvements

Schools

The WJHMP area is within the service areas of two school districts: Elk Grove USD and Sacramento City USD. Most of the plan area is in the Elk Grove USD with a smaller portion (i.e., the northernmost part of the plan area) in the Sacramento City USD.

Based on the number of residences projected to be within the plan area upon full buildout, anticipated student enrollment is approximately 5,544 elementary students,

1,758 middle school students, and 3,073 high school students. If buildout within the plan area occurs as anticipated, the plan area would require six elementary schools, a middle school, and a high school within the Elk Grove USD. Elk Grove USD has determined that students within its district boundaries could be served by existing schools outside of the plan area.

As indicated above, within District 1, land is reserved for five schools, including a 70-acre middle/high school site and four elementary schools that average 10 acres in size. Where possible, elementary school sites would be combined with other land uses such as public parks, open space, and higher density residential to create activity centers for their respective neighborhoods. These activity centers would be connected to other areas of the plan area through the proposed trail system. Each school would have access to nearby neighborhoods and three of the elementary schools would be co-located with public parks to encourage shared use of recreational facilities. In addition to the four elementary schools identified within District 1, there would be a need for at least two elementary schools in FPAs. The ultimate location of these facilities would be determined when a future specific plan, master plan amendment, or subsequent entitlements are prepared for the FPAs. A middle school/high school is planned a little northeast of the intersection of Elder Creek Road and Bradshaw Road that would serve the entire plan area, including FPAs.

Law Enforcement

The Sacramento County Sheriff 's Department currently provides law enforcement services and police protection to the plan area. This includes response to calls and incidents, investigations, surveillance, and routine patrolling. Police services within the plan area are currently provided by the nearest substation (Kilgore Station), which is located within the city of Rancho Cordova. This station has Sheriff's personnel that handle calls for service within the unincorporated county.

To facilitate future infrastructure in the plan area, the WJHMP includes Policy 8.2, which allows Sheriff's Department stations and substations in all commercial, industrial, and residential areas.

Fire Protection and Emergency Response

The Sacramento Metropolitan Fire District (Metro Fire) currently provides fire protection and emergency medical response to the plan area. The nearest fire station is located on Bradshaw Road, approximately 0.8 mile north of the WJHMP boundary. Another station is located on South Watt Avenue and is approximately 1.5 miles to the northwest of the WJHMP boundary. Both of these stations currently serve the plan area. It is anticipated that two new fire stations could be located in the plan area, if determined necessary by Metro Fire. Specific sites would be identified during the tentative map process.

Public Library

The Sacramento Public Library provides library services to the plan area. The nearest public library branch is the Rancho Cordova Community Library in the city of Rancho Cordova, which is approximately 3.5 miles from the plan area. In order to accommodate

increased demand, the Sacramento Public Library is planning to develop two new libraries south of the plan area within the Vineyard Community and another new library north of the plan area within the Cordova Community. The Sacramento Public Library anticipates that these new branches and the existing Rancho Cordova branch will be sufficient to meet the library needs of residents in the WJHMP area.

Utilities

Water Supply

The WJHMP is located within the Zone 40/41 service area of the Sacramento County Water Agency (SCWA) and the service area of California American Water Company (Cal Am). Cal Am serves the northwest third of the plan area and SWCA serves the remainder; the boundary between the two purveyors roughly follows Fruitridge Road and Happy Lane. Figure 2-10 shows the portions of the plan area that are served by the two water purveyors, as well as existing and proposed water infrastructure.

Generally, the on-site water transmission system would consist of 16-inch to 24-inch mains. A grid of 8-inch to 12-inch distribution mains would extend from the transmission system to serve local developments. Due to the varying elevations of the plan area, several booster pumps and pressure-reducing stations would be required to maintain system pressures. Water infrastructure would be phased with development to meet end user demands, as well as operational criteria. While some streets would have both Cal Am- and SWCA-owned mains, no interconnections are currently anticipated between the Cal Am and SWCA systems.

Off-site improvements would consist of SWCA transmission mains looping to the Vineyard Surface Water Treatment Plant along Florin Road and Elder Creek Road (consistent with SWCA's Water Supply Master Plan), a 24-inch Cal Am water line extending to Folsom Boulevard within Watt Avenue, and a 12-inch Cal Am water line extending north in Mayhew Road to the existing domestic water facilities at Oxwood Drive.

Wastewater

The WJHMP is within the service areas of the Sacramento Area Sewer District (SacSewer). SacSewer owns and operates sewer trunk and collection systems throughout Sacramento County. SacSewer owns and operates the EchoWater Resource Recovery Facility and an interceptor system throughout Sacramento County.

There are existing interceptor and trunk sewer lines located within the plan area. These existing lines would be expanded to include a system of trunk and collector wastewater pipes that would feed into the existing Bradshaw Interceptor, located in the central portion of the plan area, and Northeast Interceptor, located in the northwest portion of the plan area. In addition, the Central Interceptor is located within South Watt Avenue at the western boundary of the plan area (Figure 2-11).

A new interceptor is proposed along Florin Road. This trunk line would be located within the road right of way From Excelsior Road west to the edge of the plan area near Bradshaw Road. From the edge of the plan area to the existing Bradshaw Interceptor

along Morrison Creek (approximately 1.5 miles), the new interceptor would be constructed within the right of way of Florin Road outside of the plan area. Similarly, trunk line extensions would occur along Jackson Highway for approximately 0.5 mile east of the plan area and less than 0.5 mile along Elder Creek Road between Hedge Avenue and South Watt Avenue (Figure 2-11). Much of the plan area would gravity drain; however, some mined areas would require pumping via lift stations.

STORMWATER DRAINAGE AND FLOOD PROTECTION

With implementation of the WJHMP, stormwater would continue to drain into Morrison and Elder Creeks. The plan area has been designed with an integrated drainage network that utilizes a series of detention basins that would attenuate stormwater runoff to pre-development levels and improve water quality. As illustrated in Figure 2-12, piped drainage systems within the developed areas would discharge to either a constructed open channel along the future Rock Creek Parkway or detention basins prior to being discharged to Morrison or Elder Creeks. To limit runoff from development, Low Impact Design (LID) principles would be employed to the greatest extent feasible and when soil conditions permit.

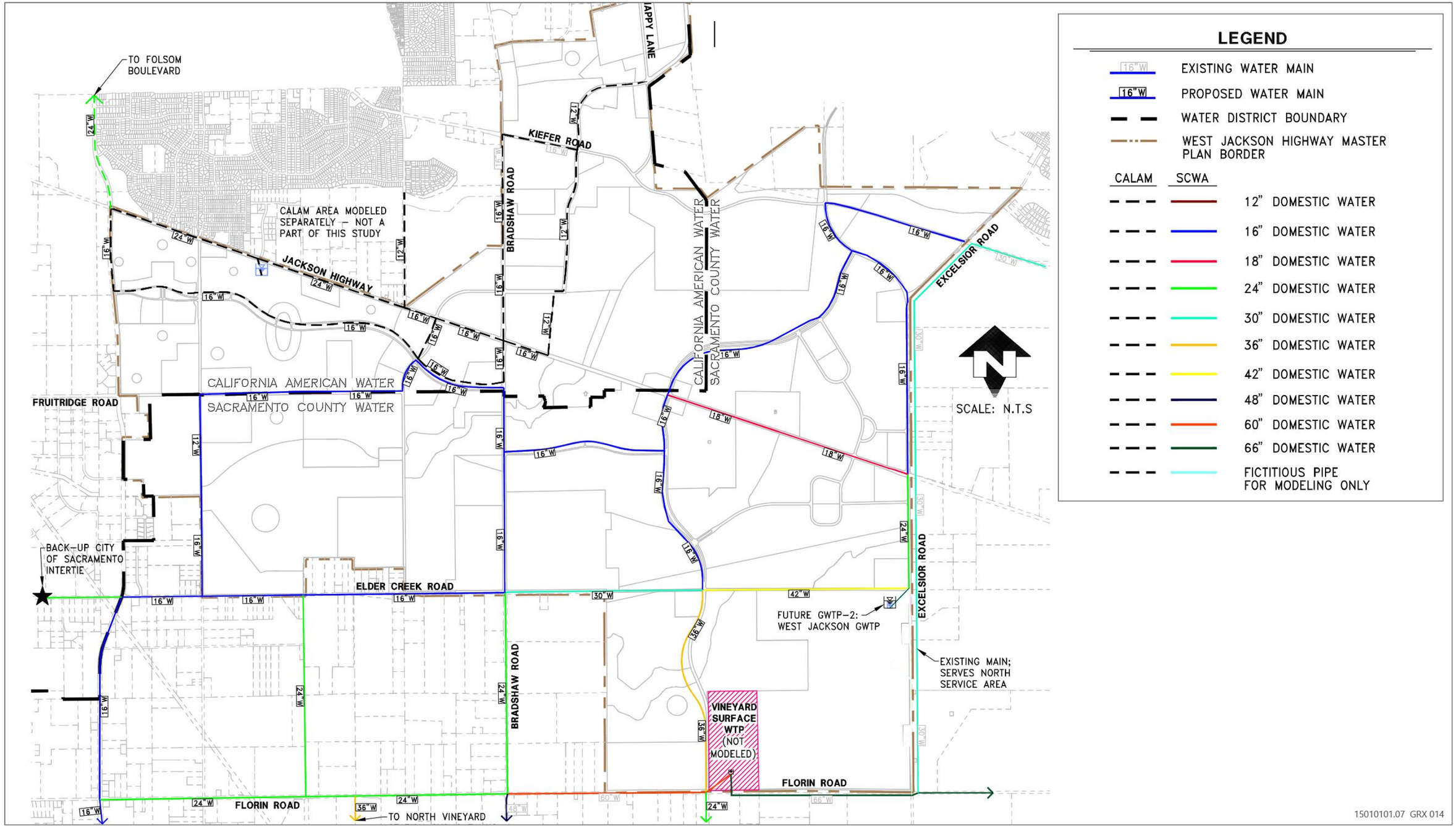
A total of 26 detention basins are anticipated, with seven of these detention basins requiring pumping facilities (Wood Rodgers 2022). The pumping facilities would be regulated using monitoring stations at the outfalls of the pump station in Morrison Creek and pumping would be curtailed during peak flow conditions. Other improvements include raising previously mined areas above the floodplain, levee improvements, and closure of the conveyor tunnels at Fruitridge Road, Jackson Road, and Bradshaw Road. See Figure 2-12. The drainage system has been designed to provide a minimum of 200-year (0.5-percent annual chance of flooding) storm event protection and to include resiliency to the anticipated effects of climate change on future flood events.

MORRISON CREEK

Morrison Creek has been previously modified and partially realigned. The current creek alignment would be maintained, and the waterway would be used to convey stormwater flows. An existing weir and large detention basin are planned to be improved near the northeast portion of the plan area, which drained naturally to Morrison Creek prior to mining activities that lowered the ground surface to below creek elevation. The peak flows would enter the detention basin through the weir and would later be pumped back into the Morrison Creek system. Some previously mined areas are planned to be filled above the floodplain to allow gravity drainage back to Morrison Creek. Modeled water surface elevations in Morrison Creek would be unchanged or lower than the existing condition water surface elevations throughout the channel after project drainage improvements are completed (Wood Rodgers 2022).

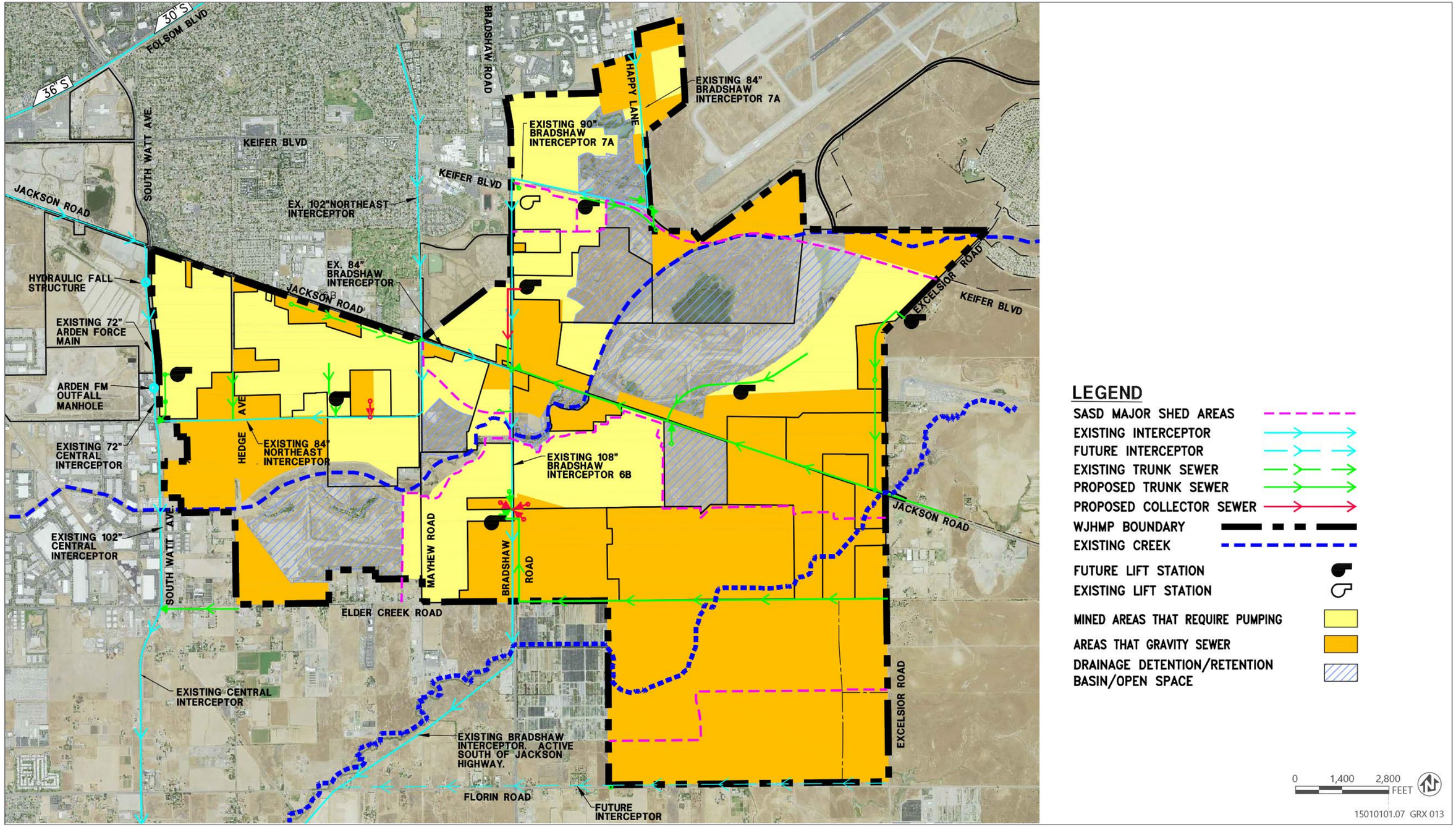
ELDER CREEK

The Elder Creek channel would remain in a natural state with no channel modifications. Detention basins would be configured within the Elder Creek drainage shed to maintain Elder Creek conditions and planned development and levees would not encroach into the existing Elder Creek floodplain. No increase or change to peak flow conditions is anticipated following development of the WJHMP.



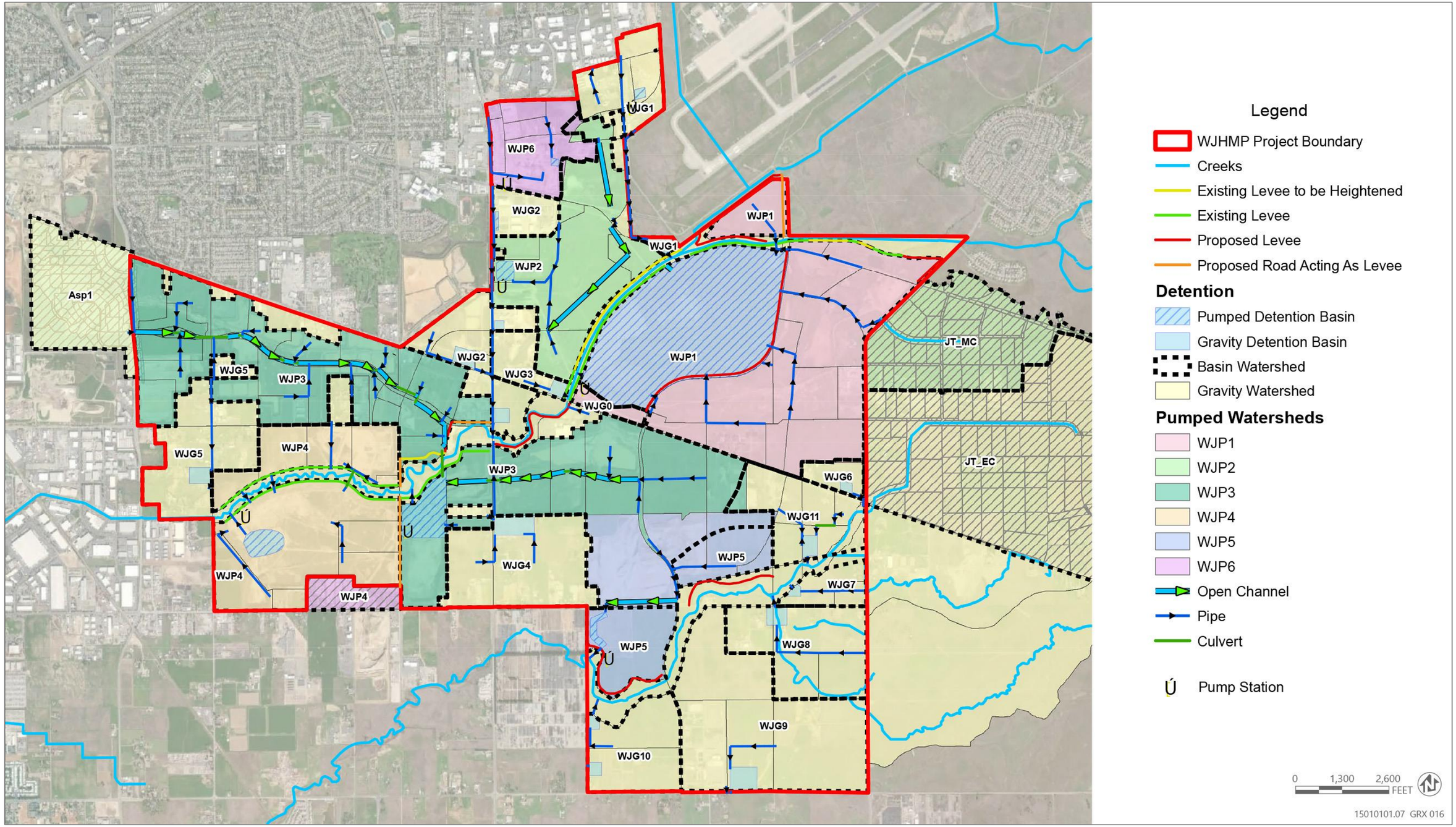
Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-10 Proposed Water System



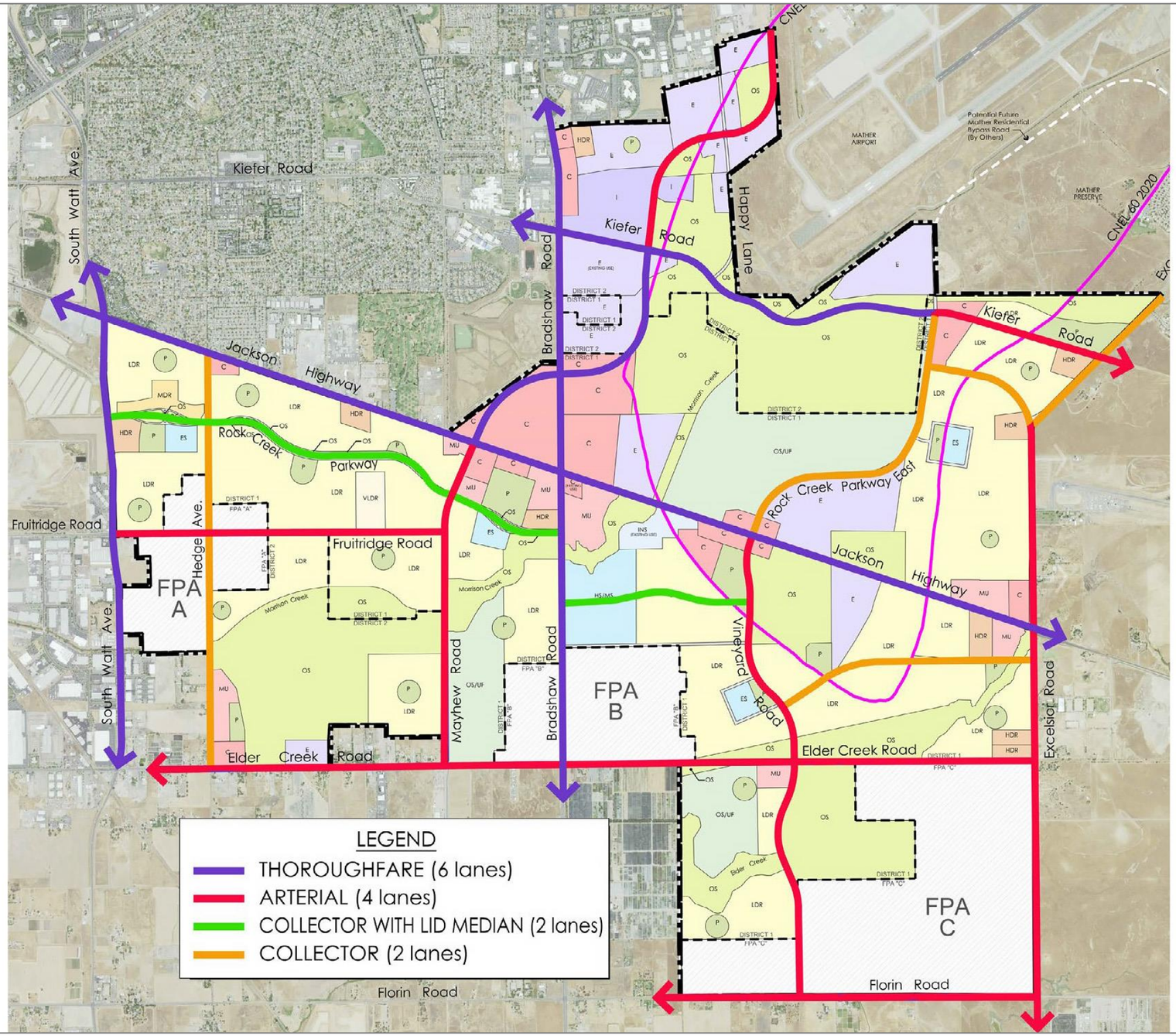
Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-11 Proposed Sanitary Sewer Infrastructure



Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-12 Proposed Drainage Systems



Source: Image produced and provided by Wood Rodgers in 2024, adapted by Ascent in 2024.

Figure 2-13 Proposed Roadway Network

ROCK CREEK PARKWAY CHANNEL

A new unlined channel along Rock Creek Parkway would convey the runoff from proposed development west of the plan area, as well as the on-site watersheds north of Morrison Creek, to the culvert crossing under Morrison Creek. The channel would be approximately 15 feet deep, with 4:1 side slopes and an 8-foot bottom width, and bounded by the Rock Creek Parkway travel lanes. Rock Creek Parkway and the associated detention basins have been designed to provide storage for 100-year (1-percent chance of flooding), 200-year, and in some cases 500-year (0.2-percent annual chance of flooding) storm events and would detain stormwater runoff prior to discharge or pumping to Morrison Creek.

PLANNED LEVEES AND FLOOD CONTROL FACILITIES

In some areas of the plan area, levee improvements adjacent to Morrison Creek would be required in order to achieve freeboard above the maximum 200-year water surface elevation. To provide flood protection, portions of existing levees adjacent to development areas would be improved (where deemed necessary by subsequent analysis). In the northeastern portion of the plan area, a setback levee along Vineyard Road (or elevated pads) would allow for 9,250 acre-feet of surface water storage in the adjacent Open Space/Urban Farm designated land area without cresting Jackson Road (see Figure 2-12).

ENERGY

SMUD would provide electricity to the plan area. SMUD has existing 12 kV and 69 kV electric transmission and bulk substation infrastructure within the plan area and has identified the proposed locations of future 69 kV electrical transmission and bulk substations. The WJHMP would be an all-electric development; as a result, no natural gas infrastructure has been planned for future buildings.

TRANSPORTATION AND CIRCULATION

The WJHMP includes an extensive network of streets and off-street trails to connect uses within each district and between districts. Street patterns have been designed to maximize connectivity, while off-street trails are proposed in open space corridors to provide pedestrian and bicycle access to destinations. The major trails within the WJHMP would extend along linear parkways, creeks, and the powerline corridor north of Elder Creek Road.

The established roadway system provides several access points into the plan area (see Figure 2-13). From the south, the major access point is Bradshaw Road, which bisects the plan area and provides an access point to the plan area's major commercial center. Other access points from the south are provided by South Watt Avenue, Hedge Avenue, Mayhew Road, Vineyard Road, and Excelsior Road. The major access point from the west is Jackson Highway and other access points are Kiefer Road, Fruitridge Road, Elder Creek Road, and Florin Road. Bradshaw Road is the major access point from the north and other access points are provided by South Watt Avenue and Excelsior Road.

The proposed Street Master Plan integrates a variety of streets configured to provide an adequate level of service for the planned land use densities and traffic loads (Figure 2-13). At full development, the WJHMP would include six-lane thoroughfares, four-lane

arterials, two-lane community boulevards, two-lane neighborhood collectors and residential streets with detached sidewalks. Thoroughfares and arterials would connect the residential neighborhoods and employment centers in the plan area with areas outside of the plan area.

Rock Creek Parkway has been developed as a primary collector roadway within the plan area. The parkway provides east west mobility and opportunities for transit linkages and an internal trail system. For each directional lane of travel Rock Creek Parkway would include a 12-foot travel lane, 5-foot bike lane, street parking, a 10-foot planter, and 6-foot sidewalk. The parkway would allow for linkages to the trail network throughout the plan area. The project includes a stormwater channel along Rock Creek Parkway with sufficient storm water runoff volume for 100-year through 500-year storm events. See Figure 2-12. Stormwater would either be discharged or pumped into Morrison Creek. Figure 2-14 provides a cross section of Rock Creek Parkway.

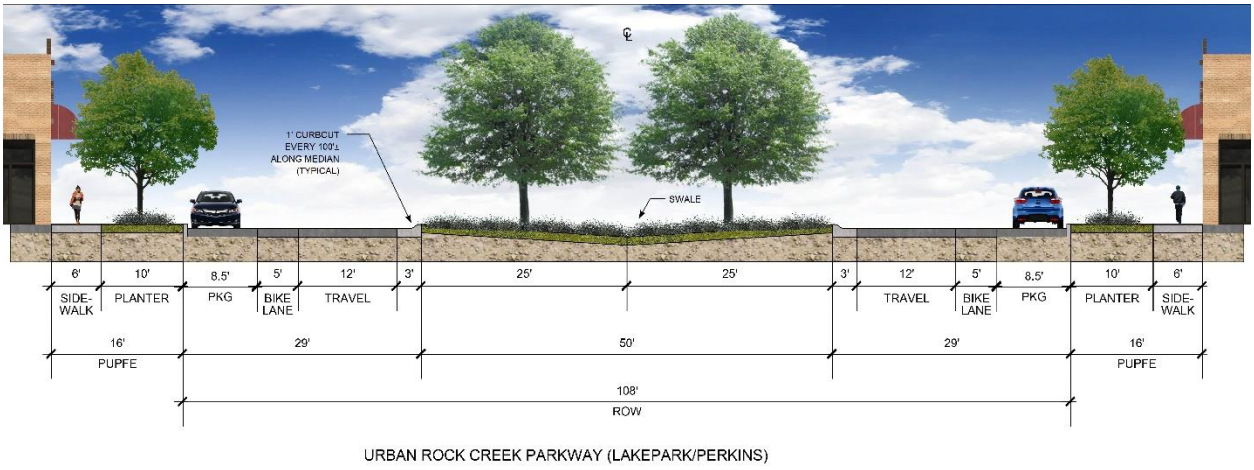


Figure 2-14 Rock Creek Parkway Cross Section

Traffic calming measures such as traffic circles, roundabouts, intersection bulb-outs, lane width restrictions, and other measures would be utilized in order to reduce vehicle speeds and enhance pedestrian safety.

TRANSPORTATION MANAGEMENT ASSOCIATION

The WJHMP includes a mandatory communitywide Transportation Management Association (TMA) to reduce vehicle trips. This program has been designed based on similar, existing programs throughout the county. The TMA would consist of the following four programs:

- **Commute Trip Reduction Marketing**. This program would include on-site or online commuter information services, employee transportation coordinators, and a guaranteed ride home service (as described below).

- **Guaranteed Ride Home.** To ensure that employees have the flexibility to adapt to changes in circumstances, this aspect of the TMA would provide the assurance of a ride home if, for example, an employee is required to work later than when the last available carpool leaves or transit options are available.
- **Provide Employer-Sponsored Vanpool.** Each employer would be required to participate in and implement an individual monitoring program or a vanpool program.
- **Provide Ridesharing and Carpooling Program:** The ridesharing program would be provided as a single program throughout the WJHMP employment community, providing benefits at the community scale.

TRANSIT

The WJHMP includes a transit concept that is intended to initially use a combination of transit shuttles, local bus service, and bus rapid transit (BRT), but anticipates evolving in response to technology and ridership patterns changes. The plan area is located along major planned transit corridors on Jackson Highway, South Watt Avenue, Bradshaw Road, and Excelsior Road. In addition, the plan area is located in close proximity to the Watt/Manlove Transit Priority Area (TPA) and its existing light rail station.

The proposed transit service route within the plan area is located within 0.5 mile from approximately 83 percent of WJHMP residents, and is located to provide easy access for residents to travel to and from commercial and community areas. See Figure 2-15.

TRAILS

The WJHMP includes a trail network that utilizes existing conveyor tunnel crossings and at-grade crossings, as well as new facilities located along Rock Creek Parkway, Morrison Creek, and several open space areas to facilitate widespread pedestrian and bicyclist opportunities throughout the plan area. This network is designed to connect to a series of Class II bikeways and lesser trails in order to provide ample opportunities for alternative modes of travel.

Three types of trails are identified in the WJHMP:

- **Regional trails** would generally follow Rock Creek Parkway, Morrison Creek, Elder Creek, and Vineyard Road. Regional trails would be paved 12-foot-wide, two-way, off-street trails with 2-foot-wide decomposed granite shoulders on both sides of the trail and associated landscape corridors of approximately 40 feet. Regional trails would provide continuous routes for active recreation and for providing connectivity between communities and to other existing and planned Regional Trails.
- **Conventional trails** are planned along portions of Hedge Avenue, Mayhew Road, Bradshaw Road, and Excelsior Road. Conventional trails would be paved 10-foot-wide, off-street trails with 2-foot-wide decomposed granite shoulders on both sides of the trail and associated landscape corridors of approximately 30 feet. Conventional trails would provide connectivity to primary destinations, such as schools, parks, employment centers, and transit.

- **Local trails** would be paved 8-foot-wide, off-street trails with 2-foot-wide decomposed granite shoulders on one side of the trail and associated landscape corridors of approximately 24 feet. Local Trails are intended to reach deep into the community, providing connections to local community destinations within the community, such as elementary schools, local parks, commercial areas, and to the conventional trail networks.

The alignment of proposed regional and conventional trails are shown in Figure 2-16. The location of local trails would be determined during future entitlements.

Avigation Easements

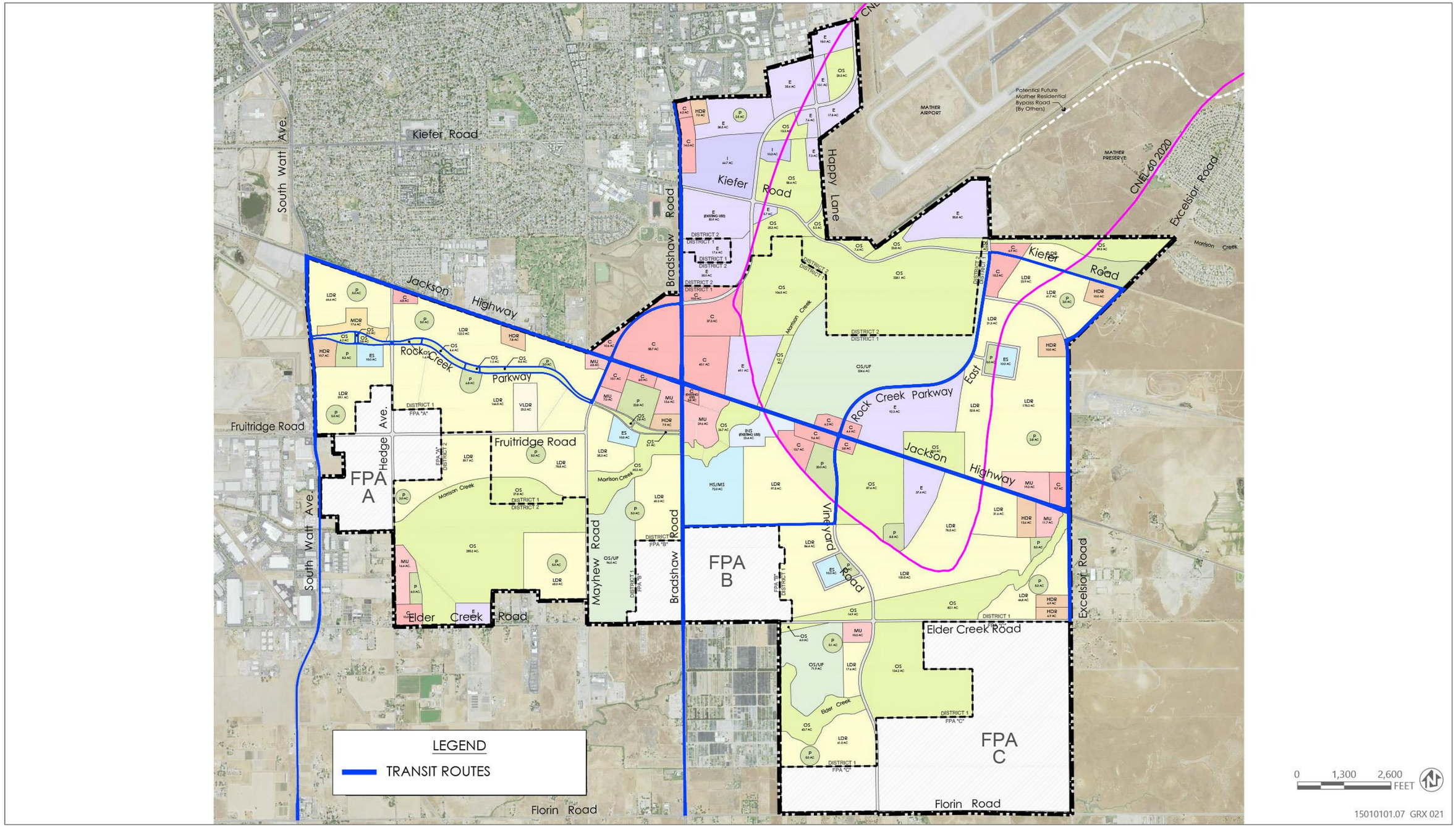
Due to the proximity of Mather Airport, avigation easements would be recorded on all properties within the Mather Airport Planning Policy Area. These avigation easements shall acknowledge that the plan area lies within the Mather Airport Planning Policy Area and include the following:

- Notification to all prospective buyers that residential parcels are located within the Mather Airport Planning Policy Area and that aircraft operations occur over the plan area.
- Granting the right of flight and unobstructed passage of aircraft into and out of Mather Airport and recordation of the avigation easement to the benefit of Sacramento County.

Construction and Implementation

As a master planned development, the project would build out in response to market demand over the course of decades. Build-out of the plan area is anticipated to occur in phases, with the initial phases of development within Districts 1 and 2, for which the WJHMP provides specific land uses to accompany development applications. Individual development projects would be submitted to the County pursuant to the WJHMP, with the likely scenario of development generally progressing from the east (adjacent to Excelsior Road) to the west.

For the purpose of analysis, construction is assumed to begin in 2025 and end in 2055, with construction activities allocated evenly through the 30-year duration of the construction period. Each year would be roughly assumed to entail 1 month of site preparation, 4 months of grading, 5 months of building construction, 1 month of paving, and 1 month of architectural coating application. In total, 500,000 cubic yards of soil import would be needed during the grading phases. As noted above, economic and market conditions would determine the actual timing and duration of project construction as well as total soil import needs.



Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-15 Mobility Plan – Transit Routes

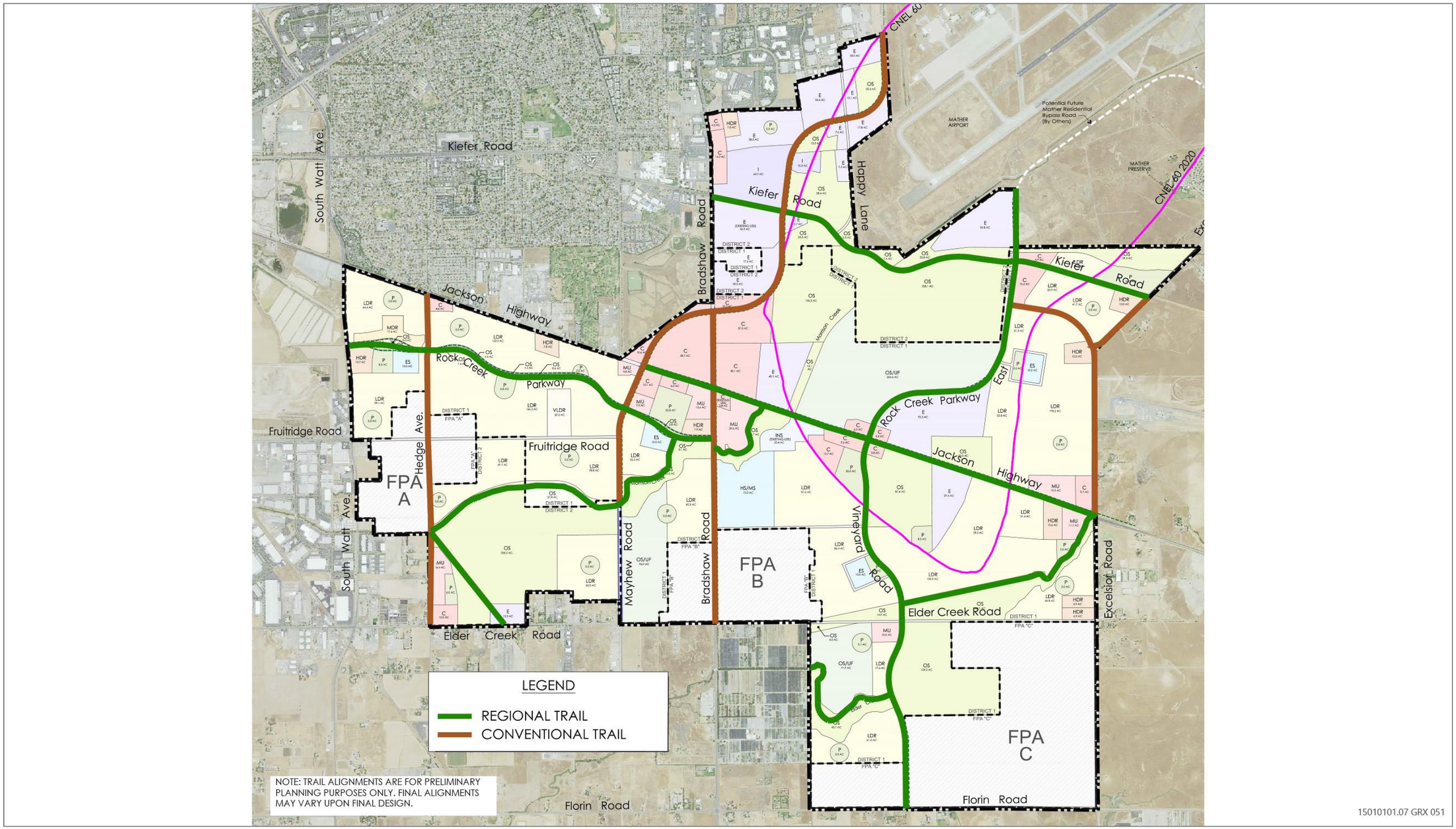


Figure 2-16 Proposed Trail Alignments

BUILDOUT ASSUMPTIONS

SUBSEQUENT DEVELOPMENT REVIEW

If the WJHMP is adopted, applications for projects (such as tentative maps) within Districts 1 and 2 would be submitted to the County Planning & Environmental Review Division (PER) for review. These applications would be reviewed to determine consistency with the WJHMP and other County regulatory documents.

PER would conduct an initial review of each application for completeness and consistency with regulatory documents and compliance with CEQA. This EIR would serve as the base or "master" environmental review document for subsequent discretionary planning projects within the plan area. Subsequent master plans or specific plans, zoning requests, and project applications would be reviewed by PER for consistency.

In some cases, subsequent master plans, specific plans, zoning requests, and other project applications may require additional environmental review to evaluate the potential for environmental impacts beyond the scope of this EIR. If it is determined that there would be potentially new or additional significant environmental impacts, a subsequent EIR, mitigated negative declaration, or negative declaration will be required. Such environmental documents could utilize and supplement this master EIR with additional analysis.

SACRAMENTO COUNTY SUBDIVISION ORDINANCE

Subdivision of properties within the plan area will conform to design and improvement standards contained in Title 22 of the Sacramento County Land Development Code. Prior to the subdivision of any property in the plan area, the County must approve a parcel or tentative map, and a final map must be filed for that property with the County Recorder. As conditions of map approval, the County may require dedication of land, payment of impact fees, and the construction of public improvements reasonably required for the promotion of health, safety, and welfare.

REQUESTED ENTITLEMENTS

The following is a complete list of requested entitlements:

1. A **General Plan Amendment** to move the UPA boundary south and east to include the WJHMP area (Figure 2-17).

2. A **General Plan Amendment** to amend the Land Use Diagram from Agricultural-Urban Reserve, General Agriculture, Extensive Industrial, Intensive Industrial, Commercial and Offices and Cemetery, Public/Quasi Public, to Low Density Residential, Medium Density Residential, Mixed Use, Commercial and Office, Recreation, Intensive Industrial, Extensive Industrial, General Agriculture, Agricultural-Urban Reserve, and Cemetery, Public/Quasi Public for approximately 5,913 acres (Figure 2-18). Note: Amendments to the land use designations listed above will not affect the designation of the existing Aggregate Resource Area Overlay, which will remain in place.

3. **Amend the General Plan Transportation Plan** to show proposed roadway alignments as shown in the Transportation General Plan Amendment Diagram dated January 2017 (Figure 2-19).

4. **Amend the Active Transportation Plan** to add on- and off-street bikeways as shown in the Active Transportation Plan Amendment Diagram dated January 2017 (Figure 2-20).

5. A **Community Plan Amendment** to amend the Cordova Community Plan to add a West Jackson Highway Master Plan Overlay and apply it to the approximately 1,112 acres of the WJHMP area located within the boundaries of the Cordova Community Plan (Figure 2-21).

6. A **Community Plan Amendment** to amend the Vineyard Community Plan to add a West Jackson Highway Master Plan Overlay and apply it to the approximately 3,779.5 acres of the WJHMP area located within the boundaries of the Vineyard Community Plan (Figure 2-22).

7. **Adoption of the West Jackson Highway Master Plan** for approximately 5,913 acres.

8. A **Development Agreement** for District 1 by and between the County of Sacramento and Teichert Land Company.

9. A **Development Agreement** for District 2 by and between the County of Sacramento and Granite Construction Company.

10. **Affordable Housing Strategy** for District 1 by and between the County of Sacramento and Teichert Land Company.

11. **Affordable Housing Strategy** for District 2 by and between the County of Sacramento and Granite Construction Company

12. **Adoption of a Public Facilities Financing Plan** for West Jackson Highway that includes a Capital Improvement Program and Financing Plan.

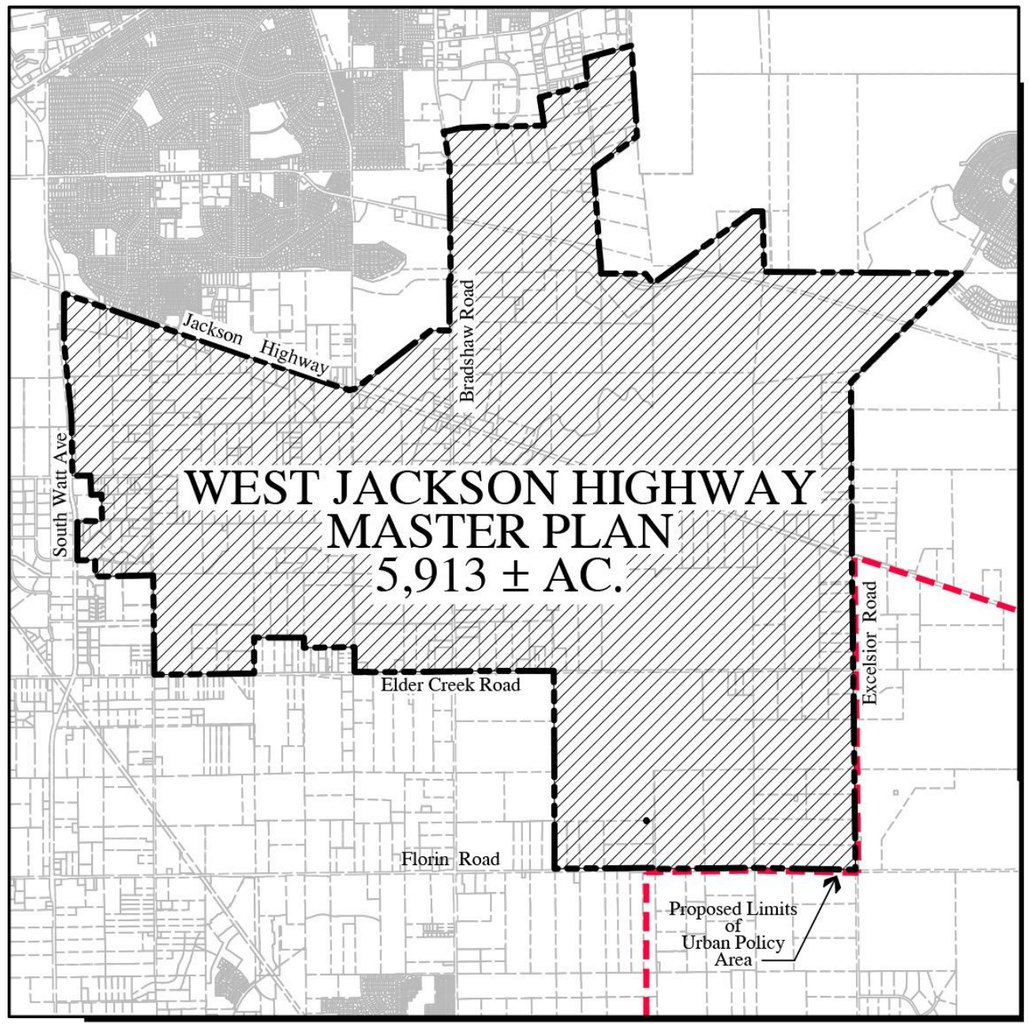
13. **Adoption of an Urban Services Financing Plan** for West Jackson Highway.

14. A **Water Supply Master Plan Amendment** to amend the Existing Zone 40 Water Supply Master Plan to include provision of water service to the WJHMP area.

15. **Approve the Water Supply Assessment for the WJHMP:** Required by the California Water Code to link land use and water supply planning activities.



Existing Urban Policy Area Boundary



Proposed Urban Policy Area Boundary

Denotes Proposed West Jackson Highway Master Plan Area (5,913± Acres)

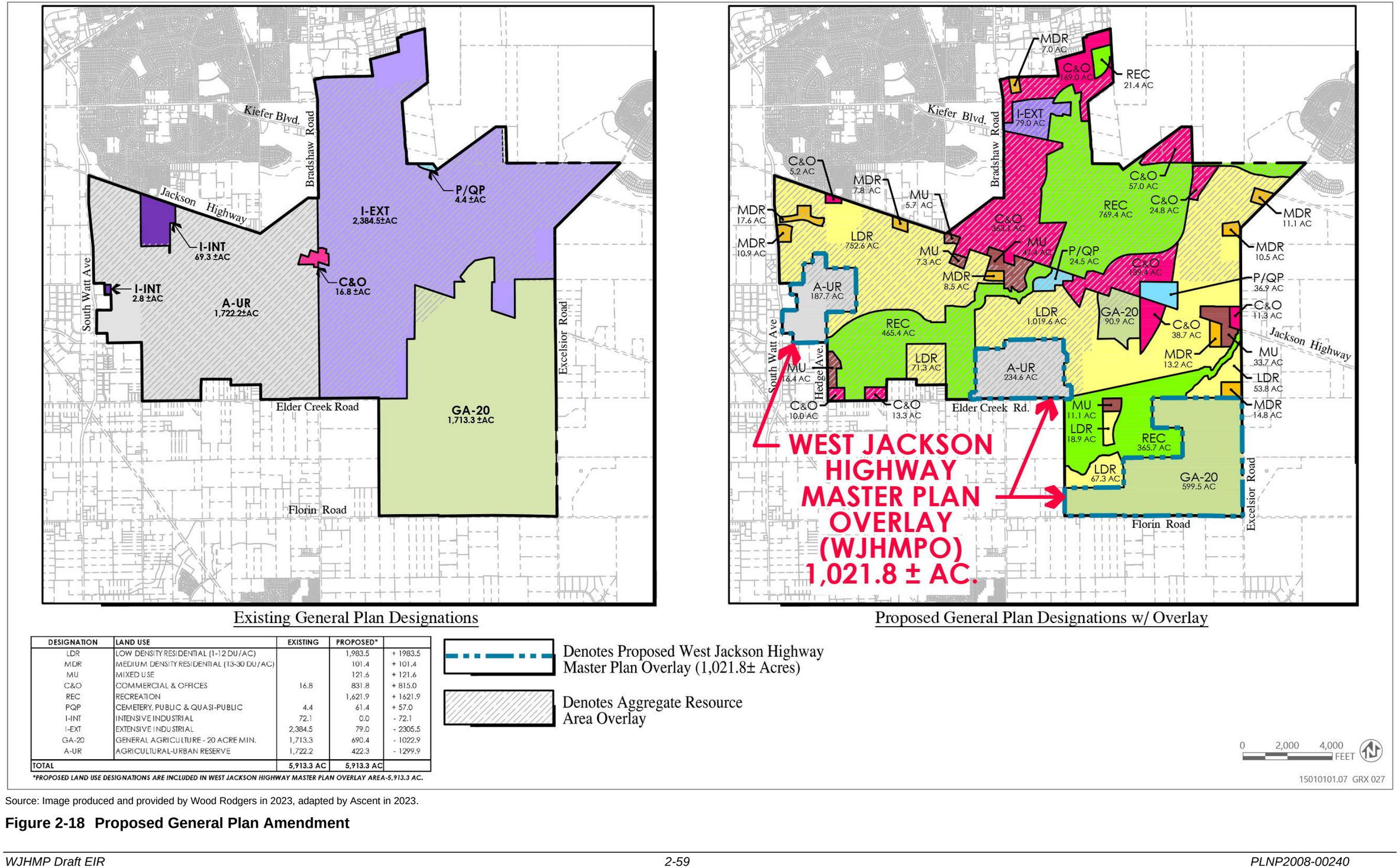
Denotes properties proposed for inclusion in the Urban Policy Area (5,913± Acres)

0 2,000 4,000 FEET

15010101.07 GRX 026

Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-17 Proposed UPA Amendment

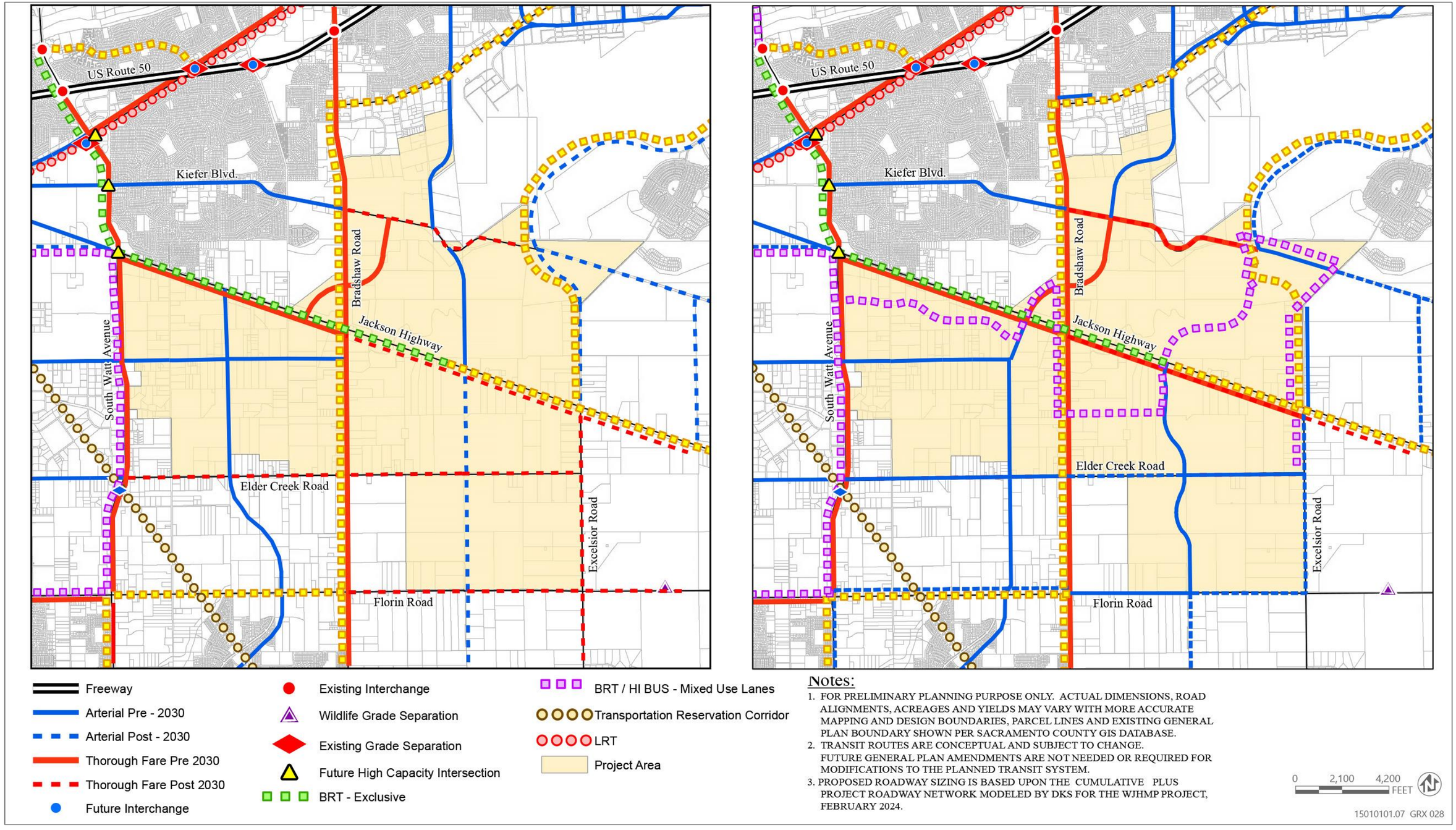


DESIGNATION	LAND USE	EXISTING	PROPOSED*	
LDR	LOW DENSITY RESIDENTIAL (1-12 DU/AC)		1,983.5	+ 1983.5
MDR	MEDIUM DENSITY RESIDENTIAL (13-30 DU/AC)		101.4	+ 101.4
MU	MIXED USE		121.6	+ 121.6
C&O	COMMERCIAL & OFFICES	16.8	831.8	+ 815.0
REC	RECREATION		1,621.9	+ 1621.9
PQP	CEMETERY, PUBLIC & QUASI-PUBLIC	4.4	61.4	+ 57.0
I-INT	INTENSIVE INDUSTRIAL	72.1	0.0	- 72.1
I-EXT	EXTENSIVE INDUSTRIAL	2,384.5	79.0	- 2305.5
GA-20	GENERAL AGRICULTURE - 20 ACRE MIN.	1,713.3	690.4	- 1022.9
A-UR	AGRICULTURAL-URBAN RESERVE	1,722.2	422.3	- 1299.9
TOTAL		5,913.3 AC	5,913.3 AC	

*PROPOSED LAND USE DESIGNATIONS ARE INCLUDED IN WEST JACKSON HIGHWAY MASTER PLAN OVERLAY AREA-5,913.3 AC.

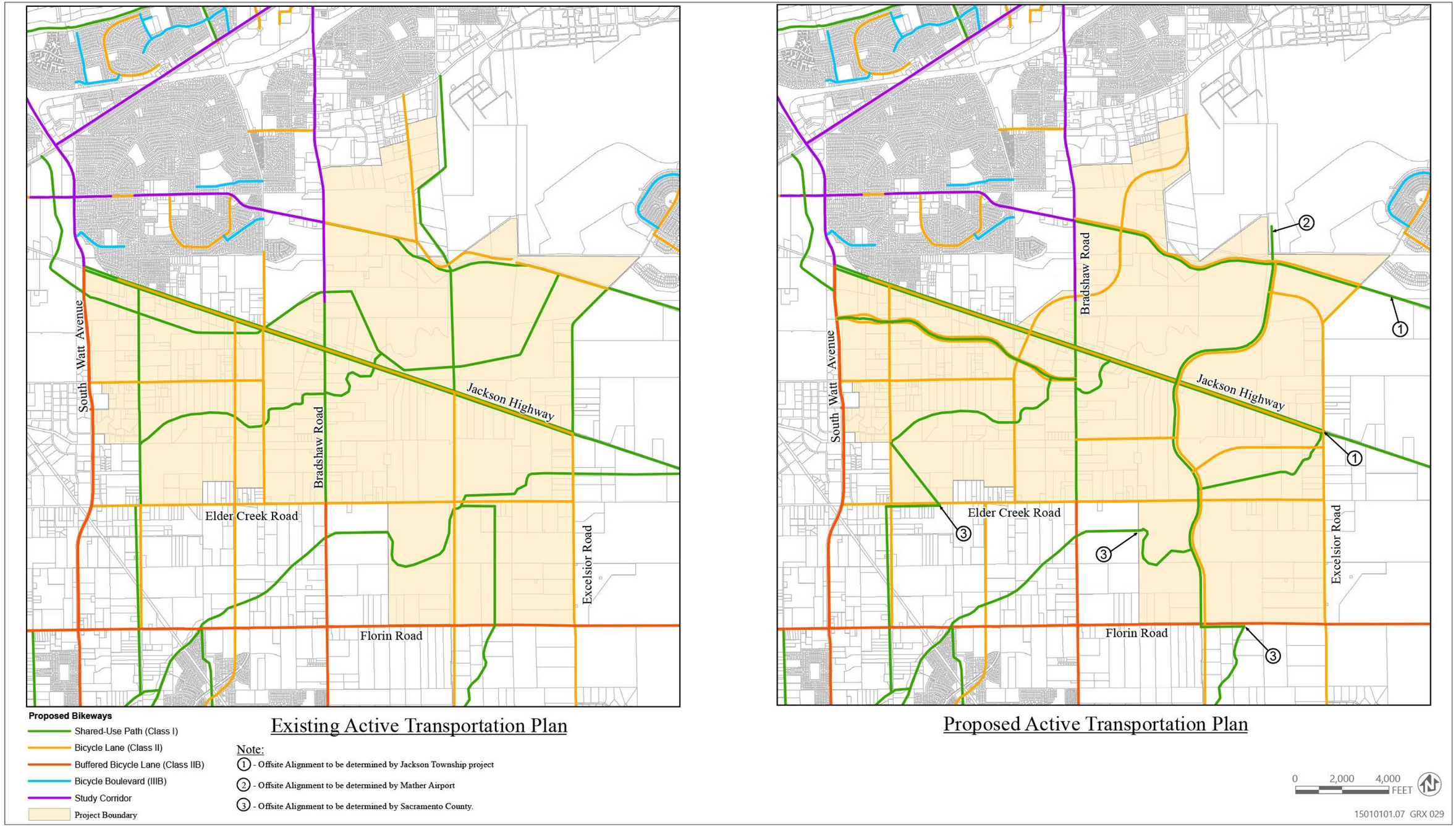
Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-18 Proposed General Plan Amendment



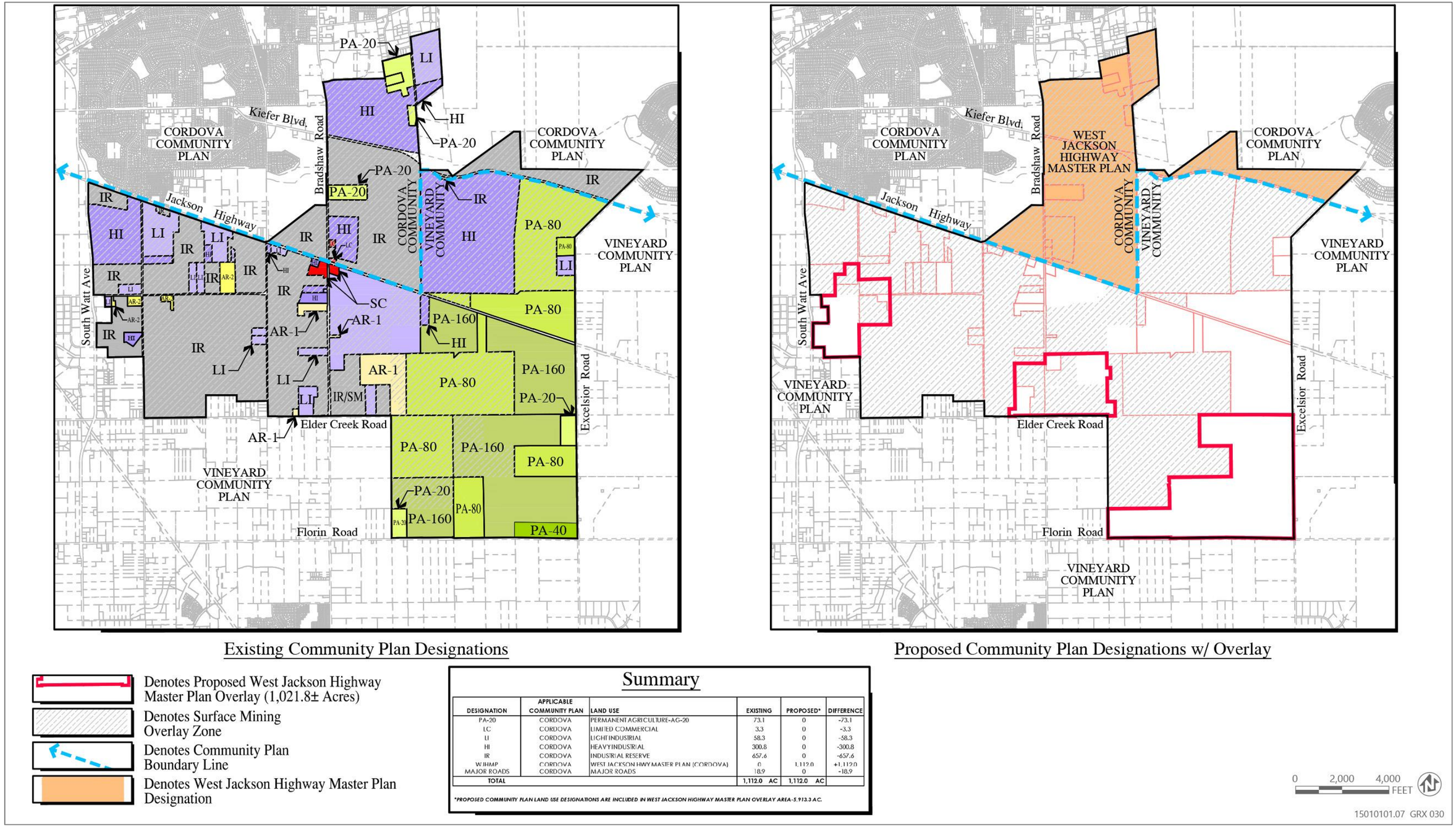
Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-19 Proposed Transportation Plan Amendment



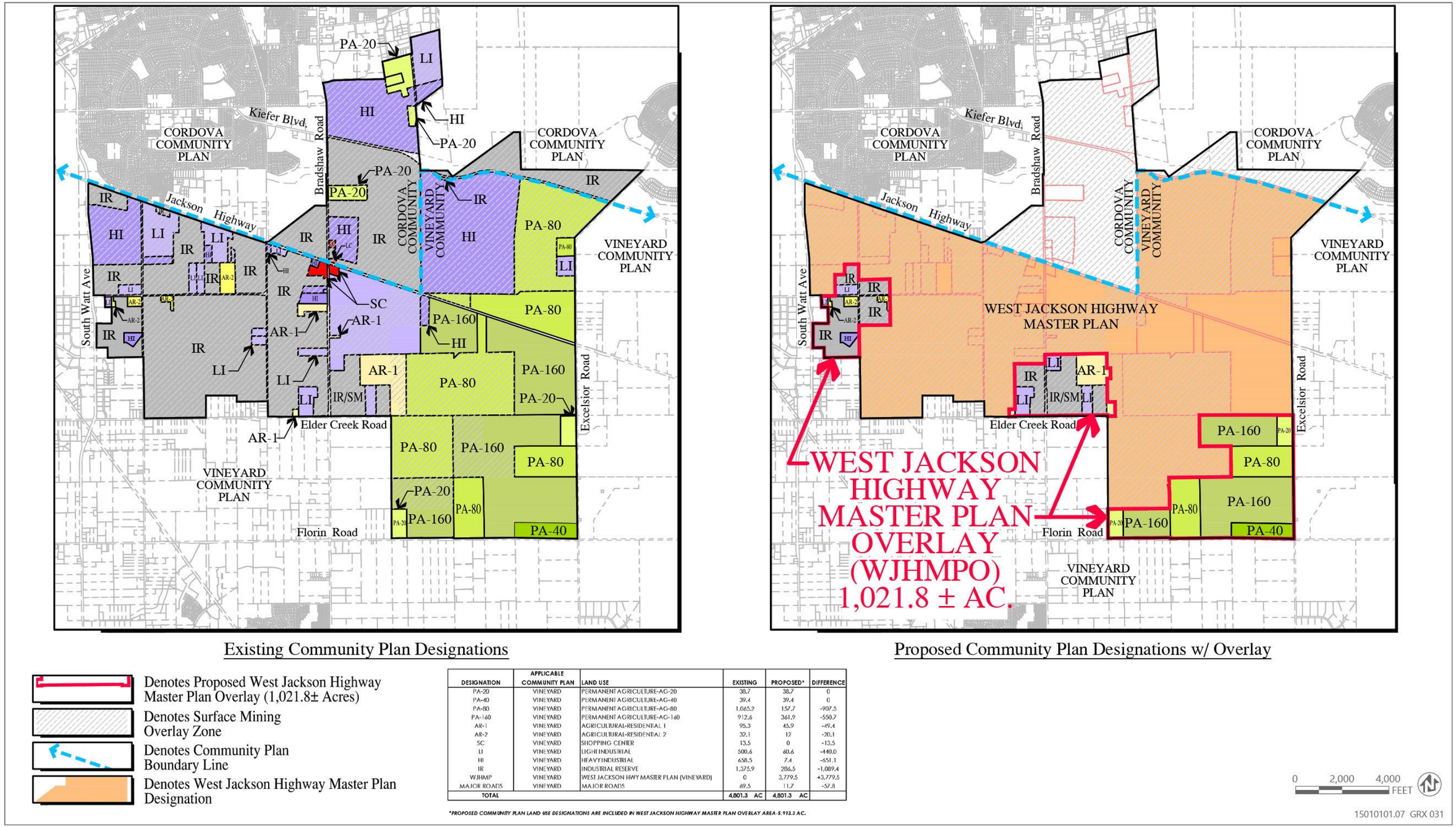
Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-20 Proposed Active Transportation Plan Amendment



Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-21 Proposed Cordova Community Plan Amendment



DESIGNATION	APPLICABLE COMMUNITY PLAN	LAND USE	EXISTING	PROPOSED*	DIFFERENCE
PA-20	VINEYARD	PERMANENT AGRICULTURE-AG-20	38.7	38.7	0
PA-40	VINEYARD	PERMANENT AGRICULTURE-AG-40	39.4	39.4	0
PA-80	VINEYARD	PERMANENT AGRICULTURE-AG-80	1,065.2	157.7	-907.5
PA-160	VINEYARD	PERMANENT AGRICULTURE-AG-160	912.6	361.9	-550.7
AR-1	VINEYARD	AGRICULTURAL-RESIDENTIAL 1	95.3	45.9	-49.4
AR-2	VINEYARD	AGRICULTURAL-RESIDENTIAL 2	32.1	12	-20.1
SC	VINEYARD	SHOPPING CENTER	13.5	0	-13.5
LI	VINEYARD	LIGHT INDUSTRIAL	500.6	60.6	-440.0
HI	VINEYARD	HEAVY INDUSTRIAL	658.5	7.4	-651.1
IR	VINEYARD	INDUSTRIAL RESERVE	1,375.9	286.5	-1,089.4
WJHMP	VINEYARD	WEST JACKSON HWY MASTER PLAN (VINEYARD)	0	3,779.5	+3,779.5
MAJOR ROADS	VINEYARD	MAJOR ROADS	69.5	11.7	-57.8
TOTAL			4,801.3 AC	4,801.3 AC	

*PROPOSED COMMUNITY PLAN LAND USE DESIGNATIONS ARE INCLUDED IN WEST JACKSON HIGHWAY MASTER PLAN OVERLAY AREA-5,913.3 AC.

Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 2-22 Proposed Vineyard Community Plan Amendment

REQUIRED DISCRETIONARY ACTIONS

LEAD AGENCY

Sacramento County is the Lead Agency for the CEQA evaluation of the proposed WJHMP.

The project would require the following actions, permits, or approvals from the County:

- certification of this EIR,
- adoption of a mitigation monitoring and reporting plan,
- adoption of findings and any statement of overriding considerations,
- adoption of affordable housing plans,
- adoption of a General Plan amendment,
- adoption of Community Plan amendments,
- approval of the WJHMP, and
- execution of development agreements.

Future actions, permits or approvals required from the County would include:

- Rezoning of property consistent with the Master Plan,
- Tentative Subdivision Maps, and
- Various development permits.

RESPONSIBLE AND TRUSTEE AGENCIES

Responsible Agencies are other agencies that are responsible for carrying out or implementing a specific component of the WJHMP or for approving a project (such as an annexation) that implements the goals and policies of the plan. Trustee agencies have jurisdiction over certain resources held in trust for the people of California, but do not have legal authority over approving or carrying out the project. Based on the potential effects known at this time, responsible agencies may include: US Army Corps of Engineers, US Fish and Wildlife Service, the California Department of Transportation, the California Department of Fish and Wildlife, the South Sacramento Conservation Agency, the Central Valley Regional Water Quality Control Board, SMUD, Sacramento Area Sewer District, Sacramento County Water Authority, Cordova Recreation and Park District, Southgate Recreation and Park District, Sacramento Metropolitan Air Quality Management District, Elk Grove USD, the Central Valley Flood Protection Board, and Cal American Water.

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3 ALTERNATIVES

INTRODUCTION

State CEQA Guidelines Section 15126.6(a) requires EIRs to describe "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a range of potentially feasible alternatives that will avoid or substantially lessen the significant adverse impacts of a project, and foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason." This section of the State CEQA Guidelines also provides guidance regarding what the alternatives analysis should consider. Subsection (b) further states the purpose of the alternatives analysis is as follows:

> Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

The State CEQA Guidelines require that the EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project as proposed (Section 15126.6[d]).

The State CEQA Guidelines further require that the "no project" alternative be considered (Section 15126.6[e]). The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving a proposed project with the impacts of not approving the proposed project. If the no project alternative is the environmentally superior alternative, CEQA requires that the EIR "shall also identify an environmentally superior alternative among the other alternatives" (Section 15126[e][2]).

In defining "feasibility" (e.g., "feasibly attain most of the basic objectives of the project"), Section 15126.6(f)(1) states, in part:

> Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

In determining what alternatives should be considered in the EIR, it is important to consider the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by the lead agency's decision-making body, here the Board of Supervisors. (See CEQA Sections 21081.5 and 21081[a][3].)

Evolution of the WJHMP Land Use Plan

The proposed WJHMP is the product of an approximately 20-year planning process. During this time, the Project Applicants and the County worked collaboratively to identify and resolve issues and develop a plan that minimizes the environmental effects of development. As described below, the iterative review process has resulted in a project with fewer environmental effects than the project in the original proposal.

The Project Applicants first engaged in preapplication processes with the County approximately 10 years before submittal of a formal project application in 2013. The County released a notice of preparation of an EIR in 2013 and began initial evaluations, including a draft cumulative traffic study, preliminary biological resources assessments, and noise studies. As environmental review of the 2013 submission progressed, it became clear that certain environmental impacts warranted attention. Foremost among these were traffic impacts, with the analysis revealing that the project as proposed in 2013 would, because of the intensity of employment generating land uses, result in an excessive number of trips being attracted to the plan area with resulting adverse traffic impacts. To lessen these identified impacts, the intensity of the proposed employment areas was reduced in revised plans submitted to the County in 2017. Other modifications made in the 2017 submission to address potential impact areas identified through initial CEQA review of the 2013 submission included:

- **Air Quality Impacts**. The traffic related impacts modifications were, in part, also made to achieve a reduction in air quality and greenhouse gas impacts.

- **Transit Impacts**. More direct and efficient transit routes were developed to respond to identified transit and transportation impacts.
- **Biological Impacts**. Various modifications were made to address a series of identified biological impacts, including:
    - eliminating impacts to vernal pools in Aspen IX, which is south of Jackson Highway, by not proposing development in that area;
    - eliminating impacts to various natural areas along Morrison Creek by eliminating road and bridge crossings;
- **Open Space Impacts**. The loss of open space was addressed by identifying 1,945.8 acres as compared to 1,583.4 acres as proposed in the 2013 submission;
- **Groundwater Impacts**. The amount of groundwater recharge capability was increased as a by-product of increasing the amount of open space; and
- **High School/Middle School Impacts**. The high school/middle school site was altered to move it outside of the Mather Airport 60-decibel (dB) community noise equivalent level (CNEL) noise contour line.

The 2017 submittal included a preferred land use diagram and three design options that changed the location of the proposed middle school/high school site. Following submittal of these plans and release of the revised notice of preparation in April 2017, the Sacramento Area Council of Governments updated the Mather Airport noise contours and safety zones. In addition, designs were developed for the drainage features within the plan area. Then, in 2020, the Project Applicants submitted a package of three alternative land use plans that had been revised to reflect the direction of the County Department of Airports and County Department of Water Resources.

Alternative 1-A was initially the preferred alternative. This alternative differed from the 2017 submission by:

- providing a setback levee along the extension of Vineyard Road to achieve satisfactory drainage control;
- converting residential land uses to employment/commercial uses within the area in response to revisions to the then-proposed Mather Airport noise contour and making appropriate adjustments to the remainder of the plan;
- modifying a portion of the project by shifting high-density residential uses to mixed use and employment uses to accommodate the newly proposed safety zone associated with Mather Airport;
- making minor design changes to the Mayhew Road/Happy Lane Roadway alignment in accordance with direction from Sacramento County Department of Transportation (SACDOT) staff; and

- moving the location of the 70-acre high school/middle school site to the east side of Bradshaw Road, rather than at the Granite Vineyard mine property west of Bradshaw Road.

Alternative 1-B differed from the 2017 submission by:

- employing high ground and a possible small setback levee to achieve satisfactory drainage control;
- providing a loop street off Excelsior Road to access designated residential development rather than an extension of Vineyard Road;
- converting residential land uses to employment/commercial uses within the area affected by the proposed Mather Airport noise contour;
- modifying a portion of the project by shifting higher-density residential uses to mixed use and employment uses so as to accommodate the newly proposed safety zone associated with Mather Airport;
- changing uses at Excelsior Road and Jackson Highway by shifting high-density residential uses slightly to the west;
- modifying the land uses associated with the western portion of the project;
- making minor design changes to the Mayhew Road/Happy Lane Roadway alignment that has been designed in accordance with direction from SACDOT staff; and
- moving the location of the 70-acre high school/middle school site to the east side of Bradshaw Road, rather than at the Granite Vineyard mine property west of Bradshaw Road.

Alternative 1-C proposed the same changes as Alternative 1-A except that this alternative retained the low-density residential land uses located within the eastern portion of the plan area within the proposed noise contour. The Project Applicants later designated this alternative as their proposed project because the distribution of housing rendered it the most economically viable from an infrastructure financing perspective. Alternative 1-C is the foundation of the plan evaluated in this EIR.

As indicated above, the project, as currently proposed, is the result of discussions between the Project Applicant and County staff, as well as input from other regulatory agencies and the public. Through this process, the severity of potential environmental effects has been reduced through a more efficient land use pattern, inclusion of a multi-modal trail system, expansion of the proposed open space, and incorporation of public transportation.

CONSIDERATIONS FOR SELECTION OF ALTERNATIVES

ATTAINMENT OF PROJECT OBJECTIVES

As described above, one factor that must be considered in selection of alternatives is the ability of a specific alternative to attain most of the basic objectives of the project (State CEQA Guidelines Section 15126.6[a]). Chapter 2, "Project Description," articulates the following project objectives:

1. Identify and redevelop former mining properties and properties formerly restricted by airport operations of Mather Air Force Base into a vibrant master planned community.
2. Provide a broad mix of needed housing in close proximity to existing and future job centers, including affordable housing as required by the County's Inclusionary Housing Ordinance.
3. Support development located and designed to reduce the per capita vehicle miles traveled and greenhouse gas emissions relative to the Sacramento County regional average.
4. Achieve a Net Zero Greenhouse Gas community at buildout.
5. Provide commercial and recreational services that are connected to and serve adjacent communities.
6. Provide for the development and improvement of services that will serve Environmental Justice areas.
7. Provide equitable protection from environmental and health hazards for disadvantaged communities within the plan area.
8. Include a variety of land use types that will provide employment, commercial, industrial, recreational, and housing opportunities. Locate the different land uses within easy walking distance of each other.
9. Encourage health and wellness by providing an extensive system of trails and parks that are distributed throughout the community and are within easy walking and biking distance of residents. Provide also urban farms and community gardens that will be centrally located and will enable residents, as well as adjacent communities, to obtain locally grown produce and farm products.
10. Incorporate sustainable design practices through a variety of measures including energy efficient design, urban forests, and Low Impact Development (LID). These measures are intended to reduce the overall carbon footprint of the community.
11. Provide a high level of connectivity through an extensive network of streets and off-street trails. Provide bicycle and pedestrian trails that will allow connectivity up slope banks to key intersections, schools, or commercial centers in order to facilitate access options.

12. Provide infrastructure for a variety of transportation options, including roadways, bike trails, walking trails, electric vehicle charging, and public transportation.
13. Create distinctive community and neighborhood nodes that create a sense of place and opportunities for social and recreational activity.
14. Provide a range of housing choices that could include semi-rural, traditional single-family homes, condominiums/townhomes, apartments, active adult/seniors, and mixed-use development.
15. Develop a master plan within and consistent with the South Sacramento Habitat Conservation Plan.
16. Achieve an economically viable master planned development.

Environmental Impacts of the WJHMP Project

Chapters 4–21 of this EIR address the environmental impacts of implementation of the proposed project. Potentially feasible alternatives were developed with consideration of avoiding or lessening the significant, and potentially significant, adverse impacts of the project, as identified in this EIR and summarized below. The WJHMP would result in significant impacts, some of which could be reduced to a less-than-significant level, in the following resources areas:

- aesthetics;
- agricultural resources;
- air quality;
- airport compatibility;
- biological resources;
- climate change;
- cultural resources;
- geology, soils, and mineral resources;
- hazards and hazardous materials;
- hydrology, drainage, and water quality;
- noise;
- transportation; and
- tribal cultural resources.

ALTERNATIVES CONSIDERED BUT NOT EVALUATED FURTHER

As described above, State CEQA Guidelines Section 15126.6(c) provides that the range of potential alternatives for the project shall include those that could feasibly accomplish most of the basic objectives of the project, and could avoid or substantially lessen one or more of the significant effects. Alternatives that fail to meet the fundamental project purpose need not be addressed in detail in an EIR (*In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* [2008] 43 Cal.4th 1143, 1165-1167).

In determining what alternatives should be considered in the EIR, it is important to acknowledge the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by lead agency decision maker(s). (See CEQA Section 21081[a][3].) At the time of action on the project, the decision maker(s) may consider evidence beyond that found in this EIR in addressing such determinations. The decision maker(s), for example, may conclude that a particular alternative is infeasible (i.e., undesirable) from a policy standpoint, and may reject an alternative on that basis provided that the decision maker(s) adopts a finding, supported by substantial evidence, to that effect, and provided that such a finding reflects a reasonable balancing of the relevant economic, environmental, social, and other considerations supported by substantial evidence (*City of Del Mar v. City of San Diego* [1982] 133 Cal.App.3d 401, 417; *California Native Plant Society v. City of Santa Cruz* [2009] 177 Cal.App.4th 957, 998).

The EIR should also Identify any alternatives that were considered by the lead agency but were rejected during the planning or scoping process and briefly explain the reasons underlying the lead agency's determination.

The following alternatives were considered by the County but are not evaluated further in this Draft EIR.

OFF-SITE ALTERNATIVE

Under an off-site alternative, the project would be developed on a separate site within the unincorporated county. An alternative site would need to be of a size similar to that of the plan area (5,913 acres) and would need to be able to be acquired, at least in part, by the Project Applicants. Further, the alternative site would need to be located a similar distance from downtown Sacramento to provide commensurate benefits to residents, including short commute times and future transit access, as well as favorable vehicle miles traveled to support the project's net zero GHG objective. The off-site alternative would also need to be within the Urban Services Boundary and either within the Urban Policy Area (UPA) or adjacent to the UPA such that incorporation into the UPA would be a logical extension. As described further in Chapter 15, "Land Use, Population, and Housing," Sacramento County 2030 General Plan Policy LU-119 establishes that

proposed UPA expansions must have significant borders that are adjacent to the existing UPA or a city boundary. The boundary of the UPA expansion must be logical and consistent with LU-119 for the Board of Supervisors to approve the project.

Although there are other areas within the county that could potentially be developed to accommodate the anticipated growth in the Jackson Corridor, the plan area is intended to make use of property already owned by the Project Applicants. With such a large plan area, it is difficult to bring together multiple property owners for a large-scale planning process. With the Project Applicants owning most of the plan area, the planning process is simpler and more likely to eventually build out successfully.

Moreover, while an off-site alternative could feasibly achieve many of the project objectives, one of the stated objectives of the project is to "redevelop former mining properties and properties formerly restricted by airport operations of Mather Air Force Base into a vibrant master planned community." The County has directed long-term planning efforts to prepare for future development along Jackson Road (also referred to as Jackson Highway). Despite the area's proximity to urban development and jobs in Sacramento, Rancho Cordova, and Elk Grove, development potential has been limited due to the proximity of mining activities and military operations at the former Mather Air Force Base. However, with the closure of historic mines and decommissioning of Mather Air Force Base, many of the prior limitations on the land have been lifted, making this area an acceptable and convenient location for new development. Maintaining consistency with this goal would dramatically reduce the potential locations of an off-site alternative.

There are limited areas of land of a similar size adjacent to, or within, the UPA, most of which are already under consideration as other potential growth areas, and this is the only area that meets the project's objectives and is also majority owned by the Project Applicants. For these reasons, an off-site alternative was determined to be infeasible.

2017 Submittal Alternative 1-A

As described above, this alternative was developed by the Project Applicants in 2017. It is substantially similar to the proposed project evaluated in this EIR but would provide greater consistency with the Mather Airport Comprehensive Land Use Plan (CLUP). As discussed further in Chapter 7, "Airport Compatibility," the project as proposed would be consistent with the County's General Plan and impacts to future residents would be addressed through mitigation measures requiring special building considerations and acoustical testing for homes constructed between the 60- and 65-dB CNEL contours. This alternative would not reduce the impacts of the project on the environment and has not been carried forward for detailed analysis.

ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

The following alternatives are evaluated in this EIR:

- **Alternative 1: No Project Alternative**. This alternative assumes that the project is not approved and development occurs in a manner consistent with adopted land use designations and zoning.
- **Alternative 2: Reduced Footprint Alternative.** This alternative would remove approximately 2,000 acres of less disturbed land east of Bradshaw Road and south of State Route (SR) 16 from the plan area.
- **Alternative 3: Development of Reclamation Lands Alternative.** With this alternative, development would occur only on the aggregate mining properties that are owned by the Project Applicants and have been reclaimed.

Further details on these alternatives, and an evaluation of environmental effects relative to the proposed project, are provided below.

ALTERNATIVE 1: NO PROJECT ALTERNATIVE

Section 15126.6(e) of the State CEQA Guidelines requires that an EIR evaluate and analyze the environmental impacts of the No Project Alternative to examine and compare the potential environmental consequences associated with not approving the project. For the purposes of this analysis, the No Project Alternative would allow for development consistent with the existing General Plan land use and zoning designations on properties within the plan area. Generally, the portion of the plan area west of Bradshaw Road is designated for Agricultural-Urban Reserve. East of Bradshaw Road, the northern portion of the plan area is generally designated Extensive Industrial and the southern portion of the plan area is designated General Agriculture (see Figure 2-6 in Chapter 2, “Project Description”).

This alternative would not result in the development of a master planned community and would not meet any of the project objectives.

AESTHETICS

Development of the plan area according to the existing zoning would result in limited potential for changes in the portion of the plan area designated for agricultural use. The northeast portion of the plan area could be developed for industrial uses, which would be a substantial change to the character and quality of the area and could introduce sources of light or glare. Because the potential for changes to the visual character of the plan area would be less overall, the visual and lighting impacts of the No Project Alternative would be less than those anticipated for the project.

AGRICULTURAL RESOURCES

The No Project Alternative would not change the land use designations or zoning of the plan area. As a result, the No Project Alternative would not conflict with existing

agricultural zoning. Alternative 1 would also avoid the conversion of Prime Farmland and limit conversion of Farmland of Statewide Importance within the plan area. Impacts on agricultural resources would be less for the No Project Alternative than for the proposed project.

Air Quality

The No Project Alternative would generate lower air pollutant emissions (particulate matter and ozone precursors) because of continued agricultural activities and rural residential use of the plan area. Although aggregate mining activities currently result in emissions, these activities are planned to sunset, and required reclamation plans would address the potential for erosion or other ongoing air quality concerns once mining operations cease. The significant construction, operational, and cumulative air quality impacts identified for the project would not occur. Therefore, the air quality impacts of the No Project Alternative would be less than those that would occur with the project.

Airport Compatibility

Under the No Project Alternative, development would be implemented in a manner consistent with the Mather Airport CLUP, 2030 General Plan, and zoning code. Further, development in the Overflight Zone would be subject to Sacramento Area Council of Governments review. This review process would ensure that development would not interfere with the safe and efficient use of navigable air space. Development of the portion of the plan area that is zoned industrial would also result in a net reduction of wetland features with the potential to serve as wildlife attractants, which could improve safe and efficient use of navigable airspace. Therefore, the No Project Alternative would not create substantial safety hazards to people living and working in the vicinity of an airport, expose sensitive receptors to excessive noise, or impair the safe and efficient use of navigable air space. Impacts would be similar to, but less than, those anticipated with implementation of the project.

Biological Resources

Under the No Project Alternative, activity within the plan area would be limited to the continued operation of agricultural, rural residential, industrial, and mining uses, with potential for additional industrial development in the central portion of the plan area. This alternative would retain the grasslands, agricultural habitat, and trees in southeastern portion of the plan area that may support special-status plant and wildlife species known to occur in the region. Impacts would be similar to, but less than, those anticipated with implementation of the project.

Climate Change

The No Project Alternative would generate lower greenhouse gas (GHG) emissions from continued agricultural and mining operations in the plan area. When compared to the proposed land use plan there may be less development overall; however, the type of development that occurs would be industrial-type uses that are typically associated with emissions from operations and truck traffic. If new industrial land uses were developed in the future, these land uses could generate substantial GHG emissions

from processing activities, loading docks, and heavy truck travel that would be subject to project-level review and mitigation to reduce GHG emissions.

In addition, the No Project Alternative may create development pressure elsewhere in the unincorporated county that is further from established cities because development of the plan area according to adopted zoning would not generate substantial housing. This could result in higher vehicle miles traveled (VMT) and fewer opportunities to develop large-scale programs that reduce VMT. However, the potential for less GHG-efficient development to indirectly result from implementation of the No Project Alternative is speculative at this time. Overall, the GHG emission impacts of the No Project Alternative would be similar to those that would occur with the project.

Cultural Resources

Under the No Project Alternative, new ground disturbance would be largely concentrated in the area zoned for industrial uses, which is an area that has been largely disturbed by past mining activities. Overall, impacts on cultural resources under the No Project Alternative would be less than under the project because less ground would be disturbed.

Energy

As described above in relation to climate change and GHG emissions, the No Project Alternative could result in new industrial development in the plan area and, indirectly, residential development in other areas of the county. The energy efficiency of such developments cannot be precisely determined at this time. However, any future development would be held to the same energy efficiency standards as the project and would be supplied with largely renewable energy by Sacramento Municipal Utility District (SMUD). the potential for wasteful or inefficient use of energy under the No Project Alternative that could result in conflict with state or local plans for renewable energy or energy efficiency is expected to be similar to that under the proposed project.

Geology, Soils, and Mineral Resources

The No Project Alternative would substantially reduce the potential for development in the plan area. Reclaimed lands would be retained in their restored state, typically characterized by grasses established to limit erosion. Development that does occur would be consistent with the established zoning and would be subject to the same regulations as the project, including the Uniform Building Code (UBC) and California Uniform Building Code (CBC), which would ensure the maximum necessary protection available for development within areas known to contain expansive soils. Due to the reduction in development, impacts associated with soil erosion, siltation, loss of topsoil, exposure to expansive soils, and destruction of paleontological resources would be less than those associated with development of the project.

Hazards and Hazardous Materials

The No Project Alternative could result in development of a portion of the plan area for light industrial use. This zoning generally allows for the assembly of manufactured

goods and is not associated with use of large quantities of potentially hazardous materials. Further, any construction and operation of light industrial uses would be subject to existing regulations governing the use, transport, and disposal of hazardous materials. Therefore, although more industrial and agricultural land uses, which may use and generate large quantities of potentially hazardous materials, could occur under Alternative 1, impacts are anticipated to be similar to those that would occur with development of the WJHMP following adherence to existing regulatory standards.

Hydrology, Drainage, and Water Quality

The No Project Alternative would result in less impervious surface area than anticipated due to future development potential under the WJHMP. This would increase surface water infiltration and reduce sedimentation and other pollutants in stormwater runoff. However, Alternative 1 would not result in improvement to Morrison Creek and the existing weir that are proposed as part of the project and are anticipated to benefit off-site drainage and water quality. Overall, the hydrology, drainage, and water quality impacts of the No Project Alternative would be less than those of the project.

Land Use, Population, and Housing

This alternative would not result in any conflicts with existing land uses or adopted plans because no changes to the General Plan land use designations or zoning would occur. The No Project Alternative also would not result in revision to the UPA. However, the analysis in Chapter 15, “Land Use, Population, and Housing” indicates that the WJHMP would not result in significant impacts as a result of the proposed land use changes and expansion of the UPA. For this reason, the land use, population, and housing impacts under this alternative would be similar to those of the project.

Noise

The No Project Alternative would generally reduce the potential for construction and operation noise compared to that identified for the project based on the reduced area of potential development. As described above, the central portion of the plan area could be built out with light industrial uses, and agricultural and rural residential lands would provide a partial buffer for the existing communities to the north and south.

Future industrial uses may result in short-term construction noise and operational noise sources similar to those described for industrial uses in the WJHMP in Chapter 16, “Noise.” Discretionary development in the plan area would likely be subject to mitigation related to construction and operational noise that is similar to the mitigation measures included in Chapter 16. However, the actual mitigation requirements and effectiveness are unknown. Further, the overall amount of industrial development, which is generally noisier than residential mixed-use development, would be greater than proposed in the WJHMP. Therefore, the noise and vibration impacts of the No Project Alternative would be similar to those anticipated with implementation of the project.

Public Services

The No Project Alternative would have less potential to trigger the need for new or improved fire, law enforcement, or park facilities because most of the area is designated for light industrial or agricultural uses and this limits the potential to introduce residents into the plan area. Overall, the public service impacts of the No Project Alternative would be less than those of the project.

Public Utilities

Under the No Project Alternative, the potential for development in the plan area would be substantially reduced. Development of the industrially zoned areas could result in additional solid waste and wastewater generation, which could require limited on-site and off-site infrastructure, including septic systems. A comprehensive on-site wastewater system similar to that evaluated for the project would not be constructed. Effects would be less than those anticipated with implementation of the project.

Transportation

The No Project Alternative would have limited potential to affect the operation of area roadways and would not change conditions relative to bicycle, pedestrian, or transit facilities. The plan area has limited potential to accommodate residential or employment uses under the existing land use designations; as a result, the potential for the No Project Alternative to generate new VMT is also relatively low. However, the No Project Alternative would not implement updates to the transit plan or Active Transportation Plan. As a result, a gap in transit and trail systems would occur between the Vineyard Community to the south, Rosemont Community to the north, and approved master plans along the east Jackson Corridor (e.g., Jackson Township, Mather South, Newbridge). It is expected that the No Project Alternative would have less impact on transportation than the project.

Water Supply

Under the No Project Alternative, the potential for development of the plan area and corresponding water demand would be considerably reduced. Due to the reduced development footprint, the No Project Alternative would also result in less potential to affect groundwater recharge. Overall, the effect on water supply would be less than with implementation of the project.

Tribal Cultural Resources

Under the No Project Alternative, new ground disturbance would be largely concentrated in the area zoned for industrial uses, which is an area that has been largely disturbed by past mining activities. Overall, impacts on tribal cultural resources under the No Project Alternative would be less than under the project because less ground would be disturbed.

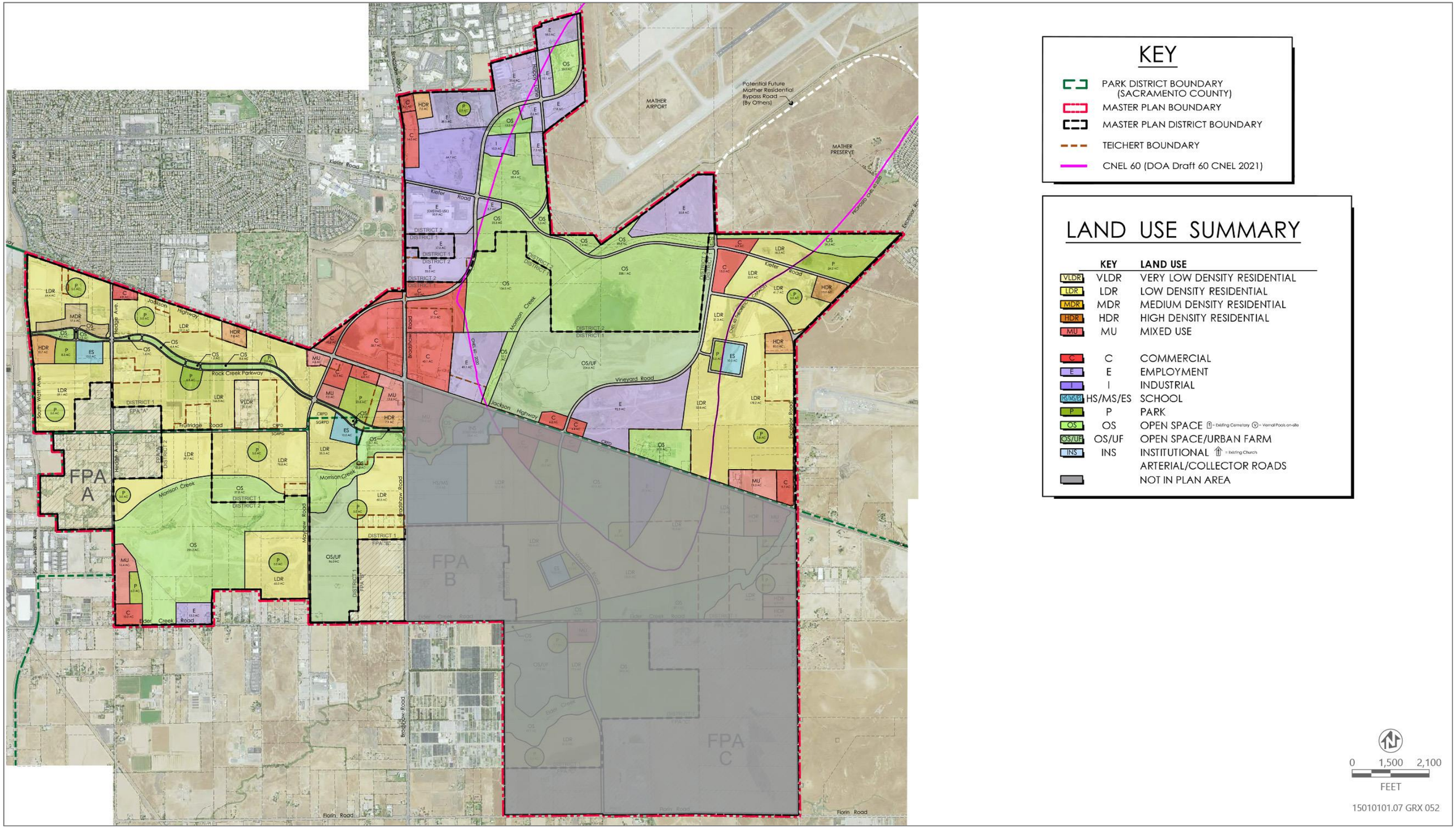
Alternative 2: Reduced Footprint Alternative

Alternative 2 would implement the same land use plan and policy framework as the WJHMP but would not include any land use changes east of Bradshaw Road and south of Jackson Highway. Removing approximately 2,000 acres in the southeast portion of the plan area would reduce the overall plan area by approximately 36 percent. See Figure 3-1. With this modification, most of the plan area that is currently designated for agricultural use would remain designated for agricultural use and all Prime Farmland in the plan area would be avoided. This alternative would also eliminate the potential for any direct impacts on Elder Creek. In total, Alternative 2 would eliminate approximately 42 acres of mixed use, 28 acres of commercial use, 37 acres of employment uses, 27 acres of high-density residential, and 463 acres of low-density residential. A 10-acre elementary school site would not be included and FPA C and most of FPA B would be outside of the plan area. The high school/middle school site would also be affected, and it is anticipated that the land use plan would have to be modified to accommodate the school within the remainder of the plan area. Because this alternative would reduce the overall disturbance and development footprint for the project, effects that are associated with ground disturbance (i.e., potential to encounter undocumented cultural resources) and effects inherent in the magnitude of the project (i.e., air quality impacts) would be reduced, although likely not to a less-than-significant level.

Alternative 2 would achieve most of the basic project objectives, including redeveloping mined properties formerly incompatible with development due to operation of Mather Air Force Base, providing a broad mix of needed housing in close proximity to existing and future job centers and supporting development that is located and designed to reduce per capita vehicle miles traveled and greenhouse gas emissions; creating a community with net zero greenhouse gas emissions, providing commercial and recreational services that are connected to and serve adjacent communities and a variety of land use types, and encouraging health and wellness by providing an extensive system of trails and parks that are distributed throughout the community and are within easy walking and biking distance of residents. The alternative would also meet project objectives related to sustainable design practices, community connectivity, and range of transportation choices, and would be consistent with the South Sacramento Habitat Conservation Plan (SSHCP).

Aesthetics

Alternative 2 would result in less development at the southeastern boundary of the plan area than the project. This could result in slightly less off-site lighting effects to the southeast of the plan area. However, like the project, this alternative would introduce a substantial amount of new lighting to an area that is currently rural and largely unlit. Although Alternative 2 would reduce the footprint of the plan area, it would also result in the near complete conversion of the remaining area from undeveloped rural land to a fully developed urban community, which would result in a permanent, substantial alteration to existing viewsheds within the area. Overall, impacts on the visual quality and character of the area would be less than those of the proposed project.



Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2024.

Figure 3-1 Cordova and Vineyard CPAC Growth Areas

Agricultural Resources

As described above, Alternative 2 removes most of the existing agricultural land and all of the land designated as Prime Farmland from the plan area. In addition, this alternative includes both portions of the plan that are designated for Open Space/Urban Farm and is assumed, for the purpose of this analysis, to provide this community resource as described for the project. As a result, the potential for the plan to result in the conversion of Farmland would be reduced. Alternative 2 would have less impact on agricultural resources than the proposed project.

Air Quality

Alternative 2 would generate lower air pollutant emissions (particulate matter and ozone precursors) because of continued agricultural activities and rural residential use of the majority of the plan area. This alternative would avoid project air quality impacts related to toxic air contaminants (TACs) and potential odor generation. The significant construction, operational, and cumulative air quality impacts identified for the project would not occur in the southeast portion of the plan area. Therefore, the air quality impacts of Alternative 2 would be less than those that would occur with the project.

Airport Compatibility

Alternative 2 would remove approximately 79 acres of low-density residential that is proposed within the 60-dB CNEL from the plan area. This would reduce the potential for future residents to be affected by airport-generated noise and improve alignment with the adopted land use plan for the airport. Impacts would be less than those anticipated with implementation of the project.

Biological Resources

Alternative 2 would not include the area east of Bradshaw Road and south of SR 16. This area has experienced less historical disturbance than the remainder of the plan area and provides most of the annual grassland habitat in the plan area. Therefore, this alternative would retain the grasslands, agricultural habitat, and trees in northeastern portion of the plan area that may support special-status plant and wildlife species known to occur in the region. In addition, the overall reduction in disturbance and loss of habitat would reduce impacts on species such as Swainson's hawk, Cooper's hawk, white-tailed kite, grasshopper sparrow, song sparrow (Modesto population), yellow-headed blackbird, northern harrier, and other special-status birds. In addition, Figure 8-2 in Chapter 8, "Biological Resources," identifies possible direct impacts to wetlands in this portion of the plan area. Impacts to biological resources from implementation of Alternative 2 would be less than those anticipated with implementation of the project.

Climate Change

Although Alternative 2 would reduce the project footprint, construction and operational GHG impacts are likely to be similar due to the size and scale of the overall development. Mitigation similar to that proposed for the project would be required to reduce emission to below Sacramento County's per capita thresholds of significance for residential and nonresidential development. The contribution to global climate change under Alternative 2 would be similar to that under the project.

Cultural Resources

Under Alternative 2, ground disturbance would occur only in the west and northeast portions of the plan area, which are areas that have been largely disturbed by past mining activities. Unevaluated cultural resources may still be encountered, but the potential to encounter resources would be reduced proportionately with the reduction in plan area. Overall, impacts on cultural resources under Alternative 2 would be less than under the project because less ground area would be disturbed.

Energy

Alternative 2 would include design features from the WJHMP document that would increase energy efficiency in the buildings and facilities when compared to development consistent with Alternative 2. This alternative would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation. This alternative would comply with the California Energy Code, and SMUD would comply the state's Renewable Portfolio Standard. As a result, this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. This impact would be similar to that of the project.

Geology, Soils, and Mineral Resources

Alternative 2 would remove roughly 2,000 acres from the plan area, which would result in reduced potential for erosion due to less ground disturbance. Development would be subject to the same regulations as the project, including the UBC and CBC, which would ensure the maximum necessary protection available for development within areas known to contain expansive soils.

The potential to encounter unanticipated paleontological resources would also be similar or slightly reduced, because the potential is associated with land disturbance. With the implementation of Mitigation Measures CR-2a and CR-2b, impacts would be reduced because construction workers and operational personnel would be alerted to the possibility of encountering paleontological resources and professionally-accepted and legally compliant procedures for the discovery of paleontological resources would be implemented in the event of a find. Because the area of disturbance would be reduced, the potential for impacts would also be less than for the project.

Hazards and Hazardous Materials

With the removal of approximately 2,000 acres from the plan area, Alternative 2 would result in less potential for ground disturbance than the project. However, the remainder of the plan area would remain subject to the potential for discovery of, and exposure to, contaminated soils and/or groundwater. Alternative 2 would be subject to the same strict regulations that control the transport, use, and disposal of hazardous materials, and would not result in the development of different types of land uses that would be subject to greater risk from accidental release than the project. Implementation of Mitigation Measures HAZ-2a and HAZ-2b would require further evaluation and characterization of the plan area.

The effects of Alternative 2 on emergency response and evacuation plans would be similar to the project because the basic roadway network would be substantially similar to the project and implementation would be phased so that the County's emergency planning could incorporate the growth in the plan area gradually. Overall impacts associated with Alternative 2 would be less than those of the project.

Hydrology, Drainage, and Water Quality

Alternative 2 would retain the amount of undeveloped land in the southeastern portion of the plan area, which would eliminate most effects within the Elder Creek watershed. Further, the main design features of the Drainage Plan that contribute to stormwater quality and hydromodification attenuation are proposed in the northeastern portion of the plan area along Morrison Creek and would not be affected.

Alternative 2 would occur in the same location as the plan area and would have a similar impact associated with the potential for flooding because of dam or levee failure due to recently completed flood protection projects and distance from dams and levees. Alternative 2 would be required to comply with the same stormwater quality regulations as the project. The effects on hydrology, drainage, and water quality would be less than those of the proposed project.

Land Use, Population, and Housing

Alternative 2 would also require expansion of the UPA and would include similar smart growth principles. By creating boundaries along major roadways, the alternative would provide a logical extension of the UPA and is anticipated to satisfy the requirements of General Plan Policy LU-120. Alternative 2 would eliminate approximately 42 acres of mixed use, 28 acres of commercial use, 37 acres of employment uses, 27 acres of high-density residential, and 463 acres of low-density residential. A 10-acre elementary school site would not be included and FPA C and most of FPA B would be outside of the plan area. The high school/middle school site would also be affected, and it is anticipated that the land use plan would have to be modified to accommodate the school within the remainder of the plan area. Like the project, Alternative 2 would not physically divide an established community, induce substantial population growth, or displace housing. Impacts would be similar to those of the project.

Noise

Alternative 2 would reduce the size of the plan area, but would include a similar mix and configuration of land uses in the western and northeastern portion of the plan. Similar to the project, sensitive receptors could be exposed to construction noise levels above the Sacramento County noise standards if development of land uses adjacent to the sensitive receptors were to occur during nighttime hours. Implementation of the noise control measures identified in Mitigation Measure NO-1 would substantially reduce construction noise levels and, subsequently, levels of annoyance and potential sleep disruption to occupants of nearby residential dwellings. Also similar to the project, vibration-inducing construction activity could occur within 550 feet or within 100 feet of sensitive land uses with new sensitive receptors, resulting in disturbance or possible structural damage. Mitigation Measure NO-2 would reduce potential impacts by

requiring minimum setbacks to sensitive land uses, impact monitoring during pile driving activity, use of alternative equipment when appropriate, and restrictions on hours of use to avoid annoyance to sensitive receptors. Similar to the project, new stationary noise sources would be at a distance at which noise levels from these sources would not exceed Sacramento County's exterior noise standard for daytime noise (i.e., 55 dBA) or nighttime noise (i.e., 50 dBA. Mitigation Measures NO-4a and NO-4b could reduce noise exposure to sensitive residents from industrial land uses). Overall, the noise and vibration effects of Alternative 2 would be similar to those of the project.

Public Services

The overall land uses proposed under Alternative 2 would be roughly the same as proposed for the project, and demand for public services would be generally consistent with the demand generated by the project, although reduced by approximately one-third. As described above, Alternative 2 would eliminate two school sites from the plan. It is anticipated that this would create an impact on school services unless the schools are accommodated within the revised land use plan. Loss of parkland would be roughly proportionate to the reduction in dwelling units and is not anticipated to substantially affect the provision of park services, although segments of the planned trail linkages would be lost. Impacts would be greater than those disclosed for the project.

Public Utilities

Alternative 2 would reduce the project's demand for public utilities. It also would result in slightly less development and would likely require slightly less wastewater treatment capacity than the project. The Sacramento Regional Wastewater Treatment Plant (SRWTP) would have adequate capacity to treat wastewater flows generated by future development. As identified above for the project, it is anticipated that Kiefer Landfill would have adequate capacity to accept waste generated by future development. Impacts on wastewater and solid waste service capacity would be less than those of the project.

Transportation

VMT is dependent on multiple, interrelated local and regional factors and includes consideration of data points such as the jobs/housing balance and availability of services. No VMT modeling of Alternative 2 was conducted; however, the VMT that would result from Alternative 2 could be similar at the programmatic level. The same general types and pattern of development would occur, although Alternative 2 would eliminate approximately 42 acres of mixed use, 28 acres of commercial use, 37 acres of employment uses, 27 acres of high-density residential, and 463 acres of low-density residential. As indicated above, the net effect of removing this mix of land uses from the plan area has not been modeled; however, the reduction in low-density residential may reduce VMT.

The alternative would also include the provision of new bicycle and pedestrian facilities throughout the reduced plan area, and between the plan area and other nearby land uses. However, as noted above, a substantial portion of the proposed trail system linkages would not be constructed. Sidewalks would be required as part of the frontage improvements along all new roadway construction in conformance with County design

standards. Like the project, Alternative 2 would be designed to meet all the design and safety standards established by the County, which requires coordination with Sacramento Metropolitan Fire District to ensure that the design of local roads will accommodate emergency vehicles. Adherence to these design standards would ensure that adequate site distances and access for vehicles entering and leaving the site is provided for safe travel. The transportation effects of this alternative would be similar to those of the project.

Water Supply

The overall level of development under Alternative 2 (and corresponding water demand) would be less than under the WJHMP. Alternative 2 would require less water in the Sacramento Water Agency's service area. Off-site and on-site infrastructure improvements are anticipated to be substantially the same as discussed for the project in Chapter 20, "Water Supply," because the extension of water services from the Vineyard treatment plant through this area would still be required. Implementation of planned off-site expansion projects would be conducted by the water purveyors and would be subject to separate environmental review and approval. Development of on-site water supply infrastructure would not result in utility-specific adverse physical impacts. Assuming that the area excluded from the plan area under this alternative remains in agricultural use, this alternative would improve the potential for groundwater recharge. Impacts on water supply would be less with implementation of Alternative 2 than with implementation of the project.

Tribal Cultural Resources

Under Alternative 2, ground disturbance would occur only in the west and northeast portions of the plan area, which are areas that have been largely disturbed by past mining activities. Unevaluated tribal cultural resources may still be encountered, but the potential to encounter resources would be reduced proportionately with the reduction in plan area. Overall, impacts on tribal cultural resources under Alternative 2 would be less than under the project because less ground area would be disturbed.

Alternative 3: Development of Reclamation Lands Alternative

As described in Chapter 15, "Land Use, Population, and Housing," the properties owned by the Project Applicants primarily include aggregate mining sites used for sand and gravel extraction. Most of these sites have already been reclaimed and the remainder will be reclaimed following exhaustion of the valuable resources in the area. Although the reclamation process addresses general project conditions and requires actions to ensure that the mined property does not contribute to contamination through soil erosion or release of other media, mining generally results in degradation of the natural attributes of an area. As a result, development in these areas would have fewer effects on biological, cultural, and paleontological resources.

Alternative 3 would allow development to occur only on former mining sites that have been previously disturbed (see Figure 3-2) and would achieve the project objective of redeveloping former mine sites. Like Alternative 2, this alternative would limit the overall project footprint. The total developed area would be approximately 2,940 acres, or

roughly half of the proposed plan area. For the purpose of this evaluation, it is assumed that all of the mined areas would be designated for the same land use as proposed in the WJHMP. However, the open space areas (which are largely on previously mined sites) are assumed to be reduced to accommodate income-generating designations that accommodate housing, commercial, and industrial uses. In addition, the viability of programs to reduce per capita VMT and GHG emissions with the substantially reduced footprint is unknown. Therefore, it is possible that project objectives related to connectivity, SSHCP consistency, and net zero development could not be achieved by this alternative.

Aesthetics

Alternative 3 would generally concentrate development in the center of the plan area. This could result in slightly less off-site lighting effects to the southeast of the plan area. However, like the project, this alternative would introduce a substantial amount of new lighting to an area that is currently rural and largely unlit. Overall, impacts on the visual quality and character of the area would be less than those of the proposed project.

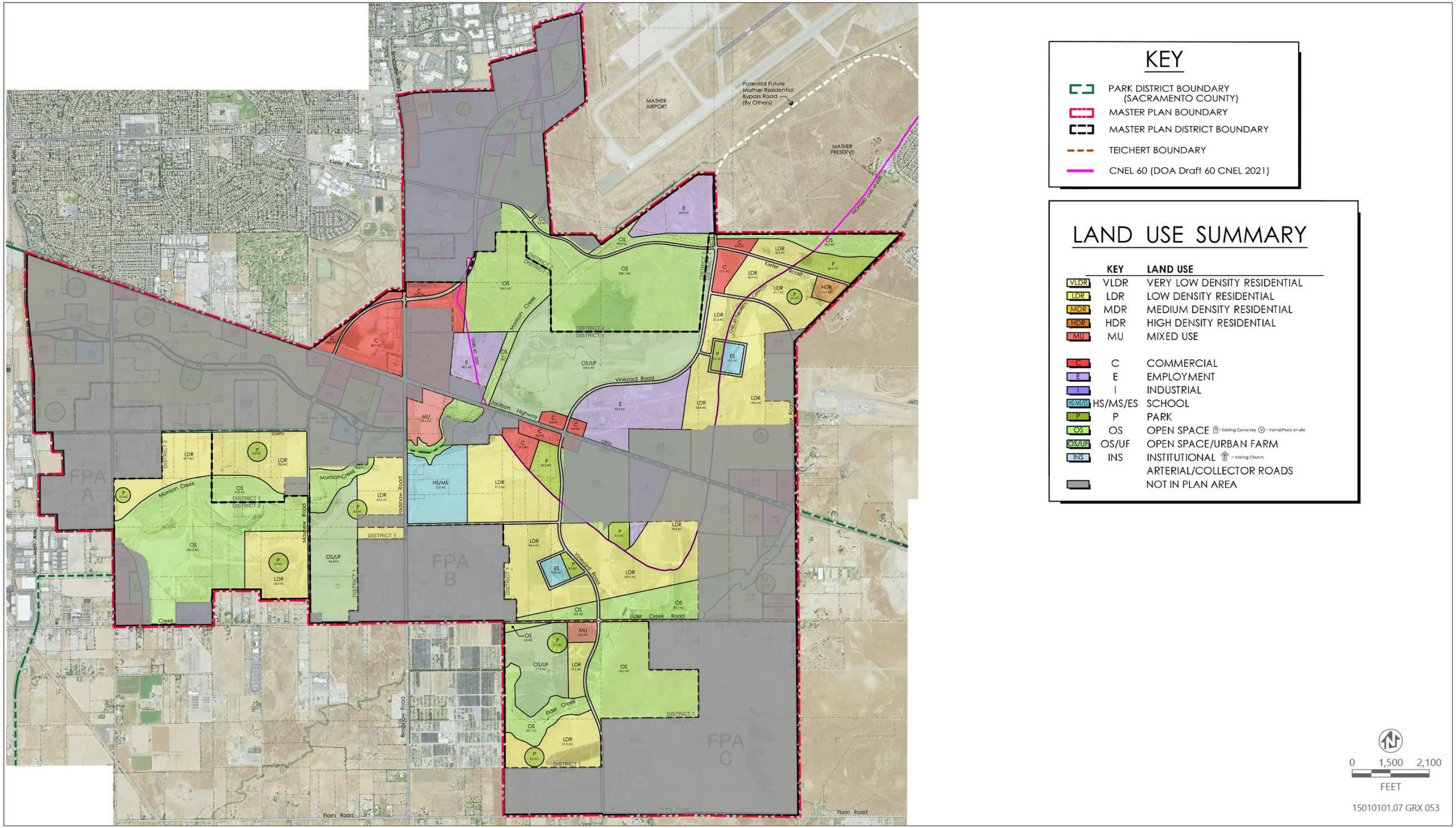
Agricultural Resources

Under Alternative 3, most of the existing agricultural land and all of the land designated as Prime Farmland would remain within the plan area. Nevertheless, the potential for the plan to result in the conversion of Farmland of Statewide Importance and Farmland of Local Importance would be reduced. Alternative 3 would have less impact on agricultural resources than would the proposed project.

Air Quality

Construction impacts are likely to be similar due to the size and scale of the development in Alternative 3. Application of Mitigation Measures AIR-1a and AIR-1b would be sufficient to reduce construction impacts to levels below Sacramento Metropolitan Air Quality Management District mass emissions thresholds. As identified for the project, implementation of Mitigation Measures AIR-2a through AIR-2f would reduce operational emissions. Alternative 3 would be beholden to the same air quality plans cited in the discussion of the project's consistency with applicable air quality plans.

Alternative 3 would result in fewer residences and other development, which would generate fewer additional daily trips than the project. Potential for adverse carbon monoxide impacts and TAC exposure impacts would be similar due to the size and scale of the overall development. Implementation of Mitigation Measures AIR-5a through AIR-5d would reduce potential TAC exposure by providing guidelines when siting sensitive land uses near land uses that could be sources of diesel particulate matter and TACs. Overall, the air quality impacts of Alternative 3 would be slightly less than those of the project.



Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2024.

Figure 3-2 Cordova and Vineyard Mined Areas

Airport Compatibility

Under Alternative 3, roughly half of the developable area would be in the northeast portion of the plan area that is closest to Mather Airport. Land use designations would be the same as those identified in the master plan. As a result, similar airport compatibility impacts would occur to those identified for the project.

Biological Resources

Alternative 3 would occur only on lands that have been previously mined and would remove many of the areas with the greatest habitat value from the plan area. Although the previously mined properties have been restored through the required mining reclamation process and do provide some habitat value (see Chapter 8, "Biological Resources"), overall impacts on biological resources would be reduced compared to those of the project due to the relative size of the plan area and the concentration of development on lands that have been previously disturbed.

Climate Change

Although Alternative 3 would reduce the project footprint, construction and operational GHG impacts are likely to be similar due to the size and scale of the overall development. Mitigation similar to that proposed for the project would be required to reduce emission to below Sacramento County's per capita thresholds of significance for residential and nonresidential development. However, as indicated above, the effectiveness of programs designed to reduce GHG emissions may be hampered by the layout of the plan area under Alternative 3 and could result in slightly greater impacts than those identified for the project.

Cultural Resources

Under Alternative 3, ground disturbance would occur in approximately the half of the plan area that has been largely disturbed by past mining activities. Unevaluated cultural resources may still be encountered, but the potential to encounter resources would be reduced proportionately with the reduction in plan area. Overall, impacts on cultural resources under Alternative 3 would be less than under the project because less ground area would be disturbed.

Energy

Alternative 3 would include design features from the WJHMP document that would result in energy efficiency in the buildings and facilities in the plan area. Alternative 3 would also include design features to reduce the project's anticipated annual VMT and, therefore, reduce transportation-related energy demand. This alternative would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation. This alternative would comply with the California Energy Code and SMUD would comply with the state's Renewable Portfolio Standard. As a result, this alternative would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. This impact would be similar to that of the project.

Geology, Soils, and Mineral Resources

As described for Alternative 2, Alternative 3 would result in reduced potential for erosion due to less ground disturbance. Development would be subject to the same regulations as the project, including the UBC and CBC, which would ensure the maximum necessary protection available for development within areas known to contain expansive soils.

The potential to encounter unanticipated paleontological resources would also be similar or slightly reduced, because the potential is associated with land disturbance. With the implementation of Mitigation Measures CR-2a and CR-2b, impacts would be reduced because construction workers and operational personnel would be alerted to the possibility of encountering paleontological resources and professionally-accepted and legally-compliant procedures for the discovery of paleontological resources would be implemented in the event of a find. Because the area of disturbance would be reduced, the potential for impacts would also be less than for the project.

Hazards and Hazardous Materials

With the removal of approximately half of the plan area and limiting the project to redevelopment of areas previously mined for aggregate resources, Alternative 3 would result in less potential for new ground disturbance that could encounter undocumented resources than the project. Alternative 3 would be subject to the same strict regulations that control the transport, use, and disposal of hazardous materials, and would not result in the development of different types of land uses that would be subject to greater risk from accidental release than would the project. Implementation of Mitigation Measures HAZ-2a and HAZ-2b would require further evaluation and characterization of the plan area.

The effects of Alternative 3 on emergency response and evacuation plans would be similar to those of the project. Although the comprehensive roadway network proposed in the WJHMP would likely not be developed, the mined areas are generally adjacent to major transportation corridors (i.e., SR 16, Bradshaw Road) that would continue to provide emergency access and evacuation routes. Overall impacts associated with Alternative 3 would be less than those of the project.

Hydrology, Drainage, and Water Quality

Alternative 3 would remove lands in the northwestern, northern, and southwestern corners of the plan area from the project. The proposed drainage along Rock Creek Parkway would not be constructed because it would be outside the previously mined areas included in the plan

Alternative 3 would occur in the same location as the plan area and would have a similar impact associated with the potential for flooding because of dam or levee failure due to recently completed flood protection projects and distance from dams and levees. Alternative 3 would be required to comply with the same stormwater quality regulations as the project. Both the Morrison and Elder Creek watersheds would be affected by this alternative; however, only of the drainage and stormwater improvements identified in

mined areas would be implemented. In addition, the layout and relationship of the previously mined areas would limit the potential for comprehensive planning of surface drainage, which may result in localized and off-site drainage effects. The effects on hydrology and water quality would be greater than those of the proposed project because the effective attenuation of flows may not occur, which could increase impacts associated with drainage and water quality.

Land Use, Population, and Housing

Alternative 3 would also require expansion of the UPA; however, the previously mined areas do not provide a logical boundary for urban development and are not anticipated to satisfy the requirements of General Plan Policy LU-120. Further, planning for intense development of residential uses in the center of the WJHMP area could induce unplanned growth on the surrounding properties (particularly in the north and northeast where incorporated cities are relatively close by). This could result in land use policy effects if regional infrastructure is not properly planned. Like the project, Alternative 3 would not physically divide an established community or displace housing. Due to potential conflicts with the County's growth management policies, land use impacts would be greater under Alternative 3 than under the project.

Noise

Alternative 3 would reduce the size of the plan area and would increase the interface between urban land use and agricultural and industrial uses of adjacent lands. Similar to the project, sensitive receptors could be exposed to construction noise levels above the Sacramento County noise standards if development of land uses adjacent to the sensitive receptors were to occur during nighttime hours. Implementation of the noise control measures identified in Mitigation Measure NO-1 would substantially reduce construction noise levels and, subsequently, levels of annoyance and potential sleep disruption to occupants of nearby residential dwellings. Also similar to the project, vibration-inducing construction activity could occur within 550 feet or within 100 feet of sensitive land uses with new sensitive receptors, resulting in disturbance or possible structural damage. Mitigation Measure NO-2 would reduce potential impacts by requiring minimum setbacks to sensitive land uses, impact monitoring during pile driving activity, use of alternative equipment when appropriate, and restrictions on hours of use to avoid annoyance to sensitive receptors. Finally, new stationary noise sources would be at a distance at which noise levels from these sources would not exceed Sacramento County's exterior noise standard for daytime noise (i.e., 55 dBA) or nighttime noise (i.e., 50 dBA). Mitigation Measures NO-4a and NO-4b could reduce noise exposure to sensitive residents from industrial land uses. In addition, because many of the previously mined are below the elevation of the surrounding land, the grade separation may provide a degree of noise attenuation to surrounding uses. Overall, the noise and vibration effects of Alternative 3 would be similar to those of the project.

Public Services

Alternative 3 would encompass roughly half of the plan area. Demand for public services, including police and fire protection, is anticipated to be reduced under Alternative 3 compared to the project. As described above, modifications to the

proposed land use plan would be anticipated under this alternative and schools and parks would need to be sited within the revised plan area. The County has not determined whether adequate land for the required school and park sites could be accommodated and an impact on school services and parkland could occur. Overall, there is a potential for greater impacts on public services under this alternative compared with the project.

Public Utilities

Alternative 3 would have a reduced demand for public utilities compared with the project. Alternative 3 would result in less development and would likely require slightly less wastewater treatment capacity than the project. The SRWTP would have adequate capacity to treat wastewater flows generated by future development. As identified above for the project, it is anticipated that Kiefer Landfill would have adequate capacity to accept waste generated by future development. Impacts on wastewater and solid waste service capacity would be less under this alternative than under the project.

Transportation

VMT is dependent on multiple, interrelated local and regional factors and includes consideration of data points such as the jobs/housing balance and availability of services. Although overall VMT generation may be reduced under this alternative due to the reduction in plan area size, Alternative 3 would likely increase VMT generation per acre because complementary uses and programs that reduce VMT and are included in the project may not be feasible under this alternative due to the size and layout of the previously mined properties. The alternative would also include the provision of new bicycle and pedestrian facilities throughout the plan area, and between the plan area and other nearby land uses. Sidewalks would be required as part of the frontage improvements along all new roadway construction in conformance with County design standards. Like the project, Alternative 3 would be designed to meet all the design and safety standards established by the County, which requires coordination with Sacramento Metropolitan Fire District to ensure that the design of local roads will accommodate emergency vehicles. Adherence to these design standards would ensure that adequate site distances and access for vehicles entering and leaving the site is provided for safe travel. The transportation effects of this alternative would be similar to those of the project.

Water Supply

The overall level of development under Alternative 3 (and corresponding water demand) would be less than under the WJHMP. Off-site and on-site infrastructure improvements are anticipated to be substantially the same as discussed for the project in Chapter 20, “Water Supply.” Implementation of planned off-site expansion projects would be conducted by the water purveyors and would be subject to separate environmental review and approval. Assuming that the area excluded from the plan area under this alternative remains in agricultural use, this alternative would improve potential for groundwater recharge. Impacts on water supply would be less under Alternative 3 than under the project.

TRIBAL CULTURAL RESOURCES

Under Alternative 3, ground disturbance would occur in approximately the half of the plan area that has been largely disturbed by past mining activities. Unevaluated tribal cultural resources may still be encountered, but the potential to encounter resources would be reduced proportionately with the reduction in plan area. Overall, impacts on tribal cultural resources under Alternative 3 would be less than under the project because less ground area would be disturbed.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 3-1 summarizes the significance conclusions reached for impacts on the resources evaluated in Chapters 4–20 of this EIR.

As indicated above, the No Project Alternative would reduce or result in similar impacts on all resource areas. As a result, this alternative would be environmentally superior. However, State CEQA Guidelines Section 15126.6(e)(2) requires that if an EIR determines that the No Project Alternative is environmentally superior to the project, the EIR must identify an environmentally superior alternative from among the other alternatives considered.

Based on potential to reduce impacts, the Reduced Footprint Alternative (Alternative 2) would be environmentally superior. In addition, as discussed above, this alternative would meet most of the basic objectives of the project.

Table 3-1 Summary of Environmental Effects of the Alternatives Relative to the Proposed Project

Environmental Topic	Proposed WJHMP	Alternative 1: No Project	Alternative 2: Reduced Footprint Alternative	Alternative 3: Development of Reclamation Lands Alternative
Aesthetics	SU	Less	Less	Less
Agricultural Resources	SU	Less	Less	Less
Air Quality	SU	Less	Less	Less
Airport Compatibility	LTSM	Less	Less	Similar
Biological Resources	LTSM	Less	Less	Less
Climate Change	LTSM	Similar	Similar	Greater
Cultural Resources	SU	Less	Less	Less
Energy	LTS	Similar	Similar	Similar
Geology, Soils, and Mineral Resources	LTSM	Less	Less	Less
Hazards and Hazardous Materials	LTSM	Similar	Less	Less
Hydrology, Drainage, and Water Quality	LTS	Less	Less	Greater
Land Use, Population, and Housing	LTS	Similar	Similar	Greater
Noise	SU	Similar	Similar	Similar
Public Services	LTS	Less	Greater	Greater
Public Utilities	LTS	Less	Less	Less
Transportation	LTSM	Less	Similar	Similar
Water Supply	LTS	Less	Less	Less
Tribal Cultural Resources	LTSM	Less	Less	Less

Notes: LTS = less than significant; LTSM = less than significant with mitigation; SU = significant and unavoidable.

4 AESTHETICS

INTRODUCTION

This chapter addresses aesthetics and visual quality issues related to the development of the plan area. This chapter also documents existing aesthetic and visual resources of the plan area, presents standards to judge visual sensitivity, and addresses relevant scenic resource issues. No comments regarding aesthetics, lighting, or visual character were received in response to the notice of preparation.

ENVIRONMENTAL SETTING

VISUAL CHARACTER OF REGION

Sacramento County lies near the center of California's Central Valley, at the southern end of the Sacramento Valley. Open space views within the valley region are generally characterized by broad sweeping panoramas of flat agricultural lands and open space dotted with trees, divided by numerous rivers and creeks. To the east, the Sierra Nevada and their foothills are visible in the background, and the Coast Range provides a backdrop on the western horizon.

VISUAL CHARACTER

From the perspective of travelers on roadways adjacent to mining excavation areas within the plan area, the roadway frontage is dominated by fencing and landscaping comprised of trees and shrubs used to screen mining sites. Drivers see security fencing and landscaping along long stretches of Jackson Highway, South Watt Avenue, Bradshaw Road, Hedge Road, and Fruitridge Road. The character is rural, and grasslands used for grazing land and agriculture dominate the views. In areas not impacted by mining activity, travelers see grassland areas. Houses on 1 to 10- acre lots are interspersed among the mining sites and grasslands along the major roadways. Most of the businesses are along Jackson Highway, including storage yards with sand and gravel or rental equipment can be seen from the roadway. There are large overhead transmission towers in the southwestern and southeastern portions of the plan area.

The visual character of the properties to the east and south consist of flat open fields intermixed with limited residential and commercial development. Mather Airport is located to the north of the plan area and the runways and associated buildings are visible from the northernmost portions of the plan area. To the west is the Aspen 1 mining site with landscaping along South Watt Avenue and an industrial business park area in the city of Sacramento. To the northwest is the existing community of Rosemont which is comprised of predominately single-family homes.

Scenic Views and Resources

The plan area is generally flat, with depressed pockets where aggregate extraction has lowered parcels elevations. The plan area does not contain scenic resources such as trees, rock outcroppings, and historic buildings that act as the focal point of a viewshed and are usually foreground elements.

Scenic vistas are elements of the broader viewshed such as mountain ranges, valleys, and ridgelines that possess visual and aesthetic qualities of high value to the community. They are usually middle ground or background elements of a viewshed that can be seen from a range of viewpoints, often along a roadway or other corridor. Distant views of the Sierra Nevada, the Coast Range, Mount Diablo, and the Sutter Buttes can be visible under clear conditions and are also considered part of the county's visual heritage (Sacramento County 2010). Views of the Sierra Nevada mountain range, which is visible from the plan area, is an important scenic vista in the area. However, no designated scenic vistas are located within the plan area.

The County General Plan designates scenic corridors within the county. These corridors include River Road, Isleton Road, Garden Highway, Scott Road (from White Rock Road south to Latrobe Road), Latrobe Road, Michigan Bar Road, and Twin Cities Road (from State Route 160 east to Highway 99). SR160/River Road from the Contra Costa County line to the southern city limit of Sacramento is a state designated scenic highway (Sacramento County 2010). There are no county-designated scenic corridors within or adjacent to the plan area.

Light and Glare Sources

The unincorporated rural and agricultural areas of the county, which includes the plan area, are sparsely developed and used for agriculture. These rural land uses typically do not generate substantial amounts of glare, lighting, or illumination, and the ambient nighttime lighting and illumination levels are very low. Mobile light sources are generated by vehicles traveling on roadways.

Regulatory Setting

State

California Scenic Highway Program

California's Scenic Highway Program was created by the California Legislature in 1963 and is managed by the California Department of Transportation (Caltrans). The goal of this program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to highways. A highway may be eligible or officially designated "scenic" depending on how much of the natural landscape travelers can see, the scenic quality of the landscape, and the extent to which development intrudes on travelers' enjoyment of the view. There are no designated scenic highways in the immediate vicinity of the plan area (Caltrans 2023).

NIGHTTIME SKY – TITLE 24 OUTDOOR LIGHTING STANDARDS

The California legislature passed a bill in 2001 requiring the California Energy Commission (CEC) to adopt energy efficiency standards for outdoor lighting for both the public and private sectors. In addition to improved energy efficiency standards, Title 24 standards regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2010 Census. Areas can be designated as one of three lighting zones (LZs): LZ1 (dark), LZ2 (rural), or LZ3 (urban). Lighting requirements for dark and rural areas are stricter in order to protect the areas from new sources of light pollution and light trespass. Sacramento County Code designates the plan area as LZ2 in conformance with Title 24 zoning rules.

LOCAL

SACRAMENTO COUNTY 2030 GENERAL PLAN

The following 2030 General Plan policies are applicable to the project.

- **Policy LU-16.** Apply the "Community Design Guidelines" and design review authority to all long-range planning efforts, including but not limited to Specific Plans, Comprehensive Plans, Community Plans, and Commercial Corridor Plans.
- **Policy LU-17.** Support implementation of the design review program on a project-by-project basis to ensure that all development applications positively contribute to the immediate neighborhood and the surrounding community.
- **Policy LU-18.** Encourage development that complements the aesthetic style and character of existing development nearby to help build a cohesive identity for the area.
- **Policy LU-19.** Incompatible land uses should be buffered from one another by methods that retain community character, and do not consume large land areas or create pedestrian barriers.
- **Policy LU-20.** Planning processes for existing communities, commercial corridors and new growth areas shall provide for distinct and identifying physical elements, which may include: gateways, signage, public art, common site or street layout, shared design qualities of buildings or infrastructure, or prominent landmarks or destinations.
- **Policy LU-21.** Promote a better balance of employment, neighborhood services, and different housing types by reviewing development projects and the surrounding community and designing new projects wherever feasible so that they maintain or improve the mix of uses in the community.
- **Policy LU-23.** Providing compact, mixed use developments shall be an integral part of all master planning efforts for new growth areas and commercial corridors.

- **Policy LU-24.** Support private development requests that propose pedestrian- and transit-friendly mixed use projects in commercial corridors, town centers, and near existing or proposed transit stops.
- **Policy LU-94.** Use design review to ensure that new commercial and residential development projects are designed to be compatible with existing neighborhoods and improve quality of life.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community Plans relevant to the WJHMP are the Cordova Community Plan and the Vineyard Community Plan.

Cordova Community Plan

The Cordova Community Plan does not contain specific policies related to aesthetics.

Vineyard Community Plan

The Vineyard Community Plan does not contain specific policies related to aesthetics.

Sacramento County Zoning Code

Title 1 (General Provisions) of the Zoning Code contains standards requiring that illumination of buildings, landscaping, signs, and parking and loading areas be shielded and directed so that no light trespasses onto adjacent properties. Title III (Use Regulations and Development Standards) requires that lighting shall be directed away from residential areas and public streets so that glare is not produced that could impact the general safety of vehicular traffic and the privacy and well-being of residents.

Significance Criteria and Methodology

Significance Criteria

An aesthetics impact would be significant if implementation of the project would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of public views of the plan area and its surroundings; and/or
- Create a new substantial source of light and glare, which would adversely affect day or nighttime views in the area.

Issues Not Discussed Further

Substantial Adverse Effects on Scenic Vistas

A scenic vista is generally considered to be a location from which the public can experience unique and exemplary high-quality views—typically from elevated vantage points that offer panoramic views of great breadth and depth. The primary visual character of the site is that of undeveloped flat grasslands and mining excavations, with rural residences and limited development – including the existing racetrack. Views of the plan area are not unique in the eastern portion of the county and do not constitute a scenic vista. Impacts to scenic vistas are not discussed further in this EIR.

Substantial Adverse Effects on Scenic Resources within a State Scenic Highway

The plan area is not visible from a designated state scenic highway or county scenic corridor (Caltrans 2023). Therefore, the project would not result in damage to scenic resources within view of a state scenic highway or locally designated roadways. Impacts related to state scenic highways or county scenic roads would not occur and are not discussed further in this EIR.

Methodology

The US Department of Transportation, Federal Highway Administration (FHWA) developed a manual to aid in the preparation of visual assessments for highway projects. Although the project does not propose a highway, the key concepts established by FHWA apply to all visual settings and were used to help evaluate the visual character and quality of the region and the plan area. Many of these same key concepts are used to evaluate aesthetics in many contexts, including artistic compositions, architecture, and residential landscaping design. For the purposes of landscapes, the concepts of vividness, intactness, and unity define visual quality. Definitions of key terms and the project impacts to visual quality and character are described below.

- *Vividness* is a measure of the visual impression that remains in the memory of the viewer (e.g. Niagara Falls). Vivid visual experiences are striking and distinctive.
- *Intactness* is the visual integrity of the natural and built landscape. This represents the degree to which past or present actions within the viewshed have noticeably and unfavorably changed the view by introducing features which are incompatible or incongruent with the overall character of the viewshed.
- *Unity* refers to the pattern formed by connected landscape elements. A high degree of unity creates a harmonious visual pattern. This differs from “congruence” in that “unity” describes whether or not the combined visual elements within a viewshed have a noticeable pattern and cohesive composition, while “congruence” focuses on comparing individual elements. For instance, a cellular tower and a large industrial building would be consistent in character (congruent), but have very different shapes, massing, and overall appearance (not unified).

Visual character is derived from visual pattern elements and their dominance, scale (apparent size relationship), diversity, and/or continuity (uninterrupted flow of patterns). Visual pattern elements include form (visual mass or shape), line (silhouette), color, and texture (apparent coarseness). Although visual character and quality can be described objectively, there is no established official process that will identify all areas of high visual quality. Therefore, visual quality is often defined in part by viewer sensitivity. Viewer sensitivity is defined using the following criteria:

- visibility of resources in the landscape,
- proximity of viewers to the visual resource,
- elevation of viewers relative to the visual resource,
- frequency and duration of views,
- number of viewers, and
- types and expectations of individuals and viewer groups.

Viewer Groups

The visual experience is a combination of visual resources and viewer response. Different viewer groups respond differently to visual environments. The opinions or preferences of different groups depend on viewer activity and awareness, local values, and the cultural significance of the visual resources. Viewer activity affects the viewers' ability to perceive the landscape. Depending on the activity, a viewer may be attracted or distracted from the landscape. For example, a person reclining in a backyard ("Resident") or sitting on a bench will be encouraged to view the landscape, whereas a person driving along a road ("Motorist") on an errand will be distracted from the landscape and concentrate more on the road itself.

Viewer awareness also affects the viewer's receptivity to the landscape. Viewer awareness is affected by position, preconceptions, and recent visual experience. If viewer sensitivity is very high, any visible change in the area may be perceived as a negative effect. Typically, residents and recreational viewer groups are especially concerned about the appearance of their visual environment because their viewing experience is more than merely transitory. Perceived adverse visual impacts associated with a project typically occur not because of the quality of the project in question, but rather because of the substantial change in the nature of the view. Many viewers value undisturbed open space views much more highly than views of urbanized or developed property, however well-designed and visually balanced the development may be.

The following groups are likely to have views of the plan area: motorists on local roadways and residents of adjacent communities, including Rosemont and Independence at Mather. The visual character and availability of site views are similar from all viewing locations.

Impact Quantification Methodology

The FHWA guidance manual contains a numeric formula to quantify the change in visual quality. Each of the three primary characteristics (vividness, intactness, and unity) is given a numeric rating between 1 and 7 (from very low to very high). The following formula is then applied: (Vividness + Intactness + Unity)/3. The numeric difference between the existing visual quality and the proposed visual quality is a representation of the impact to a project site. Table 4-1 provides a basic explanation of some (not all) factors to take into account when applying the scale.

The perceived impact to the quality of a view is not a strict linear function. If a project resulted in a decrease of 2 points of visual quality, the degree to which viewers would be affected by that decrease would depend on the initial quality of the site. When a site is considered of high visual quality, even small decreases in the quality are much more noticeable and remarked on. However, when a site is only of moderate or low visual quality, observers do not tend to be as affected by the change. The significance of a decrease in visual quality will also depend on how often and for how long the site will be viewed.

Table 4-1 Evaluation Scale

Scale	Vividness	Human-made development	Encroachments or Eyesores	Unity/Intactness
7	Very High	None	None	Very High
6	High	Little	Few	High
5	Moderately High	Some	Some	Moderately High
4	Average	Average	Average	Average
3	Moderately Low	Moderately High	Several	Moderately Low
2	Low	High	Many	Low
1	Very Low	Very High	Very Many	Very Low

Source: Prepared by Ascent in 2024.

Representative Viewpoints

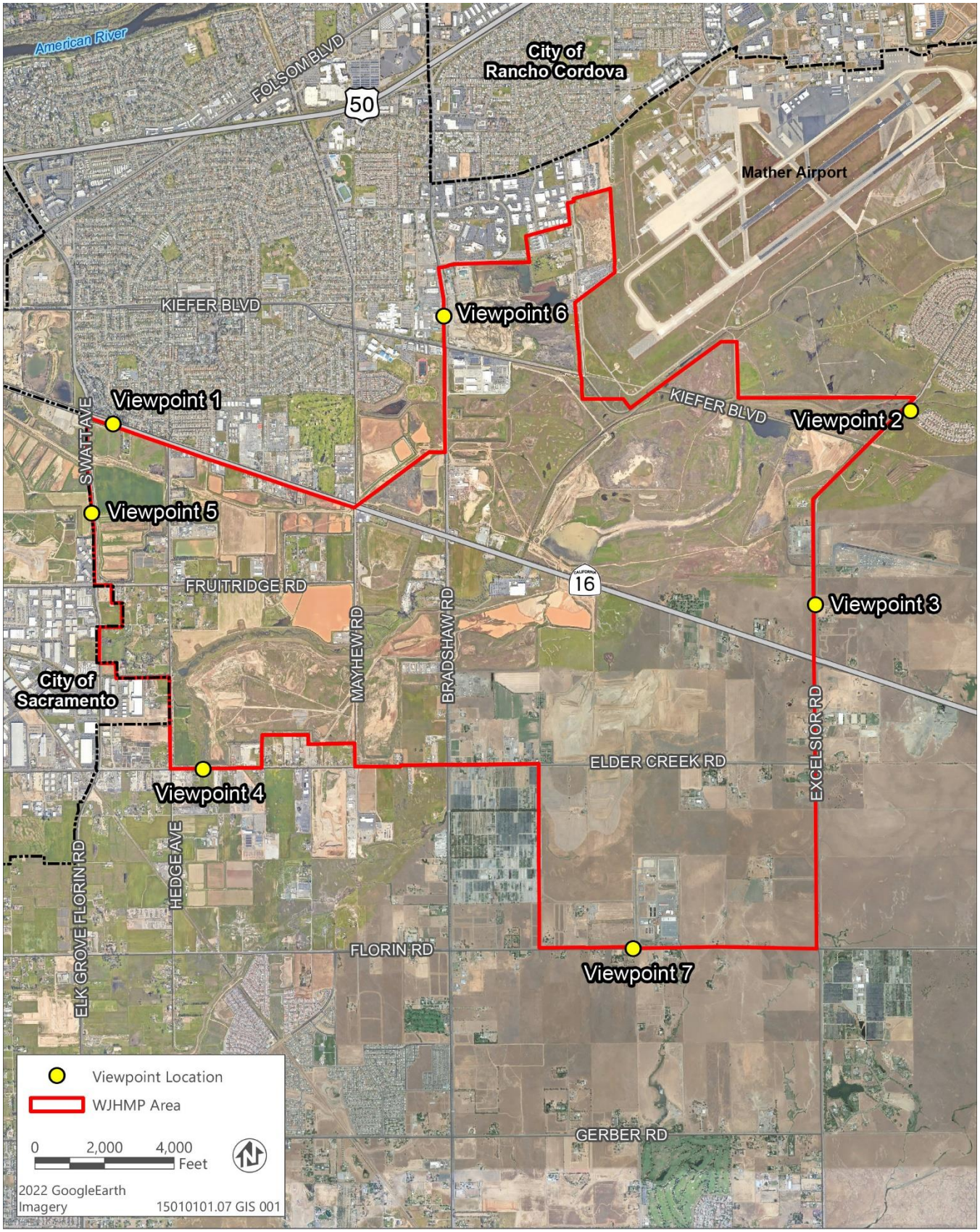
For the purpose of the following analysis, seven viewpoints were identified that represent predominate public views of the plan area (Figure 4-1):

- Viewpoint 1: Jackson Highway (near South Watt Avenue) looking east and west. This represents typical views along the most heavily traveled thoroughfare in the plan area (Figures 4-2a and 4-2b).
- Viewpoint 2: Excelsior Road looking southwest, representing the closest point of the Independence at Mather residential community (Figure 4-2c).
- Viewpoint 3: Excelsior Road looking west, representing the rural landscape of the plan area (Figure 4-2d).
- Viewpoint 4: Elder Creek Road looking north, representing open grasslands and mining areas from rural residences (Figure 4-2e).
- Viewpoint 5: South Watt Avenue looking north and south, representing an existing mining area near the western boundary of the plan area that is screened by motorists as a result of thick vegetation (Figures 4-2f and 4-2g).
- Viewpoint 6: Bradshaw Road looking north and south, representing an existing mining area in the northern boundary of the plan area that is screened by motorists as a result of thick vegetation (Figures 4-2h and 4-2i).
- Viewpoint 7: Florin Road looking north, representing rural residential near the southern boundary of the plan area (Figure 4-2j).

West Jackson Highway Master Policies

The WJHMP includes the following policies related to aesthetics.

- **Policy 6.22.** Trees, shrubs and other landscape elements may be used to create a shaded environment that will act as a visually attractive background for neighbors that will be located below grade. This will also provide an appealing and shaded environment for those using slope roadways, trails, and connections.
- **Policy 6.27.** A tree planting plan shall accompany all tentative map applications and can be provided in the form of a conceptual landscape plan.
- **Policy 6.28.** Conceptual landscape plans required as part of Policy 6.27 shall be implemented through the use of landscape drawings for street trees that are reviewed and approved through the improvement plan process. Street tree plantings shall consider and detail the use of appropriate street tree species for the Sacramento region and take into account tree size, spacing, water use, and potential utility conflicts at maturity.



Sources: Adapted by Ascent in 2023.

Figure 4-1 Viewpoint Map

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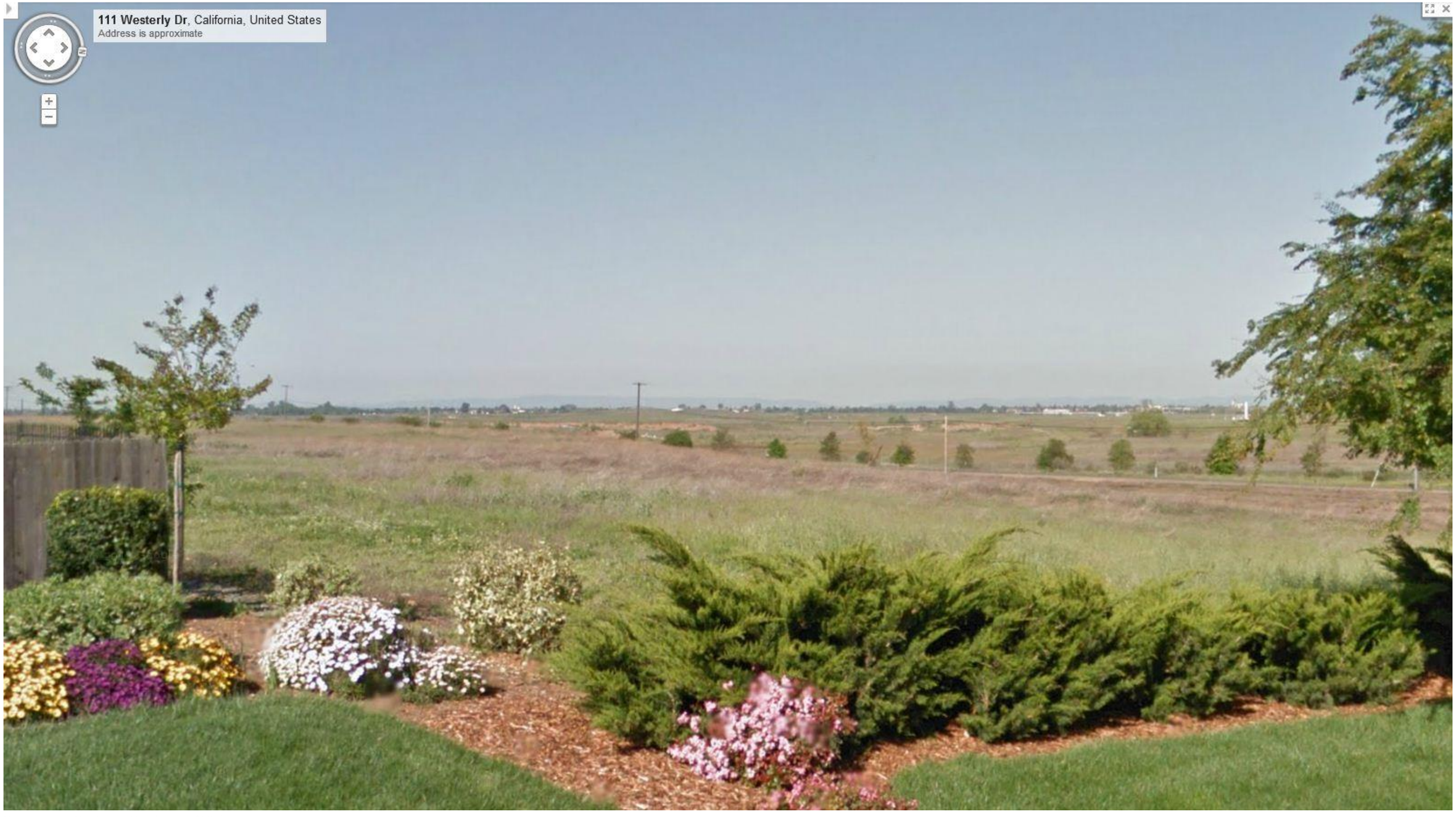
Source: Image Courtesy of Google Maps (2014).

Figure 4-2a Viewpoint 1-View from Jackson Highway Looking East



Source: Image Courtesy of Google Maps (2014).

Figure 4-2b Viewpoint 1-View from Jackson Highway Looking West



Source: Image Courtesy of Google Maps (2014).

Figure 4-2c Viewpoint 2-Independence at Mather Looking Southwest



Source: Image Courtesy of Google Maps (2014).

Figure 4-2d Viewpoint 3-View from Excelsior Road Looking West



Source: Image Courtesy of Google Maps (2014).

Figure 4-2e Viewpoint 4-View from Elder Creek Road Looking North



Source: Image Courtesy of Google Maps (2014).

Figure 4-2f Viewpoint 5-View from South Watt Avenue Looking West (Northbound)



Source: Image Courtesy of Google Maps (2014).

Figure 4-2g Viewpoint 5-View from South Watt Avenue Looking West (Southbound)



Source: Image Courtesy of Google Maps (2014).

Figure 4-2h Viewpoint 6-View from Bradshaw Road Looking East (Northbound)



Image Courtesy of Google Maps (2014).

Figure 4-2i Viewpoint 6-View from Bradshaw Road Looking East (Southbound)



Image Courtesy of Google Maps (2014).

Figure 4-2j Viewpoint 7-View from Florin Road Looking North

IMPACTS AND ANALYSIS

IMPACT AE-1: DEGRADATION OF EXISTING CHARACTER OR QUALITY OF PUBLIC VIEWS OF THE PLAN AREA AND ITS SURROUNDINGS

JACKSON HIGHWAY VIEWER GROUP (VIEWPOINT 1)

Near this viewpoint there are residences on the north side of Jackson Highway that potentially have views into the plan area. However, dense landscaping along the north side of the roadway has blocked views into the plan area for many of the residents. Also, some multifamily residences near the Jackson Highway/South Watt Avenue intersection are set back from the roadway. For this reason, the major viewer group for Viewpoint 1 is travelers along Jackson Highway, with a high rate of travel that limits the duration of the motorists' views of the plan area.

From this viewpoint, views of the plan area are obscured by trees, shrubs, a man-made berm, and chain link fencing along Jackson Highway. There are also utility poles and overhead electric wires along the roadway that detract from the view of the sky. Visual breaks in the screen landscaping and fencing show a background landscape that has been extensively modified by human activity. There are visible mining floors and slopes in the background landscape, but yellow and green grasses have softened these features. Trees and transmission towers can also be seen in the distance.

The foreground of screen trees and shrubs provides a certain amount of unity for this view. However, the chain link fence, utility pole and overhead electric wires detract from the view's intactness because of their incongruence with the screen landscaping. These man-made features are straight and angular while the landscaping has curves and generally round shapes. Existing condition vividness is rated 2 (low), unity is rated 3 (moderately low), and intactness is rated 2 (low), for an average rating of 2 (low).

The project would improve the visual quality and characteristics of this view by providing street trees, decorative trees and shrubs that contribute to a cohesive and unified landscape design, and by removing the chain link fence, utility poles and overhead wires. The grasses in the background view would be replaced by rooftops and trees that are located 20 to 25 feet below the elevation of the viewpoint. Due to the lack of hills in this portion of the unincorporated county, this view of rooftops and trees (and lighting during night) from a higher elevation would be unique for this area. With project buildout, vividness would be rated 4 (average), while unity would be rated 5 (moderately high), and intactness would be rated 4 (average), for an average rating of 4 (average). Because the existing view from this viewpoint has low visual quality, changes that the project would make to this viewshed would have minimal effect on the viewer group.

Independence at Mather Viewer Group (Viewpoint 2)

The primary viewer group for this viewpoint is motorists on Excelsior Road, with a rate of travel that limits motorists' views of the plan area. The views from Excelsior Road include green and yellow grassland on slightly rolling hills with trees planted at regular intervals along the roadway in the foreground and scattered trees in the background. In the foreground there is a chain link security fence running parallel to Excelsior Road, but this fence does not detract from the visual attractiveness of the view because it is 25 to 30 feet from the roadway. In the background, transmission line towers can be seen in the distance. The towers and security fence do not dominate the viewshed because the towers and the fence's posts are quite narrow and spaced far apart and are a small portion of the entire viewshed.

The primary visual breaks in this view are the street trees, the chain link fence and the transmission towers. Nonetheless, the overall impression is still one of openness and continuity; the views are highly intact – meaning that there are few unattractive or negative encroachments in the view. Drivers pass by the site quickly and their focus is on the roadway and the periphery, so it is doubtful that most drivers notice the towers or the chain link fence as they pass. The grasslands appear to continue unbroken into the horizon. Though unified and intact, the uniformity of the view means that it is not particularly vivid. One cannot distinguish the plan area from the surrounding grasslands – there is nothing particularly memorable or striking. Existing condition vividness is rated 2 (low), while unity and intactness are rated 6 (high), for an average rating of 5 (moderately high).

The project would remove the illusion of continuity – that is, the illusion that the grasslands continue unbroken up into the horizon – both due to the introduction of the structures themselves, and because of the substantial changes in the color and texture of the viewshed. The project would introduce hard, angled shapes into an area that previously appeared smooth, and will introduce a wider array of color into an area that was previously uniform. Though this will increase the diversity of the view, the loss of continuity and the sense of open space have the potential to significantly and negatively impact the quality of the views. However, the completed project would provide landscaping along Excelsior Road. Due to these decorative features, project condition vividness would be rated 5 (moderately high), intactness would be rated 4 (average), and unity would be rated 2 (low), for an average rating of 3 (moderately low).

Excelsior Road Viewer Group (Viewpoint 3)

In the existing condition, the views from residences along Excelsior Road east of the plan area include flat and open grassland against the backdrop of scattered trees and white buildings in the distance. The primary visual break in the landscape is a cluster of trees at a church site. This collection of trees is particularly dominant in the landscape during the late summer because the trees are tall, dark green, and rough-textured while the majority of the viewshed is taken up by smooth-textured, low-profile, and wheat-colored grasslands. During the winter the contrast is not as high and, thus, the trees are not as dominant. The grouping of trees detracts from the visual quality and character of the view because they are so unique and dominant in the landscape that they are not unified with the rest of the view. The trees draw the eye of the viewer somewhat away from the whole.

The landscape in this view gives an overall impression of openness and continuity but the intactness is broken up by some man-made features. The view includes overhead transmission lines that run parallel with the roadway. The higher wires are thin and light colored and, thus, their visual impact is minimal, but the lowest wire is thick and black and very visible to residences at this viewpoint. This transmission line directs the eyes of the observer away from the landscape to the thick and black wire. However, long-time residents who live at this viewpoint may no longer be aware of the transmission lines. They may be acclimated to the overhead lines just as those who live near an airport get acclimated to airplane noise. Other encroachments include some fencing in the grassland, utility poles along the roadway, and the road itself.

Though the landscape in this view is unified and intact (if one ignores the transmission lines and utility poles), one cannot distinguish the plan area from the surrounding grasslands – there is nothing particularly memorable or striking. Existing condition vividness is rated 2 (low), while unity and intactness are both rated 6 (high), for an average rating of 5 (moderately high). These scores are assuming that the residents have become acclimated to the overhead wires.

The project would introduce hard, angled shapes into an area that previously appeared smooth, and would introduce a wider array of color into an area that was previously quite uniform. Though this would increase the diversity of the view, the loss of continuity and the sense of open space have the potential to significantly and negatively impact the quality of the views. However, the project landscaping along Excelsior Road would give an element of unity to the view, which is typical of landscape plans designed by landscape architects. Project condition vividness would be rated 5 (moderately high), intactness would be rated 1 (very low), and unity would be rated 2 (low), for an average rating of 3 (moderately low).

This viewer group is anticipated to be sensitive to any changes the project makes to the viewshed, even with the continued presence of the transmission lines. There are three reasons for this sensitivity: in the existing condition the entire site is visible, the viewers are relatively close to the site, and the viewpoints are from residences. Residents usually consider the surrounding views to be part of their property and are thus more protective of existing scenic views. Residents also observe views for much longer periods of time, and during times of relaxation and enjoyment when scenic resources are typically more appreciated. However, as noted above, the evaluation of environmental effects in non-urbanized areas under CEQA is focused on public views of the plan area and surroundings.

ELDER CREEK ROAD VIEWER GROUP (VIEWPOINT 4)

In the existing condition, the viewshed from residences along Elder Creek Road south of the plan area include shrubs, chain-link security fence, utility poles and overhead lines in the foreground and a landscape of flat open grassland and distant clusters of trees in the background. A portion of the grassland has been cleared by tractors with exposed dirt that is visible to the residences. The visual extent of this grassland is not limitless – as one travels a short distance eastward on Elder Creek Road, the landscape alters significantly to become the jagged slopes and flat floors of a mining excavation pit. There is nothing memorable or striking in this view as open grasslands and mining areas are common sights in the plan area.

Looking northwestward from the viewpoint, the grassland and trees give an overall impression of openness and continuity which contribute to the unity of the view. However, this overall impression is lost when one looks in a different direction from the viewpoint (northeastward) where the landscape of flat grassland and trees gives way to the exposed floors and slopes of a nearby mining pit. Thus, this view's unity that has been provided by the open grassland has been negatively impacted by human activity. The view's intactness has been broken up by various man-made features. This includes the utility pole, which has the most visual impact due to its stark verticalness, the chain-link fence, and the overhead wires. There is also a row of transmission towers, but their impact is reduced by their distance from this viewpoint. Existing condition vividness is rated 1 (very low), unity and intactness are rated 2 (low) as well, for an average rating of 2 (low).

Similar to Viewpoint 1, the project would improve the visual quality and character of this view of the plan area by providing street trees, landscaping, and decorative fencing along the roadway, which would contribute to a unified and cohesive landscape design. A decorative 6-foot-high masonry wall would be provided along the landscape corridor and would replace the chain-link fence. The existing background landscape would undergo major changes, with grasslands and mining areas replaced by houses and trees. The project would introduce hard, angled shapes into an area that previously appeared smooth, and would introduce a wider array of color into an area that is now quite uniform. With implementation of the project, it is anticipated that vividness would be rated 5 (moderately high), intactness would be rated 1 (very low), and unity would be rated 2 (low), for an average rating of 3 (moderately low). Because the existing view from this viewpoint has low visual quality, changes that the project would make to the view from this viewshed is anticipated to have minimal effect on residents. However, as noted above, the evaluation of environmental effects in non-urbanized areas under CEQA is focused on public views of the plan area and surroundings.

South Watt Avenue Viewer Group (Viewpoint 5)

The primary viewer group for this viewpoint is motorists traveling along South Watt Avenue. This viewpoint along South Watt Avenue is another viewpoint that has a view into a mining area. Like other similar viewpoints, the viewshed is dominated by screen landscaping. A chain-link fence along the roadway detracts from the visual quality and character of this view but the existing screen landscaping is visually attractive with a variety of textures, shades, and shapes. Trees closest to the roadway are planted at regular intervals in front of dense foliage of trees and shrubs. There are no breaks in the screen landscaping and, thus, the background landscape is not visible from this viewpoint.

All of the components of this view are provided by the landscaping along the roadway. The existing screen landscaping provides unity for this view, but this view's intactness is broken by the chain-link fencing. The straight lines of the fence posts are incongruent with the curves and roundness of the trees and shrubs. Unlike Viewpoints 1 and 4, there is no utility pole or overhead wires to detract from the view's attractiveness. Though this view is a good example of attractive screen landscaping, there is nothing memorable or striking in this view due to the presence of similar views throughout the plan area. In addition, South Watt Avenue is a multi-lane roadway with a rate of travel that limits

motorists' views of the plan area. Existing condition vividness is rated 2 (low), unity is rated 5 (moderately high), and intactness is rated 2 (low), for an average rating of 3 (moderately low).

The project would provide street trees, landscaping and security fencing along South Watt Avenue that would provide some unity to this viewshed. The proposed street trees, decorative trees, and shrubbery would contribute to a unified and cohesive landscape design. The chain-line fencing adjacent to the Watt Avenue right of way would be replaced with fencing associated with the development. Urban development of predominantly residential buildings would occur beyond the landscaping, but these buildings would not be visible to travelers along South Watt Avenue. The buildings would be at an elevation 20 to 25 feet below the roadway and would be two stories or less. Project condition vividness is rated 4 (average), intactness is rated 1 (low), and unity is rated 4 (average); for an average rating of 4 (average).

Bradshaw Road Viewer Group (Viewpoint 6)

The primary viewer group for Viewpoint 6 are motorists on Bradshaw Road, which is a north-south roadway that crosses through the WJHMP area. Bradshaw Road is a multi-lane roadway with a rate of travel that limits motorists' views of the plan area. The view from Viewpoint 6 is from Bradshaw Road, north of Jackson Highway. This view is similar to those at Viewpoints 1 and 5 where landscaping used to screen mining areas is the predominant feature. The blooming oleanders in the background and the green shrubbery in the foreground provide a certain amount of unity to this view but the view's intactness has been reduced by a palm tree next to the roadway and the chain link fence. The mining and construction material processing areas beyond the landscaping are not visible to travelers along Bradshaw Road because there are no breaks in the screen landscaping. Like the view from Viewpoint 5, this view is a good example of attractive screen landscaping but there is nothing memorable or striking to this view due to the presence of similar views throughout the plan area. Existing condition vividness is rated 1 (low), intactness is rated 4 (average), and unity is rated 5 (moderately high); for an average rating of 3 (moderately low).

The project would provide a landscaped corridor along Bradshaw Road with trees, shrubbery, and a pedestrian walkway. The proposed landscaping along Bradshaw Road would have a unified and cohesive design. According to the project's land use plan, there would be a commercial center along this stretch of Bradshaw Road on land that was raised to the level of the roadway grade after the conclusion of mining activity. The buildings of the commercial center and the landscaping along Bradshaw Road will increase the view's diversity by introducing angled shapes into an area that previously appeared smooth and will introduce a wider array of color into an area that was previously quite uniform. In the project condition, vividness would be rated 5 (moderately high), intactness would be rated 1 (very low), and unity would be rated 2 (low); for an average rating of 3 (moderately low).

Florin Road Viewer Group (Viewpoint 7)

In the existing condition, the views from residences along Florin Road, south of the plan area include the flat grassland of the site against the backdrop of scattered trees and buildings. The primary visual breaks in this view are a cluster of large white buildings with red roofs, a utility pole along the roadway and an overhead utility line. There are also utility poles and a cellular tower in the distance.

The overall impression of this view is one of openness and continuity; the views are highly intact – meaning that there are few unattractive or negative encroachments in the view. The utility poles, cellular towers, and the cluster of white buildings do not dominate the viewshed because the poles and tower are thin and the white buildings are on the view's periphery. The only dominating man-made feature in the viewshed is the overhead electric line. Similar to Viewpoint 3, the overhead line could potentially be visually intrusive to residents at this viewpoint, but there is the possibility that residents have been acclimated to the overhead line.

Though the view may appear unified and intact, particularly if one is acclimated to the overhead electric line, the view may not be particularly vivid. One cannot distinguish the plan area from the surrounding grasslands – there is nothing particularly memorable or striking. Existing condition vividness is rated 2 (low), while unity and intactness are both rated 6 (high), for an average rating of 5 (moderately high).

The project would introduce hard, angled shapes into an area that previously appeared smooth, and would introduce a wider array of color into an area that was previously quite uniform. Though this would increase the diversity of the view, the loss of continuity and the sense of open space have the potential to significantly and negatively impact the quality of the views. The proposed landscaping along Bradshaw Road would have a unified and cohesive design which would be the major element that would contribute to the view's unity. With project buildout vividness would be rated 5 (moderately high), intactness would be rated 1 (very low), and unity would be rated 2 (low), for an average rating of 3 (moderately low). Similar to Viewpoint 3, residents will be most sensitive to any changes the project would make to this viewshed for the reasons stated earlier, including increased observation duration. However, as noted above, the evaluation of environmental effects in non-urbanized areas under CEQA is focused on public views of the plan area and surroundings.

Summary of Viewshed Impacts

Views of the plan area for travelers on Jackson Highway, South Watt Avenue, and Bradshaw Road would be affected by implementation of the WJHMP. However, because views from these viewpoints are dominated by screen landscaping and security fencing for mining and construction material processing areas in the existing condition, the project would improve the visual quality of these views by providing street trees, decorative trees, and shrubbery along the roadway that would be part of a unified and cohesive landscape design. The chain link security fence which currently detracts from the viewshed's attractiveness would be removed. Therefore, although the character of the views would change, the overall quality of the views is anticipated to be improved for most viewers.

Table 4-2 provides a breakdown of the average rating as it relates to visual quality of each viewpoint and identifies the change in ratings of these viewsheds from existing conditions to post-project conditions. The overall change in visual quality is quantified based on the modification of the viewsheds from existing conditions to post-project conditions, and results in either a positive, negative, or unchanged average rating. In this case, a positive number concludes an improved change in visual quality, whereas a negative number concludes a decline in visual quality. Additionally, the table depicts the main view group from each viewpoint. Views from residences are not considered a public view, and as noted above, the evaluation of environmental effects in non-urbanized areas under CEQA is focused on public views of the plan area and surroundings.

Table 4-2 Average Rating of Visual Quality from Viewsheds

Viewshed	Existing	Post-Project	Overall Change	Viewer Group
Viewpoint 1	2	4	+2	Motorists
Viewpoint 2	5	3	-2	Motorists
Viewpoint 3	5	3	-2	Residents
Viewpoint 4	2	3	+1	Residents
Viewpoint 5	3	4	+1	Motorists
Viewpoint 6	3	3	0	Motorists
Viewpoint 7	5	3	-2	Residents

Source: Prepared by Ascent in 2024.

Open grassland is a dominant feature of views of the plan area from residences south of Elder Creek Road in the existing condition. The project would result in the loss of this grassland and the sense of openness and continuity that it provides. However, the other dominant feature of this viewshed is the open mining pit which detracts from the viewshed's attractiveness. Because the project would reclaim the mining pit for urban development and use landscaping and grading to conceal evidence of mining activity, the project would result in a net gain in the visual quality and character of this viewshed.

Views of the plan area from the southernmost residences of Independence at Mather include a wide expanse of grassland, but portions of this grassland have been affected by mining activity. Also, background structures detract from the view's visual attractiveness. For this reason, there would be no net loss in visual quality after urban development occurs in this portion of the plan area.

The viewshed's overall impression of openness and continuity would be replaced by a large urban development that would introduce hard, angled shapes into an area that previously appeared smooth, and would introduce a wider array of color into an area that was previously quite uniform. Though this would increase the diversity of the view and thereby affect the overall visual character of the plan area, the loss of continuity and impression of openness would also impact the quality of the views. These impacts are due to the placement of a large urban development in an area currently dominated by open space; the impact is not due to any particular feature or features that could be changed.

While the project includes adoption of design guidelines and development standards and would implement a cohesive landscaping program to ensure an attractive new development that would integrate the new uses, the change in visual character would be permanent and drastic, regardless of whether or not the new development community would be visually appealing. To sensitive viewer groups, particularly area residents, this could be perceived as a substantial degradation. This would be a significant impact. Besides design guidelines and policies that would guide the visual characteristics of development, including but not limited to landscaping, building design standards, setbacks, and massing, which are already required for the project, no other feasible mitigation is available to reduce the magnitude of visual changes that would occur. Therefore, this impact would be **significant and unavoidable**.

MITIGATION MEASURES

No mitigation is available.

IMPACT AE-2: NEW SOURCES OF LIGHT OR GLARE

The project does not involve any elements with particularly reflective surfaces, and thus would not introduce a significant new source of glare. The project would, on the other hand, involve a substantial amount of new residential, commercial, employment, and industrial development that would include lighting sources such as streetlights and security lights. Nighttime lighting has been associated with negative human health impacts and ecological impacts. In humans, the primary effect is sleep disruption. Nighttime lighting is necessary for safety, for work productivity, and for recreation, but Title 24 and County Ordinances were instituted in recognition that excess lighting should be avoided.

The plan area is within a rural area that has minimal lighting and is designated as an LZ2 zone (low levels of ambient nighttime light). Because the plan area is in an LZ2 zone, the lighting restrictions will be more robust than if the plan area were in a more urban environment. For instance, Table 140.7-B of the 2022 Building Efficiency standards indicates that building entrances in an LZ2 zone are limited to 15 watts, while in an LZ4 (urbanized) zone the allowance is 21 watts (CEC 2022).

Most of the project would result in standard urban lighting systems with average light output, including porch lights and parking lot lights. Though there are existing restrictions that minimize the impacts of new lighting sources on existing nighttime conditions, the project would result in a substantial new source of light. Existing residents in the Rosemont community to the north (across Jackson Highway) and Independence at Mather to the northeast are accustomed to nighttime light sources. Existing residents to the east of Excelsior Road, to the south of Elder Creek Road, and to the south of Florin Road would likely be more disturbed by the new sources of light which may result in nighttime sleep disruption, however, it is assumed that residences will include window coverings (i.e. curtains, blinds, etc.) to reduce impacts from nighttime lighting. However, lighting, including adverse effects of glare and light trespass or spillover light are considerations addressed by the city through the site plan and design review process. All future development in the plan area would be subject to this review process, ensuring that the effects of glare and spillover light would be addressed.

Although the project introduces a substantial new source of light that may adversely impact views, there are existing regulations that would minimize lighting impacts. The project would, nonetheless, result in a significant impact related to new lighting sources. This impact is not due to any individual feature or features, but due to introducing a large urban development within a rural landscape. However, there are means available to further reduce the level of light pollution produced by the project.

The International Dark-Sky Association (IDA) is a world-recognized authority on nighttime lighting and light pollution. IDA operates a program which reviews and rates outdoor lighting fixtures, giving IDA-approved status to fixtures that minimize glare and light trespass. The IDA maintains a list of fixtures that have been approved. Pursuant to Mitigation Measure AE-2, future project applicants would be required to amend the WJHMP to include a requirement to use IDA-approved fixtures. Though feasible mitigation is applied, the project would generate a substantial new source of light; impacts would be **significant and unavoidable***.*

MITIGATION MEASURES

MITIGATION MEASURE AE-2: LIGHTING STANDARDS

The WJHMP shall be amended to require all lighting applications subject to the 2022 Building Efficiency Standards Section 140.7 during buildout, and as amended thereafter, to use fixtures approved by the International Dark Sky Association.

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5 AGRICULTURAL RESOURCES

INTRODUCTION

This chapter describes the existing agricultural resources within the plan area and analyzes possible impacts to agricultural resources that could occur as the result of the project. The discussion focuses on the impact of converting the designated Farmland in the plan area to non-agricultural uses, impacts related to Williamson Act contracts, and possible impacts to agricultural activities on adjacent lands. There is no forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined by Public Resources Code section 4526) within or near the plan area. As a result, effects of project implementation on forestry resources are not evaluated in this EIR.

A comment received from the Agricultural Commissioner in response to the Notice of Preparation (NOP) raised concern about the proximity of Village Nursery to proposed residential development and potential placement of the middle/high school site. Village Nursery has since permanently closed this location and is no longer considered a concern. Other nurseries that are located in the vicinity of the plan area are discussed in Impact AR-2 below. The NOP and comments received in response to the NOP are included in Appendix A.

ENVIRONMENTAL SETTING

The plan area is largely undeveloped. Established uses include grazing, aggregate mining and processing activities, and agricultural-residential homes. The entirety of the plan area is within the Urban Services Boundary (USB), and a small portion (approximately 69 acres) of the plan area is within the Urban Policy Area (UPA).

The plan area is designated for various land uses. The majority of the plan area is zoned for agriculture in the Sacramento County Zoning Code. As discussed further in Chapter 2, “Project Description,” and Chapter 15. “Land Use,” the plan area includes the following zoning designations: Agricultural 20 (AG-20) (91 acres), Agricultural 40 (AG-40) (39 acres), Agricultural 80 (AG-80) (1,090 acres), Agricultural 160 (AG-160) (918 acres), Agricultural-Residential 1 (AR-1) (114 acres), and Agricultural- Residential 2 (AR-2) (21 acres) (see Figure 2-8). There are no parcels in the plan area that are under Williamson Act contracts.

PROTECTED FARMLAND

FARMLAND MAPPING AND MONITORING PROGRAM DESIGNATION

The State of California maps and classifies farmland through the California Department of Conservation’s Farmland Mapping and Monitoring Program (FMMP). The goal of the FMMP, which typically updates maps every 2 years, is to document the location and

extent of California's agricultural resources so that they can be considered in the planning process. Although the FMMP typically prepares and maintains an automated map and data base system to record and report changes in the use of agricultural lands every 2 years on even numbered calendar years, the most current important farmland data that is available in Sacramento County is from 2020 (DOC 2024). Classifications are based on a combination of land use and soil characteristics and climate that determine the degree of suitability of the land for crop production. The classifications under the FMMP are as follows:

- *Prime Farmland* is defined by the state as "land with the best combination of physical and chemical features able to sustain long-term production of agricultural crops." Prime Farmland has the soil, quality, growing season, and moisture supply needed to produce sustained high yields. To be designated as Prime Farmland, the land must have been used for production of irrigated crops at some time during the four years prior to the mapping date.
- *Farmland of Statewide Importance* is defined by the state as "land similar to Prime Farmland that has a good combination of physical and chemical characteristics for the production of agricultural crops." This land has less ability to store moisture than Prime Farmland. In order for land to be designated as Farmland of Statewide Importance, it must have been used for production of irrigated crops at some time during the four years prior to the mapping date.
- *Unique Farmland* consists of lower-quality soils but is nonetheless used for production of the state's leading agricultural crops. Unique Farmland is usually irrigated, but may include non-irrigated orchards or vineyards in some climatic zones in California. To qualify for this designation, land must have been used for crops at some time during the four years prior to the mapping date.
- *Farmland of Local Importance* is determined by each county's board of supervisors and a local advisory committee. For Sacramento County, this classification refers to lands which do not qualify as Prime, Statewide, or Unique designation but are currently irrigated crops or pasture or nonirrigated crops; lands that would be Prime or Statewide designation and have been improved for irrigation but are now idle; and lands which currently support confined livestock, poultry operations, and aquaculture.
- *Grazing Lan*d is land which is suitable for grazing livestock. The minimum mapping unit for this category is 40 acres.
- *Urban and Built-Up Land* is defined as land occupied by structures at a density of at least one dwelling unit per 1.5 acres.
- *Land Committed to Nonagricultural Use* consists of existing land that has a permanent commitment to development but has an existing land use of agricultural or grazing lands.
- *Other Land* is not included in any other mapping category, common examples of which include low-density rural developments, brush, timber, wetland, and vacant and nonagricultural land surrounded by urban development.

According to the current (2020) California Department of Conservation's FMMP, the plan area contains roughly 49 acres of Prime Farmland, 459 acres of Farmland of Statewide Importance, 630 acres of Farmland of Local Importance, 1,014 acres of Grazing Land, and 9 acres of land designated as Unique Farmland (see Figure 5-1).

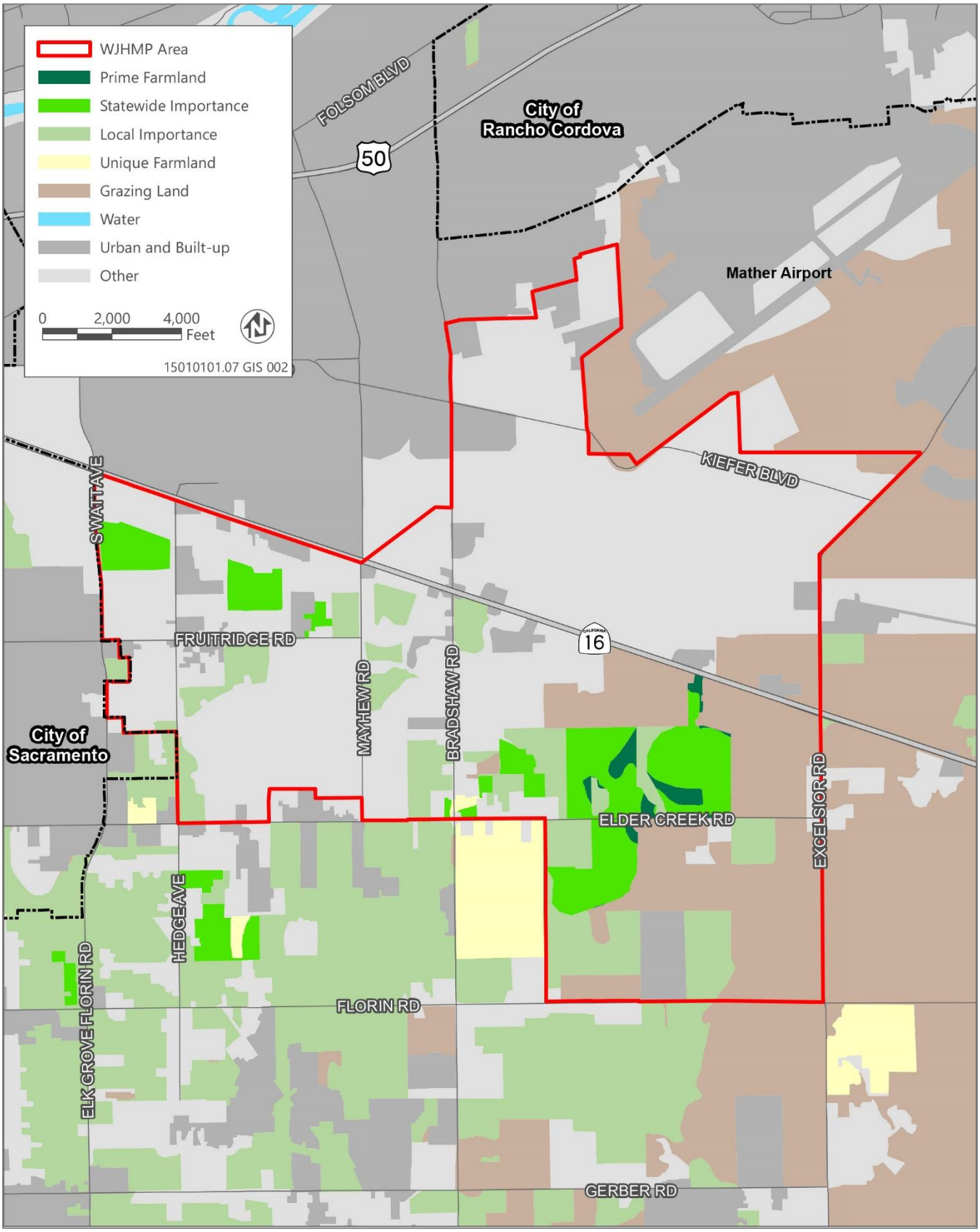
FARMLAND CONVERSION

Over the 6-year period from 2014 to 2020, the California Department of Conservation estimates that the total acreage of Important Farmland in Sacramento County decreased by approximately 1,371 acres annually, with notable losses to Prime Farmland and gains in Unique Farmland. Table 5-1 summarizes the acreages of agricultural land in Sacramento County between 2014 and 2020 (DOC 2016, 2020).

Table 5-1 Farmland Conversion in Sacramento County, 2014-2020

Land Use Category	Acreage by Category				Average Annual Acreage Change (2014 – 2020)
	2014	2016	2018	2020	
Prime Farmland	91,569	90,691	86,963	84,684	-1,147.5
Farmland of Statewide Importance	43,104	43,342	44,003	43,825	120
Unique Farmland	15,125	15,540	15,579	15,642	86
Farmland of Local Importance	58,852	57,910	55,049	56,275	-429.5
Important Farmland Subtotal	208,650	207,483	201,594	200,426	-1,371
Grazing Land	153,454	153,174	149,987	147,789	-944
Agricultural Land Subtotal	362,104	360,657	351,581	348,215	-2,315
Urban and Built-Up Land	181,297	182,237	183,975	185,537	707
Other Land	74,558	75,069	83,619	85,437	1,813
Water Area	18,120	18,116	16,910	16,896	-204
Total Area Inventoried	636,079	636,079	636,085	636,085	-

Source: DOC 2016; 2020.



Source: data download from the CA Department of Conservation for Sacramento County for the year 2020.

Figure 5-1 Farmland Mapping and Monitoring Program Designations

REGULATORY SETTING

FEDERAL

There are no federal policies or regulations applicable to the analysis of agricultural resources.

STATE

FARMLAND MAPPING AND MONITORING PROGRAM

The California Department of Conservation's FMMP was established in 1984 to document the location, quality, and quantity of agricultural lands and conversion of those lands over time. The program provides impartial analysis of agricultural land use changes throughout California.

The FMMP is tasked with mapping and monitoring important farmlands for most of the State's agricultural areas. The maps are prepared based on soil survey information and land inventory and monitoring criteria developed by the US Department of Agriculture (USDA), Natural Resources Conservation Service. The minimum mapping unit used for all agricultural land categories except grazing land is 10 acres. The minimum unit for grazing land is 40 acres. Though the FMMP typically updates its farmland maps every 2 years based on information from local agencies and recent aerial photography, the most recent Sacramento County Important Farmland Map is dated 2020.

WILLIAMSON ACT

The Williamson Act, also known as the California Land Conservation Act of 1965, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. When the County enters into a contract with the landowners under the Williamson Act, the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least 10 years and the County agrees to tax the land at a rate based on the agricultural production of the land, rather than its real estate market value.

The plan area does not contain any properties under an active Williamson Act contract. However, there are parcels in active Williamson Act contracts in the vicinity, primarily south of Jackson Highway.

PUBLIC RESOURCES CODE

The CEQA Statute, Public Resources Code Section 21060.1, defines "agricultural land" as: Prime Farmland, Farmland of Statewide Importance or Unique Farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California.

LOCAL

SACRAMENTO COUNTY 2030 GENERAL PLAN

The following policies of the 2030 General Plan are applicable to the project:

- **Policy AG-3.** The County shall permit agricultural uses on buffers, provided such uses are conducted in a manner compatible with urban uses. Buffers shall be used to separate farming practices incompatible with adjacent urban uses. Any homeowners' association or similar entity within the development shall assist in determining compatible use. Buffers shall not adversely conflict with agricultural uses on adjoining property.
- **Policy AG-4**. Prospective buyers of property adjacent to agricultural land shall be notified through the title report that they could be subject to inconvenience or discomfort resulting from accepted farming activities as per provisions of the County's right-to-farm ordinance.
- **Policy AG-5.** Projects resulting in the conversion of more than fifty (50) acres of farmland shall be mitigated within Sacramento County, except as specified in the paragraph below, based on a 1:1 ratio, for the loss of the following farmland categories through the specific planning process or individual project entitlement requests to provide in-kind or similar resource value protection (such as easements for agricultural purposes):
    - prime, statewide importance, unique, local importance, and grazing farmlands located outside the USB;
    - prime, statewide importance, unique, and local importance farmlands located inside the USB.

    The Board of Supervisors retains the authority to override impacts to Unique, Local, and Grazing farmlands, but not with respect to Prime and Statewide farmlands. However, if that land is also required to provide mitigation pursuant to a Sacramento County endorsed or approved habitat conservation plan (HCP), then the Board of Supervisors may consider the mitigation land provided in accordance with the HCP as meeting the requirements of this section including land outside of Sacramento County.

    Note: This policy is not tied to any maps contained in the Agricultural Element. Instead, the most current Important Farmland map from the Department of Conservation should be used to calculate mitigation.
- **Policy AG-6.** If a property owner is required to mitigate for the loss of farmland under Policy AG-5, and the approved master plan or community plan includes land permanently set aside for an urban farm, a 1:1 farmland credit will be given to projects that incorporate urban farming within the project that permanently preserves farmland. Urban farms may qualify for credit for the proposed master plan or community plan and will be considered as part of the master plan or community plan process subject to the following criteria:

- The required minimum urban farm size to qualify for the credit shall be at least 5 acres.
- Only land that is fully available for farming shall count towards the credit. Ancillary facilities such as education buildings, farmer's markets, and parking areas shall not be included in the acreage calculation.
- Community gardens shall not count toward the credit.
- The zoning shall be a permanent agricultural zone, or similar zone, that ensures the permanency of the agricultural use.
- An appropriate source of water shall be identified and provided.
- A permanent agricultural easement shall be recorded over the site. The agricultural easement shall be dedicated to the County of Sacramento or an organization approved by the County to preserve the farmland.
- If there is a separate farm management entity, a recorded farming management agreement shall be required between the landowner and the farm manager.

Any reversion to a non-farming use on an urban farm site that received farmland credit shall trigger farmland mitigation regardless of the size. The mitigation shall be equivalent to the mitigation required at the time of the original project approval. In addition, the mitigation shall be based on the farmland category at the time of original project approval; however, in the event the farmland category has been upgraded to a higher category as shown on the latest Important Farmland Map from the Department of Conservation, that farmland category shall be used as the basis in determining equivalent mitigation.

- **Policy AG-9.** Agricultural land divisions shall not adversely affect the integrity of agricultural pursuits. Agricultural land divisions may be denied if the reviewing authority finds that the division of land is likely to create circumstances inconsistent with this policy.
- **Policy CO-51.** Direct development away from prime or statewide importance farmlands or otherwise provide for mitigation as required by AG-5 slowing the loss of additional farmland conversion to other uses.
- **Policy CO-52.** Recreational uses shall not be constructed on prime, statewide importance, unique or local farmland outside of the Urban Services Boundary where the use would impede agricultural practices.

Community Plans

Community Plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and the Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan does not contain objectives related to agricultural resources that would apply to the project.

VINEYARD COMMUNITY PLAN

- **Policy AG-1.** Support agriculturally compatible development proposals.
- **Policy AG-4.** Recognize and support the necessity and desirability of agricultural land allocation and uses as legitimate and appropriate in the Vineyard Community.
- **Policy AG-5.** Solicit input and participation from Vineyard ranchers and farmers on all land use matters.

SACRAMENTO COUNTY ZONING CODE

The Agricultural Land Use Zone is designed to promote and protect the public health, safety, and general welfare within Sacramento County.

In general, the agricultural land use zone is designed to:

- Eliminate encroachment of incompatible land uses on agricultural lands;
- Preserve the supply of agricultural land in order to conserve the County's economic resources;
- Discourage premature and unnecessary conversion of agricultural land to urban uses;
- Preserve agricultural lands as open space and for production of agricultural products so as to preserve an important physical, social, esthetic and economic asset of the residents of the County; and
- Encourage retention of large agricultural lots to assure viable agricultural units.

SACRAMENTO COUNTY CODE 14.05 (AGRICULTURAL ACTIVITIES)

Sacramento County has adopted a right-to-farm ordinance to provide legal assurance that established agricultural operations are allowed to continue, and to inform residents of areas zoned or designated for agriculture that they may be subject to inconvenience or discomfort resulting from accepted agricultural operations. This ordinance does not, however, prevent residents of farming areas from complaining about such inconvenience or discomfort.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

An agricultural resources impact would be significant if implementation of the project would:

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- conflict with existing zoning for agricultural use or a Williamson Act contract; or
- involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

In addition to the CEQA Guidelines criteria for significance of farmland loss, General Plan Policy AG-5 defines a substantial farmland loss as 50 acres. The State CEQA Guidelines indicate that loss of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland may be a significant impact, but the General Plan further includes Farmland of Local Importance and Grazing Land – though in the case of Grazing Land, the threshold specifically applies only to such lands which occur outside of the USB.

ISSUES NOT DISCUSSED FURTHER

CONFLICT WITH WILLIAMSON ACT ZONING

There are no active Williamson Act contracts within the plan area, or adjacent to the plan area. There are parcels in active Williamson Act contracts in the vicinity, primarily south of Jackson Highway, but none directly adjacent to the plan area. Because no Williamson Act parcels are located within or adjacent to the plan area, implementation of the project would not result in conflicts with Williamson Act contracts, and there would be no impact on Williamson Act properties.

METHODOLOGY

The following evaluation of potential impacts associated with agricultural resources is based on a review of planning documents, including policies of the 2030 General Plan, field reviews, and maps. The impact assumes that the entire plan area would be developed consistent with the Land Use Plan, although there are a few areas within the plan area that may continue existing land uses for the time being, including some small rural residential parcels, institutional landowners such as the Elk Grove USD, religious organizations, and various industrial users on the non-participating properties.

The impact evaluation is based on the thresholds established in the State CEQA Guidelines and the mitigation requirements in 2030 General Plan Policy AG-5. Conversion of more than 50 acres of Farmland classified as Prime, Statewide

Importance, Unique, or Local Importance within the USB is considered a significant impact. Furthermore, Policy AG-5 specifies that mitigation calculations are based on the most current Important Farmland map prepared by the Department of Conservation. Therefore, the following analysis is based on the 2020 FMMP, which is the most current map publicly available.

Conversion of Farmland to Non-Agricultural Use

Mining projects have impacted extensive areas of Prime, Statewide Importance, Local Importance, and Unique Farmlands within the plan area. Many of the mining projects have mitigation measures and reclamation plans that require mining areas to be reclaimed back to agriculture and other uses upon completion of mining activities. Therefore, two methodologies are used to identify farmland conversion impact. The first methodology (Methodology 1) uses the most current FMMP map (as described in General Plan Policy AG-5) to identify existing farmland. The second methodology (Methodology 2) calculates impacted farmland acreage within mining projects with active reclamation plans. Methodology 2 takes into account future conditions that will exist after reclamation plans are implemented. Methodology 1 and Methodology 2 are described below.

Methodology 1

General Plan Policy AG-5 is used to identify impacts to farmland in non-mining areas, mining projects with closed reclamation plans, and mining projects that do not meet Methodology 2 criteria. Mining projects with closed reclamation plans in the project area are Aspen II, Aspen III, and Sacramento Aggregates 2. According to General Plan Policy AG-5, the most current Important Farmland map from the Department of Conservation should be used to calculate agriculture mitigation acreage. The 2020 FMMP map (Figure 5-1) is the most current map that is available at the time of preparing this document. Open space is not considered agricultural use in this analysis. If an area designed for open space and open space/urban farm is located on Prime, Statewide Importance, Local Importance, or Unique Farmlands, it would be considered as conversion of farmland to non-agricultural use.

Methodology 2

The most current FMMP map does not show farmland that has been impacted by active mining activities. However, mining reclamation plans required by Sections 3708 and 3711 of the State Mining and Geology Board's (SMGB) Reclamation Regulations provide the potential to restore farmland within mining areas. For this reason, Methodology 2 is used to assess impacts to farmland that are not shown in the most current FMMP. This methodology utilizes each active mining project's environmental document to determine whether farmland has been impacted by the mining project and whether the impacted farmland would need to be restored through a reclamation plan. Projects under this methodology were assumed to result in a temporary loss of farmland and contained mitigation to restore the project site to an equivalent level of farmland quality. Therefore, Methodology 2 assumes a future baseline condition where some previously impacted farmland in mining areas has been reclaimed to agricultural use consistent with previously adopted mitigation measures, conditions of approval, or

applicable SMGB regulations. The following criteria are used to determine whether reclaimed farmland within a mining project would be impacted by the project:

- a CEQA document was prepared for the mining project;
- the CEQA document states that the mining project would cause a significant impact to farmland;
- the CEQA document has mitigation measures, and the mining use permit has conditions of approval to reduce this impact to farmland; and
- to mitigate the loss of farmland caused by the mining project, the reclamation plan implemented mitigation measures identified in the CEQA document and conditions of approval.

The following steps are used to calculate the impacted farmland if a mining project meets the above criteria:

1. Determine on-site agricultural acreage required by the mining project's conditions of approval, mitigation measures or reclamation plan. This acreage presents the amount of farmland that would exist after the mining area is reclaimed for agricultural use.
2. Use the mining project's environmental document to identify the type of farmland (e.g., Prime, Statewide, etc.) and the acreages for each type. Because it is not possible to determine the type of farmland that would be present after the mining area is reclaimed, agricultural use conditions that existed before the commencement of mining activity were assessed. If the environmental document did not identify the type of farmland, the Farmland Map during the time of environmental document preparation is used for the assessment.

Table 5-2 summarizes the mining projects that are evaluated against the Methodology 2 criteria.

Table 5-2 Mining Projects Evaluated under Methodology 2

Mining Project	Criterion 1: Was a CEQA document prepared?	Criterion 2: Did the CEQA document identify potentially significant agriculture impact?	Criterion 3: Did CEQA mitigation measures and project conditions of approval include reclamation to agriculture?	Criterion 4: Did the project's reclamation plan implement CEQA mitigation measures and project conditions of approval?
Aspen V South Vineyard 1 Aspen III South Aspen IV South	**YES.** Morrison Creek Mining Reach Downstream (South) of Jackson Road EIR/EIS (94-0671)	**YES**. Land Use Impact #2: The proposed project would disturb 31 acres of Prime Farmland, 435 acres of Farmland of Statewide Importance, and 419 acres of Local Importance (*Significant Impact*) (p. 5-86 of Environmental Document)	**YES.** Mitigation Measure and Condition of Approval for Mining Projects: Prior to issuance of work authorization, the proponents shall prepare a plan for the preservation and salvage of topsoil resources suitable for sustaining economically viable agricultural uses, consistent with the performance standards set forth in Sections 3708 and 3711 of the State Mining and Geology Board Reclamation Guidelines (p. 5-89 of Environmental Document)	**YES.**
Aspen VI Granite 1 Aspen V, Va	**YES.** Morrison Creek Mining Reach Downstream (North) of Jackson Road EIR/EIS (89-1195)	**NO.** Loss of farmland not considered impact at time of CEQA document preparation.	**NO.**	**YES.**
Fairbairn South	**YES.**	**NO.** Loss of farmland land is not considered impact at time of CEQA document preparation	**NO.**	**NO.**

Source: prepared by Sacramento County in 2024.

There is one additional mining project that does not meet either methodology. The newest mining project, Aspen VIII/IX, has already mitigated the permanent conversion of a total of 355 acres of Farmland (39 acres of Prime Farmland, 225 acres of Farmland of Statewide Importance, and 91 acres of Farmland of Local Importance) and would not be subject to additional mitigation.

West Jackson Highway Master Plan Policies

The WJHMP includes the following policies related to agricultural resources.

- **Policy 6.20.** Urban Farms and agricultural uses may utilize portions of detention and retention basins as appropriate, subject to Clean Water Act and National Pollutant Discharge Elimination System (NPDES) requirements as applicable.
- **Policy 6.24.** Sloped areas may be utilized for agricultural production including urban farming and community gardens.

Impacts and Analysis

Impact AR-1: Convert Farmland to Non-Agricultural Uses

As shown in Figure 5-1, there are lands within the plan area that are designated Prime Farmland, Farmland of State Importance, Farmland of Local Importance, and Unique Farmland in the most current FMMP data. The impacted farmland acreage using the 2020 FMMP map is estimated and summarized in Table 5-3 below.

Table 5-3 Impacted Farmland Acreage Based on Department of Conservation Data under Methodology 1

Category	Prime Farmland	Farmland of State Importance	Farmland of Local Importance	Unique Farmland	Total
Non-Mining Area	13.86	205.20	422.82	6.45	648.33
Mining Projects with Closed Reclamation Plans	0	105.0	24.16	0	129.16
Mining Projects Do Not Meet Methodology 2 Criteria	0	0	0	0	0
Total	13.86	310.2	446.98	6.45	777.49

Source: prepared by Sacramento County in 2024.

In addition, there is land in the plan area that is not mapped because it does not currently meet the FMMP farmland definition due to active mining. As explained above, because these areas are subject to established mitigation agreements that would result in the ultimate restoration of the properties to their former agricultural uses, the available FMMP data has been augmented to reflect the ultimate restoration obligations of these

mining projects. As shown in Table 5-3, four mining projects with active reclamation plans meet the Methodology 2 criteria: Aspen III South, Aspen IV South, Aspen V South, and Vineyard 1. The estimated impacted farmland acreage resulting from these four mining projects is summarized in Table 5-4 below.

Table 5-4 Impacted Farmland Acreage on Reclaimed Mining Land under Methodology 2

Mining Project	Prime Farmland	Farmland of State Importance	Farmland of Local Importance	Unique Farmland	Total
Aspen III South	0.17	0.01	74.84	0	75.02
Aspen IV South	5.78	41.32	106.85	0	153.95
Aspen V South	0	124.84	84.03	0	208.87
Vineyard I	0	122.44	26.39	0	148.83
Total	5.95	288.61	292.11	0	586.67

Source: prepared by Sacramento County in 2024.

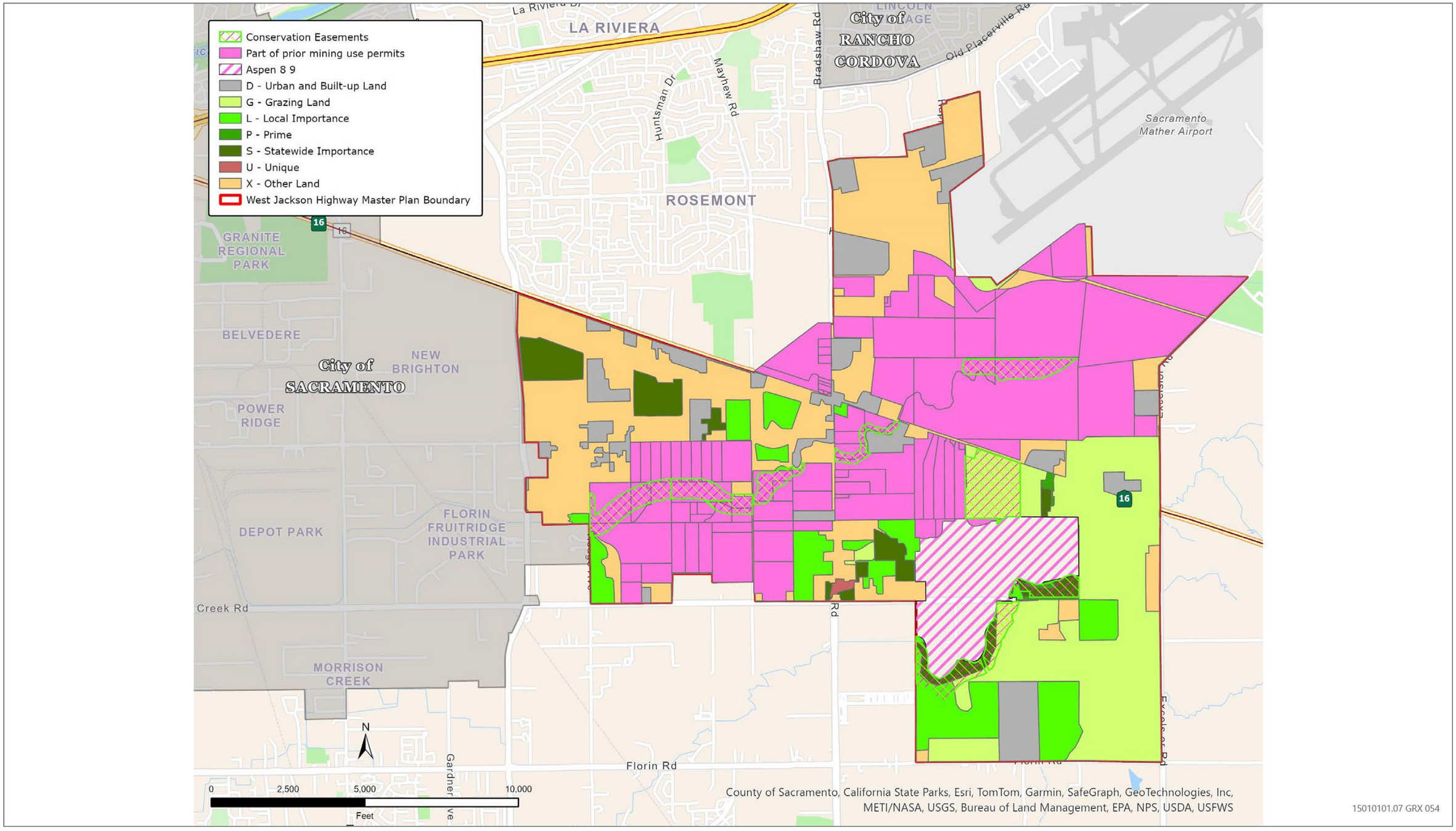
The total impacted farmland is estimated by combining the impacted farmland identified under Methodology 1 and Methodology 2. Table 5-5 summarizes the total impacted farmland. Figure 5-2 shows Prime, Statewide Importance, Local Importance, Unique Farmlands, and prior mining projects that have had various mitigation obligations within the plan area.

Table 5-5 Total Impacted Farmland Acreage under Both Methodology 1 and 2

Methodology	Prime Farmland	Farmland of State Importance	Farmland of Local Importance	Unique Farmland	Total
Methodology 1	13.86	310.2	446.98	6.45	777.49
Methodology 2	5.95	288.61	292.11	0	586.67
Total	**19.81**	**598.81**	**739.09**	**6.45**	**1,364.16**

Source: prepared by Sacramento County in 2024.

In total, implementation of the project would convert a total of 1,364.16 acres of Importance Farmland (19.81 acres of Prime Farmland, 598.81 acres of Farmland of State Importance, 739.09 acres of Farmland of Local Importance, and 6.45 acres of Unique Farmland) to non-agricultural use (see Table 5-5). Note that this evaluation assumes full conversion of the plan area to non-agricultural uses. Although the master plan includes approximately 393 acres of open space/urban farm designation, the master plan does not include specific requirements for development of the urban farmland and it is uncertain whether the urban areas would meet the farmland mitigation credit criteria described in General Plan Policy AG-6. Therefore, no reduction in total agricultural land compensation is assumed at this time.



Source: image provided by Sacramento County in 2024.

Figure 5-2 Important Farmland and Prior Mining Projects with Agriculture Mitigation in the Plan Area

Development within the plan area would be completed over a span of approximately 30 years. Therefore, it is estimated that approximately 45.5 acres of Important Farmland would be converted to non-agricultural use annually over the 30-year period. However, the overall conversion of the approximately 1,364 acres of Importance Farm as a result of the master plan implementation would be substantial according to the General Plan Policy AG-5 definition. Therefore, the project would result in a significant impact related to conversion of farmland to non-agricultural use.

Mitigation Measure AR-1 would require mitigation of farmland (Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Lands) at a 1:1 ratio, consistent with Policy AG-5 of the 2030 General Plan. However, even with this mitigation, the County recognizes that prime soils are a finite resource. When an area is permanently taken out of agricultural production, there has been a net loss of agricultural lands. Other agricultural lands may be preserved through compliance with mitigation, but new agricultural soils would not be created. There would be a substantial net-loss of agricultural production within Sacramento County as a result of the project, and impacts would be **significant and unavoidable**.

MITIGATION MEASURES

MITIGATION MEASURE AR-1: PRESERVATION OF FARMLAND

Prior to Sacramento County's approval of onsite grading permits or improvement plans within the portion of the Plan Area where Prime or Local Importance Farmland is impacted, whichever occurs first, the developers of the master plan shall demonstrate that adequate land has been set aside through participation in the South Sacramento Habitat Conservation Plan to offset the loss of Important Farmland within the portion of the Plan Area proposed for development. Acreage of land preserved shall, at a minimum, result in a 1:1 preservation ratio for the portion of the Plan Area under consideration. Farmland preservation can also be achieved through developing urban farms meeting the requirements identified in Sacramento County 2030 General Plan Policy AG-6.

IMPACT AR-2: RESULT IN CONVERSION OF FARMLAND TO NON-AGRICULTURAL USE DUE TO CONFLICT WITH EXISTING, ADJACENT AGRICULTURAL USE AND ZONING

Agricultural operations may create risks and nuisances for urban residences, schools, and businesses. Health risks and nuisances potentially created by agricultural operations in the plan area could include the following:

- exposure to pesticide and herbicide applications,
- exposure to smoke (from burning) and dust (from soil preparation),
- exposure to noise (from machinery and trucks),
- hazards to children (irrigation channels and ditches), and
- exposure to mosquitoes breeding in flooded fields.

Conversely, urban land uses and the associated population can create operational difficulties for agriculture. Negative effects of urban uses on agriculture could include the following:

- interference with agricultural operations (e.g., limitations on pesticide/herbicide applications, burning, operational hours);
- trespassing, vandalism, and theft because of the proximity of urban uses to agricultural areas; and
- land value impacts because of the proximity to urban areas which tends to increase land values in anticipation of future urban development. This increase reduces the probability that farmers would make long-term investments to maintain the productive potential of the land.

As shown in Figure 2-8, there are areas zoned for agricultural activity within and outside of the plan area. Existing uses of these areas include cropland along Elder Creek Road within the plan area. In addition, there are two nurseries in proximity to the plan area boundary (Matsuda's Nursery and Golden State Growers). Matsuda's Nursery is located on Florin Road east of the intersection of Florin Road and Excelsior Road. Golden State Growers is located on Elder Creek Road northwest of the intersection of Elder Creek Road and Hedge Avenue. Matsuda's Nursery is approximately 900 feet away from FPA C. Golden State Growers is approximately 900 feet away from the southwestern corner of the plan area. The southwestern corner of the plan area is designed for commercial use, mixed use, parkland, and open space.

Although proposed changes to the existing zoning designations would not occur in conjunction with adoption of the master plan, it is assumed that the plan area would be rezoned in the future to be consistent with the land use designations established in the WJHMP (refer to Table 2-1 in Chapter 2, "Project Description"). As described above, the plan includes an open space/urban farm designation that would be applied to three distinct areas, totaling approximately 393 acres. Per County code, these areas could be used for a variety of agricultural uses including limited row crop cultivation and animal husbandry, community gardens, and educational and agricultural processing facilities (e.g., olive oil press, canning machinery). The urban farms would be incorporated into the network of community spaces, and all processing of agricultural products would be 5 acres or less and would adhere to a minimum setback of 200 feet from any residential uses. Due to the placement and design of these areas and the setback requirements enforced through zoning, conflict with adjacent land uses is not anticipated. However, phased development of the WJHMP could result in construction of sensitive uses, such as residences, adjacent to existing agricultural uses that continue to operate in the plan area as buildout occurs. This would be a temporary condition during development of Districts 1 and 2 but may occur longer-term at the interface with the FPAs, which would retain their land use and agricultural zoning designations until subsequent entitlements are pursued. This evaluation assumes full conversion of designated Farmland (see Impact AR-1), and any land use conflicts within the plan area would not have the potential to result in additional conversion of land use.

However, extension of the UPA to include the entirety of the plan area would be required in conjunction with adoption of the WJHMP (as shown in Figure 2-17). Therefore, the project would extend the edge of urban development adjacent to existing agricultural land along the southwestern boundary of the plan area, as mapped in the FMMP and shown in Figure 5-1. This area is planned for future urbanization through separate proposals. Southeast of the plan area and east of Excelsior Road, there are areas of Unique Farmland and Grazing Land that are largely preserve areas or rural development.

As described above, conflicts associated with nuisance dust and noise, as well as trespassing and limitations on agricultural operations, could occur where agricultural land is adjacent to urban uses. Land use conflicts can result in the conversion of agricultural land to non-agricultural uses where restrictions are placed on existing agricultural operations or additional administrative burden results from addressing complaints. These conflicts could threaten the viability of agricultural businesses. Livestock grazing usually involves a lesser potential conflict than row crops because the intensity of the activity is reduced.

Some of the non-participating properties in the FPAs are zoned for agricultural use (see Figure 2-8 in Chapter 2, “Project Description”). The West Jackson Master Plan Overlay would be applied to the FPAs; however, these areas would retain their current General Plan land use designations (General Agriculture – 20 acre minimum and Agricultural-Urban Reserve) with adoption of the WJHMP. Most of these uses are smaller than 80 acres in size, and, therefore, cannot accommodate intensive agricultural operations that tend to be associated with major nuisances such as those listed above.

Given the lack of intensive farming in areas not already planned for urban development, impacts related to conflict with existing, adjacent agricultural uses would be **less than significant**.

Although significant impacts are not anticipated, Mitigation Measure AG-2 is included to ensure compliance with 2030 General Plan Policy AG-4 and not to reduce any potentially significant impact. This mitigation would require noticing to future property owners about potential inconveniences due to nearby agricultural activities. Mitigation Measure AG-2 would require property sellers or agents to provide a notice to prospective buyers for properties within 500 feet of existing agricultural activities. Implementation of Mitigation Measure AG-2 would ensure that the prospective buyers are aware that they could be subject to inconvenience or discomfort resulting from accepted farming activities. Purchasers of properties adjacent to Excelsior Road, Florin Road, and Elder Creek Road would receive notice through the title report that they could be subject to inconvenience or discomfort resulting from accepted farming activities as per provisions of the County Right-To-Farm Ordinance (Sacramento County Code Chapter 14.05) and 2030 General Plan Policy AG-4.

MITIGATION MEASURES

MITIGATION MEASURE AR-2: PROVIDE RIGHT-TO-FARM NOTIFICATION

Prior to the settlement of the real estate transactions, properties sellers and/or agents shall provide a notice to the prospective buyers of properties within 500 feet of existing pasture, cropland, orchards or nurseries. The notice shall appear in the Title Report that they could be subject to inconvenience or discomfort resulting from accepted farming activities as per provisions of the County Right-To-Farm Ordinance.

6 AIR QUALITY

INTRODUCTION

This chapter includes a discussion of existing air quality conditions, a summary of applicable air quality regulations, and an analysis of potential short-term and long-term air quality impacts that could result from implementation of the project. This analysis relies on the findings of the *West Jackson Highway Master Plan Air Quality and Greenhouse Gas Technical Report* (AQMP/GHGRP) prepared by ESA in April 2024 (Appendix B). Mitigation is developed as necessary to reduce significant air quality impacts to the extent feasible.

Comments to the notice of preparation expressed concern regarding increased traffic and associated air pollution within the plan area.

ENVIRONMENTAL SETTING

The plan area is located within the Sacramento Valley Air Basin (SVAB). The SVAB includes all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba Counties. The ambient concentrations of air pollutant emissions are determined by the number of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the number of emissions released by existing air pollutant sources, as discussed separately below.

CLIMATE, METEOROLOGY, AND TOPOGRAPHY

The SVAB is a relatively flat area bordered by the north Coast Ranges to the west and the northern Sierra Nevada to the east. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento River–San Joaquin River Delta (Delta) from the San Francisco Bay area.

The Mediterranean climate type of the SVAB is characterized by hot, dry summers and cool, rainy winters. During the summer, daily temperatures range from 50 degrees Fahrenheit (°F) to more than 100°F. The inland location and surrounding mountains shelter the area from much of the ocean breezes that keep the coastal regions moderate in temperature. Most precipitation in the area results from air masses that move in from the Pacific Ocean, usually from the west or northwest, during the winter months. More than half the total annual precipitation falls during the winter rainy season (November through February); the average winter temperature is a moderate 49°F. Also characteristic of SVAB winters are periods of dense and persistent low-level fog, which are most prevalent between storms. The prevailing winds are moderate in speed and vary from moisture-laden breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution. The highest frequency of poor air movement occurs in the fall and winter when high-pressure cells are often present over the SVAB. The lack of surface wind during these periods, combined with the reduced vertical flow caused by a decline in surface heating, reduces the influx of air and leads to the concentration of air pollutants under stable metrological conditions. Surface concentrations of air pollutant emissions are highest when these conditions occur in combination with agricultural burning activities or with temperature inversions, which hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground.

May through October is ozone season in the SVAB. This period is characterized by poor air movement in the mornings with the arrival of the Delta sea breeze from the southwest in the afternoons. In addition, longer daylight hours provide a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO_X), which result in ozone formation. Typically, the Delta breeze transports air pollutants northward out of the SVAB; however, a phenomenon known as the Schultz Eddy prevents this from occurring during approximately half of the time from July to September. The Schultz Eddy phenomenon causes the wind to shift southward and blow air pollutants back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the area and contributes to the area violating the ambient air quality standards.

Criteria Air Pollutants

Concentrations of criteria air pollutants are used to indicate the quality of the ambient air. A brief description of key criteria air pollutants in the SVAB is provided below. Emission source types and health effects are summarized in Table 6-1. Sacramento County's attainment status for the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS) are shown in Table 6-2.

Ozone

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of ROG and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Emissions of ROG and NO_X decreased from 2000 to 2010 and are projected to continue decreasing from 2010 to 2035 (CARB 2013). This is attributable to more stringent motor vehicle standards and cleaner burning fuels.

Table 6-1 Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	Secondary pollutant resulting from the reaction of ROG and NO_X in the presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X results from the combustion of fuels	increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	permeability of respiratory epithelia, the possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	headache, dizziness, fatigue, nausea, vomiting, death	permanent heart and brain damage
Nitrogen dioxide (NO_2)	combustion devices, e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, death	chronic bronchitis, decreased lung function
Sulfur dioxide (SO_2)	coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of the upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO_2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}), Fine particulate matter ($PM_{2.5}$)	fugitive dust, soot, smoke, mobile and stationary sources, construction, fires, and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO_2 and ROG	breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	alterations to the immune system, carcinogenesis
Lead	metal processing	reproductive/ developmental effects (fetuses and children)	numerous effects including neurological, endocrine, and cardiovascular effects

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases.

[1] "Acute" refers to the effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.

[2] "Chronic" refers to the effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.

Source: EPA 2024.

Table 6-2 Attainment Status Designations for Sacramento County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone	Attainment (1-hour)[1]	Nonattainment (1-hour) Classification-Serious[2]
	Nonattainment (8-hour)[3] Classification=Moderate	Nonattainment (8-hour) Nonattainment (8-hour)
Respirable particulate matter (PM_{10})	Attainment (24-hour)	Nonattainment (24-hour)
		Nonattainment (Annual)
Fine particulate matter ($PM_{2.5}$)	Nonattainment (24-hour)	(No State Standard for 24-Hour)
	Attainment (Annual)	Attainment (Annual)
Carbon monoxide (CO)	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Unclassified/Attainment (1-hour)	Attainment (1-hour)
	Unclassified/Attainment (Annual)	Attainment (Annual)
Sulfur dioxide (SO_2)[5]	(Attainment Pending) (1-Hour)	Attainment (1-hour)
		Attainment (24-hour)
Lead (Particulate)	Attainment (3-month rolling avg.)	Attainment (30-day average)
Hydrogen Sulfide	No Federal Standard	Unclassified (1-hour)
Sulfates		Attainment (24-hour)
Visibly Reducing Particles		Unclassified (8-hour)
Vinyl Chloride		Unclassified (24-hour)

[1] Air Quality meets federal 1-hour Ozone standard (77 FR 64036). EPA revoked this standard, but some associated requirements still apply. SMAQMD attained the standard in 2009. SMAQMD has requested EPA recognize attainment to fulfill the requirements.

[2] Per Health and Safety Code Section 40921.5(c), the classification is based on 1989–1991 data, and therefore does not change.

[3] 2015 Standard.

[4] 2010 Standard.

Source: CARB 2022a.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local sources of NO_X emissions.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (CARB 2013). Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM_{10} emissions in the SVAB are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion. Direct emissions of PM_{10} are projected to remain relatively constant through 2035. Direct emissions of $PM_{2.5}$ have steadily declined in the SVAB between 2000 and 2010 but are projected to increase very slightly through 2035 due to CARB's population projections (i.e., increased development and growth within the SVAB). Emissions of $PM_{2.5}$ in the SVAB are dominated by the same sources as emissions of PM_{10} (CARB 2013).

Toxic Air Contaminants

According to the *California Almanac of Emissions and Air Quality* (CARB 2013), health risks from toxic air contaminants (TACs) can largely be attributed to relatively few compounds, the most important being diesel PM (CARB 2013:5-2 to 5-4). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. Unlike the other TACs, no ambient monitoring data is available for diesel PM because no routine measurement method currently exists. The TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Diesel PM poses the greatest health risk among the 10 TACs mentioned. Overall, statewide emissions of diesel PM are forecasted to decline by 71 percent between 2000 and 2035 (CARB 2013: 3-8). The plan area is not located within 1,000 feet from any stationary or major TAC-emitting roadways; however, the Mather Airport is located directly to the east of the plan area boundary.

Odors

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

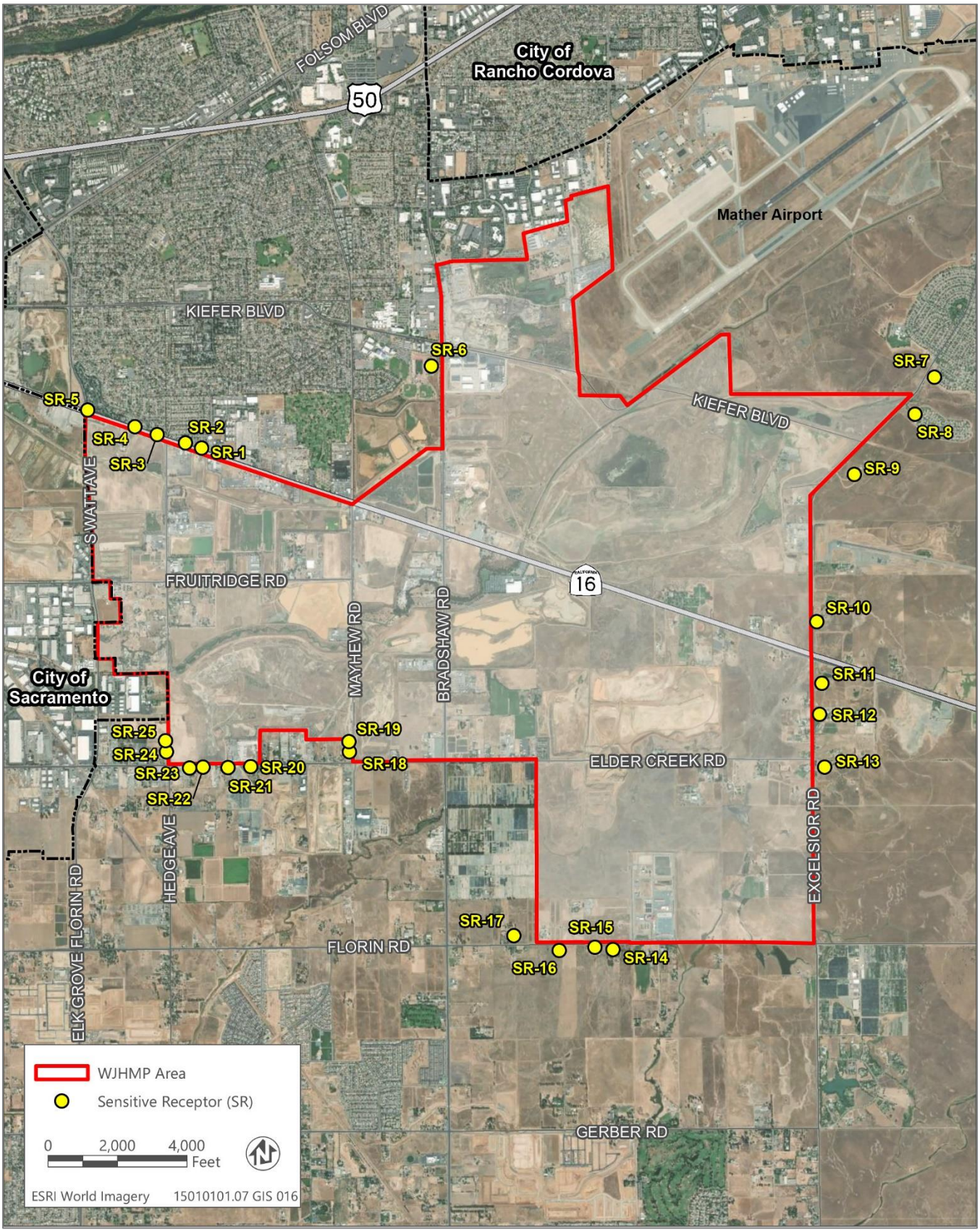
With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell very minute quantities of specific substances; others may not have

the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor, and recognition only occurs with an alteration in the intensity.

Odor sources of concern include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, food packaging plants, and cannabis (SMAQMD 2016). Several sources of odors are located within the vicinity of the plan area include the Sacramento Rendering Company Plant (2.25 miles east), Granite Hot Asphalt Plant (within the northern portion of the plan area), Teicher Hot Asphalt Plant (0.7 miles to the northwest), Florin-Perkins Landfill (0.75 miles to the west), and L&D Landfill (0.15 miles to the west).

Sensitive receptors

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants. Sensitive receptors near the plan area include residences to the north, along Rose Parade Way, Hedge Avenue, Burst Court, Thornhill Drive, Prairie Trail Way, and other streets within the Rosemont Junction and Primrose neighborhoods. Additional receptors include Rosemont High School, Sierra Enterprise Elementary School, ABC School, Morgan Junior/Senior High School, Albert Einstein Middle School, Golden Empire Preschool, A.M. Winn Elementary School, George Washington Carver School of Arts and Science, Kitty Hawk School, Mather Youth Academy, and Mather Heights Elementary School. Figure 6-1 below depicts the locations of the nearest reception to the plan area. The project, itself, would also introduce new sensitive receptors.



Source: Adapted by Ascent in 2024.

Figure 6-1 Sensitive Receptors

REGULATORY SETTING

Air quality in the plan area is regulated through the efforts of various federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, planning, policymaking, education, and a variety of programs. The agencies responsible for improving the air quality in the SVAB are discussed below.

FEDERAL

CORPORATE AVERAGE FUEL ECONOMY STANDARDS

The National Highway Traffic Safety Administration regulates vehicle emissions through the Corporate Average Fuel Economy (CAFE) Standards.

The CAFE Standards, which were first enacted by Congress in 1975, set fleet-wide averages that must be achieved by each automaker for its car and truck fleet. The purpose of the CAFE Standards is to reduce energy consumption by increasing the fuel economy of cars and light trucks. On April 1, 2022, Transportation Secretary Pete Buttigieg unveiled new CAFE standards for 2024–2026 model year passenger cars and light-duty trucks, requiring new vehicles sold in the US to average at least 40 miles per gallon.

CLEAN AIR ACT

The Clean Air Act (CAA) required the US Environmental Protection Agency (EPA) to establish the NAAQS (42 United States Code Section 7409). As shown in Table 6-3, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), NO_2, sulfur dioxide, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect public health, and the secondary standards protect public welfare. The CAA also requires each state to prepare a state implementation plan (SIP) for attaining and maintaining the NAAQS. The federal CAA amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. Individual SIPs are modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

Table 6-3 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California (CAAQS)[a,b]	National (NAAQS)[c]	
			Primary[b,d]	Secondary[b,e]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	–	Same as primary standard
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (147 µg/m^3)	
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	Same as primary standard
	8-hour	9 ppm[f] (10 mg/m^3)	9 ppm (10 mg/m^3)	
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as primary standard
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	—	—
	3-hour	—	—	0.5 ppm (1300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
Respirable particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	—	Same as primary standard
	24-hour	50 µg/m^3	150 µg/m^3	
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	9.0 µg/m^3	15.0 µg/m^3
	24-hour	—	35 µg/m^3	Same as primary standard
Lead [f]	Calendar quarter	—	1.5 µg/m^3	Same as primary standard
	30-Day average	1.5 µg/m^3	—	—
	Rolling 3-Month Average	–	0.15 µg/m^3	Same as primary standard
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m^3)	No national standards	
Sulfates	24-hour	25 µg/m^3		
Vinyl chloride [f]	24-hour	0.01 ppm (26 µg/m^3)		
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km		

Notes: µg/m^3 = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million.

[a] California standards for ozone, carbon monoxide, SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[c] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. The $PM_{2.5}$ 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the US Environmental Protection Agency for further clarification and current federal policies.

[d] National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: CARB 2016, EPA 2024.

TOXIC AIR CONTAMINANTS/HAZARDOUS AIR POLLUTANTS

TACs, or, in federal parlance, hazardous air pollutants (HAPs), are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. A substance that is listed as a HAP pursuant to subsection (b) of Section 112 of the CAA (42 United States Code Section 7412[b]) is considered a TAC. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, and genetic damage, or short-term acute effects, such as eye-watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and noncarcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which ambient standards have been established (Table 6-3). Cancer risk from TACs is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure.

EPA and, in California, the California Air Resources Board (CARB) regulate HAPs and TACs, respectively, through statutes (i.e., 42 United States Code Section 7412[b]) and regulations that generally require the use of the maximum achievable control technology or best available control technology (BACT) for toxics to limit emissions.

STATE

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish CAAQS (Table 3.2-1).

CRITERIA AIR POLLUTANTS

CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases, the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporates a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to attain and maintain the CAAQS by the earliest date practical. It specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources, and it provides air districts with the authority to regulate indirect emission sources.

CARB regulates the emission of criteria air pollutants through several programs, regulations, and plans. The 2022 State SIP Strategy (2022 SIP) serves as a compilation document of all actions taken by CARB and local air districts to further the attainment of the NAAQS. Pertinent regulations to the project included in the 2022 SIP include, the Advanced Clean Cars II Program, Advanced Clean Fleets, and Zero-Emissions Trucks Measure, which all serve to electrify the transportation sector through sales requirements for benchmark years (CARB 2022b).

Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, particulate matter (PM) exhaust from diesel engines (diesel PM) was added to CARB's list of TACs.

After a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate the best available control technology for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With the implementation of CARB's Risk Reduction Plan and other regulatory programs, it is estimated that emissions of diesel PM will be less than half of those in 2010 by 2035. Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

LOCAL

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

CRITERIA AIR POLLUTANTS

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is the primary agency responsible for planning to meet NAAQS and CAAQS in Sacramento County. SMAQMD works with other local air districts in the Sacramento region to maintain the region's portion of the SIP for ozone. The SIP is a compilation of plans and regulations that govern how the region and State will comply with the CAA requirements to attain and maintain the NAAQS for ozone. The Sacramento Region has been designated as a "moderate" 2015 8-hour ozone nonattainment area with an extended attainment deadline of June 15, 2019. The 2018 Sacramento Regional 2008 8-Hour Ozone Attainment and Further Reasonable Progress Plan was approved by CARB on November 16, 2017. The previous 2013 Update to the 8-Hour Ozone Attainment and Reasonable Further Progress Plan was approved and promulgated by EPA for the 1997 8-Hour Ozone Standard. EPA has not released a notice of approval and promulgation of the 2017 SIP (CARB 2017). At a public meeting held on October 26, 2023, CARB approved the 2023 Sacramento Regional Plan for the 2015 70-ppb 8-Hour Ozone Standard (2023 Plan). The 2023 Plan was prepared by the five local air districts of the Sacramento Federal Non-attainment Area (Sacramento Region, or SFNA), with the support of CARB.

SMAQMD has developed a set of guidelines for use by lead agencies when preparing environmental documents. The guidelines contain thresholds of significance for criteria pollutants and TACs, and also make recommendations for conducting air quality analyses. After SMAQMD guidelines have been consulted and the air quality impacts of a project have been assessed, the lead agency's analysis undergoes a review by SMAQMD. SMAQMD submits comments and suggestions to the lead agency for incorporation into the environmental document.

All projects are subject to adopted SMAQMD rules and regulations in effect at the time of construction. Specific rules relevant to the construction of future development in the WJHMP area may include the following:

- **Rule 201**: **General Permit Requirements.** Any project that includes the use of equipment capable of releasing emissions to the atmosphere may be required to obtain permit(s) from SMAQMD before equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact SMAQMD early to determine whether a permit is required, and to begin the permit application process. Portable construction equipment (e.g., generators, compressors, pile drivers, lighting equipment) with an internal combustion engine greater than 50 horsepower must have a SMAQMD permit or CARB portable equipment registration.

- **Rule 202**: **New Source Review.** The purpose of this rule is to provide for the issuance of authorities to construct and permits to operate at new and modified stationary air pollution sources and to provide mechanisms, including emission offsets, by which authorities to construct such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.
- **Rule 207**: **Federal Operating Permit.** The purpose this rule is to establish an operating permitting system consistent with the requirements of Title V of the United States Code and pursuant to 40 FR Part 70. Stationary sources subject to the requirements of this rule are also required to comply with any other applicable federal, state, or SMAQMD orders, rules, and regulations, including requirements pertaining to prevention of significant deterioration pursuant to Rule 203, requirements to obtain an authority to construct pursuant to Rule 201, or applicable requirements under SMAQMD's new source review rule in the SIP.
- **Rule 402**: **Nuisance.** A person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property.
- **Rule 403**: **Fugitive Dust.** The developer or contractor is required to control dust emissions from earthmoving activities or any other construction activity to prevent airborne dust from leaving the project site. Fugitive dust controls include the following:
    - Water all exposed surfaces two times daily.
    - Cover or maintain at least 2 feet of free board on haul trucks transporting soil, sand, or other loose material on the site.
    - Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day.
    - Limit vehicle speeds on unpaved roads to 15 miles per hour.
    - All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
    - Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes.
    - Maintain all construction equipment in proper working condition according to manufacturer's specifications.
- **Rule 442: Architectural Coatings.** The purpose of this rule is to limit the emissions of volatile organic compounds from the use of architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within Sacramento County.

- **Rule 902**: **Asbestos.** The developer or contractor is required to notify SMAQMD of any regulated renovation or demolition activity. Rule 902 contains specific requirements for surveying, notification, removal, and disposal of material containing asbestos.

In addition, if modeled construction-generated emissions for a project are not reduced to levels below SMAQMD's mass emission threshold (of 85 pounds per day [lb/day] for nitrogen oxide [NO_X], 80 lb/day or 13.2 tons per year (tpy) for PM_{10}, and 82 lb/day or 15 tpy for $PM_{2.5}$) after the standard construction mitigation is applied, then SMAQMD requires an offsite construction mitigation fee to purchase offsite emissions reductions. Such purchases are made through SMAQMD's Heavy Duty Incentive Program, through which select owners of heavy-duty equipment in Sacramento County can repower or retrofit their old engines with cleaner engines or technologies (SMAQMD 2019).

As discussed in greater detail below in the "Thresholds of Significance" and "Methodology" sections, the thresholds of significance have been developed in consideration of long-term regional air quality planning. Projects that are found to emit emissions in exceedance of these bright-line thresholds would generate a cumulatively considerable contribution of regional air pollution which could obstruct the region's attainment of the NAAQS and/or CAAQS or cause a localized exceedance of these concentration-based standards within the SVAB. Conversely, projects that emit levels of air pollution below these thresholds would not affect the SVAB's ability to attain the NAAQs and/or CAAQS.

TOXIC AIR CONTAMINANTS

At the local level, air districts may adopt and enforce CARB control measures for TACs. Under SMAQMD Rule 201 ("General Permit Requirements"), Rule 202 ("New Source Review"), and Rule 207 ("Federal Operating Permit"), all sources that possess the potential to emit TACs are required to obtain permits from SMAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including New Source Review standards and air toxics control measures. SMAQMD limits emissions and public exposure to TACs through a number of programs. SMAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. Sensitive receptors are people, or facilities that generally house people (e.g., schools, hospitals, residences), that may experience adverse effects from unhealthful concentrations of air pollutants.

HEALTH EFFECTS

SMAQMD has also issued *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District, Sacramento, California,* which contains guidance on how to address the California Supreme Court decision in Sierra Club v. County of Fresno, 6 Cal.5th 502 (2018)—a court decision often referred to as the Friant Ranch decision (SMAQMD 2020a). In that decision, the California Supreme Court held that an EIR should "relate the expected adverse air quality impacts to likely health consequences or explain in meaningful detail why it is not feasible at the time of drafting

to provide such an analysis." SMAQMD's guidance recommends using the Minor Project Health Effects Tool to estimate the level of health effects for an emissions source that results in emissions at or below criteria air pollutant and precursor thresholds of significance. The sole input for the Minor Project Health Effects Tool is the project's geographical location, and the output of the Minor Project Health Effects Tool is based on that location and modeled emissions at 82 pounds per day (lb/day) of NO_X, ROG, or particulate matter, which are the highest thresholds of significance for each of these pollutants in the SMAQMD and neighboring air districts. Therefore, the Minor Project Health Effects Tool is used for projects with emissions at or below air district thresholds of significance. To estimate health effects for larger projects at strategic locations in the SFNA, a Strategic Area Project Health Effects Screening Tool (Strategic Area Project Tool) was developed with additional photochemical and health effects modeling for six locations at NO_X, ROG, and $PM_{2.5}$ emission rates two times and eight times the 82 lb/day thresholds of significance level. The user selects one of the six modeled locations and inputs the NO_x, ROG, and $PM_{2.5}$ emission rates for the proposed project. The Strategic Area Project Tool interpolates the health effects from the modeled emission rates to generate a health effects summary table for the user supplied emissions at the user selected location. Based on the magnitude of the project, the Strategic Area Project Health Effects Tool contained in the guidance was used to evaluate the project's incremental health effects. The Strategy Area Project II, "Rancho Cordova," was used for the model. Based on the impact determinations summarized below, the project's associated adverse health outcomes were only estimated for operational emissions.

ODORS

Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and SMAQMD. SMAQMD's Rule 402 ("Nuisance") regulates odors.

SACRAMENTO COUNTY GENERAL PLAN

The Sacramento County General Plan contains the following policies from the Air Quality Element that are applicable to the project:

- **Policy AQ-1.** New development shall be designed to promote pedestrian/bicycle access and circulation to encourage community residents to use alternative modes of transportation to conserve air quality and minimize direct and indirect emission of air contaminants.
- **Policy AQ-3.** Buffers and/or other appropriate exposure reduction measures shall be established on a project-by-project basis and incorporated during review to provide for protection of sensitive receptors from sources of air pollution or odor. CARB's "Strategies to Reduce Air Pollution Exposure Near High Volume Roadways" Technical Advisory and the AQMD's "Mobile Sources Air Toxics Protocol" or applicable AQMD guidance shall be utilized when establishing these exposure reduction measures.

- **Policy AQ-4.** Developments which meet or exceed thresholds of significance for ozone precursor pollutants, and/or Greenhouse Gases (GHG) as adopted by SMAQMD, shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan and/or a Greenhouse Gas Reduction Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by SMAQMD.
- **Policy AQ-4A.** Residential zones should not be located adjacent to industrial zones (M-1 and M-2) or general agriculture zones (AG-10 to 160). In the event that a residential zone is located adjacent to an industrial or agricultural zone, the developer of the property(ies) being rezoned shall be required to implement exposure reduction measures developed in consultation with the SMAQMD.
- **Policy AQ-10.** Encourage vehicle trip reduction and improved air quality by requiring development projects that exceed the SMAQMD's significance thresholds for operational emissions to provide on-going, cost-effective mechanisms for transportation services that help reduce the demand for existing roadway infrastructure.
- **Policy AQ-11.** Encourage contractors operating in the county to procure and to operate low-emission vehicles, and to seek low emission fleet status for their off-road equipment.
- **Policy AQ-13.** Use California State Air Resources Board (ARB) and SMAQMD guidelines for Sacramento County facilities and operations to comply with mandated measures to reduce emissions from fuel consumption, energy consumption, surface coating operations, and solvent usage.
- **Policy AQ-17.** Promote optimal air quality benefits through energy conservation measures in new development.
- **Policy AQ-19.** Require all feasible reductions in emissions for the operation of construction vehicles and equipment on major land development and roadway construction projects.
- **Policy AQ-20.** Promote Cool Community strategies to cool the urban heat island, reduce energy use and ozone formation, and maximize air quality benefits by encouraging four main strategies including, but not limited to: plant trees, selective use of vegetation for landscaping, install cool roofing, and install cool pavements.
- **Policy AQ-21.** Support SMAQMD's particulate matter control measures for residential wood burning and fugitive dust.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan does not contain specific policies related to air quality.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan does not contain specific policies related to air quality.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

Implementing the project would have a significant impact related to air quality such that human health would be adversely affected if it would (SMAQMD 2020b):

- cause construction-generated criteria air pollutant or precursor emissions to exceed the SMAQMD-recommended thresholds of 85 lb/day for NOX, 80 lb/day or 13.2 tpy for PM10, and 82 lb/day or 15 tpy for PM2.5 after SMAQMD's Basic Construction Emission Control Practices (construction BMPs) have been implemented;
- result in a net increase in long-term operational criteria air pollutant or precursor emissions that exceed the SMAQMD-recommended thresholds of 65 lb/day for ROG and NOX, 80 lb/day or 13.2 tpy for PM10, and 82 lb/day or 15 tpy for PM2.5 after SMAQMD's BACT and operational BMPs have been applied;
- result in short-term construction and long-term operational local mobile-source CO emissions that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 ppm or the 8-hour CAAQS of 9 ppm;
- expose any off-site sensitive receptor to a substantial incremental increase in TACs emissions that exceed 10 in 1 million for carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic hazard index of 1.0 or greater;
- conflict with or obstruct implementation of the applicable air quality plan; and/or
- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

ISSUES NOT DISCUSSED FURTHER

All the issues identified in the significance criteria are addressed in the following analysis.

METHODOLOGY

Regional and local criteria air pollutant emissions and associated impacts, as well as impacts from TACs, CO concentrations, and odors were assessed in accordance with Sacramento County and SMAQMD-recommended methodologies using the findings of the AQMP/GHGRP prepared for the project (ESA 2024). The project's emissions were compared to SMAQMD's construction and operational thresholds.

CRITERIA AIR POLLUTANTS AND OZONE PRECURSORS

Construction-related emissions of criteria air pollutants and precursors were estimated using the California Emissions Estimator Model (CalEEMod) Version 2020.4.0 computer program (CAPCOA 2020), which was reviewed and approved for use in the project analysis by the SMAQMD (see Appendix B). Modeling was based on the proposed land use plan and project-specific information (e.g., size, number of residential units proposed, area to be graded, area to be paved), where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location (e.g., meteorology, emissions factors) and land use types. The impact analysis includes general mitigation that would be applicable to all future construction projects. Future project-level analyses should utilize the SMAQMD screening methods to determine the appropriate level of analysis required.

Since the master plan would be built out based on market demand, the exact phasing of construction is unknown. It is anticipated that the buildout period would occur over 30 years based on the MTP/SCS economic analyses showing the overall anticipated development horizon for the region. A buildout period of 30 years is a conservative estimate given the size and amount of development allowed in the master plan. The master plan covers almost 6,000 acres of land and provides 16,484 residential units and over 13 million square feet of non-residential development. Other recently approved projects in the area such as the Mather South Master Plan and the NewBridge Specific Plan are not as large, covering 848 acres with 3,522 residential units and 1,095 acres with 2,915 residential units, respectively. As noted in the text above, the MTP/SCS contains a projected level of economic growth for the SACOG region and then estimates the number of new housing units to meet the employment levels that will support that economic growth. Projected growth patterns (i.e., the location of growth) are estimates, only, and growth may occur in areas identified in the MTP/SCS or in other areas approved later by local agencies. In addition, the "Future Planning Areas" for the master plan are likely beyond the 30-year horizon.

For this analysis, the first year of construction was modeled to approximate the worst-case construction emissions. Equipment used during the first year of construction would be equipped with engines that are expected to emit more criteria pollutant emissions than construction equipment used in later construction years. This is because construction equipment becomes cleaner over time as older, less efficient equipment is replaced through fleet turnover with newer, cleaner equipment that meets more stringent emission standards as required by CARB and EPA. Since the project would likely be built out over a 30-year period as discussed above, it is assumed that 1/30th of the proposed developments would be constructed in the year 2025. The following assumptions were used in CalEEMod to estimate emissions for year 1 (2025) construction activities. It is assumed that the master plan would require 500,000 cubic yards of soil import during the grading phase. Assuming the haul trucks used during project construction can carry 16 cubic yards of soil each and construction will be completed over a 30-year period, the first year of construction could result in 2,083 one-way haul truck trips associated with 16,667 cubic yards of soil. Assuming 1/30th of the project would be constructed in 2025, total soil import or 50,000 cubic yards, which

would result in 6,250 one-way haul truck trips. CalEEMod defaults for number of construction equipment per construction phase and daily worker and vendor trips were used. Additional information and model results for each of the analyses described above are presented in Appendix B.

The proposed development under the project is assumed to be fully built out in the year 2055. Since CalEEMod version 2020.4.0 only allows the user to enter operational years up to the year 2050, it was not possible to model an operational year 2055 in CalEEMod. Therefore, for this analysis, criteria pollutant emissions under the master plan were modeled for operational year 2050 using CalEEMod version 2020.4.0. This approach is conservative as emissions rates will likely be higher in 2050 than in 2055 due to continual improvements in vehicle technology, emission controls, and fuel efficiency. Although there are existing uses within the plan area, criteria pollutant emissions for these uses were not modeled due to their limited number, and emissions from these uses would be minor. It is also conservative to assume zero emissions from existing uses because these emissions would be subtracted from master plan emissions to determine the net change in emissions from the master plan. Since construction of the master plan is anticipated to begin in 2025, it is assumed that all buildings will be constructed to 2022 Title 24 energy efficiency standards (which was adopted August 11, 2021). Future Title 24 requirements were not modeled because the specific requirements are not known this time. The 2022 energy efficiency standards require solar for all new single-family homes and for all multifamily buildings up to three stories. For the purposes of this analysis, and in accordance with SMAQMD's recommended methodology for the preparation of AQMPs, the project's unmitigated emissions were modeled assuming that natural gas would be allowed within the plan area. Although the project is designed to be fully electric, the emissions reductions from this project design feature are captured in the AQMP and credited to the project.

For on-road vehicles, criteria pollutant emissions and GHG emissions were calculated using EMFAC2021 v1.0.2, which only allows the user to enter operational years up to 2050. Vehicle miles traveled (VMT) per speed bin is based on data provided in the VMT Analysis Memos (DKS Associates 2023; Kimley-Horn 2023), which evaluate the VMT effects of the WJHMP. Additional information and model results of the operational analysis of criteria air pollutants described above are presented in Appendix B. Refer to Chapter 19, "Transportation," in this EIR for further discussion of VMT.

The Sacramento County General Plan Policy AQ-4 requires that projects exceeding the SMAQMD operational threshold for ozone precursors (i.e., ROG and NO_X) prepare an air quality mitigation plan (AQMP), as recommended by SMAQMD. For projects that are included in the current SIP, SMAQMD recommends a 15 percent reduction of ozone precursors from mobile-source emissions. For projects not included in the current SIP, SMAQMD recommends a 35 percent reduction of ozone precursors from mobile-source emissions.

For the project, only the land uses west of Bradshaw Road are included in the SACOG's MTP/SCS and, therefore, are included within the SIP. The land uses proposed east of Bradshaw Road are not included in SMAQMD's SIP. SMAQMD's AQMP guidance does

not specify a percentage reduction to use for projects partially accounted for in the SIP. By calculating the master plan's VMT included in the SIP, a "blended rate" mitigated reduction goal of 29 percent below an unmitigated scenario could be used to show consistency with regional air quality plans. This blended rate reduction goal was developed through coordination with County and SMAQMD staff and represents the amount of VMT for the master plan land uses west of Bradshaw Road compared to the total WJHMP VMT. However, to provide a conservative analysis of the AQMP requirement for the master plan, a 35 percent reduction of ozone precursors from mobile-source emissions below an unmitigated scenario was used in the AQMP. In compliance with both the General Plan policies and SMAQMD guidance, the project has prepared an AQMP to define the processes by which emissions of ROG and NO_X would be reduced by 35 percent. The AQMP, including detail on and the derivation of the 35 percent reduction requirement, can be found in Appendix B.

West Jackson Highway Master Policies

The WJHMP includes the following policies related to air quality.

- **Policy 5.2.** Future development applications shall work with the County to implement the mobility system as shown in Figure 5.13 Transit Plan and Figure 5.14 Proposed Trails, which illustrates the non-vehicular system of multi-use trails, on-street bike lanes and transit facilities.
- **Policy 6.27.** A tree planting plan shall accompany all tentative map applications and can be provided in the form of a conceptual landscape plan.
- **Policy 9.2.** Future development shall provide access to multi-modal transit opportunities and access to a healthy mix of businesses, childcare, senior services, and housing. This is to encourage development that reduces VMT, decreases distances between jobs and housing, reduces traffic impacts, and improves housing affordability.
- **Policy 9.3.** Future development shall achieve improvements in overall public health by encouraging a healthier living environment that includes walkable neighborhoods, access to recreation and open space, healthy foods and public transit.

Impacts and Analysis

Impact AIR-1: Generate Construction Emissions of Criteria Air Pollutants and Precursors (ROG, NO_X, PM_{10}, and $PM_{2.5}$) that Exceed Standards

Construction emissions are described as "short-term" or temporary in duration. Although project construction is anticipated to occur for an extended period of approximately 30 years and individual construction projects would occur intermittently throughout the entire period, a worst-case construction year was modeled for 2025 representing build-out of 1/30th of the total plan area. This is considered conservative as emissions would

inherently decrease over the 30-year construction period of the project as regulatory mechanisms improve the fuel economy of heavy-duty construction equipment and on-road vehicles.

Typical construction activities could require all-terrain forklifts, cranes, pick-up and fuel trucks, compressors, loaders, backhoes, excavators, dozers, scrapers, pavement compactors, welders, concrete pumps and concrete trucks, and off-road haul trucks, as well as other diesel-fueled equipment. Construction-related activities would result in emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ (a subset of PM_{10}) from site preparation (e.g., excavation, clearing), off-road equipment, material delivery, worker commute trips, and other miscellaneous activities (e.g., building construction, asphalt paving, application of architectural coatings). Fugitive dust emissions of PM_{10} and $PM_{2.5}$ are associated primarily with site preparation and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, and VMT on and off the site. Emissions of the ozone precursors ROG and NO_X, are associated primarily with construction equipment and on-road mobile exhaust. Paving and the application of architectural coatings would result in off-gas emissions of ROG. PM_{10} and $PM_{2.5}$ are also contained in vehicle exhaust.

It is expected that construction would occur over a series of phases; however, the order in which the development areas would be constructed is unknown. While the WJHMP contains a land use map (see Chapter 2, “Project Description”), there is inherent uncertainty surrounding market forces and approval of individual development applications, which could affect the timing and phasing of project construction. Ultimately, construction phasing and activities would be driven by prevailing market conditions in any given year. Therefore, construction was assumed to be evenly spread by year. Conservative assumptions were used and individual construction phases (e.g., site preparation, grading, building construction) were overlapped to account for construction activities occurring simultaneously at different locations throughout the entire plan area in anticipation of periods with above-average construction activities. As such, reported emissions represent a conservative estimate of maximum daily emissions for each year of construction.

Table 6-4 summarizes the unmitigated maximum daily emissions modeled to result from the first possible year of construction in 2025. As noted above, as construction continues into the future, equipment exhaust emission rates would decrease as newer, more emission-efficient construction equipment replaces older, less efficient equipment. For assumptions and modeling inputs, refer to Appendix B.

Table 6-4 Summary of Unmitigated Maximum Daily Emissions of Criteria Air Pollutants and Precursors Associated with Project Construction (2025)

Scenario	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	PM_{10} (tpy)	$PM_{2.5}$ (lb/day)	$PM_{2.5}$ (tpy)
Worst-Case	1,134	166	24	4.5	8	3.2
SMAQMD Threshold of Significance	None	85	0[1]	0[1]	0[1]	0[1]
Exceeds Threshold?	NA	Yes	Yes	Yes	Yes	Yes

Notes: ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; lb/day = pounds per day; tpy = tons per year; SMAQMD = Sacramento Metropolitan Air Quality Management District.

Maximum daily emissions represent overlapping construction phases under a worst-case scenario in 2025. See Appendix B for details.

[1] SMAQMD recommends using a 0 lb/day and 0 tpy threshold of significance for evaluating construction-related emissions of PM_{10} and $PM_{2.5}$ prior to the implementation of best management practices or best available control technology. Following implementation of best management practices and/or best available control technology, construction emissions of PM_{10} are evaluated against a threshold of significance of 80 lb/day or 14.6 tpy and $PM_{2.5}$ is evaluated against a threshold of significance of 82 lb/day or 15 tpy.

Source: Modeled by ESA in 2024.

As shown above in Table 6-4, the project's unmitigated construction emissions would exceed SMAQMD's thresholds for NO_X, PM_{10}, and $PM_{2.5}$. This level of emissions could result in adverse health outcomes within the SVAB and would be **significant**.

Table 6-5 summarizes the project's mitigated emissions following the application of Mitigation Measures AIR-1a and 1b. By paying the appropriate off-site mitigation fee if and as required by Mitigation Measure AIR-1b, construction-generated emissions of NO_X would be reduced to a less-than-significant level. The fee calculation to offset daily NO_X emissions shall be based on the SMAQMD-determined cost to reduce one ton of NO_X applicable at the time (currently $30,000 per ton but subject to change in future years). As shown in Table 6-5, Mitigation Measures AIR-1a and 1b would be sufficient to reduce the project's construction emissions of NO_X, PM_{10}, and $PM_{2.5}$ to below SMAQMD's thresholds of significance. This impact would be **less than significant with mitigation**.

Table 6-5 Summary of Mitigated Maximum Daily Emissions of Criteria Air Pollutants and Precursors Associated with Project Construction (2025)

Scenario	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	PM_{10} (tpy)	$PM_{2.5}$ (lb/day)	$PM_{2.5}$ (tpy)
Worst-Case	1,133	37	21	1.6	6	.0
SMAQMD Threshold of Significance	None	85	80[1]	82[1]	14.6[2]	15[2]
Exceeds Threshold?	NA	No	No	No	No	No

Notes: ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; lb/day = pounds per day; tpy = tons per year; SMAQMD = Sacramento Metropolitan Air Quality Management District.

Maximum daily emissions represent overlapping construction phases under a worst-case scenario in 2025. See Appendix B for details.

[1] If all feasible BACT/BMPs are applied, then 82 lb/day and 15 tpy. Project complies with the California Building Code and is therefore subject to this threshold.

[2] If all feasible BACT/BMPs are applied, then 80 lb/day and 14.6 tpy. Project complies with the California Building Code and is therefore subject to this threshold.

Source: Modeled by ESA in 2024.

MITIGATION MEASURES

MITIGATION MEASURE AIR-1A: SMAQMD'S BASIC CONSTRUCTION EMISSION CONTROL PRACTICES

For all future land use development applications processed within the plan area, future project applicants, its designee, or subsequent developer(s), shall require its construction contractors to implement SMAQMD's Basic Construction Emission Control Practices in place at the time of construction, which currently include the following:

- water all exposed surfaces two times daily (exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads);
- cover or maintain at least 2 feet or free board space on haul trucks transporting soil, sand, or other loose material on the site and cover any haul trucks traveling along freeways or major roadways;
- use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day (note: use of dry power sweeping is prohibited);
- limit vehicle speeds on unpaved roads to 15 miles per hour (mph);
- complete construction of all roadways, driveways, sidewalks, parking lots as soon as possible;
- building pads should be laid as soon as possible after grading unless seeding or soil binders are used;
- provide clear signage the entrances to construction sites that posts the requirement to minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]; and
- maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

These measures shall be included in project improvement plans as a condition of approval.

MITIGATION MEASURE AIR-1B: SMAQMD'S ENHANCED EXHAUST CONTROL PRACTICES FOR NO_X AND EXHAUST PM

For all future land use development applications processed within the plan area, future project applicants, their designee, or subsequent developer(s), shall implement SMAQMD's Enhanced Exhaust Control Practices for NO_X and exhaust PM emissions. Before the issuance of grading and/or building permits, future project applicants, or its designee, shall submit to the County and SMAQMD an initial report of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used 8 hours or more during any portion of the construction project before any grading activities. The initial report shall include the horsepower rating, engine model year, and

projected hours of use for each piece of equipment. Future project applicants shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The information shall be submitted at least four business days before the use of subject heavy-duty off-road equipment. The report shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.

- Before any grading activities, future project applicants, or its designee, shall provide a plan for approval by the County and SMAQMD demonstrating that the heavy-duty off-road vehicles (50 horsepower or more) to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet-average of 10 percent NO_X reduction (depending on available technology and engine Tier) compared to the most recent CARB fleet average. This plan shall be submitted in conjunction with the equipment inventory. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. If achievement of the aforementioned reductions over the statewide average are deemed infeasible by the County, SMAQMD, or construction contractor, the future project applicants shall ensure the construction fleet meets the lowest fleetwide emissions average possible, through the use of all available on-site emissions reduction measures (e.g., highest tier engines, emission control devices, cleaner burning fuel).
- The future project applicants, or its designee, shall submit a final report at the end of the job, phase, or calendar year, as pre-arranged with SMAQMD staff and documented in the approval letter, to demonstrate continued project compliance. If modeled construction-generated emissions of NO_X are not reduced to a level below SMAQMD's thresholds of significance by the application of the aforementioned mitigation measures, then the project developer must pay a mitigation fee into SMAQMD's off-site mitigation program.
- Once initial construction activities are finalized by the developer and all on-site mitigation has been exhausted, and before the issuance of grading and/or building permits, quantification of construction-related emissions shall be verified at the project level. As each project-level construction phase is finalized throughout the duration of the project buildout, the mitigation fee shall be calculated based on current information, available construction equipment, and proposed construction activities. As construction activities occur over the buildout period, the developer shall work with SMAQMD to continually update mitigation fees based on actual on-the-ground emissions. The final mitigation fees shall be based on the contractor equipment report provided by the developer to SMAQMD and shall reconcile any fee discrepancies due to schedule adjustments and increased or decreased equipment inventories. Equipment inventories and NO_X emission estimates for subsequent construction phases shall be coordinated with SMAQMD, and the off-site mitigation fee measure shall be assessed to any construction phase that would result in an exceedance of SMAQMD's mass emission threshold for NO_X.

IMPACT AIR-2: GENERATE LONG-TERM OPERATIONAL EMISSIONS OF CRITERIA AIR POLLUTANTS AND OZONE PRECURSORS (ROG, NO_X, PM_{10}, AND $PM_{2.5}$) THAT EXCEED STANDARDS

ANALYSIS OF PROJECT-RELATED OPERATIONAL CRITERIA POLLUTANTS

Development of the project would result in the generation of long-term operational emissions of ROG, NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) from mobile, stationary, and area-wide sources. Mobile-source emissions of criteria pollutants and precursors would result from vehicle trips generated by residents, users of the parks, students at the schools, employee commute trips, and other associated vehicle trips (e.g., delivery of supplies, maintenance vehicles for commercial and retail land uses). Stationary and area-wide sources would include the combustion of natural gas for space and water heating (i.e., energy use), the use of landscaping equipment and other small equipment, the periodic application of architectural coatings, and ROG from the use of consumer products. It is foreseeable that as portions of the project are built out over the 30-year construction period, portions of the project may become operational prior to 2055 and would overlap with construction emissions; however, at this programmatic stage, the timing and location of future development is unknown. Therefore, overlapping emissions have not been quantified.

Table 6-6 summarizes the maximum daily and annual operation-related emissions of criteria air pollutants during the winter and summer seasons at full buildout. This is consistent with the AQMP prepared for the project, which calculates emission reductions from mitigation in tons per year (tons/year). Emissions were calculated based on proposed land uses and VMT values contained in the traffic study (DKS Associates 2023). As shown in Table 6-6, operation-related activities would result in project-generated daily emissions of NO_X, PM_{10}, and $PM_{2.5}$ that exceed the SMAQMD-recommended thresholds of significance.

As summarized in Table 6-7, PM_{10} and $PM_{2.5}$ emissions would also exceed SMAQMD's annual mass emissions thresholds of 14.6 and 15 tpy respectively. Notably, SMAQMD does not have a recommended annual threshold for ROG and NO_X.

Because ROG, NO_X, PM_{10}, and $PM_{2.5}$ would exceed their respective thresholds, operational emissions generated under full buildout of the project would conflict with long-term ozone planning efforts and/or contribute substantially to a net increase in concentrations of ozone for which Sacramento County is in nonattainment.

Projects that emit criteria air pollutants in exceedance of SMAQMD's thresholds would contribute to the regional degradation of air quality within the plan area that could result in adverse human health impacts. Acute exposure to criteria air pollutants can cause coughing, chest pain, shortness of breath, eye and throat irritation, lung scarring, and may aggravate preexisting cardiovascular and respiratory illness (e.g., asthma). Chronic exposure to criteria pollutants may result in permanent lung and heart impairment, chronic coughing, cancer, decreased immune function in children, and premature death. This would be a **significant** impact.

Table 6-6 Summary of Project Maximum Daily (Unmitigated) Operational Emissions of Criteria Air Pollutants at Full Buildout (2050)

Source Type	Maximum Daily Emissions (lb/day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area[1]	1,086	16	8	8
Energy[2]	12	102	8	8
Mobile	128	122	414	105
Total Daily Emissions[3]	1,226	240	429	120
SMAQMD Threshold of Significance[3]	65	65	80[4]	82[4]
Exceeds Threshold?	Yes	Yes	Yes	Yes

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter.

1. Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings. It was assumed that none of the residential units would be equipped with a fireplace.

2. Energy emissions include emissions associated with natural gas consumption for space heating/cooling, and appliance use.

3. Mass emission significance criteria apply to the sum of area, energy, and mobile sources.

4. SMAQMD recommends a 0 lb/day threshold be applied to projects that do not include best management practices or best available control technology. SMAQMD's recommended BMP for land use development projects, which the project is characterized as, is compliance with the most recent version of the building code. The project would comply with the building code; therefore, SMAQMD's thresholds of 80 and 82 lb/day are applied to the project for PM_{10} and $PM_{2.5}$, respectively.

Source: Modeling conducted by ESA in 2024.

Table 6-7 Summary of Project Annual (Unmitigated) Operational Emissions of Criteria Air Pollutants and Precursors at Full Buildout (2050)

Source Type	Annual Emissions (tpy)	
	PM_{10}	$PM_{2.5}$
Area[1]	1	1
Energy[2]	1.5	1.5
Mobile	75	19
Total Annual Emissions	78	21
SMAQMD Threshold of Significance[3,4]	14.6	15
Exceeds Threshold?	Yes	Yes

Notes: tpy = tons per year; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; NA = not applicable.

1. Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings. It was assumed that none of the residential units would be equipped with a fireplace.

2. Energy emissions include emissions associated with natural gas consumption for space heating/cooling, and appliance use.

3. Mass emission significance criteria apply to the sum of area, energy, and mobile sources.

4. SMAQMD has adopted tpy operational thresholds for only PM_{10} and $PM_{2.5}$.

Source: Modeling conducted by ESA in 2024.

Long Term Regional Air Pollution

Consistent with SMAQMD's most recent Friant Ranch Guidance, the possible operational emissions of criteria air pollutants from implementation of the project were used to estimate foreseeable adverse health outcomes using SMAQMD's Strategic Area Project Health Effects Tool. Strategic Area Project II, "Rancho Cordova," was used as this Strategic Area is in closest proximity to the majority proposed rezone sites. Table 6-8 below summarizes the potential health effects in the region from the project.

Based on this modeling, operational emissions from implementation of the project may result in an additional 4 mortalities from ozone and $PM_{2.5}$ exposure compared to a background number of incidences of about 75,000 mortality incidences per year, or a 0.0053 percent increase in regional annual deaths. This increase in mortalities is negligible when compared to the rates at which other causes of death occur in the county according to the most recent Health Profile for Sacramento County (CDPH 2019). There is no established threshold of significance that addresses anticipated deaths; however, consistent with guidance from the Friant Ranch Decision, this information has been included to provide a meaningful level of detail to the public. Notably, as discussed under the "Methodology" section above, there is inherent difficulty in evaluating the exact location and degree of adverse health outcomes from project-level emissions. Moreover, the Strategic Area Project Health Effects Tool cannot account for personal information such as age, preexisting conditions, genetic propensities, and lifestyle choices that may contribute to a receptor's sensitivity to air pollution.

Table 6-8 Potential Annual Incremental Health Incidences Resulting from the Project Implementation

$PM_{2.5}$ Health Endpoint	Age Range	Incidences (Mean)	Percent (%) of Background Incidences	Total Number of Health Incidences (per Year)
Respiratory				
Emergency Room Visits	0-99	1.7	0.0095%	18,419
Hospital Admissions, Asthma	0-64	0.11	0.0061%	1,846
Hospital Admissions, All Respiratory	65-99	0.66	0.0033%	19,644
Cardiovascular				
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65-99	1.7	0.0095%	24,037
Acute Myocardial Infarction, Nonfatal	18-24	0.11	0.0061%	4
Acute Myocardial Infarction, Nonfatal	25-44	0.66	0.0033%	308
Acute Myocardial Infarction, Nonfatal	45-54	1.7	0.0095%	741
Acute Myocardial Infarction, Nonfatal	55-64	0.11	0.0061%	1,239
Acute Myocardial Infarction, Nonfatal	65-99	0.66	0.0033%	5,052
Mortality				
Mortality, All Causes	30-99	4.4	0.0098%	44,766

Ozone Health Endpoint	Age Range	Incidences (Mean)	Percent of Background Incidences	Total Number of Health Incidences (per Year)
Respiratory				
Hospital Admissions, All Respiratory	65-99	0.20	0.0010%	19,644
Emergency Room Visits, Asthma	0-17	0.81	0.014%	5,859
Emergency Room Visits, Asthma	18-99	1.4	0.011%	12,560
Mortality				
Mortality, Non-Accidental	0-99	0.13	0.00044%	30,386
Total Incidences	**0-99**	**14.35**	**0.09294%**	**184,505**

Notes: $PM_{2.5}$ = fine particulate matter; NA = not applicable.

Source: Modeling conducted by Ascent 2024.

According to SMAQMD, a project should assess consistency with the SIP by asking the following question: "Would the project involve a change in a land use designation established by the applicable local land use plan and/or general plan?" According to SACOG, the household population of the master plan's footprint within the MTP/SCS Developing Community area is expected to increase from 630 in 2012 and 720 in 2020 to 13,000 in 2036. Dwelling unit counts in the area are expected to increase from 270 in 2012 and 2020 to 5,400 in 2036. Employment counts in the area are expected to increase from 2,200 in 2012 and 2,300 in 2020 to 3,000 in 2036. Assuming roughly half of the proposed development under the master plan is constructed by 2040, the master plan would result in more dwelling units than what was included in the SIP for 2040. In other words, the full extent of master plan development is not included in SACOG's growth projections included in the current SIP. Therefore, the project would not be consistent with the growth projections of the SIP (SACOG 2019).

NO_X, ROG, PM_{10}, and $PM_{2.5}$, after full-build-out of the project, would exceed SMAQMD's thresholds of significance. Unmitigated operational emissions would generate ozone precursor (ROG and NO_X) emissions that would exceed the significance thresholds established by SMAQMD and would therefore be considered significant for CEQA purposes.

When operational emissions exceed significance thresholds, SMAQMD recommends the development of an AQMP to minimize impacts, with guidance and suggested measures included in the *Recommended Guidance for Land Use Emission Reductions Version 4.0 (for Operational Emissions).* As discussed above in the "Methodology*"* section above, a "blended rate" mitigated reduction goal of 29 percent was used to show consistency with regional air quality plans. Nevertheless, to demonstrate that the master plan would adhere to SMAQMD's AQMP requirements, a more conservative 35 percent reduction rate was applied.

An AQMP was prepared demonstrating that the master plan could achieve the 35 percent reduction in ROG and NO_X emissions from project-related mobile sources after all proposed design features have been implemented; the AQMP can be found in Appendix B. Specific project design features included as a component of the project that

reduce VMT are listed below as they correspond to CAPCOA greenhouse gas mitigation measures (T-xx) and SMAQMD land use emission reduction measures (LUT-xx), including:

- The project is located in a suburban center within approximately 10 miles of the Sacramento downtown central business district and less than 5 miles from other existing high-density commercial/job center areas (LUT-2 and LUT-3).
- The project is located adjacent to other planned developments such that single-use trips are minimized, and there are more pass-by and diverted trips (LUT-3 and LUT-4).
- The project provides a compact mix of land uses in close proximity to each other with a highly connected street and trail network (LUT-3).
- Overall housing density is better than 7 dwelling units per acre (LUT-1).
- The project design includes locating at least four schools within the plan area, such that most students can walk to a local school (LUT-3 and LUT-4).
- The project design includes at least eight parks within the plan area, such that residents can walk/bike to enjoy the parks (LUT -3 and LUT-4).
- The project design includes access to high frequency bus service that connects to the Watt/Manlove light rail station (LUT-5).
- Bus routes are signalized in order to avoid traffic delays (T-27).
- The project design promotes a multi-modal system that makes public transit, walking, and bicycling viable and attractive travel choices for residents and employees. Features include:
- Adequate bike parking at non-residential locations (T-34, T-47).
- Showers/lockers and other end of trip facilities at non-residential buildings (T-10).
- Long-term bike parking facilities (T-34, T-47).
- The project includes an extensive pedestrian path and trail system that is convenient and accessible from homes, school, parks, employment, and shopping (LUT-8).
- Pedestrian and bike paths minimize any barriers to pedestrian/bicycle use, (e.g., fences, berms and other impediments are eliminated where possible) (LUT-8, T-18, T-20).
- The project subsidizes bus rapid transit lanes (T-27).
- The project funding and design would result in bus headways of 15 minutes or better (T-26).
- The project includes joining a Transportation Management Association (TMA) funded through assessments. Although the project would include a TMA, no VMT reduction from the TMA is assumed in the modeling of emissions (Appendix K).

- The project includes assessments for regional transportation improvements (T-27).
- Electric bike share and scooter share (T-22-B, T-22-C).
- Additional sidewalks within the plan area (T-18).
- The project would include a carpooling/rideshare program (T-8).

Mitigation Measure AIR-2, discussed below, would be applied to the project. Mitigation Measure AIR-2 requires that an AQMP that achieves a minimum 35 percent reduction compared to an "unmitigated" project scenario (i.e., utilizes CalEEMod VMT default values) be applied to the whole of the project. The adequacy of the AQMP shall be verified by SMAQMD through a formal letter certifying that the reductions achieve the 35 percent reduction target. Mitigation Measure AIR-2 would require the project to adhere to the most recent Tier 2 voluntary standards of the CalGreen Code, which would further reduce emissions from the mobile source sector. Mitigation Measure AIR-2 would also promote the use of low-VOC content consumer projects throughout the plan area. Mitigation Measure AIR-2 would reduce mobile source emissions through the electrification of heavy-duty trucks accessing the plan area. Further, Mitigation Measure AIR-2 would reduce areawide sources of emissions through the electrification of landscaping equipment. Finally, Mitigation Measure AIR-2 would reduce emissions from stationary sources through the application of best available control technology for generators.

However, complying with SMAQMD guidance to prepare an AQMP, in addition to the other measures presented above, would not inherently result in a less-than-significant impact as emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ could be in exceedance of the SMAQMD mass emissions thresholds for operational emissions. As shown in Tables 6-9 and 6-10, the project's mitigated emissions would still exceed SMAQMD's thresholds of significance for ROG, NO_X, PM_{10}, and $PM_{2.5}$.

Although the project may reduce operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ overall, these reductions would not be sufficient to meet SMAQMD's mass emissions thresholds; therefore, the mitigation measures contained in the AQMP would not be sufficient to reduce air pollutants to less-than-significant levels. Thus, the project's operations may contribute to the nonattainment status of the region and may conflict with the NAAQS and CAAQS. This contribution could result in increased exposure of populations to harmful concentrations of criteria air pollutants which could cause adverse health impacts such as acute and chronic respiratory and cardiovascular illness, suppressed immune function, and cancer.

Table 6-9 Summary of Project Maximum Daily (Mitigated) Operational Emissions of Criteria Air Pollutants at Full Buildout (2050)

Source Type	Maximum Daily Emissions (lb/day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area[1]	1,086	16	8	8
Energy[2]	0	0	0	0
Mobile	118	93	382	96
Total Daily Emissions[3]	1,204	108	390	103
SMAQMD Threshold of Significance[3]	65	65	80[4]	82[4]
Exceeds Threshold?	Yes	Yes	Yes	Yes

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter.

1. Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings. It was assumed that none of the residential units would be equipped with a fireplace.

2. Energy emissions include emissions associated with natural gas consumption for space heating/cooling, and appliance use.

3. Mass emission significance criteria apply to the sum of area, energy, and mobile sources.

4. SMAQMD recommends a 0 lb/day threshold be applied to projects that do not include best management practices or best available control technology. SMAQMD's recommended BMP for land use development projects, which the project is characterized as, is compliance with the most recent version of the building code. The project would comply with the building code; therefore, SMAQMD's thresholds of 80 and 82 lb/day are applied to the project for PM_{10} and $PM_{2.5}$, respectively.

Source: Modeling conducted by ESA in 2024.

Table 6-10 Summary of Project Annual (Mitigated) Operational Emissions of Criteria Air Pollutants and Precursors at Full Buildout (2050)

Source Type	Annual Emissions (tpy)	
	PM_{10}	$PM_{2.5}$
Area[1]	1	1
Energy[2]	0	0
Mobile	70	17
Total Annual Emissions	71	18
SMAQMD Threshold of Significance[3,4]	14.6	15
Exceeds Threshold?	Yes	Yes

Notes: tpy = tons per year; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; NA = not applicable.

1. Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings. It was assumed that none of the residential units would be equipped with a fireplace.

2. Energy emissions include emissions associated with natural gas consumption for space heating/cooling, and appliance use.

3. Mass emission significance criteria apply to the sum of area, energy, and mobile sources.

4. SMAQMD has adopted tpy operational thresholds for only PM_{10} and $PM_{2.5}$.

Source: Modeling conducted by ESA in 2024.

Projects that emit criteria air pollutants in exceedance of SMAQMDs thresholds would contribute to the regional degradation of air quality that could result in adverse human health impacts. Acute exposure to criteria air pollutants can cause coughing, chest pain, shortness of breath, eye and throat irritation, lung scarring, and may aggravate preexisting cardiovascular and respiratory illness (e.g., asthma). Chronic exposure to criteria pollutants may result in permanent lung and heart impairment, chronic coughing, cancer, decreased immune function in children, and premature death.

Therefore, compliance with SMAQMD's AQMP requirement and additional mitigation measures would not be sufficient to reduce emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ to levels below the applicable operational thresholds of significance. Thus, operational emissions of criteria air pollutants and ozone precursors would be **significant and unavoidable**.

MITIGATION MEASURES

MITIGATION MEASURE AIR-2: AIR QUALITY MANAGEMENT PLAN REDUCTION MEASURES

The project shall include the following quantifiable reduction measures included in the AQMP prepared for the project (Appendix B of the EIR), which would reduce the project's operational criteria air pollutants and ozone precursors by, at a minimum, 35 percent in comparison to the "unmitigated" project, as conditions of approval.

ELECTRIC VEHICLE CHARING INFRASTRUCTURE

Prior to the issuance of a certificate of occupancy for any project structure with parking, the future project applicants shall demonstrate compliance with the most recently adopted version of the California Green Building Standards (CALGreen Code) Tier 2 voluntary electric vehicle (EV) charging requirements or the mandatory requirements of the most recently adopted version of the County of Sacramento building code, whichever is more stringent. The installation of all EV charging equipment shall be included on the project drawings submitted for the construction-related permit(s) demonstrating the future development is meeting the Tier 2 voluntary EV requirements of the most recent version of the CalGreen code as verified by the County.

OPERATIONAL TRUCK EMISSIONS REDUCTIONS

The project applicants shall incorporate the following measures into the project contracts (as applicable) to reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with operational on-road trucks, along with the potential health risk caused by exposure to toxic air contaminants from operational on-road trucks. These features shall be submitted to the County for review and approval prior to the issuance of building permits and shall be included on the project drawings submitted for the construction-related permit or on other documentation submitted to Planning and Environmental Review. ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions from project-related operational diesel trucks shall be reduced by implementing the following measures:

- Equip all truck delivery bays with electrical hook-ups for diesel trucks at loading docks to accommodate plug-in electric truck transport refrigeration units (TRUs) or auxiliary power units during project operations.

- Provide a notice on the lease to all new tenants or owners of the project or any portion thereof requiring any truck-intensive uses on the site, such as large grocery stores or distribution facilities with their own fleet of trucks, to use TRUs and auxiliary power units that are electric plug-in capable and trucks that use advanced exhaust technology (e.g., hybrid) or alternative fuels. Trucks equipped with diesel TRUs shall meet US EPA's Tier 4 emissions standards. This shall be enforced through oversight by the County and shall be included as part of contractual lease agreement language to ensure the tenants/lessees are informed of all ongoing operational responsibilities.
- Prohibit TRUs from operating at loading docks for more than thirty minutes, and post signs at each loading dock presenting this TRU limit.
- All newly constructed loading docks that are on a commercial or industrial property and can accommodate trucks with TRUs shall be equipped with electric vehicle (EV) charging equipment for heavy-duty trucks. This measure does not apply to temporary street parking for loading or unloading.
- Prohibit trucks from idling for more than two minutes, and post "no idling" signs at the site entry point, at all loading locations, and throughout the project site.

BEST AVAILABLE EMISSIONS CONTROLS FOR STATIONARY EMERGENCY GENERATORS

To reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with operation of any emergency generators that would be installed in the plan area, the future project applicants shall implement the following measures. These features shall be submitted to County Planning and Environmental Review for review and approval, and shall be included on the project drawings submitted for the construction-related permit(s) or on other documentation submitted to the lead agency prior to the issuance of any building permits:

- Permanent stationary emergency generators installed on-site shall have engines that meet or exceed CARB Tier 4 Off-Road Compression Ignition Engine Standards (California Code of Regulations Title 13, Section 2423). If the CARB adopts future emissions standards that exceed the Tier 4 requirement, the emissions standards resulting in the lowest ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions shall apply.
- As non-diesel-fueled emergency generator technology becomes commercially available, as permitted by SMAQMD, non-diesel-fueled generators shall be installed in new buildings, provided that alternative fuels used in generators, such as biodiesel, renewable diesel, natural gas, or other biofuels or other non-diesel emergency power systems, are demonstrated to reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions compared to diesel fuel.
- For each new diesel backup generator permit submitted to air district for the proposed project, the future project applicants shall submit the anticipated location and engine specifications to the lead agency for review and approval prior to issuance of a permit for the generator. Once operational, all diesel backup generators shall be maintained in good working order for the life of the

equipment, and any future replacement of the diesel backup generators must be consistent with these emissions specifications. The operator of the facility at which the generator is located shall maintain records of the testing schedule and emergency operations for each diesel backup generator for the life of that diesel backup generator and shall provide this information for review to the County within three months of requesting such information.

- A non-diesel-fueled emergency generator shall ordinarily be considered commercially available if the generator is capable of serving the intended purpose, is approved by the local fire department, and is available for commercial purchase and installation within California. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such generators are commercially unavailable, the operator must submit documentation from a minimum of three (3) non-diesel-fueled emergency generator dealers demonstrating the inability to obtain the required non-diesel-fueled emergency generators needed within 6 months.

IMPACT AIR-3: CONFLICT WITH AN AIR QUALITY PLAN

The *Sacramento Regional 2023 8-Hour Ozone Attainment and Reasonable Further Progress Plan*, which is the current ozone attainment plan for the region, addresses attainment of the federal 8-hour ozone standard, while the *Triennial Report and Air Quality Plan Revision* and the *2017 Annual Progress Report* address attainment of the California 1-hour and 8-hour ozone standards. These are the latest plans issued by the SMAQMD, and they incorporate land use assumptions and travel demand modeling from SACOG.

According to SMAQMD, land use development projects that exceed emissions of 85 lbs/day of NO_X during construction would have the potential to obstruct the success of the regional ozone attainment plans and would therefore be considered significant and require mitigation. Emissions of ROG and NO_X from construction are discussed above in Impact AIR-1: Construction Emissions of Criteria Air Pollutants and Precursors (ROG, NO_X, PM_{10}, and $PM_{2.5}$). Both ROG and NO_X emission are expected to exceed the applicable significance thresholds as presented below; therefore, the project's construction impact would be considered significant.

For operations, land use development projects that exceed emissions of 65 lbs/day of ROG or NO_X during operational activities would have the potential to obstruct the success of the regional ozone attainment plans and would therefore be considered significant and require mitigation. In order to determine compliance with the applicable air quality plan with regard to operational emissions, the SMAQMD recommends comparing the project to the growth projections and VMT included in the MTP/SCS.

As discussed above in Impact AIR-2: Long-Term Operational Emissions of Criteria Air Pollutants and Ozone Precursors (ROG, NO_X, PM_{10}, and $PM_{2.5}$), development proposed by the project would be outside of the growth projections outside of the MTP/SCS. According to SACOG, the household population of the master plan's footprint within the

MTP/SCS Developing Community area is expected to increase from 630 in 2012 and 720 in 2020 to 13,000 in 2036. Dwelling unit counts in the area are expected to increase from 270 in 2012 and 2020 to 5,400 in 2036. Employment counts in the area are expected to increase from 2,200 in 2012 and 2,300 in 2020 to 3,000 in 2036. Assuming roughly half of the proposed development under the master plan is constructed by 2040, the master plan would result in more dwelling units than what was included in the SIP for 2040. In other words, the full extent of master plan development is not included in SACOG's growth projections included in the current SIP. Therefore, the project would not be consistent with the growth projections of the SIP and would conflict with long-term regional air quality planning in the SVAB. This impact would be **significant**.

Also discussed in Impact AIR-2: Long-Term Operational Emissions of Criteria Air Pollutants and Ozone Precursors (ROG, NO_X, PM_{10}, and $PM_{2.5}$), an AQMP was prepared for the project. Emission of ROG, NO_X, PM_{10}, and $PM_{2.5}$ were reduced, but not the degree that the project's emissions would be under SMAQMD's recommended daily and annual thresholds of significance. Therefore, compliance with SMAQMD's AQMP requirement and additional mitigation measures would not be sufficient to reduce emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ to levels below the applicable operational thresholds of significance. Thus, operational emissions of criteria air pollutants and ozone precursors would be **significant and unavoidable**.

MITIGATION MEASURES

Implement Mitigation Measure AIR-2

IMPACT AIR-4: RESULT IN SUBSTANTIAL MOBILE-SOURCE CO CONCENTRATIONS

Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. However, under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels at nearby sensitive land uses, such as residential units, hospitals, schools, and childcare facilities. As a result, it is recommended that CO not be analyzed at the regional level, but at the local level.

Construction would occur over many years and, therefore, traffic-related to construction activities would also be spread over the duration of construction activities. As such, construction-generated traffic is not anticipated to result in large peaks in traffic volume at any one time over the course of construction. This analysis focuses on operation-related traffic.

Whether CO emissions generated by traffic at congested intersections have the potential to exceed, or contribute to an exceedance of, the 8-hour CAAQS of 9.0 micrograms per cubic meter ($\mu g/m^3$) or the 1-hour CAAQS of 20.0 $\mu g/m^3$, SMAQMD recommends a project's contribution of new vehicle trips should be compared to a screening criteria of 31,600 vehicle per hour at one affected intersection. At complete buildout, the project would generate up to 20,000 trips during the a.m. peak hour and up to 21,500 trips during the p.m. peak hour.

Moreover, in its most recent guidance, SMAQMD notes that "[o]ther pollutants such as CO, sulfur dioxide and lead are of less concern because operational activities are not likely to generate substantial quantities of these criteria air pollutants and the Sacramento Valley Air basin has been in attainment for these criteria air pollutants for multiple years" (SMAQMD 2020b).

Also, because of stricter vehicle emissions standards in newer cars, new technology, and increased fuel economy, CO emissions are expected to be substantially lower in future years than under existing conditions. Thus, project-generated local mobile-source CO emissions would not result in or substantially contribute to concentrations that exceed the 1-hour or 8-hour ambient air quality standards for CO. As a result, this impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT AIR-5: EXPOSURE OF SENSITIVE RECEPTORS TO TACS

The exposure of sensitive receptors to TAC emissions from project-generated construction and operational sources are discussed separately below.

CONSTRUCTION

Construction-related activities would result in temporary, intermittent emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., demolition, clearing, grading); paving; application of architectural coatings; on-road truck travel; and other miscellaneous activities. For construction activity, diesel PM is the primary TAC of concern. On-road diesel-powered haul trucks traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations.

Particulate exhaust emissions from diesel-fueled engines (i.e., diesel PM) was identified as a TAC by CARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2013). Studies show that diesel PM is highly dispersive. For instance, concentrations of diesel PM generated by freeway traffic decreased by approximately 70 percent at 500 feet from the source, and receptors must be near emission sources to result in the possibility of exposure to concentrations of concern and must be near for a long duration of time. With regard to exposure of diesel PM, the dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher level of health risk for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to Office of Environmental Health Hazard Assessment (OEHHA), Health Risk Assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70- or 30-year exposure period;

however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2015:11-3). Based on the emission modeling conducted (see Appendix B), maximum daily exhaust emissions of PM_{10}, considered a surrogate for diesel PM, would not exceed 3 lb/day during the most intense season of construction activity. Furthermore, even during the most intense year of construction, emissions of diesel PM would be generated from different locations in the plan area rather than a single location because different types of construction activities (e.g., site preparation, building construction) would not occur at the same place at the same time. Consequently, it is important to consider that the use of off-road heavy-duty diesel equipment would be limited to the construction phase of up to 30 years. However, each individual construction activity within this 30-year period would be much shorter. As construction progresses, activity intensity and duration would vary throughout the site. As such, no single existing or future receptor (i.e., as part of the project) would be exposed to construction-related emissions of diesel PM for extended periods of time.

As the plan area is developed, construction from other future planned developments in Sacramento County could potentially overlap with the construction activities of the project, potentially exposing newly sited sensitive receptors within the plan area and adjacent developments including the NewBridge Specific Plan and the Jackson Township Master Plan, both located to the east of the plan area, and the Mather South Community Master Plan, located to the northeast of the plan area. However, any potential construction activity associated with these other planned future developments would be located over 2,000 feet from the site of any future receptors constructed as part of the project and, thus, would not be exposed to excessive levels of TACs associated with construction.

Regarding existing off-site receptors, residences are in the Rosemont Planning Area, approximately 500 feet to the north of the plan area. Given the locations of existing receptors relative to potential diesel PM emission sources, and the temporary and intermittent nature of construction activities within specific locations in the plan area (i.e., construction does not occur year round and does not occur in any one part of the plan area during the entire buildout period), the dose of any exposure to diesel PM of any one receptor would be very limited.

Nevertheless, based on the size of the master plan and the anticipated intensity of construction, it is expected that off-road construction equipment could be operating near existing and future residences for a duration lasting longer than the two-month exposure period recommended by OEHHA. Therefore, construction of the project could expose sensitive receptors to an incremental increase in cancer risk greater than 10 in 1 million or a hazard index greater than 1.0. This impact would be potentially significant.

Long-Term Operation

Operation of some land uses developed under the project would result in new sources of TACs associated with new vehicular trips on existing and new roadways, as well as new sources of diesel PM associated with commercial loading docks frequented by diesel-powered delivery trucks and backup diesel generators. New TAC sources could expose existing and future sensitive receptors to TAC emissions. The project would also locate new sensitive land uses in proximity to existing TAC sources associated with surrounding roadways.

In accordance with available guidance from CARB, freeways or urban roadways experiencing 100,000 or more vehicles per day could expose sensitive receptors to adverse health risks. The nearest roadway supporting over 100,000 or more trips per day is Highway 50, which is located approximately 5,300 feet to the north of the plan area. Using SMAQMD's Mobile Sources Air Toxics protocol, the portion of the plan area nearest Highway 50 is currently experiencing cancer risk exposure of 15 in one million from combined diesel PM and total organic gases emissions (SMAQMD 2020c). It is foreseeable the implementation of the project could exacerbate this existing adverse condition.

Additionally, as described above and in Chapter 19, "Transportation," several objectives within the WJHMP would require coordination with the County to support bicycle, pedestrian, and transit travel within the plan area. The project also includes a requirement to participate in a Transportation Management Association program to reduce emissions of air pollution.

In addition to new mobile sources on local roadways, the project would include the development of approximately 291 acres of General Commercial uses, 543 acres of Employment use, and 154 acres of Industrial use. These land uses may include loading docks for delivery trucks, resulting diesel PM exhaust emissions from idling trucks that could expose existing or new sensitive receptors to TACs, depending on the location of these new land uses and proximity to off-site or new on-site receptors.

The placement of new sources of diesel PM associated with commercial delivery trucks could expose new or existing sensitive receptors to increased TAC emissions. This impact would be potentially significant.

Mitigation Measure AIR-5a would require the future project applicants to site new receptors according to CARB's 2005 Land Use Handbook to avoid exposure of receptors to existing source of TACs. Mitigation Measure AIR-5b would require the preparation of a project-level HRA for future development in the plan area once specific project information is available. Mitigation Measures AIR-5c and 5d would reduce the potential for diesel PM exposure through engine requirements to either electrify or improve the efficiency of diesel-powered equipment. Although Mitigation Measure AIR-5b would require that each applicant shall prepare an HRA specific to each development under the project to determine the potential proximity of nearby sensitive receptors to future TAC emission sources, the exact location of sensitive receptors and their exposure to future TAC emissions is currently unknown. For these reasons, construction of the project would result in the exposure of nearby existing and future sensitive receptors to TAC emissions that would be considered **significant and unavoidable**.

MITIGATION MEASURES

MITIGATION MEASURE AIR-5A: CARB LAND USE SITING STANDARDS

The design guidelines and development standards of the master plan shall include consideration of CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* recommendations in land use siting. These include the following.

- Prohibit siting new sensitive land uses within 500 feet of urban roads carrying 100,000 vehicles per day.
- Prohibit siting new sensitive land uses within 300 feet of a large gasoline station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gasoline-dispensing facilities.
- Prohibit siting new sensitive land uses within 300 feet of any dry-cleaning operation using perchloroethylene. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult the local air district. Do not site new sensitive land uses in the same building with dry-cleaning operations that use perchloroethylene.
- Obtain facility-specific information from SMAQMD where there are questions about siting a sensitive land use close to an industrial facility, including the amount of pollutant emitted and its toxicity, distance to nearby receptors, and types of emissions controls in place.

MITIGATION MEASURE AIR-5B: PROJECT-LEVEL CONSTRUCTION AND OPERATIONAL HEALTH RISK ASSESSMENT

Future project applicants shall prepare construction and operational health risk assessments (HRAs) specific to each proposed development in the plan area. For projects that do not introduce a new stationary source of TACs (i.e., residential development), an operational HRA need not be prepared. The HRAs shall be prepared by a qualified air quality analyst and submitted to the County of Sacramento for review and approval prior to project approval as a component of an initial entitlement application package. The HRAs shall be prepared based on the latest methodology recommended by the Office of Environmental Health Hazard Assessment (OEHHA) and the Sacramento Metropolitan Air Quality Management District (SMAQMD). The HRAs shall evaluate the development's potential health risk impacts pursuant to SMAQMD CEQA guidelines and thresholds. Specifically, each HRAs must evaluate the development's incremental increase in cancer risk, acute hazard index, chronic hazard index, and annual average concentrations of particulate matter in size fractions of 2.5 microns or less in diameter ($PM_{2.5}$) associated with the development's TAC emissions at all sensitive receptor locations within 1,000 feet of the development's boundaries. Impacts shall be identified by comparing health risks to the SMAQMD's current CEQA health risk thresholds (the current thresholds as of April 2024 are an incremental increase in cancer risk greater than 10 in one million or a hazard index greater than 1). The HRAs must also identify all feasible mitigation measures to reduce the development's potentially significant impacts to less-than-significant levels. Any mitigation measures reported in the HRAs shall be implemented by the applicants and enforced by the County of Sacramento.

MITIGATION MEASURE AIR-5C: CLEAN OFF-ROAD CONSTRUCTION EQUIPMENT

In order to reduce the impact of PM_{10} off-road equipment exhaust emissions during construction, the applicant shall ensure that all construction contracts stipulate the following as a component of the project's construction plans:

- Engine Requirements:
  - All portable engines, such as generators, shall be electric. If grid electricity is not available, propane or natural gas generators shall be used.
  - Electric engines shall be used for all equipment that is commercially available as plug-in or battery-electric equipment, to the maximum extent feasible during each construction phase and activity. Portable equipment shall be powered by grid electricity if available. Electric equipment shall include, but is not limited to, concrete/industrial saws, sweepers/scrubbers, aerial lifts, welders, air compressors, fixed cranes, forklifts, and cement and mortar mixers, pressure washers, and pumps. To qualify for an exception, future project applicants shall provide the County with evidence supporting its conclusion that electric equipment is not commercially available and shall use the next cleanest piece of off-road equipment in terms of diesel PM and $PM_{2.5}$.
  - Engines that cannot be electrically powered must meet or exceed either EPA or CARB Tier 4 Final or cleaner engines. Exceptions to the requirement for engines that meet Tier 4 Final emission standards shall include only select pieces of specialty equipment, such as those specified below, for which such engines may not be commercially available at the start of a construction phase requiring that equipment. Exceptions may be granted for certain pieces of equipment; examples include bore/drill rigs required for grading/shoring/excavation and for mobile cranes required for building construction. To qualify for an exception, future project applicants shall provide the County with evidence supporting its conclusion that equipment meeting Tier 4 Final standards is not commercially available and shall use the next cleanest piece of off-road equipment in terms of diesel PM and $PM_{2.5}$.
  - Engines shall be fueled with alternative fuels, including natural gas, propane, hydrogen fuel cell, and electricity, as commercially available and to the maximum extent feasible during each construction phase and activity.
  - Any other best technology available in the future may be included in the construction emissions minimization plan as substitutions for the above items a–d, provided that the project sponsor submits documentation to the lead agency demonstrating that (1) the technology would result in comparable ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions reductions and (2) it would not increase other pollutant emissions or exacerbate other impacts, such as noise. This may include new alternative fuels or engine technology for off-road equipment (such as electric or hydrogen fuel cell equipment) that is not available as of 2024.

- Idling time for off-road equipment shall be limited to 2 minutes, except as provided in exceptions to the applicable state regulations regarding idling for offroad equipment. Documentation shall be provided to equipment operators in multiple languages (e.g., English, Spanish, Chinese) to remind operators of the 2-minute idling limit.
- Construction operators shall be required to properly maintain and tune equipment in accordance with manufacturer specifications.

For the purpose of this mitigation measure, "not commercially available" is defined as either: (1) not being used for other large-scale projects in Sacramento County occurring at the same time; (2) cannot be obtained without significant delays to critical-path timing of construction; or (3) not available within the larger northern California region. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. For the County to make a determination that such equipment is commercially unavailable, the operator must submit documentation from a minimum of three (3) electric offroad equipment dealers demonstrating the inability to obtain the required electric equipment needed within 6 months.

MITIGATION MEASURE AIR-5D: CLEAN ON-ROAD CONSTRUCTION TRUCKS

Heavy-duty on-road construction trucks shall comply with the following, which would reduce PM_{10} and $PM_{2.5}$ emissions:

- Engine Requirements:
  - All on-road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used at the plan area (such as haul trucks, water trucks, dump trucks, concrete trucks, and vendor trucks) shall be model year 2020 or newer.
  - Use alternative fuels as commercially available, such as natural gas, propane, hydrogen fuel cell, and electric vehicles or other fuels where the future project applicants can provide evidence which suggests that PM_{10} and $PM_{2.5}$ emissions would be reduced compared to conventional diesel fuel.
  - Any other best technology available in the future (i.e., not available as of 2023) may be used in lieu of or in addition to the above items, provided that the project sponsor submits documentation to the County demonstrating that (1) the technology would result in comparable PM_{10} and $PM_{2.5}$ emissions reductions and (2) that such measures would not increase other pollutant emissions or result in other impacts, such as noise. This may include new alternative fuels for on-road trucks.
  - An alternative-fueled and ZEV truck shall ordinarily be considered commercially available if the vehicle is capable of serving the intended purpose and is included in California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, https://californiahvip.org/ or listed as available

in the US on the Global Commercial Vehicle Drive to Zero inventory, https://globaldrivetozero.org/. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such vehicles are commercially unavailable, the operator must submit documentation from a minimum of three ZEV dealers identified on the californiahvip.org website demonstrating the inability to obtain the required ZEVs or equipment needed within 6 months.

- Require the idling time for on-road vehicles be limited to 2 minutes, except as provided in exceptions to the applicable state regulations regarding idling for on-road vehicles. Documentation shall be provided to truck drivers in multiple languages (e.g., English, Spanish, Chinese) to remind operators of the 2-minute idling limit.

Impact AIR-6: Exposure to Odors Affecting a Substantial Number of People

With respect to operations, no common sources of substantial nuisance odors, such as wastewater treatment facilities or waste-disposal facilities are proposed as part of the project. However, the project would include an industrial land use category that would allow manufacturing, such as asphalt concrete plants, that could contribute odors. It is currently not known whether new industrial facilities that may be sources of odorous emissions would be constructed in these areas. While commercial uses could provide uses that may include sources of odorous emissions (e.g., fast-food restaurants) that could be perceived as offensive to some individuals, it is assumed that the size, location, and construction of these facilities would not create significant odor impacts. In addition, these uses may also receive additional environmental analysis in the future, and it is speculative to determine what specific commercial uses would be constructed.

Regarding land use compatibility of locating sensitive receptors in proximity to existing sources of odor in the region, there are several potential sources in the vicinity of the WJHMP Area, including the Sacramento Rendering Company plant (about 2.25 miles to the east at 11350 Kiefer Boulevard), Granite hot asphalt plant (within the northern portion of the plan area at 4291 Bradshaw Road), Teichert hot asphalt plant (about 0.7 miles to the northwest at 9760 Jackson Road), Florin-Perkins Landfill (approximately 0.75 miles to the west at 4201 Florin Perkins Road 95826) and L & D Landfill (about 0.15 miles to the west at 8635 Fruitridge Road.

SMAQMD enforces California Health and Safety Code Section 41700 prohibited discharge, and District Rule 402, Nuisance, which prohibits causing a public nuisance from odor. SMAQMD determines that businesses are a public nuisance for odor if they receive public complaints and are able to verify that the source is causing the odors. Both landfills handle primarily construction and demolition debris, which is not a source of substantial odors. According to SMAQMD, in the last three years (CY 2020-2023) the Florin-Perkins Landfill, Granite hot asphalt plant, and the L And D Landfill have received no public complaints and no notice of violations (NOVs). Within the same time period,

the Teichert hot asphalt plant has received two odor complaints and no NOVs. The Sacramento Rendering Company has received 287 odor complaints between 2020-2023, however the SMAQMD is precluded from enforcing odor nuisance at the facility due to the State of California Right to Farm Act. These facilities are within the SMAQMD odor screening distances (2 miles for asphalt batch plants and 4 miles for rendering plants) and, depending on whether these plants are still operational as the plan is developed (the Sacramento Rendering Plant has plans to relocate the plant to a more compatible area), would be a source of potential nuisance odors. In addition, the prevailing annual wind direction in the plan area is from the south and, therefore, the majority of the plan area would not be located directly downwind from the rendering plant or asphalt plants. However, since the future operational status of these plants is unknown and there have been substantial odor complaints associated with the facilities (289 total complaints as discussed above), the Sacramento Rendering Company plant and hot asphalt plants would represent potentially significant odor sources for future residents in the plan area. However, the WJHMP would not exacerbate the potential for these existing facilities to emit odors.

To address the potential conflict between the project and existing land uses, the County will require, as a condition of approval, that the deeds to all properties located within the plan area that are within 4 miles of the rendering plant or 2 miles of either the Granite or Teichert hot asphalt plants are accompanied by a written disclosure from the transferor, in a form approved by the County, advising any transferee of the potential adverse odor impacts from nearby odoriferous operations and requiring the transferee(s) to sign an acknowledgement that odors from the Sacramento Rendering Company plant or hot asphalt plant may be detectable at their property.

The WJHMP does not propose specific or unusual uses that would either result in new odor emissions or increase odor emissions from existing sources in a manner that would adversely affect a substantial number of people. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

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7 AIRPORT COMPATIBILITY

INTRODUCTION

Mather Airport is immediately adjacent to the northeast perimeter of the plan area. For development near airports, special considerations are taken into account to address potential land use conflicts related to airport operations and the surrounding uses. This chapter describes the environmental and regulatory setting for airport compatibility in the plan area, identifies and analyzes impacts related to airport compatibility from implementation of the WJHMP, and as necessary, recommends mitigation measures to reduce or eliminate significant impacts.

During the notice of preparation (NOP) scoping process, commenters raised concerns about airport compatibility related to noise and hazardous wildlife attractants. A copy of the NOP and comment letters received in response to the NOP are included in Appendix A of this EIR.

ENVIRONMENTAL SETTING

AIRPORT LAND USE COMPATIBILITY PLANNING

Airport land use compatibility plans (ALUCPs), formerly called comprehensive land use plans (CLUPs), include policies and regulations to address the issues of airport noise and safety, with the intent of protecting airport operations from encroachment by incompatible land uses, as well as protecting citizens on the ground from the impacts of excessive noise and the potential for aircraft accidents. Under provisions of the California Public Utilities Code, Chapter 4, Article 35, Section 21670.1, Airport Land Use Commission Law, the Sacramento Area Council of Governments (SACOG) has been designated the Airport Land Use Commission (ALUC) for Sacramento, Sutter, Yolo, and Yuba Counties.

ALUCPs and CLUPs regulate land use in three major areas: safety zones, noise zones, and height restrictions. These restrictions are defined below. The plan area is subject to safety zones, noise contours, and height restrictions established in the Mather Airport ALUCP, as described below in the “Regulatory Setting” section.

SAFETY ZONES

The probability of airplane accidents is highest in the immediate vicinity of airports. Consequently, safety zones are delineated around airports and restrict land use. The densities of land uses allowed in these zones are inversely related to probability of an accident in the zone.

Noise Contours

Aircraft noise is one of the primary motivators for land use compatibility planning. Typically, the sound of aircraft operations is the most recognizable issue for people living and working in the vicinity of an airport. Depending on the size of the airport and the types of aircraft it accommodates, aircraft noise can be experienced over large areas.

The community noise equivalent level (CNEL) is used to describe noise exposure cumulatively for an annual-average day of aircraft operations. The annual-average day represents all aircraft operations for every day in a year divided by 365, the number of days in a year. This is intended to represent a typical day of operations within a study year. The CNEL for this annual-average day is calculated by mathematically combining the number of single noise events that occur during this period (24 hours) with how loud the events were and what time of day they occurred. The CNEL metric addresses the fact that noise events occurring after 7:00 p.m. and before 7:00 a.m. are considered more intrusive by adding noise penalties. The penalized time period is further subdivided into evening (7:00 p.m. through 9:59 p.m.) and nighttime (10:00 p.m. to 6:59 a.m.). CNEL treats every evening operation as though it were three operations and every nighttime operations as though it were ten operations. This “weighting” adds a 4.77 decibel (dB) penalty during the evening hours and a 10 dB penalty during the nighttime hours.

Noise that emanates away from airstrips and airplane flight paths is represented by concentric noise contours around the airport referred to as Theoretic Capacity Noise Contours. The contours delineate zones where land use is restricted, protecting citizens from the detrimental effects of exposure to excessive airplane noise. The contours are constructed using Federal Aviation Administration (FAA) approved modeling. The actual noise levels around an airport are a function of the number, time of day, and frequency of operations of each aircraft type. Noise levels are also influenced by the variations in monthly and seasonal flight schedule changes by the airlines. The contours are used to determine compatible land uses around the airport.

Height Restrictions

Buildings surrounding airports are prohibited from intruding into aircraft airspace except when permitted by the California Department of Transportation, Division of Aeronautics. Compliance with the height restrictions is tested by comparing the height of proposed projects with an imaginary surface surrounding each airport.

Mather Airport

Mather Airport is located within the unincorporated area of Sacramento County and is immediately adjacent to the northeast perimeter of the plan area. The airport is 2,239 acres in size and the airport elevation is 98.3 feet above mean sea level (AMSL) (SACOG 2022). Mather Airport is surrounded by a mix of residential, commercial, industrial, and open space land uses, including the Mather Preserve. The airport was originally established in 1918 as Mather Air Force Base, as a military base and pilot training school. The base went through a series of changes but continued to operate

under the military until 1988 when the US Department of Defense decided to close it. The property was transitioned via lease to Sacramento County and officially reopened in May 1995 as Mather Airport, a civilian airport. In 2012, the property was purchased by Sacramento County. However, the airport continues to receive federal funding and limited military use continues.

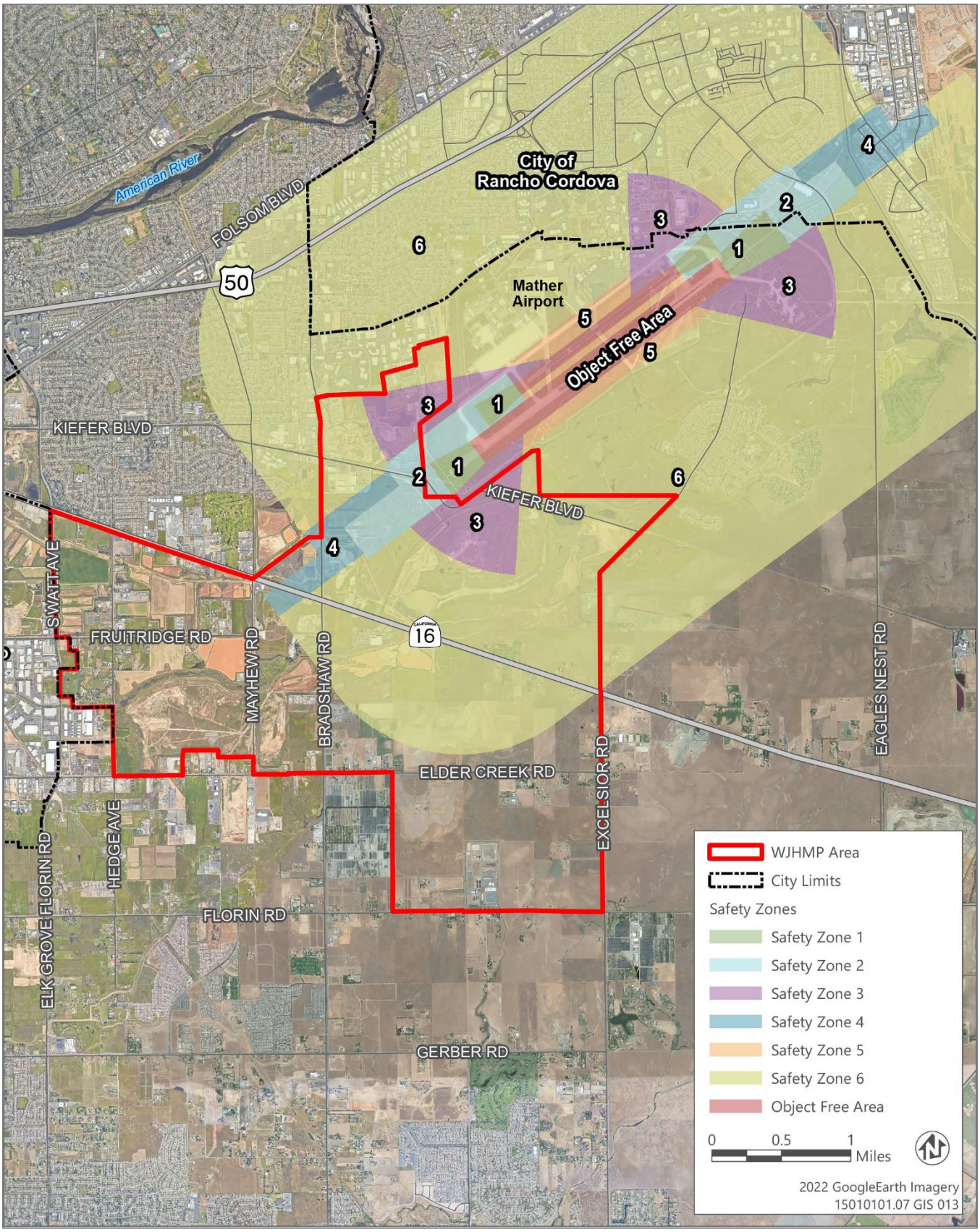
Mather Airport includes two parallel runways that are situated in a southwest-northeast orientation and supports two helipads (North Helipad and South Helipad) located adjacent to the runways (SACOG 2022). The northern of the two runways is 6,040 feet long and 150 feet wide (a planned runway extension would increase the overall length of to 7,178 feet); and the southern runway is 11,301 feet long and 150 feet wide (SACOG 2022). Mather Airport accommodates the United Parcel Service for cargo services; regional general aviation demand, including corporate general aviation and recreational general aviation; and air taxis. Mather Airport's general aviation aircraft are primarily used for corporate, government, and recreational purposes (SCDA 2013).

According to the Mather Airport airline landing statistics, Mather Airport saw 3,282 landings in 2019; 3,337 landings in 2020; 3,266 landings in 2021; 3,155 landings in 2022; and 3,029 landings in 2023 (SCDA 2019-2023). Mather Airport typically receives between 240 to 275 landings a month, with the majority of these being cargo planes. December typically has increased landings (325 to 450 landings) (SCDA 2019-2023). The majority of cargo operations occur during the evening and early morning hours at low-level overflights. Military operations consist of touch and go (take-off and landing operations), in which Air Force T-38 jet fighters are used. These aircraft are small, single-engine supersonic aircraft, which are quite loud. Touch and go operations occur at low level flight decks generally between 1,500 and 3,500 feet. Approximately 88 percent of all aircraft operations occur on the southern runway. Flights can take various flight paths depending on a variety of factors.

Mather Airport Land Use Planning

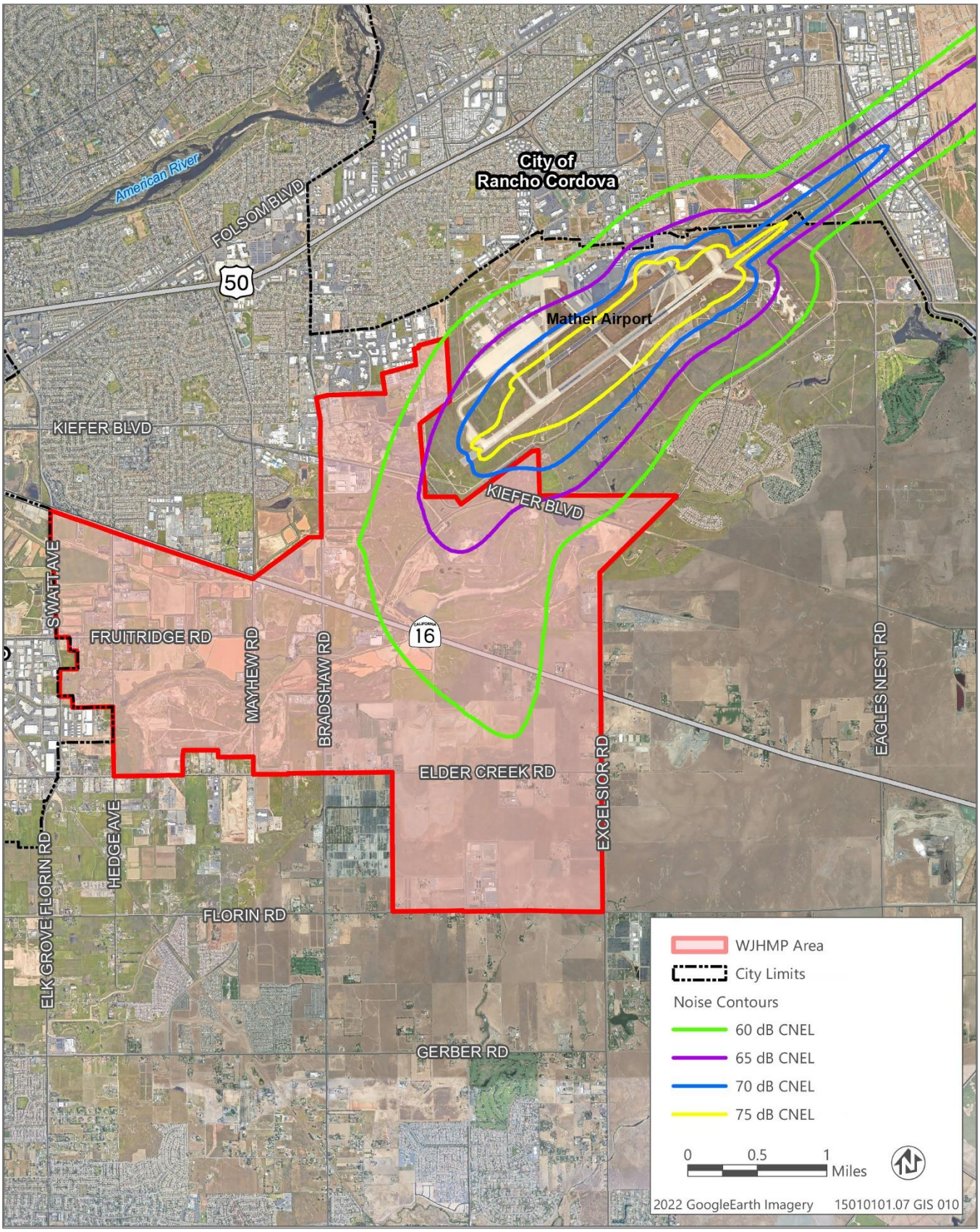
The Mather Airport ALUCP was adopted by SACOG in August 2022 and replaces the Mather Airport CLUP adopted by SACOG in May 1997. The updated ALUCP is based on the Mather Airport 2013 Revised Draft Master Plan and the FAA-approved 2014 Airport Layout Plan prepared by the Sacramento County Department of Airports. The 2013 Revised Draft Master Plan was not formally adopted.

The Mather Airport ALUCP provides land use compatibility guidelines and establishes planning boundaries for safety zones (Figure 7-1), noise (Figure 7-2), and height restrictions (Figure 7-3).



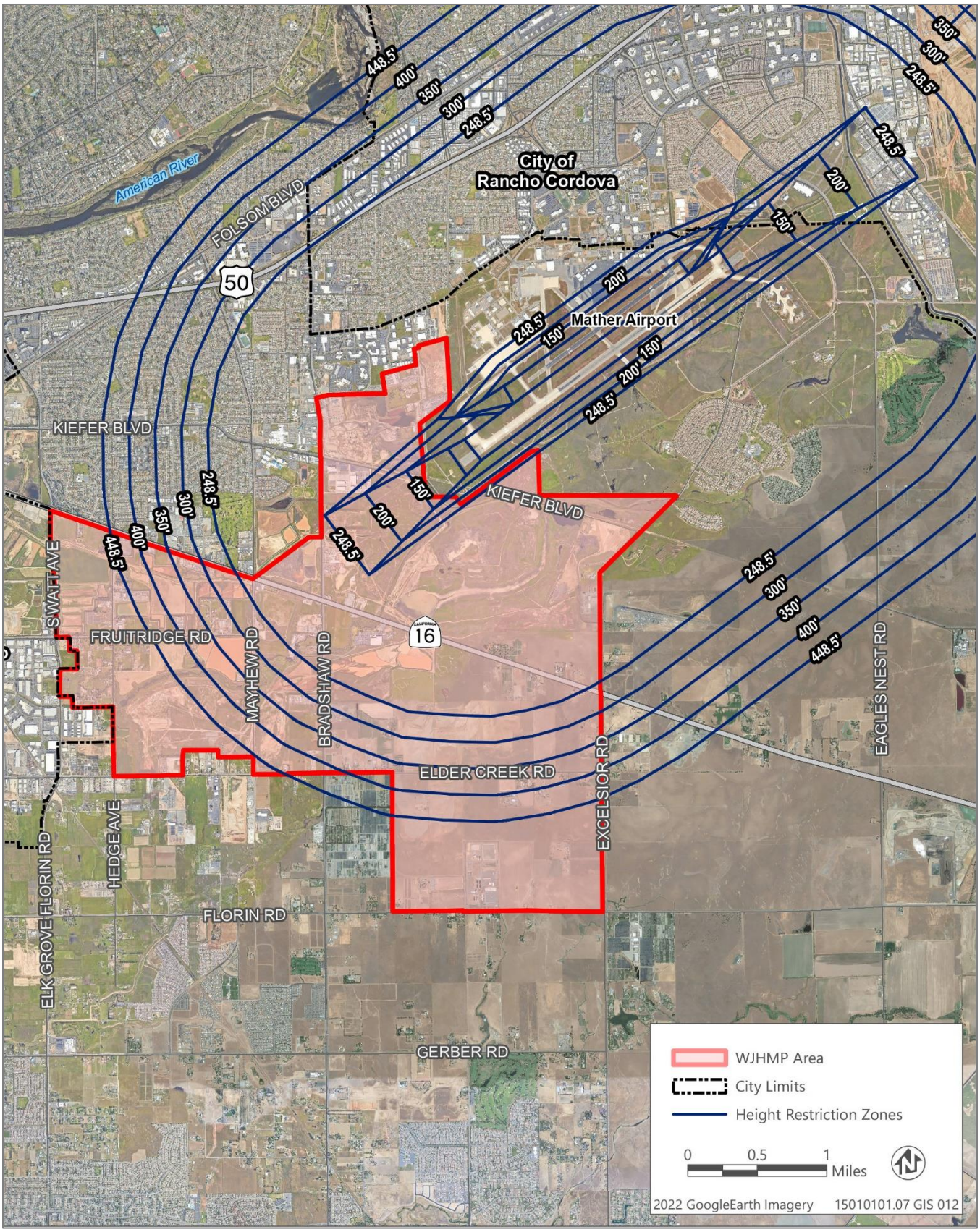
Source: Data received from Sacramento County in 2024 from SACOG; adapted by Ascent in 2024.

Figure 7-1 Mather Airport Safety Zones



Source: Data downloaded from SACOG in 2023; adapted by Ascent in 2024.

Figure 7-2 Mather Airport Theoretic Capacity Noise Contours



Source: Adapted from the County of Sacramento in 2024; adapted by Ascent in 2024.

Figure 7-3 Mather Airport Height Restrictions

The specific policies in the ALUCP are focused around four compatibility factors. These factors include:

Noise – The aircraft noise policies promote the goals of the California Airport Noise Standards (California Code of Regulations, Title 21, Section 5000 et seq.) and the California Noise Insulation Standards (25 California Administrative Code Section 1092) by avoiding the establishment of noise-sensitive land uses in areas around the Airport that are exposed to significant levels of aircraft noise.

Safety – The safety policies minimize the potential number of future residents and land use occupants exposed to hazards related to aircraft operations such as aircraft accidents.

Airspace Protection – The airspace protection policies maintain the safe and efficient operation of the airspace around the airport by avoiding potential hazards to aircraft in flight and protecting the navigable airspace around the Airport consistent with the requirements of 14 Code of Federal Regulations Part 77, Safe, Efficient Use and Preservation of the Navigable Airspace, FAA Order 8260.3B, United States Standard for Terminal Instrument Procedures, and other relevant federal regulations.

Overflight Notification – The overflight notification policies address issues related to aircraft overflights by identifying the area within which flights to and from the airport occur frequently enough and at a low enough altitude to be noticeable by sensitive residents. Within this area, real estate disclosure notices are required, pursuant to state law (California Business and Professions Code Section 11010 and California Civil Code, Sections 1102.6 and 1103.4).

The airport land use compatibility policies and criteria in the ALUCP apply only to new development. Under state law, the ALUC has no jurisdiction over existing development, except for nonconforming uses that are proposed for expansion or redevelopment. The ALUCP is discussed in greater detail below.

Nighttime Awakenings and Single Event Noise Levels

The EIR for the Mather Airport Master Plan (Sacramento County 2014) includes a technical analysis of the percentage of population residing in the areas around Mather Airport potentially awakened by aircraft noise. The portion of population potentially awakened under the 2012 existing conditions scenario is shown in Figure 7-4. (Note: Areas with no existing population were not assigned a potential for awakenings and appear white.) Under 2012 existing conditions, less than 1 percent to 13 percent of the population of the plan area is estimated to be potentially awakened by existing airport operations. The analysis concludes that in the future, as a result of implementation of the Mather Airport Master Plan, the communities around Mather Airport would be subject to increases in the percent of the population potentially awakened due to forecasted growth in aircraft operations.

REGULATORY SETTING

FEDERAL

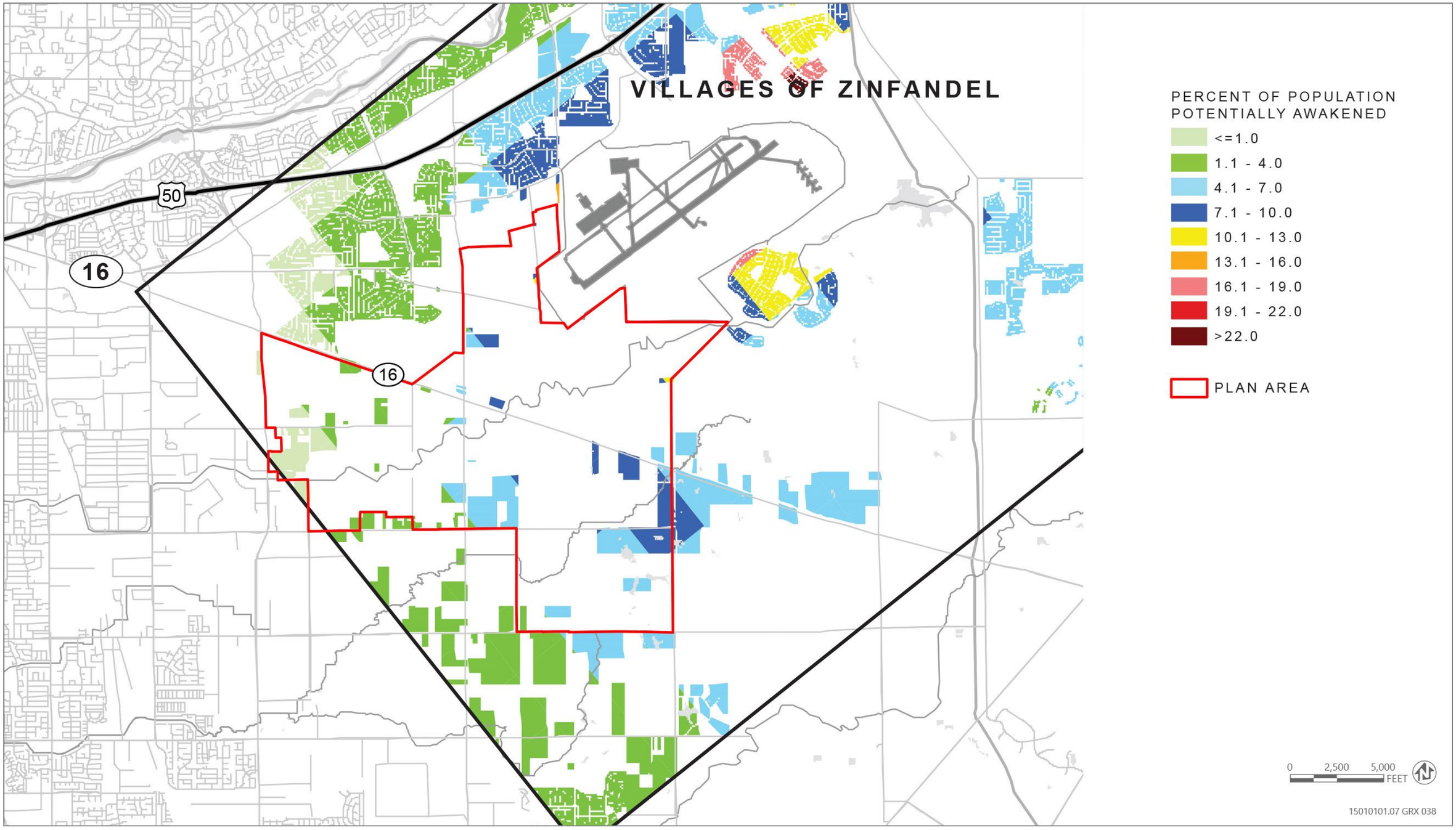
FEDERAL AVIATION ADMINISTRATION REGULATIONS

Federal Regulation Title 14 Part 77 establishes standards and notification requirements for objects affecting navigable airspace. Notification serves as the basis for FAA to:

- evaluate the effect of the construction or alteration on operating procedures,
- determine the potential hazardous effect of the proposed construction on air navigation,
- identify mitigating measures to enhance safe air navigation, and
- chart new objects.

Notification allows the FAA to identify potential aeronautical hazards in advance, thus preventing or minimizing the adverse impacts to the safe and efficient use of navigable airspace. Any person or organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA:

- any construction or alteration exceeding 200 feet above ground level;
- any construction or alteration:
    - within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 feet,
    - within 10,000 feet of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 feet,
    - within 5,000 feet of a public use heliport which exceeds a 25:1 surface;
- any highway, railroad or other traverse way whose prescribed adjusted height would exceed that above noted standards;
- when requested by the FAA; and
- any construction or alteration located on a public use airport or heliport regardless of height or location.



Source: Image produced and provided by ESA in 2018, adapted by Ascent in 2024.

Figure 7-4 Population Potentially Awakened by Aircraft Noise from Mather Airport

WILDLIFE ATTRACTANTS

The FAA provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. The FAA also requires airports that receive Federal grant-in-aid assistance, such as Mather Airport, to utilize these guidelines for projects within their boundaries. Moreover, it recommends that land use planners and project developers use the FAA's guidance for privately owned or initiated projects on or near airports.

On February 21, 2020, the FAA released a revised *Advisory Circular for Hazardous Wildlife Attractants On or Near Airports* (AC 150/5200-33C, replacing AC 150/5200-33B) that provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. The Advisory Circular, among other things, addresses stormwater detention facilities as potential hazardous wildlife attractants. According to the FAA, all stormwater facilities located within 10,000 feet of all airports' operations areas must drain within 48 hours of the design storm. Furthermore, for a 5-mile radius (nearly 20 square miles) the Advisory Circular discourages hazardous wildlife attractants, including detention basins that do not drain within 48 hours (FAA 2020).

STATE

STATE AIRPORT LAND USE POLICY

The State of California regulates airports under the authority of the Airport Land Use Commission Law, Chapter 4, Article 3.5, California Public Utilities Code. The objectives of the Airport Land Use Commission Law are to:

- protect public health, safety, and welfare through the adoption of land use standards that minimize the public's exposure to safety hazards and excessive levels of noise; and
- prevent the encroachment of incompatible uses around public-use airports, thereby preserving the utility of these airports into the future.

Under the provisions of the law, the ALUC is required to prepare an ALUCP for each public airport within its jurisdiction. The ALUCP or CLUP must be based on either a 20-year master plan or an airport layout plan if the Caltrans Division of Aeronautics decides that the existing airport layout plan is adequate for use in ALUCP/CLUP preparation.

State law requires that General Plans be made consistent with adopted ALUCPs and/or CLUPs. Consistency can be achieved through either of the following actions:

- Amending general/community plan elements and other land use regulations, where necessary, to be consistent with the ALUCP/CLUP, or prevent the encroachment of incompatible uses around public-use airports, thereby preserving the utility of these airports into the future; or

- In the event the Board of Supervisors does not agree with a provision of the plan, it can satisfy the consistency requirement for that provision by overruling the ALUC by a two-thirds vote. The overruling must, however, be made after a public hearing and must be based on specific findings that the proposed actions are consistent with the purposes of the Airport Land Use Commission Law.

Once consistency is achieved between the ALUCP/CLUP and County land use controls through either of the above two methods, State law requires that certain types of projects be referred to the ALUC for a determination of their consistency with an adopted ALUCP/CLUP. Such projects include amendments to the 2030 General Plan, or a community plan, and adoption or amendments to zoning ordinances that affect an area within an airport planning boundary as established by an ALUCP/CLUP. If the ALUC determines the project to be inconsistent, the County may overrule the ALUC by a two-thirds vote, again after a public hearing, and based on specific findings.

California Education Code

The Education Code includes provisions that apply to prospective school sites near airports. Section 39005 requires that school boards notify the Department of Education prior to acquiring title to property within 2 miles of an airport. The Department of Education then works with the Department of Transportation to investigate the proposed school site and presents recommendations concerning acquisition of the site to the board. Section 81036 sets forth similar requirements specific to community colleges.

Local

Mather Airport Airport Land Use Compatibility Plan

The Mather Airport Airport Land Use Compatibility Plan (ALUCP) was adopted by SACOG in August 2022. The ALUCP established new safety zones, noise contours, and height restrictions for Mather Airport. Sacramento County subsequently amended its General Plan Land Use and Noise Elements to incorporate the updated Mather Airport ALUCP, including the new safety zones and noise contours. The General Plan Amendments were adopted in December 2022.

Mather Airport Safety Zones

Consistent with State airport land use policy as described above, the purpose of having safety zones is to minimize the number of people exposed to hazards related to aircraft operations and accidents. Figure 7-1 depicts the adopted safety zones for Mather Airport. Portions of the plan area are located within Safety Zones 2, 3, 4, and 6. Proposed land uses within the safety zones must be evaluated in accordance with the safety compatibility criteria in the ALUCP, which are identified in Table 4-2 of the ALUCP and summarized below. The compatibility criteria identify maximum residential density, non-residential intensity, and allowable land uses for each of the six safety zones. The land uses shown in Table 4-2 of the ALUCP fall into one of three categories: compatible, conditionally compatible, and incompatible.

Safety zones for Mather Airport include the following:

Safety Zone 1 (Runway Protection Zone): No land uses identified in the ALUCP are considered compatible in Safety Zone 1.

Safety Zone 2 (Inner Approach/Departure Zone): Land uses considered by the ALUCP to be incompatible in Safety Zone 2 include the following:

- Outdoor Major Assembly Facilities
- Outdoor Large Assembly Facilities
- Outdoor Small Assembly Facilities
- Indoor Large Assembly Facilities
- Indoor Recreation/Small Assembly Facilities
- Congregate Care Facilities
- Child and Adult Day Care Facilities
- Family Day Care Home, Large
- School, K-12
- Family Day Care Home, Small
- In-Patient Medical Services
- Out-Patient Medical Services
- Public Safety Facilities
- Temporary Supportive Housing
- Hazardous Materials
- Heavy Industrial
- Light Industrial, High Intensity
- Renewables
- Major Utilities

Land uses considered conditionally compatible in Safety Zone 2 include the following:

- Single-Family Residential
- Multi-Family Residential
- Long-Term Lodging (>30 nights)
- Short-Term Lodging (> 30 nights)
- Adult Schools
- Libraries and Museums
- Major Retail
- Cemeteries, Mausoleums
- Local Retail
- Large Retail
- Eating/Drinking Establishments
- General Retail
- Office Uses
- Limited Retail/Wholesale
- Communications Facilities
- Minor Utilities
- Water Facilities
- Greenwaste Facilities
- Wildlife Preserve
- General Agricultural Uses
- Government and Local Agency Buildings
- Research and Development, Laboratory

The above uses could still be developed in Safety Zone 2 to be compatible with the ALUCP if limited to an intensity of 60 people per acre and 50 percent lot coverage, and appropriate measures to avoid attracting hazardous wildlife are taken where applicable.

Safety Zone 3 (Inner Turning Zone): Land uses considered incompatible in Safety Zone 3 include:

- Outdoor Major Assembly Facilities
- Outdoor Large Assembly Facilities
- Outdoor Small Assembly Facilities
- Indoor Large Assembly Facilities
- Indoor Recreation/Small Assembly Facilities
- Congregate Care Facilities
- Child and Adult Day Care Facilities
- Family Day Care Home, Large
- School, K-12
- Family Day Care Home, Small
- In-Patient Medical Services
- Major Retail
- Large Retail

Land uses considered conditionally compatible in Safety Zone 3 include the following:

- Single-Family Residential
- Multi-Family Residential
- Long-Term Lodging (>30 nights)
- Short-Term Lodging (>30 nights)
- Adult Schools
- Libraries and Museums
- Government and Local Agency Buildings
- Cemeteries, Mausoleums
- Out-Patient Medical Services
- Public Safety Facilities Temporary Supportive Housing
- Local Retail
- General Retail
- Eating/Drinking Establishments
- Limited Retail/Wholesale
- Office Uses
- Hazardous Materials
- Heavy Industrial
- Light Industrial, High Intensity
- Communications Facilities
- Renewables
- Major Utilities
- Water Facilities
- Greenwaste Facilities
- Wildlife Preserve
- General Agricultural Uses

Conditionally compatible non-residential land uses could still be developed to be compatible in Safety Zone 3 if limited to an intensity of 100 people per acre and 60 percent lot coverage, and appropriate measures to avoid attracting hazardous wildlife are taken where applicable. Residential land uses can be developed if limited to a density of 0.5 dwelling units per acre.

Safety Zone 4 (Outer Approach/Departure Zone): Land uses considered by the ALUCP to be incompatible in Safety Zone 4 include the following:

- Outdoor Major Assembly Facilities
- Outdoor Large Assembly Facilities
- Indoor Large Assembly Facilities
- Congregate Care Facilities
- Child and Adult Day Care Facilities
- Family Day Care Home, Large
- School, K-12
- Family Day Care Home, Small
- In-Patient Medical Services

Land uses considered conditionally compatible in Safety Zone 4 include the following:

- Outdoor Small Assembly Facilities
- Multi-Family Residential
- Single-Family Residential
- Short-Term Lodging (> 30 nights)
- Long-Term Lodging (>30 nights)
- Libraries and Museums
- Adult Schools
- Cemeteries, Mausoleums
- Government and Local Agency Buildings
- Public Safety Facilities
- Out-Patient Medical Services
- Office Uses
- Major Retail
- Heavy Industrial
- Hazardous Materials
- Communications Facilities
- Light Industrial, High Intensity
- Major Utilities
- Renewables
- Greenwaste Facilities
- Water Facilities
- General Agricultural Uses
- Wildlife Preserve
- Indoor Recreation/Small Assembly Facilities

Conditionally compatible non-residential land uses could still be developed to be compatible in Safety Zone 4 if limited to an intensity of 150 people per acre and 70 percent lot coverage, and appropriate measures to avoid attracting hazardous wildlife are taken where applicable. Residential land uses can be developed if limited to a density of 0.5 dwelling units per acre.

Safety Zone 5 (Sideline Zone): The majority of land area within Safety Zone 5 occurs on airport property, with only a portion extending onto 0.4 acres of an already developed parcel.

Safety Zone 6 (Airport Traffic Pattern Zone): No uses are identified as incompatible in the ALUCP. Conditionally compatible land uses include outdoor major assembly facilities such as stadiums, amphitheaters, and racetracks which are to be avoided

unless alternative sites cannot be identified. Congregate care facilities, child and adult day care facilities, and K-12 schools can be developed if limited to an intensity of 300 people per acre. Hazardous materials, communications facilities, and wildlife preserve uses can be developed if alternative sites elsewhere cannot be identified.

MATHER AIRPORT NOISE CONTOURS

Noise generated from aircraft operations can be bothersome to the public. The Mather Airport ALUCP defines airport noise contours and land uses that are incompatible with noises 60 CNEL or above. Therefore, the Mather Airport ALUCP has restricted uses within the 60-75+ CNEL noise contours to minimize the number of people exposed to bothersome noise from aircraft operations. Uses outside of these contours are not restricted.

As shown in Figure 7-2, a portion of the plan area is located within the Mather Airport 60 dB CNEL noise contour line, which generally prohibits certain types of sensitive land uses such as homes and schools. As explained above, these contours delineate zones with differing capacity, or ability to accommodate land uses, without exposing people to excessive airplane noise. The exposure maps are based on theoretical flight tracks, rather than radar data, and represent the “theoretic capacity” of the area.

MATHER AIRPORT HEIGHT RESTRICTIONS

According to the Mather Airport ALUCP, height standards for defining obstructions to air navigation are established by FAA and are defined in Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*. The Mather Airport ALUCP further discusses the need for height restrictions as follows:

> Height restrictions are necessary to ensure that objects will not impair flight safety or decrease the operational capability of the airport. FAR Part 77 defines a series of imaginary surfaces surrounding airports. Any object or structure which would penetrate any of these imaginary surfaces is considered by the FAA to be an obstruction of air navigation.

As shown in Figure 7-3, a majority of the plan area would be subject to height restrictions; building heights could not exceed the height AMSL shown in the figure, which range from 150 feet to 448.5 feet.

MATHER AIRPORT PLANNING POLICY AREA

In 2006, the Board of Supervisors adopted the Airport Planning Policy Area (APPA) for Mather Airport, by Resolution 2006-1378, as an interim effort to ensure airport land use compatibility during a period of rapid development that was outpacing the rate at which airport master plans, environmental documentation, and ALUCPs could be updated.

The Mather APPA places specific limitations on conditions of new residential development within certain proximity to Mather Airport. Specifically, the Mather APPA includes the following conditions:

1. Prohibit new residential development inside the current Board approved 60 CNEL noise contour for Mather Airport.
2. Condition new residential land uses within the APPA boundary but beyond the current Board approved 60 CNEL noise contour for Mather Airport as follows:
   a. Minimum noise insulation to protect persons from excessive noise within new residential dwellings, including detached, single-family dwellings, that limits noise to 45 dB CNEL, with windows closed, in any habitable room.
   b. Notification in the Public Report prepared by the California Department of Real Estate disclosing to prospective buyers that the parcel is located within the applicable APPA and that aircraft operations can be expected to overfly that area at varying altitudes less than 3,000 feet above ground level (AGL).
   c. Execution and recordation with the Sacramento County Recorder of avigation easements prepared by the Sacramento County Counsel's Office on each individual residential parcel contemplated in the development in favor of the County of Sacramento. All avigation easements recorded pursuant to this policy shall, once recorded, be copied to the Director of Airports and shall acknowledge the property location within the appropriate APPA and shall grant the right of flight and unobstructed passage of all aircraft into and out of the appropriate airport.

   Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural, shall be exempt from the Airport Planning Policy Area's prohibitions.

These conditions are intended to increase the awareness of future residents of their possible exposure to aircraft operations, limit the potential for conflict between the airport and adjacent communities, and protect future airport development and aircraft operations flexibility.

The plan area is within the Mather APPA and a large portion of the plan area is located within the 60 CNEL noise contour. Therefore, both Conditions 1 and 2 apply to the project.

Sacramento County 2030 General Plan

The following Sacramento County 2030 General Plan policies are applicable to the project:

- **Policy LU-87.** Because land use decisions around airports by local governments have a direct impact on an airport's long-term viability and utility, proposed new land use projects and land use practices near airports within Sacramento County shall consider consistency with current federal, State, and local airport land use compatibility regulations, orders, policies, plans, standards and guidance pertaining to public safety and minimization of hazardous wildlife attractants within five statute miles of County airports.

- **Policy NO-2.** Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to Table 4: *Land Use Compatibility for Aircraft Noise*, except in the following cases. Development proposals which may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference. Development proposals which may be affected by aircraft noise from Mather Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, as well as applicable footnotes in Table 4.
- **Policy NO-3.** New residential development within the 60 CNEL noise contours adopted by the County for land use planning purposes at any airport or Helipad within Sacramento County shall be prohibited unless exceptions set forth in Table 4 [of the General Plan Noise Element] are found to be applicable. This policy is not applicable to Executive Airport.

  Footnotes 2, 6, and 7 of the General Plan Noise Element Table 4 state the following with respect to development of noise-sensitive uses within the Mather Airport noise contours:

  2. Single family detached residential units within the 60-65 dB CNEL noise contours of the Mather Airport Policy Area may be considered a compatible use if: (a) approved by the Board of Supervisors upon completion of Sacramento County's master plan process, including demonstration of compliance with LU-119 and LU-120; (b) an evaluation of potential noise and safety impacts pursuant to CEQA has occurred and appropriate noise mitigation measures to reduce interior noise levels to 45 dB have been included in the environmental document and adopted as conditions of approval; and (c) all of the requirements in Footnote 8 below are met. Second residential units are a compatible use within all CNEL ranges, subject to the condition that the proposed second unit be consistent with the provisions of Section 65852.1 and 65852.2 of the California Government Code.
  6. Compatible at Sacramento International Airport and Franklin Field only if the residential use is directly related to agricultural uses, such as dwelling units for the land owner, the owner's immediate family, or for employees. May be compatible at Mather Airport if approved by the Board of Supervisors as a component of a master plan and all criteria set forth in Footnote 2 above are satisfied. All residential units shall be designed to limit intruding noise such that interior noise levels do not exceed 45 CNEL, with windows closed, in any habitable room.
  7. New residential uses within 60 CNEL are not compatible, with the exception of accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural or single family dwellings as set forth in Footnote 2 above. Except as provided in Footnotes 2 and 6 above, new residential development

within the Mather Airport Policy Area boundaries but outside the 60 CNEL shall be subject to the following conditions:

A. Provide minimum noise insulation to provide 45dB within new residential dwellings, including detached single family dwellings, with windows closed, in any habitable room.

B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within the Mather Airport Policy Area.

C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento and recorded with the Sacramento County Recorder and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within the Mather Airport Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of Mather Airport.

New residential development within the Mather Airport Policy Area outside the 65 dB CNEL but inside the 60 dB CNEL shall be subject to Conditions A through C above and a County-approved noise analysis and mitigation to reduce interior noise impacts to 45 dB with windows closed, in any habitable room.

- **Policy NO-4.** New residential development within adopted Airport Policy Area boundaries, but outside the 60 CNEL, shall be subject to the following conditions:

A. Provide minimum noise insulation to 45 dB CNEL within new residential dwellings, including detached single family dwellings, with windows closed in any habitable room.

B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within an Airport Policy Area.

C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento, recorded with the Sacramento County Recorder, and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within an Airport Planning Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of the subject Airport.

Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural and between the 60 and 65 CNEL contours, shall be permitted within adopted Airport Policy Area boundaries, but would be subject to the conditions listed above.

SACRAMENTO COUNTY GUIDANCE ON SINGLE EVENT NOISE METHODOLOGY

The Sacramento County General Plan Noise Element policies do not provide a noise standard specific to single events. However, the County has determined that single-event aircraft noise exposure and associated sleep disturbance impacts are to be

assessed in accordance with the Sacramento County General Plan Noise Element Policies NO-2 through NO-4 on aircraft noise. Those policies restrict new residential development to areas outside the 60 dB CNEL airport noise contours, require noise insulation to ensure interior noise levels do not exceed 45 dB CNEL within residences, require notification that prospective buyers are located within an APPA, and require that an avigation easement be recorded acknowledging the property is located within an APPA (Bollard Acoustical Consultants 2023).

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

Cordova Community Plan

The Cordova Community Plan, which was last updated in 2003, provides guidance for both new development and the redevelopment of existing land uses within the community plan area. The following policy in the plan is applicable to the WJHMP:

- **Policy UDNC-11.** Ensure that potentially incompatible and unsafe land uses are separated from residential uses by appropriate transition areas.

Vineyard Community Plan

The Vineyard Community Plan, which was developed in 1985, provides guidance for growth and development in the community plan area. The following policy in the plan is applicable to the WJHMP:

- **Policy CI 5.** Employment intensive industrial/commercial development will be opposed within the Mather Air Force Base accident potential zones (APZs).

Significance Criteria and Methodology

Significance Criteria

An impact on airport compatibility would be significant if implementation of the project would:

- result in a safety hazard for people residing or working in the vicinity of an airport/airstrip,
- expose people residing or working in the plan area to aircraft noise levels in excess of applicable standards,
- result in a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, or
- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

The California Supreme Court concluded in *California Building Industry Association v. Bay Area Air Quality Management District*, (2015) 62 Cal.4th 369, 377-378, "agencies subject to CEQA generally are not required to analyze how existing environmental conditions will impact a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment—and not the environment's impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." With this ruling, the impact of existing conditions on a project are not considered an impact requiring consideration under CEQA, unless the project could exacerbate an existing environmental hazard or the lead agency elects to provide the analysis.

Issues Not Discussed Further

Change in Air Traffic Patterns

The project would not involve or affect air traffic movement because the project is a mixed-use development that would comply with height restrictions and does not contain a private airstrip. Therefore, there would be no impact on air traffic patterns. This issue is not discussed further in this EIR.

Methodology

The following analysis is based on review of the WJHMP and consistency with applicable regulations and planning documents, including the *FAA Advisory Circular for Hazardous Wildlife Attractants On or Near Airports* (AC 150/5200-33C), Mather Airport ALUCP (SACOG 2022), the Sacramento County General Plan (Sacramento County 2011), and the Sacramento County General Plan Noise Element (Sacramento County 2022). Additionally, this analysis incorporates material from the following reports prepared for the project, which are included in Appendix C:

- *Residential Construction and Testing Requirements for West Jackson Master Plan Residences Constructed Between the Mather Airport 60 and 65 dB CNEL Contours* (Bollard Acoustical Consultants 2022);
- *Noise and Vibration Analysis, West Jackson Highway Master Plan Area, Sacramento County, California* (Bollard Acoustical Consultants 2023); and
- *Wildlife Hazard Assessment for the West Jackson Highway Master Plan, Sacramento County, California* (ECORP Consulting 2023).

Industry Guidance on Single Event Noise and Sleep Disturbance

The following summary is from the *Noise and Vibration Analysis* prepared for the project (Bollard Acoustical Consultants 2023).

The Federal Interagency Committee on Aviation Noise (FICAN) has provided estimates of the percentage of people expected to be awakened when exposed to specific sound

exposure levels (SELs) inside a home. However, FICAN did not recommend a threshold of significance based on the percent of people awakened. According to the FICAN study, 10 percent of the population is estimated to be awakened when the SEL interior noise level reaches 81 A-weighted decibels (dBA). An estimated 5 to 10 percent of the population is affected when the SEL interior noise level is between 65 and 81 dBA, and few sleep awakenings (less than 5 percent) are predicted if the interior SEL is less than 65 dBA. The FICAN results focused on individual single-event sound levels but did not take into consideration how exposure to multiple single events affected sleep disturbance.

ANSI and the Acoustical Society of America (ASA) released a voluntary methodology to predict sleep disturbance in terms of the probability of awakening. ANSI's 2008 *Quantities and Procedures for Description and Measurement of Environmental Sound - Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes* provides a method to predict sleep disturbance associated with noise levels in terms of indoor A-weighted sound exposure level (ASEL). The methodology was developed from about 10,000 subject-nights of observations primarily in homes near areas of routine jet aircraft takeoff and landings, railroads, roads, and highways. The methodology assumes that the individuals have no sleep disorders, normal hearing, and only applies to individuals over 18 years of age. The methodology also defines "disturbance" as being restricted to a behaviorally confirmed awakening.

While FICAN has a recommended means of predicting awakenings from a single aircraft event, the new ANSI methodology further refines this approach by taking into account the time since the person fell asleep and the ability to identify the probability of being awakened from multiple aircraft events over the course of the entire night. However, research performed by Bollard Acoustical Consultants questions the accuracy of the ANSI methodology.

Although the FICAN and ANSI methodologies provide a means by which the potential for awakenings due to single events can be predicted, neither methodology provides a recommended target level for acceptable single-event noise or percentage of awakening. Further, there is no industry consensus establishing recommended target levels for acceptable single-event noise or percentage of awakening.

West Jackson Highway Master Plan Policies

The WJHMP includes the following policies related to airport compatibility:

- **Policy 4.1.** Notification shall be provided to all prospective buyers that residential parcels are located within the Mather Airport Planning Policy Area and that aircraft operations occur over the Plan Area.
- **Policy 4.2.** Granting the right of flight and unobstructed passage of aircraft into and out of Mather Airport and recordation of the avigation easement shall be provided to the benefit of Sacramento County.

IMPACTS AND ANALYSIS

IMPACT AC-1: RESULT IN A SAFETY HAZARD TO PEOPLE LIVING AND WORKING IN THE VICINITY OF AN AIRPORT

Airport safety zones are established to minimize the number of people exposed to aircraft crash hazards. According to the Mather Airport ALUCP, portions of the plan area are located within safety zones 2, 3, 4, and 6 (Figure 7-5). Proposed land uses within the safety zones must be evaluated in accordance with the safety compatibility criteria in the ALUCP, which are identified in Table 4-2 of the ALUCP and summarized above. The compatibility criteria identify maximum residential density, non-residential intensity, and allowable land uses for each of the six safety zones. Future development applications within the Mather Airport safety zones would be required to be reviewed by the ALUC to ensure that proposed projects are compatible with the safety zones. Further, proposed school sites would be subject to the review detailed in the Education Code.

In safety zone 2, the plan area designates areas for open space, employment, and commercial land uses. Examples of compatible uses in this zone include wildlife preserve, retail, eating/drinking establishments, and office uses. Conditionally compatible uses could be developed in safety zone 2 if limited to an intensity of 60 people per acre and 50 percent lot coverage, and appropriate measures to avoid attracting hazardous wildlife are taken where applicable.

In safety zone 3, the plan area designates areas for open space, open space/urban farm, employment, and industrial land uses. Examples of compatible uses in this zone include wildlife preserve, general agricultural uses, retail, eating/drinking establishments, office uses, and industrial uses. Conditionally compatible non-residential land uses could be developed in safety zone 3 if limited to an intensity of 100 people per acre and 60 percent lot coverage, and appropriate measures to avoid attracting hazardous wildlife are taken where applicable. Residential land uses could be developed if limited to a density of 0.5 dwelling units per acre.

In safety zone 4, the plan area designates areas for open space, park, employment, and commercial land uses. Examples of compatible uses in this zone include wildlife preserve, indoor recreation/small assembly facilities, retail, eating/drinking establishments, office uses, out-patient medial services, and industrial uses. Conditionally compatible non-residential land uses could still be developed in safety zone 4 if limited to an intensity of 150 people per acre and 70 percent lot coverage, and appropriate measures to avoid attracting hazardous wildlife are taken where applicable. Residential land uses could be developed if limited to a density of 0.5 dwelling units per acre.

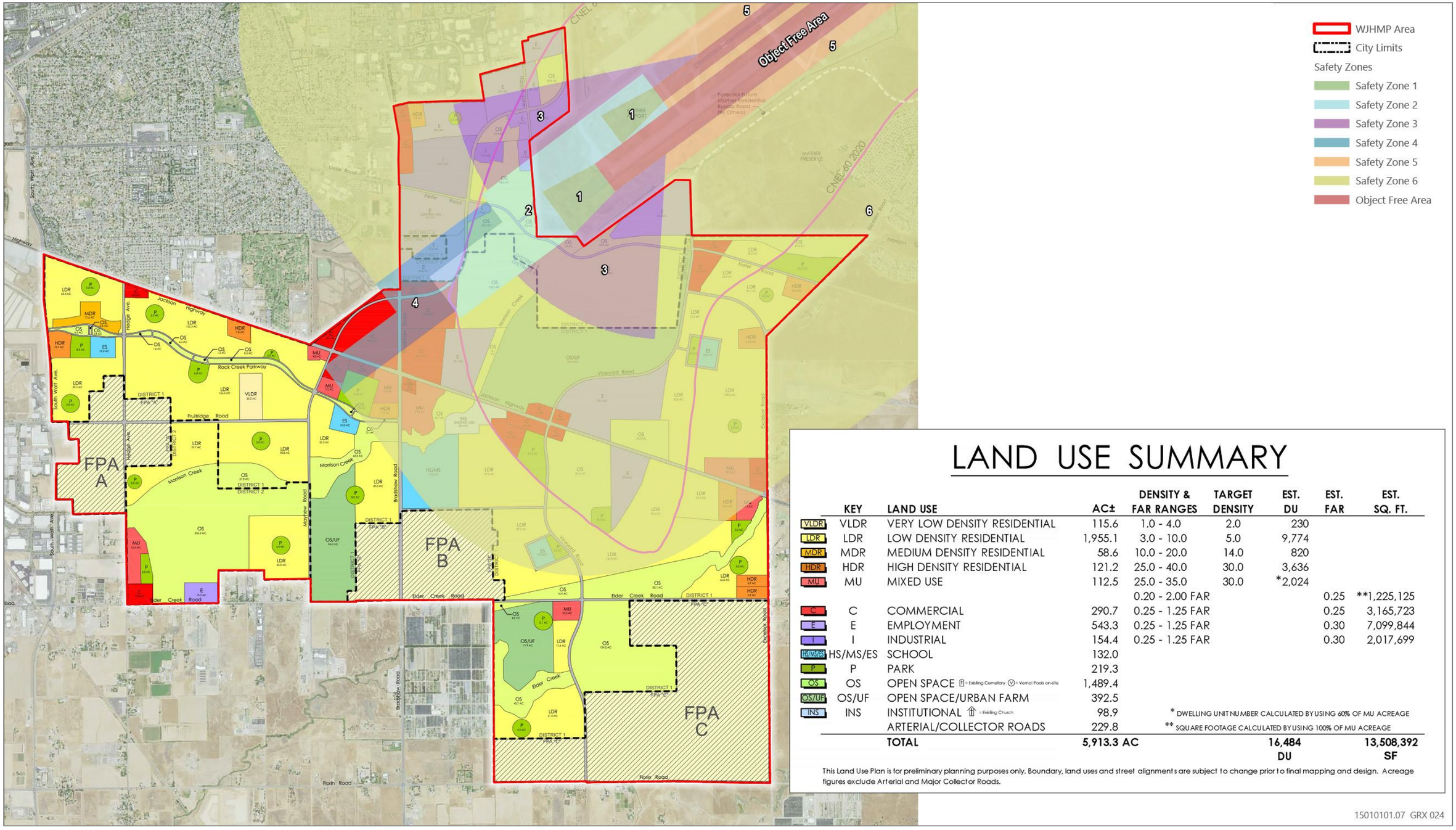
In safety zone 6, the least restrictive zone, the plan area includes a variety of planned land use designations, including residential (low- and high-density), school, open space, open space/urban farm, park, institutional, mixed use, commercial, employment, and industrial land uses. No land uses are identified as incompatible in safety zone 6, and conditionally compatible uses such as congregate care facilities and K-12 schools can be developed if the intensity does not exceed 300 people per acre.

As indicated above, planned development within the WJHMP can be accommodated under the compatibility criteria of the ALUCP with limitations on development intensity for certain land use types in specific situations. Further, pursuant to WJHMP Policy 4.1, all residential development within the APPA would be conditioned so that prospective homebuyers are notified via a public report disclosure by the California Department of Real Estate that the property is located within the APPA and that aircraft operations occur within the plan area. Pursuant to WJHMP Policy 4.2, all properties would be conditioned with an avigation easement.

Because proposed development in the plan area would be consistent with the uses allowed in the safety zones, future development applications within the Mather Airport safety zones would be required to be reviewed by the ALUC to ensure compatibility with the safety zones, and homebuyers would be notified that the property is located within the APPA and that aircraft operations occur within the area, the project would not create substantial safety hazards to people living and working in the vicinity of an airport. Therefore, this impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.



Source: Image produced and provided by Wood Rodgers in 2023; safety zones received from Sacramento County in 2024 from SACOG; adapted by Ascent in 2024.

Figure 7-5 Mather Airport Safety Zones and Project Land Uses

IMPACT AC-2: RESULT IN EXPOSURE TO EXCESSIVE NOISE LEVELS ASSOCIATED WITH AIRPORT OPERATIONS

The plan area borders the southeastern portion of Mather Airport and proposed development would be subjected to noise generated from existing and projected future airport operations. A portion of the plan area is located within the CNEL 60 zone and proposed land uses would be required to comply with the ALUCP allowable uses. Proposed land uses include open spaces, employment, industrial, commercial, parks, open spaces/urban farms, and low-density residential. There are no land use restrictions outside this noise contour associated with the ALUCP, and these levels are within adopted General Plan noise standards.

The Noise and Vibration Analysis (Bollard Acoustical Consultants 2023) prepared for the project identifies existing noise sources within or affecting the plan area, quantifies baseline ambient noise and vibration conditions within the plan area, and identifies noise impacts and mitigation measures associated with development within the plan area. Potential short-term construction and long-term operational-source noise impacts are addressed in Chapter 16, “Noise.” Results of the analysis are summarized below.

24-Hour Average Aircraft Noise Exposure at Proposed Residential Uses within the Plan Area

As shown in Figure 7-6, most residential development proposed within the plan area is located outside of the Mather Airport 60 dB Ldn theoretical capacity (worst case) exterior noise contour. However, some residential development is proposed within the Mather Airport 60-65 CNEL noise contours, which is an area in which the Mather Airport ALUCP prohibits certain types of sensitive land uses such as homes. The WJHMP would, therefore, potentially conflict with this land use regulation. These residences could be exposed to substantial aircraft noise. As a result, this impact would be significant.

24-Hour Average Aircraft Noise Exposure at Proposed School Sites within the Plan Area

According to the County General Plan Noise Element, school uses are considered acceptable in aircraft noise environments up to 65 dB CNEL. Because no school uses are proposed within Mather Airport noise environments exceeding 65 dB CNEL, proposed schools would not be exposed to substantial aircraft noise and this impact would be less than significant.

Single-Event Aircraft Noise Exposure and Sleep Disturbance at Proposed Residences within the Plan Area

As discussed above, the County has determined that single-event aircraft noise exposure and associated sleep disturbance impacts are to be assessed in accordance with the Sacramento County General Plan Noise Element Policies NO-2 through NO-4 on aircraft noise. Mitigation Measure AC-2a would require all residential development proposed within the Mather Airport 60 CNEL noise contours to include sufficient noise mitigation to satisfy the requirements of Sacramento County General Plan Policies NO-2,

NO-3, and NO-4. Those policies, which are listed above, restrict new residential development to areas outside the 60 dB CNEL airport noise contours (unless specific policy conditions are met), require noise insulation to ensure interior noise levels do not exceed 45 dB CNEL within residences, require notification that prospective buyers are located within an Airport Policy Area, and require that an avigation easement be recorded acknowledging the property is located within an APPA. Mitigation Measure AC-2b would require implementation of the Acoustical Testing Plan for Mather Airport for residences proposed within the 60-65 dB CNEL Mather Airport noise contours to further ensure compliance with these adopted General Plan policies.

Because prospective owners of residences constructed within the Airport Policy Area would be choosing to live in an environment where aircraft overflights occur, and because they would be properly notified of the presence of Mather Airport and, therefore, able to make an informed decision regarding purchasing a residence near an airport, and because interior noise levels must not exceed 45 dB CNEL within residences, Sacramento County has concluded that the satisfaction of the County's General Plan policies related to aircraft noise would ensure that no significant impacts occur with respect to aircraft single-event noise exposure and associated sleep disturbance. Therefore, this impact would be **less than significant with mitigation**.

MITIGATION MEASURES

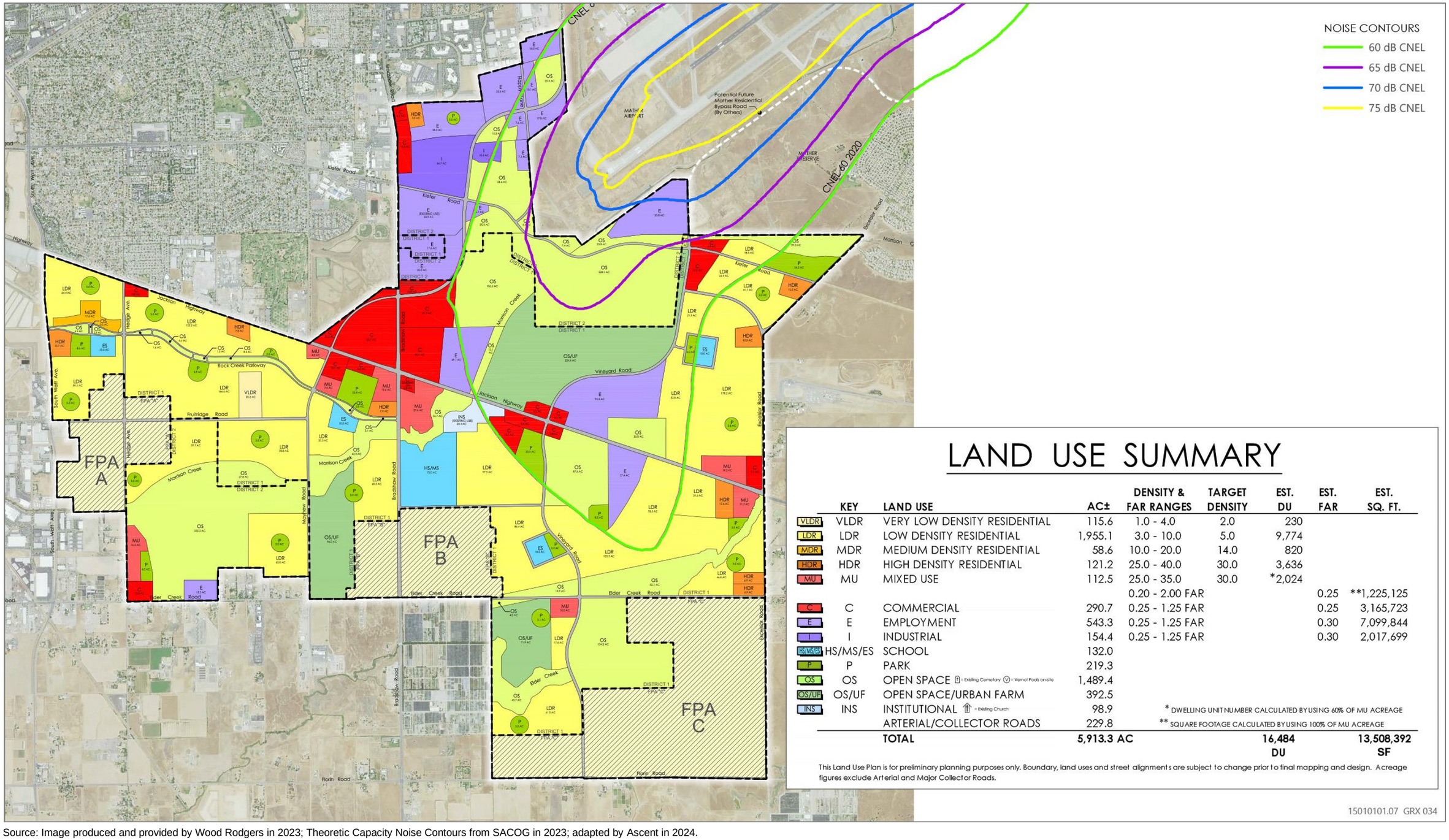
MITIGATION MEASURE AC-2A: NOISE MITIGATION WITHIN THE MATHER AIRPORT 60 CNEL NOISE CONTOURS

All residential development proposed within the Mather Airport 60 CNEL noise contours shall include sufficient noise mitigation to satisfy the requirements of Sacramento County General Plan Policies NO-2, NO-3, and NO-4, including the footnotes to General Plan Noise Element Table 4.

MITIGATION MEASURE AC-2B: ACOUSTICAL TESTING PLAN FOR RESIDENCES WITHIN THE 60-65 DB CNEL MATHER AIRPORT NOISE CONTOURS

Implement the Acoustical Testing Plan for Mather Airport for residences proposed within the 60-65 dB CNEL Mather Airport noise contours (HMMH 2022). This testing plan shall be followed to ensure satisfaction of the County General Plan policies pertaining to Mather Airport noise exposure within new residential developments. The following measures, which shall be implemented for homes constructed between the 60 and 65 dB CNEL contours (Bollard Acoustical Consultants 2022):

1. The master permit plan set for each floorplan type to be built between the 60 and 65 dB CNEL contours shall include the following:
    a. All exterior door and window assemblies of each residence shall provide a minimum sound transmission class rating of 32 and a minimum outdoor-indoor transmission class (OITC) rating of 28, respectively.
    b. The exterior structural façade elements shall satisfy an OITC rating of at least 28. For example, exterior walls should achieve OITC 28 via an insulated 2x4 construction with gypsum board on the interior and siding over sheathing on the exterior.



LAND USE SUMMARY

KEY	LAND USE	AC±	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	1.0 - 4.0	2.0	230		
LDR	LOW DENSITY RESIDENTIAL	1,955.1	3.0 - 10.0	5.0	9,774		
MDR	MEDIUM DENSITY RESIDENTIAL	58.6	10.0 - 20.0	14.0	820		
HDR	HIGH DENSITY RESIDENTIAL	121.2	25.0 - 40.0	30.0	3,636		
MU	MIXED USE	112.5	25.0 - 35.0	30.0	*2,024		
			0.20 - 2.00 FAR			0.25	**1,225,125
C	COMMERCIAL	290.7	0.25 - 1.25 FAR			0.25	3,165,723
E	EMPLOYMENT	543.3	0.25 - 1.25 FAR			0.30	7,099,844
I	INDUSTRIAL	154.4	0.25 - 1.25 FAR			0.30	2,017,699
HS/MS/ES	SCHOOL	132.0					
P	PARK	219.3					
OS	OPEN SPACE (E = Existing Cemetary, V = Vernal Pools on-site)	1,489.4					
OS/UF	OPEN SPACE/URBAN FARM	392.5					
INS	INSTITUTIONAL (Ch = Existing Church)	98.9					
	ARTERIAL/COLLECTOR ROADS	229.8					
	TOTAL	5,913.3 AC			16,484 DU		13,508,392 SF

* DWELLING UNIT NUMBER CALCULATED BY USING 60% OF MU ACREAGE

** SQUARE FOOTAGE CALCULATED BY USING 100% OF MU ACREAGE

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

15010101.07 GRX 034

Source: Image produced and provided by Wood Rodgers in 2023; Theoretic Capacity Noise Contours from SACOG in 2023; adapted by Ascent in 2024.

Figure 7-6 Mather Airport Theoretic Capacity Noise Contours and Project Land Uses

c. All structural façade elements should be properly installed to prevent any noise leakage. Construction plans shall include notes stating that exterior doors shall compress the seals when fully closed and locked with a deadbolt.

d. Residential structures shall include positive flow ventilation systems designed to provide adequate fresh air circulation to allow all of the exterior windows and doors to remain closed to achieve the noise level reduction from aircraft operations.

2. The master permit plan set for each floorplan type to be built between the 60 and 65 dB CNEL contours, shall be reviewed by an acoustical consultant to ensure the designs will provide a minimum OITC rating of 25 for the exterior facades of habitable spaces of the residence. The findings of this review shall be provided to the County of Sacramento as a condition to issuance of building permits for homes conforming to a master permit set for a floorplan type.
3. In order to verify that homes are constructed in substantial conformance to a particular master permit plan set for a floorplan type and satisfy the design goal of achieving 25 dB noise level reduction (NLR), post-construction acoustical testing shall be conducted in conformance with the methodology prescribed in the Acoustical Testing Plan for Mather Airport (HMMH 2022).
4. Appropriate solar power capacity shall be provided to ensure compliance with Title 24 to account for the need to keep windows closed for acoustic isolation.

Impact AC-3: Result in Effects on Safe and Efficient Use of Navigable Airspace

Building Height Restrictions

The ALUCP includes height standards for buildings surrounding the airport that are most restrictive adjacent to the runway and become less restrictive further away. Navigable airspace could be adversely affected if building heights in the plan area exceed these designated height standards. The height restrictions that apply to the plan area are between 150 feet to 448.5 feet AMSL. Figure 7-7 illustrates the specific height restrictions that apply to the plan area. Height restrictions for structures are based off of their height AMSL in relation to Mather Airport. Mather Airport sits at an AMSL of 98 feet. The plan area borders the southeastern end of the airport and is relatively flat in the areas immediately surrounding the airport. These areas adjacent to the airport would have the strictest height requirements, limiting building heights to approximately 50 feet in the 150 feet AMSL restriction area, 100 feet in the 200 feet AMSL restriction area, and 150 feet in the 248.5 AMSL feet restriction area. Height restrictions are stricter for the area immediately surrounding the airport and the southern runway, and any development associated with the land uses identified in this area would need to comply with the prescribed building height restrictions. A majority of the area within the most restrictive height limitations would be zoned for open space or employment, where these parcels would already be restricted in height as discussed in Impact AC-1, above.

The project does not include specifications for building heights of the future development. All future development resulting from the project would be required to comply with the height restriction requirements stated in the ALUCP and depicted in Figure 7-7, as well as the County's objective development standards. Therefore, no buildings within the plan area would exceed the maximum building height limits and project related impacts to navigable airspace with respect to building heights would be **less than significant**.

Bird Strike Hazards

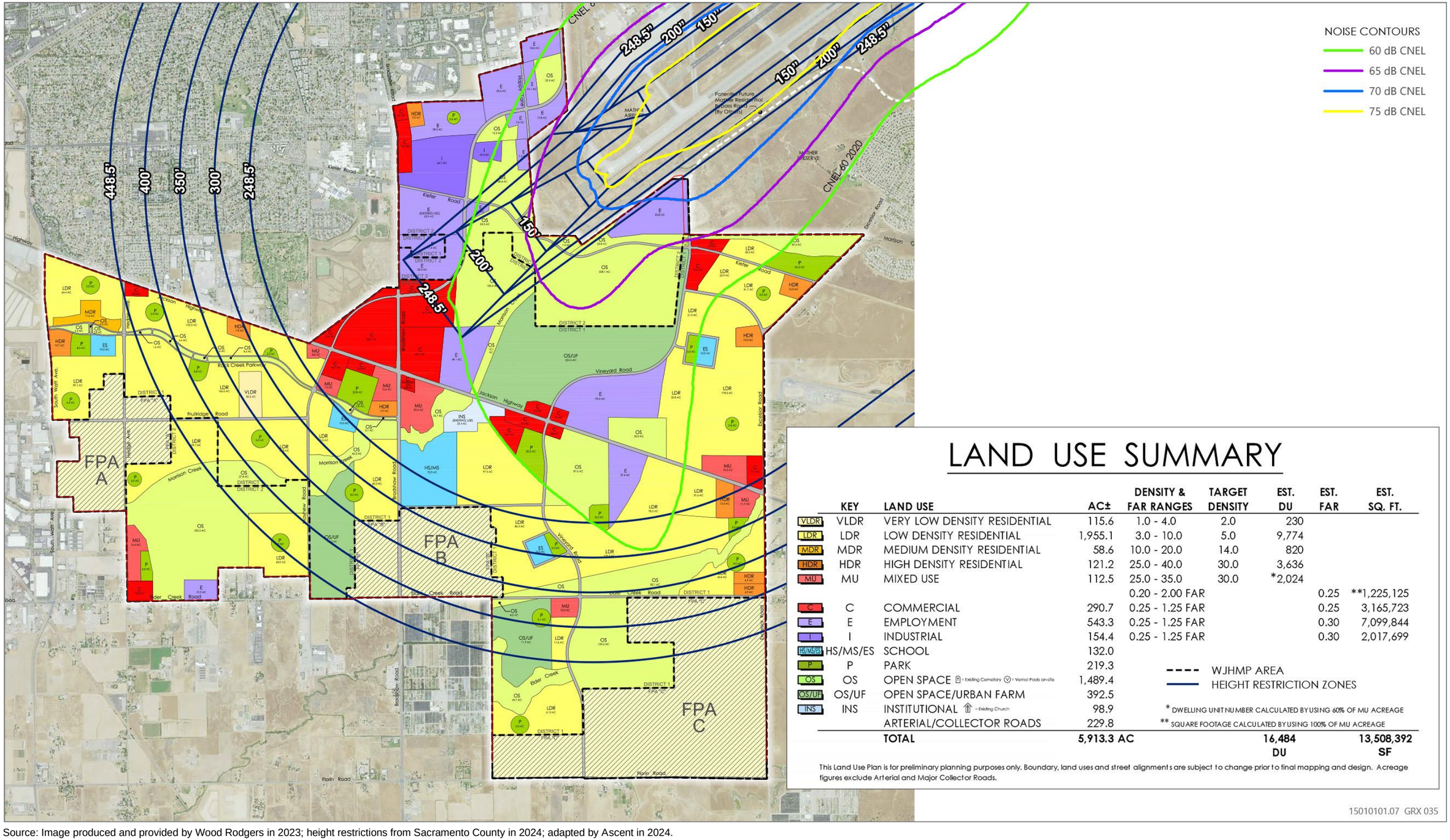
Navigable airspace can also be adversely affected by project features that could attract wildlife causing bird strike hazards. The Mather Airport ALUCP includes regulations and guidelines to limit the potential of wildlife hazards, such as bird strikes. Additionally, the FAA has established regulations and policies addressing land uses with potential to attract hazardous wildlife on and near airports.

Consistent with FAA regulations, a Wildlife Hazard Assessment (ECORP Consulting 2023) has been prepared to evaluate whether the project would increase the risk of bird-aircraft collisions and determine what measures should be taken to minimize any increase. The analysis focused on 14 species and species groups considered to pose the greatest risk to aircraft (potentially hazardous bird species), selected based on (1) their size and resulting potential for aircraft damage and (2) propensity to collide with aircraft determined from bird-aircraft collision data from Mather Airport, FAA's national collision data report and hazard assessment, and ECORP's knowledge of species in the region. SCDA has been consulted and has reviewed the Wildlife Hazard Assessment (SCDA 2023) that is included in Appendix C.

Results of the Wildlife Hazard Assessment are summarized below. The Wildlife Hazard Assessment considered four main components:

1. Land cover changes and associated changes in bird use;
2. The extent and conditions of stormwater flooding and associated bird use;
3. Frequencies of aircraft flights at various heights over the plan area, existing bird aircraft collision information, and relative frequency of flights at various heights by potentially hazardous bird species; and
4. The potential for synergistic effects, whereby conditions created within the plan area could result in increased travel by birds to and from the plan area that might cross aircraft flight paths.

Effects of land cover changes and flight heights were analyzed within 17 different subregions (analysis areas) of the plan area.



Source: Image produced and provided by Wood Rodgers in 2023; height restrictions from Sacramento County in 2024; adapted by Ascent in 2024.

Figure 7-7 Mather Airport Height Restrictions and Project Land Uses

LAND COVER ANALYSIS

Relative levels of bird use were determined based on habitat quality and quantity in the plan area as a whole and within individual analysis units. Species and species-group use was quantified by multiplying the species' relative abundances in various land cover types (on a scale of 0.0-1.0) by the area (in acres) occupied by the various land covers under existing and project conditions. The resulting quantities (habitat units) added across all land covers showed that development of substantial areas of grassland, wetlands, and agriculture would reduce habitat value and expected use (by 20-58 percent) for 11 of the 14 identified potentially hazardous species.

Habitat values under the assumed buildout of the WJHMP would increase for three species groups that favor residential areas and the resulting urban forest conditions: rock pigeon and European collared-dove (by 12 percent), Cooper's and red-shouldered hawks (by 100 percent), and yellow-billed magpie and American crow (by 12 percent). The increases in the hawks and corvids (magpie and crow) would not occur, however, until at least 20 years after trees are established in development areas and would gradually increase over a period of 20-70 years.

STORMWATER MANAGEMENT EFFECTS

With development of the WJHMP, stormwater would be more extensively managed to protect life and property. Stormwater flooding effects, analyzed as the conditions 48 hours after the peak of the 2-year and 10-year storm events, showed that the area inundated would decline as stormwater is conveyed, concentrated, detained, and evacuated through pumping. Overall, the area inundated after the 2-year event would decline by 83 percent and the area flooded after the 10-year event would decline by 84 percent compared to existing conditions.

Only six of the potentially hazardous bird species/groups make extensive use of flooded lands (Mute Swan, Canada Goose, ducks, gulls, and herons and egrets, and Bald Eagle). The decline in the amount and duration of flooding, along with the conversion of non-flooded areas to land covers with lower value for these species, demonstrates that the project would substantially reduce risks associated with bird use of flooded lands compared to existing conditions.

AIRCRAFT AND BIRD FLIGHT ANALYSIS

Aircraft flights were analyzed based on flights arriving and departing during November 15 to December 15, 2022. The rationale for choosing this period is described in Section 4.5.1 of the Wildlife Hazard Assessment. Flight paths provided by Sacramento Airports showed that aircraft flew over the plan area for 27 flight hours over that one-month period (i.e., 54 minutes/day). No aircraft crossed above the plan area at heights below 100 feet and only 1 percent of flight time (i.e., 32 seconds/day) occurred at 100 to 500 feet. No flights below 500 feet occurred above 10 of 17 analysis areas within the plan area. Roughly half of the flight-time was within 500-1,500 feet and the other half was above 1,500 feet.

Information on bird-aircraft collisions from Mather Airport showed a modest number of collisions (120 over 11 years). Most collisions occurred on or near the ground during takeoff and landing; species that spend most or all of their time on the ground comprised over half of the species identified during collisions. Therefore, most collisions did not occur over the plan area. Over three-fourths of species reported in Mather collisions were small (<500 grams) and only 4 (4 percent) were large (>1,200 grams). Nearly all large or moderate-sized species were considered a potentially hazardous species. Flight characteristics estimated for potentially hazardous species showed that most flights of all species occurred below 100 feet, a height at which few aircraft flights occurred above the plan area.

SYNERGISTIC EFFECTS

Synergistic effects are defined by FAA as two or more land uses that together may pose additional hazards, such as by creating a flight corridor between bird feeding and resting areas. Synergetic effects were evaluated based on species' uses of various land covers and other habitat elements for nesting, roosting, and foraging activities. The focus was on whether species moved among different land covers for these activities and whether the land covers that are used by these species increased or decreased with development of the WJHMP. Eleven of 14 potentially hazardous species or groups were expected to move among different land covers for different uses. Nine of these species were considered less likely to engage in synergistic movements under project than under existing conditions because the habitats they use would decline in abundance.

The rock pigeon, turkey vulture, and American crow were initially identified as species that had potential to be involved in synergistic effects with development of the WJHMP. Further evaluation, however, suggests that such effects are unlikely. Rock pigeons generally fly to agricultural lands which are located primarily east and south of the plan area and Mather Airport. Pigeons also can be discouraged through building design. Synergistic uses by crows appear unlikely because the species would increase mainly during the breeding season (when distant movements do not occur) and removal of grassland and agriculture in the plan area would reduce long-distance winter movements to the site. Roosting by migrating and wintering vultures in the Sacramento region tends to be highly localized and focused on large, older trees. Therefore, roost establishment would not occur until the urban forest matures (40-70 years) or may not occur at all.

OVERALL EFFECTS ON BIRD AIRCRAFT COLLISION RISK

As discussed in the Wildlife Hazard Assessment, the risk of bird-aircraft collisions is not expected to substantially increase with development of the WJHMP. Changes in land use are expected to reduce the potential for hazards. Changes in resulting bird use are similarly expected to decrease. The flight and collision analysis detailed in the Wildlife Hazard Assessment, and summarized above, demonstrates a relatively low risk with existing conditions, which may stay the same or decrease with development of the WJHMP. Synergistic effects are expected to decrease. Overall, the incidence of bird-aircraft collisions is not expected to increase, and rather is likely to decrease, as a result of buildout of the WJHMP. Therefore, project-related impacts on navigable airspace with respect to bird strike hazards at Mather Airport would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

8 BIOLOGICAL RESOURCES

INTRODUCTION

This chapter describes the biological resources that occur within WJHMP area; includes a description of applicable federal, state, and local regulations and policies that protect biological resources; identifies potential impacts to these resources; and recommends mitigation measures to reduce or eliminate impacts associated with the plan. The analysis focuses on impacts to the grassland and wetland habitats and the special-status species that rely on these habitats. Species covered include special-status plants, invertebrates, birds, amphibians, reptiles, and mammals.

The impact analysis for this chapter for both participating and non-participating properties was done at a programmatic level. As described further below, the impact analysis is based on the SSHCP landcover basemap layer and 2023 Google Earth Pro aerial photography interpretation, as well as relevant analysis from prior mining projects located within the WJHMP area. No comments regarding biological resources were received in response to the notice of preparation.

ENVIRONMENTAL SETTING

The WJHMP area is in unincorporated Sacramento County and adjacent to the City of Sacramento to the west and Rancho Cordova to the northeast (see Figure 2-2 in Chapter 2, “Project Description,” of this EIR). The natural topography is primarily flat with vernal swales and pools intersected by small drainages and creeks. The elevation indiscernibly rises from the west to the east with overall site elevations ranging from less than 50 feet above sea level along the western border to above 110 feet above sea level along the eastern border. There are two perennial streams within the WJHMP area. Morrison Creek flows through the WJHMP area from the northeast to the southwest and a large portion of this creek is channelized. There is also Elder Creek, which is in the southeast quadrant of the WJHMP area. Water in these streams flows in a southwest direction towards the Sacramento River.

A major land use in the WJHMP area is aggregate mining, which has been in continuous operation since the 1930s. Mining activity has resulted in excavation pits with floors between 15 and 40 feet below grade. Besides mining, there are other developed areas including truck storage yards, warehouses and building and landscaping supply yards, and Camellia Memorial Lawn cemetery. There are also small commercial and agricultural-residential areas that are distributed along major roads.

HABITATS

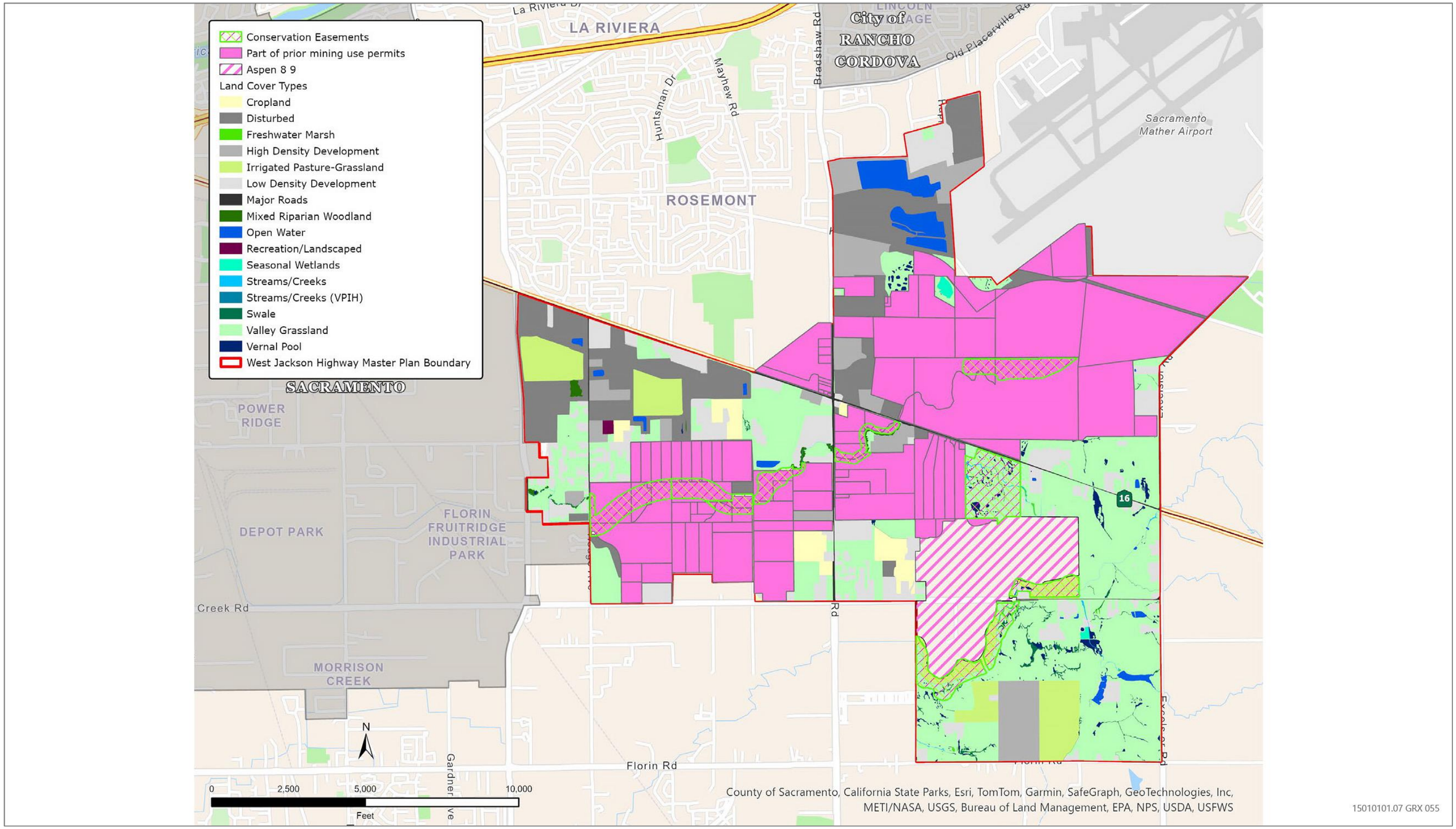
The predominant natural habitat types in the WJHMP area are annual grassland interspersed with vernal pools, seasonal wetlands, and seasonal wetland swales. These and other habitat types are described in the following paragraphs and the acreage of each is provided in Table 8-1. Existing landcover conditions are shown in Figure 8-1.

Table 8-1 Habitat Types in the WJHMP Area

Habitat Type	Acres in WJHMP Area*
Valley Grassland	1,766.89
Irrigated Pasture-Grassland	590.71
Cropland	261.77
Mixed Riparian Woodland	34.82
Mixed Riparian Scrub	0.90
Open Water	132.64
Vernal Pool	61.14
Seasonal Wetlands	31.36
Swale	24.78
Streams/Creeks	14.35
Freshwater Marsh	5.20
Streams/Creeks (VPIH)	0.45
Disturbed	2,180.11
Low Density Development	460.54
High Density Development	294.75
Major Roads	40.11
Recreation/Landscaped	3.64

* Approximate only. Does not include possible habitat in inactive mining sites. Wetland delineation surveys will be needed to determine precise acreage amount for wetlands. VPIH Vernal Pool Invertebrate Habitat

Source: Sacramento County et al 2018.



Source: SSHCP data provided by Madrone E, adapted by Ascent in 2024.

Figure 8-1 WJHMP Land Cover Types

VALLEY GRASSLAND

Valley grassland habitat makes up most of the WJHMP area that has not been impacted by mining activity (and could also be present in inactive mining sites). Valley grasslands in the WJHMP area have been modified by past and current land uses, particularly by mining and agricultural activity. This vegetation type is dominated by naturalized annual grasses and weedy annual forbs, primarily of Mediterranean origin, that have replaced native wildflower fields, perennial grasslands, and scrub because of human disturbance. However, native annual and perennial wildflowers remain a characteristic component of the valley grassland habitat type. In the WJHMP area, valley grassland surrounds vernal pool complexes, providing an important upland element that may be used for species movement and dispersal between pools as well as nesting or estivation habitat for species that use the pools for foraging or for certain phases of their life cycle. Additionally, vernal pool ecology and functions (e.g., hydrologic cycle, nutrient cycling, water chemistry, food chain support, and plant-pollinator relationships) are dependent on surrounding grasslands.

Common grass species within the WJHMP area include soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), medusa head *(Elymus caput-medusae*), filaree (*Erodium botrys*), and perennial rye grass (*Festuca perennis*).

IRRIGATED PASTURE-GRASSLAND

The Irrigated Pasture-Grassland land cover includes hay production (alfalfa, clovers, and mixed grasses), seasonal summer pasture for livestock (primarily cattle), and year-round pasture for livestock (primarily cattle or horses). Irrigated Pasture-Grassland is typically seeded, cut/grazed, and reseeded on a regular basis on an approximately 5- to 7-year cycle before the fields are left fallow to rest, and the cycle is started over again. As a perennial crop grown for several years before removal and replacement, alfalfa provides good cover for rodents and time for establishment of a good prey base for raptors. Farming operations during the growing season consist of periodic flood irrigation and four to six mowings. Both types of operations result in temporary increases in prey availability.

CROPLAND

Cropland includes annual row and field crops (e.g., small grains, corn, tomatoes, melons, peppers, safflower, sunflower) and short-term perennial crops (e.g., asparagus).

MIXED RIPARIAN WOODLAND

Riparian land covers are associated with creeks and typically occur in the zone between the active stream channel and adjacent upland land covers. While “riparian” has various definitions, the SSHCP uses the National Research Council’s 2002 definition: “Riparian areas are transitional between terrestrial and aquatic ecosystems and are distinguished by gradients in biophysical conditions, ecological processes, and biota. They are areas through which surface and subsurface hydrology connect water bodies with their adjacent uplands. They include those portions of terrestrial ecosystems that significantly influence exchanges of energy and matter with aquatic ecosystems (i.e., a zone of influence).” Discontinuous riparian areas in the WJHMP area are adjacent to creeks.

Riparian ecosystems are highly dependent on landscape setting and numerous physical and biotic interactions. Riparian ecosystems provide essential foraging, shelter, and breeding habitat for several native plant and animal species, including both resident and migratory species.

The Mixed Riparian Woodland land cover type is distinguishable by an open canopy layer dominated by tall Fremont cottonwood trees. Beneath this open layer, a moderately dense mid-canopy layer is composed of tree species such as Oregon ash (*Fraxinus latifolia*), Goodding's black willow (*Salix gooddingii*), walnut (*Juglans* spp.), valley oak (*Quercus lobata*), and box elder (*Acer negundo*). In some areas, a subcanopy of dense riparian scrub dominated by willow species, including arroyo willow and sandbar willow, is present. A discontinuous shrub layer may also be present and includes species such as blue elderberry (*Sambucus nigra*), Himalayan blackberry (*Rubus armenicus*), coyote-brush (*Baccharis pilularis*), wild rose (*Rosa californica*), and wild grape (*Vitus californica*). The ground layer is sparsely to densely vegetated with herbaceous species.

Mixed Riparian Scrub

Mixed riparian scrub land cover type is interspersed with mixed riparian woodland. This landcover type consists of an open to dense shrubby thicket dominated by a mixture of willow species and immature stands of mixed riparian woodland tree species as those listed previously.

Vernal Pools

Vernal pools are seasonal ephemeral wetlands that fill and dry each year. In Central Valley annual grasslands, they form in shallow depressions that are underlain with a soil or a soil layer impermeable to water. In California's Mediterranean climate (rainy winter months followed by a hot, dry season), vernal pool soils typically become wetted in November. Water collects in the depressions and stands during late winter and early spring, then recedes as temperatures rise and rainfall diminishes. The soil, however, remains moist through April and May, then it desiccates and stays dry until the cycle begins again. The specific hydrological regime of vernal pool inundation—too short and unpredictable to support most aquatic species but long enough to eliminate upland species—is what characterizes vernal pools as ephemeral wetlands and differentiates them from other aquatic ecosystems such as alkali meadows and seasonally flooded emergent bulrush or tule marshes (Solomeshch et al. 2007).

Vernal pools support unique assemblages of highly specialized plants and animals that are adapted to the annual cycle of winter inundation and summer drought. Consequently, vernal pools are one of the few habitats in California still dominated by native plant and animal species (Rains et al. 2008). Many vernal pool plant genera and species are endemic to California, and their presence indicates the specific hydrology and water chemistry of the vernal pool. Vernal pools were once a very common element of the Central Valley landscape, but only a small portion has not been converted to agricultural and urban developments; consequently, many vernal pool taxa are now rare and endangered.

Central Valley vernal pools occur on many geological surfaces, but in all cases, vernal pools are underlain by a low-permeability layer such as claypans, hardpans (e.g., silica-cemented duripans), mudflows, or bedrock (Rains et al. 2008). Because vernal pools are associated with specific landforms, geologic formations, and soils (Smith and Verrill 1998), vernal pools tend to be clustered at the landscape scale, forming vernal pool complexes (Rains et al. 2006). Based on a vernal pool's landform, underlying geology, nature of the soil's water restricting layer, frequency of ponding, and ponding duration, Sawyer and Keeler-Wolf (1995) have identified five vernal pool types in northern California: basalt flow pools, claypan pools, hardpan pools, volcanic ashflow pools, and volcanic mudflow pools. The vernal pools within the WJHMP area have been classified as northern hardpan vernal pools (Hanes and Stromberg 1998), and have formed on old, very acidic, iron-silica cemented hardpan soils.

There are both natural and constructed vernal pools within the WJHMP area. Several natural vernal pool complexes are located in the center of the WJHMP area, east of Bradshaw Road and south of Jackson Road, and in the southeastern quadrant of the WJHMP area. There are also approximately 181 acres of constructed vernal pools and associated grassland habitat north of Jackson Road that were created to mitigate for the loss of vernal pools due to permitted mining activity.

There is a higher level of plant diversity, particularly of native plants, in vernal pools than there are in other wetland habitats such as seasonal wetlands. Many plants found in vernal pools are endemic (i.e., found only in these habitats) and have adapted to survive partially submerged conditions. Hydrophytes, or water-loving plants, observed by Gibson & Skordal, LLC. (Gibson & Skordal) in 2010 within the vernal pools included coyote thistle (*Eryngium castrense*), slender popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), creeping spike rush (*Eleocharis macrostachya*), Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), rush (*Juncus* sp.), rabbit's-foot grass (*Polypogon monspeliensis*), dove weed (*Croton setigerus*), Fremont's goldfields (*Lasthenia fremontii*), white-headed navarretia (*Navarretia leucocephala*), and smooth goldfields (*Lasthenia glaberrima*). There are no special-status plant species documented within vernal pools in the WJHMP area, but Ahart's dwarf rush (*Juncus leiospermus* var*. ahartii*) and legenere (*Legenere limosa*) have been found in vernal pools at Mather Airport, 0.2 mile from the WJHMP area.

Seasonal Wetland

Seasonal wetland is a wetland that ponds for an extended period during a portion of the year. Seasonal wetlands generally fill during the rainy winter season then dry relatively slowly, typically in the summer or early fall. Seasonal wetlands tend to be isolated wetlands that occur within moderate to large depressional features along streams, creeks, and rivers; along the edges of open water, or scattered within the Valley Grassland land cover. In addition, some impounded drainages, excavated stock ponds, and graded or excavated former vernal pools can also be seasonal wetlands. The seasonal wetland land cover is often characterized by herbaceous annual and perennial species such as curly dock (*Rumex crispus*), sedges (*Carex* spp.), nutsedges (*Cyperus* spp.), spikerushes (*Eleocharis* spp), and occasionally cattail (*Typha* spp.).

Swale

The movement of surface water between vernal pools can occur in a network of narrow and intermittent surface “swales.” Swales are shallow ephemeral drainages found in flat to gently rolling Valley Grassland in association with vernal pool complexes, on soils with an impermeable layer. Swales convey runoff as shallow, gently sloping ephemeral wetlands during, and for short periods after, winter rainstorms. Soils within the swale land cover type may remain saturated during the winter and early spring, but dry by summer. Swales are associated with vernal pools and provide intermittent conduits between vernal pools for movement of surface water and propagules of vernal pool plant and animal covered species (seeds, cysts, eggs, and spores), and movement of amphibians. Swales support several native plant species commonly found in vernal pools. Swales also often include smaller shallow depressional features that may pond during the rainy season to provide suitable reproductive habitat for some vernal pool species, and may be considered vernal pools.

Open Water

Open water includes perennial or permanent features, such as natural or built ponds, lakes, and reservoirs. Open water may contain no vegetation, or non-rooted aquatic vegetation, such as algae, floating pondweeds, and other plants. Along shorelines, rooted, emergent vegetation may occur, forming freshwater marsh. Like freshwater marsh, open water habitat is used by numerous bird, mammal, amphibian, and reptile species.

Stream/Creek

The stream and creek land cover within the WJHMP includes streams identified by the US Army Corps of Engineers (USACE) such as small intermittent or perennial creeks. The stream/creek land cover type was mapped from aerial photographs. Where a river or stream channel was not discernable because of dense over story cover, the centerline of the channel has been approximated and buffered by a width of 6 feet.

Freshwater Marsh

Freshwater marsh occurs along the margins of streams and open water. Freshwater marsh is typically dominated by perennial herbaceous plant species such as cattails, tules (*Scirpus* spp.), and other emergent plant species, and is generally found along the edges of aquatic habitats such as ponds, lakes, and rivers.

Disturbed

The disturbed land cover type is defined as open-space areas that have been subject to previous or ongoing disturbances such as along roadsides, trails, and parking lots. Scraped or graded land, aggregate mining, and waste disposal sites are included in this land cover type. The disturbed land cover type is vegetated with diverse weedy flora. These areas are of special concern, as they tend to harbor and facilitate the spread of invasive plant species. Vascular plant species associated with the disturbed land cover typically include Johnson grass (*Sorghum halepense*), Canadian horseweed (*Conyza canadensis*), milk thistle (*Silybum marianum*), yellow-star thistle (*Centaurea solstitialis*), stinkwort (*Dittrichia graveolens*), and field bindweed (*Convolvulus arvensis*).

Low Density Development

The low-density development land cover type consists of relatively sparse residences and other structures, such as farm buildings, and small rural neighborhoods with large individual property sizes per house. Plant nurseries are also included in this category.

High Density Development

The high-density development land cover type includes urban and suburban residential neighborhoods, urban centers, industrial areas.

Major Roads

The major roads land cover type includes linear features with paved surfaces and can vary from large freeways to smaller arterial roads found within urban settings. Smaller roads not mapped as Major Roads were mapped as an element of High-Density or Low-Density Development.

Recreation/Landscaped

The recreation/landscaped land cover type includes gardens, parks, golf courses, and greenbelts. Most landscaped and recreation areas are planted with non-native grasses, shrubs, and trees. Species composition in urban habitats varies with planting design and climate. Most recreation and landscaped areas are regularly maintained by irrigation, mowing, pruning, or other management techniques.

Native and Nonnative Trees

Due to multiple participating and non-participating landowners, no comprehensive tree survey exists for the entire WJHMP area. Native trees in the plan area generally consist of valley oak, interior live oak, blue oak, willow, Fremont cottonwood, and boxelder that are scattered throughout the areas of undisturbed grassland and most common near the less-disturbed creek reaches. Landscape trees are also associated with existing roadways and structures.

County records for previously permitted mining projects indicate that a total of approximately 2,600 native oak trees have been planted within the plan area to mitigate for the loss of trees due to mining (Table 8-2).

Table 8-2 Oak Tree Mitigation Sites within WJHMP Area

Location of Mitigation Site	Project(s) Mitigated For	Number and Type of Native Trees Planted
Aspen V South – Morrison Creek riparian corridor	Aspen IV South and Aspen V South	351 valley oak (*Quercus lobata*). 139 interior live oak (*Quercus wislizeni*), 19 California box elder (*Acer negundo*), and 30 Oregon ash (*Fraxinus latifolia*).
Aspen V – Adjacent to drainage swale	Aspen IV South and Aspen V South	13 valley oaks, 6 interior live oak, and 4 Oregon ash.
Aspen III South and Vineyard I - Along realigned Morrison Creek stream bed	Vineyard I	874 valley oak, 633 blue oak (*Quercus douglasii*), 625 interior live oak, 220 Fremont cottonwood (*Populus fremontii*), 153 Oregon ash, 131 black walnut (*Juglans spp.*), 117 California box elder, 93 western sycamore (*Platanus racemosa*), 71 California buckeye (*Aesculus californica*), 36 Goodding's black willow (*Salix gooddingii*).

Source: data provided by Sacramento County in 2024.

Special-Status Species

A "special-status" species is one which has been identified as having relative scarcity and/or declining populations. Special-status species include those formally listed as threatened or endangered, those proposed for formal listing, candidates for federal listing, and those classified as species of special concern. Also included are those species considered to be "fully protected" by the California Department of Fish and Wildlife (CDFW), those granted "special animal" status for tracking and monitoring purposes, and those plant species considered to be rare, threatened, or endangered in California by the California Native Plant Society.

There are multiple status designations applied to animal and plant species; the relevant definitions are provided below[1]:

- *Endangered Species*: Any species which is in danger of extinction throughout all or a significant portion of its range.
- *Threatened Species*: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- *Species of Concern*: Any species with declining population levels, limited ranges, and/or other factors that make them vulnerable to extinction and may ultimately qualify the species for threatened or endangered status.

[1] Source: California and federal Endangered Species Acts, http://www.dfg.ca.gov/wildlife/nongame/ssc/, http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html, and http://www.cnps.org/cnps/rareplants/ranking.php.

- *Fully Protected*: The classification of Fully Protected was California's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Most have subsequently been defined as endangered or threatened, but there are exceptions.
- *California Rare Plant Ranks:* Plant taxa considered by CDFW to be "rare, threatened, or endangered in California" and assigned a California rare plant rank (CRPR) of 1A, presumed extinct in California and not known to occur elsewhere; 1B, considered rare or endangered in California and elsewhere; 2A, presumed extinct in California, but more common elsewhere and 2B, considered rare or endangered in California but more common elsewhere).

A list of special-status plant and wildlife species that are known or have the potential to occur in the WJHMP area was compiled based on review of background reports such as the Biological Resources Assessment prepared in 2018 by Madrone Ecological Consulting (Madrone) (Appendix E), previous studies conducted in the WJHMP area and adjacent properties (e.g., Mather Field Specific Plan area, Jackson Township Specific Plan area), and database searches. An unofficial species list was obtained from the USFWS Information for Planning and Consultation system (USFWS 2024); and the California Natural Diversity Database (CNDDB) Rarefind program and California Native Plant Society Inventory were queried for records of previously documented occurrences of special-status species in the Carmichael, Buffalo Creek, Florin, Rio Linda, Citrus Heights, Folsom, Sacramento East, Elk Grove, and Sloughhouse 7.5-minute quadrangles (CNDDB 2024; CNPS 2024). Pursuant to CDFW guidelines, a 9-quadrangle search area was used to query these databases (i.e., the quadrangle containing the WJHMP area plus the eight surrounding quadrangles).

Table 8-3 reports the species identified in the species searches as well as those covered under the SSHCP. The table reports the likelihood of an occurrence for each species within the WJHMP area based on habitat presence either on the site or in proximity of the site, survey results (if any), and species range and nearby recorded occurrences. A lack of reported sightings is not an indication that the species is not present; there may be many reasons that a species could be present, but unreported. For instance, the species may have been observed but not reported, may be present during times when observers are absent, or may be difficult to detect even when present. In addition, comprehensive or protocol-level surveys for the species may not have been completed in the area. For this reason, all species identified through database and literature review as potentially occurring in the general project vicinity and for which suitable habitat is present in the WJHMP area were considered as having potential to occur in the WJHMP area and are evaluated further in this document. Species for which suitable habitat is absent from the WJHMP area or whose known range does not include the WJHMP area were determined not to be affected by project implementation as described in Table 8-3. Species that are not present or were found to have a low potential of occurrence are not discussed further in subsequent analysis sections.

Table 8-3 Special-Status Species Matrix

Species	Status	Suitable Habitat	Potential for Project to Affect
Plants			
Ahart's dwarf rush *Juncus leiospermus var. ahartii*	CRPR 1B.2 SSHCP	Annual herb found along vernal pool margins and vernal swales. Blooms March-May. Elevation: 100 to 750 ft.	High Potential. The WJHMP area contains vernal pool habitat suitable for this species. There are no recorded occurrences of this species within the WJHMP area but there are recorded occurrences within 10 miles with the closest located approximately 1.25 miles to the east. SSHCP modeled habitat may be present in the southeast portion of the WJHMP area.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	CE, CRPR 1B.2 SSHCP	Annual herb found along the margins of marshes and swamps and in vernal pools with clay soil. Blooms April-August. Elevation: 30 to 7,800 ft.	High Potential. The WJHMP area contains seasonal wetland and vernal pool habitat suitable for this species. There are no recorded occurrences of this species within the WJHMP area but there are nine recorded occurrences within 10 miles with the closest located approximately 1.25 miles to the east. SSHCP modeled habitat is present within portions of the WJHMP area.
Dwarf downingia *Downingia pusilla*	CRPR 2B.2 SSHCP	Species found in vernal pools and other seasonally inundated features. Blooms March-May. Elevation: 1-1,500 feet.	High Potential. The WJHMP area contains seasonal wetland and vernal pool habitat suitable for this species. There are no recorded occurrences of this species within the WJHMP area but there are four recorded occurrences within 10 miles with the closest occurrence approximately 5 miles to the southwest. There is a reported occurrence yet to be published by the CNDDB that is located near the WJHMP area's southern boundary. SSHCP modeled habitat is present within portions of the WJHMP area.
Legenere *Legenere limosa*	CRPR 1B.1 SSHCP	Annual herb found in vernal pools. Blooms April-June. Elevation: 0 to 2,900 ft.	High Potential. The WJHMP area contains vernal pool habitat suitable for this species. There are no recorded occurrences of this species within the WJHMP area but there are 26 recorded occurrences within 10 miles with the closest located approximately 0.2 miles to the east at Mather Airport. SSHCP modeled habitat is present within portions of the WJHMP area.

Species	Status	Suitable Habitat	Potential for Project to Affect
Pin cushion navarretia *Navarretia myersii* ssp. *Myersii*	CRPR 1B.1 SSHCP	Annual herb found in vernal pools and other seasonal wetlands. Blooms April-May. Elevation: 65 to 1,100 ft.	Moderate Potential. The WJHMP area contains seasonal wetland and vernal pool habitat suitable for this species. There are no recorded occurrences within the WJHMP area and only one recorded occurrence approximately 9 miles to the northeast. SSHCP modeled habitat is present within portions of the WJHMP area.
Sacramento Orcutt grass *Orcuttia viscida*	FE, CE, CRPR 1B.1 SSHCP	Small annual grass found in vernal pools in valley and foothill grasslands. Blooms: May-June. Elevation: 100 to 350 ft.	High Potential. The WJHMP area contains grassland and vernal pool habitat suitable for this species. There are no recorded occurrences of this species within the WJHMP area but there are nine recorded occurrences within 10 miles with the closest located approximately 3 miles to the east. SSHCP modeled habitat is present within the southeast portion of the WJHMP area.
Saline clover *Trifolium hydrophilum*	CRPR 1B.2	Annual fleshy species found in saline marshes or vernal pools. Blooms: April-June. Elevation: Below 1,000 feet.	Moderate Potential. The WJHMP area contains vernal pool habitat suitable for this species. There are no recorded occurrences within the WJHMP area and there are two recorded occurrences 9.5 miles to the southeast.
Sanford's arrowhead *Sagittaria sanfordii*	CRPR 1B.2 SSCHP	Perennial, rhizomatous, emergent herb found in shallow freshwater marshes and swamps, and various perennial waterways or ponds. Blooms: May-October. Elevation: 0 to 2,000 ft.	Present. The WJHMP area contains perennial waterways, seasonal wetland, and vernal pool habitat suitable for this species. Colonies of this species have been found within the WJHMP area, though most have been removed by permitted mining activities. SSHCP modeled habitat is present within portions of the WJHMP area.
Slender Orcutt grass *Orcuttia tenuis*	FT, CE, CRPR 1B.1 SSHCP	Small annual grass found in vernal pools in valley and foothill grasslands. Blooms: May-September. Elevation: 100 to 5,750 ft.	High Potential. The WJHMP area contains grassland and vernal pool habitat suitable for this species. There are no recorded occurrences of this species within the WJHMP area but there are three recorded occurrences within 10 miles of the WJHMP area with the closest located approximately 1.3 miles to the south. SSHCP modeled habitat is present within the southeast portion of the WJHMP area.

Species	Status	Suitable Habitat	Potential for Project to Affect
Woolly rose mallow *Hibiscus lasiocarpus var. occidentalis*	CRPR 1B.2	This species typically grows at elevations below 395 feet in freshwater-saturated riverbanks and low peat islands in sloughs. The plant is strongly associated with the Delta watershed (Madrone, 2018).	Not Present. The WJHMP area does not support the required habitat for this species.
Invertebrates			
Crotch bumble bee *Bombus crotchii*	SCE	Found primarily in California: mediterranean, Pacific coast, western desert, Great Valley, and adjacent foothills through most of southwestern California. Habitat includes open grassland and scrub. Nests underground.	High Potential. Open grassland habitat is present within the WJHMP area, WJHMP area is within current known distribution. There is a recent 2022 documented occurrence within 3.5 miles northeast of the WJHMP area.
Midvalley fairy shrimp *Branchinecta mesovallensis*	SSHCP	Occurs in vernal pools that are grass or mud-bottomed with clear to tea-colored water and are often in basalt flow depression pools in grasslands (Eriksen and Belk 1999)	Present. Vernal pool habitat is present within the WJHMP area and there are two recorded occurrences of this species within the WJHMP area. SSHCP modeled habitat is present within portions of the WJHMP area.
Ricksecker's scavenger beetle *Hydrochara rickseckeri*	SSHCP	Vernal pools, vernal swales, and seasonal wetlands that hold water for a minimum of 18 days.	High Potential. The WJHMP area contains seasonal wetland and vernal pool habitat suitable for this species and the species has been recorded northeast of the WJHMP area in Mather Airport. SSHCP modeled habitat is present within portions of the WJHMP area.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT SSHCP	Breeds and forages exclusively on elderberry shrubs. Typically associated with riparian forest, riparian woodland, elderberry savanna, and other Central Valley habitats. Occurs only in the Central Valley of California. Prefers to lay eggs in elderberry stems 2–8 inches in diameter; some preference shown for "stressed" elderberry shrubs.	High Potential. There are no recorded occurrences within the WJHMP area but there are 30 recorded occurrences within 10 miles of the WJHMP area with the closest approximately 2 miles to the north along the American River. Riparian woodlands along Morrison Creek may provide suitable habitat for the species. SSHCP modeled habitat is present within portions of the WJHMP area.

Species	Status	Suitable Habitat	Potential for Project to Affect
Vernal pool fairy shrimp *Branchinecta lynchi*	FT SSHCP	Occurs in vernal pools, seasonally ponded areas within vernal swales, rock outcrop ephemeral pools, playas and alkali flats from Shasta County through most of the length of the Central Valley to Tulare County. Pools are grass or mud bottomed, with clear to tea-colored water, and are often in basalt flow depression pools in grasslands.	Present. The WJHMP area contains seasonal wetland and vernal pool habitat suitable for this species and there are five recorded occurrences of this species within the WJHMP area. SSHCP modeled habitat is present within portions of the WJHMP area.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE SSHCP	Occurs in vernal pools containing clear to highly turbid water.	Present. The WJHMP area contains vernal pool habitat suitable for this species and there are six recorded occurrences of this species within the WJHMP area. SSHCP modeled habitat is present within portions of the WJHMP area.
Fish			
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	FT, CT (Spring Run) FE, CE (Winter Run)	Distribution occurs throughout the Sacramento River and through a portion of the American River, but the distribution maps do not include the Cosumnes River as habitat. (NMFS 2009)	Not Present. The WJHMP area does not support riverine habitat suitable for this species.
Central Valley steelhead *Oncorhynchus mykiss*	FT	Most of Sacramento County is within the distinct population segment area for this species. Critical habitat has been designated within Sacramento County on the Sacramento River, American River, Mokelumne River, and Dry Creek (both north and south creeks). Spawning has been documented on the Cosumnes River. (NMFS 2009)	Not Present. The WJHMP area does not support riverine habitat suitable for this species.

Species	Status	Suitable Habitat	Potential for Project to Affect
Longfin smelt *Spirinchus thaleichthys*	CT	The Bay-Delta population of this species migrates upstream to spawn in freshwater drainages and dies after spawning. Upon hatching, the young spend their first three months in freshwater before migrating downstream to brackish or marine habitats (Madrone 2018).	Not Present. The WJHMP area is outside of the current known distribution of the species.
Sacramento perch *Archoplites interruptus*	CSC	Once very abundant in water bodies throughout the Central Valley but has been adversely impacted by habitat destruction and introduction of non-native fishes. This species' eggs are vulnerable to predation due spawning on unprepared substrate and providing no further parental care (Madrone 2018).	Not Present. The WJHMP area is outside of the current known distribution of the species. The nearest recorded occurrence is approximately 9 miles to the west of the WJHMP area.
Amphibians			
California tiger salamander (Central Valley Pop) *Ambystoma californiense*	FT SSHCP	Endemic to annual grasslands and valley-foothill habitats in California. Adults spend most time in subterranean refugia, particularly in ground squirrel burrows. Seasonal ponds or vernal pools are required for breeding.	Not Present. The WJHMP area is outside of the current known distribution of the species. The WJHMP area is outside of the aquatic and upland SSHCP modeled habitat.
Western spadefoot *Spea hammondii*	FPT, CSC SSHCP	Occurs seasonally in grasslands, prairies, chaparral, and woodlands, in and around wet sites. Breeds in shallow, temporary pools (i.e., vernal pools) formed by winter rains. Takes refuge in burrows.	High Potential. There are suitable breeding habitats for this species within the WJHMP area. There are no recorded occurrences of this species within the WJHMP area but there are several recorded occurrences within 10 miles, some from 2023 just east of the WJHMP area. SSHCP modeled habitat is present within portions of the WJHMP area.

Species	Status	Suitable Habitat	Potential for Project to Affect
Reptiles			
Giant garter snake *Thamnophis gigas*	FT, CT SSHCP	Endemic to valley floors of the Sacramento and San Joaquin Valleys. Prefers freshwater marsh and low gradient streams. Has adapted to rice agriculture, drainage channels, and irrigation ditches. Requires permanent water, emergent vegetation, and upland habitat for basking and cover (USFWS, 1999).	Low Potential. SSHCP aquatic (non-high value habitat) and upland (non-high value habitat) modeled habitat is present within portions of the WJHMP area. However, the WJHMP area is located outside of the extant range of this species. Sacramento County populations are known only from the American Basin, Cosumnes-Mokelumne Basin, and Delta Basin and the nearest recorded occurrence is approximately 8.5 miles to the southwest (CNDDB 2024) and there is no feasible dispersal corridor between known breeding populations and WJHMP area.
Western pond turtle *Emys marmorata*	FPT, CSC SSHCP	Occurs in perennial ponds, lakes, rivers, and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter (Zeiner et. al., 1990). Require some slack- or slow-water aquatic habitat. Nests upland, on unshaded south-facing slopes with friable soils that have a high percentage of clay or silt (Jennings and Hayes, 1994).	Present. The WJHMP area contains perennial stream and pond habitat suitable for this species. There is one recorded occurrence of this species within the WJHMP area in Morrison Creek. SSHCP modeled habitat is present within portions of the WJHMP area.
Birds			
Cooper's hawk *Accipiter cooperi*	SSHCP	Nests and forages in a variety of woodland and forest habitats and urban areas, but generally in stands with mature trees and dense canopy closure. In the Central Valley, strongly associated with live oak woodland.	Present. The WJHMP area has suitable nesting and foraging habitats. Though there are no recorded CNDDB occurrences within the WJHMP area, this species was observed within the WJHMP area near a constructed emergent marsh. It was not clear whether a nesting site was observed (Madrone 2018). SSHCP modeled habitat is present within portions of the WJHMP area.

Species	Status	Suitable Habitat	Potential for Project to Affect
Tricolored blackbird *Agelaius tricolor*	FSC, CT SSHCP	Forages in agricultural lands and grasslands; nests in colonies in marshes, riparian scrub, and other areas that support cattails, tules, or dense thickets of shrubs or herbs. Requires open water and protected nesting substrate, such as flooded, spiny, or thorny vegetation.	Present. There is suitable nesting habitat within the WJHMP area. There are at least 10 recorded occurrences of nesting colonies scattered throughout the WJHMP area. Four nesting colonies were observed in the southeast quadrant of the WJHMP area (Aspen VIII mining site). SSHCP modeled nesting and foraging habitat is present within portions of the WJHMP area.
Western burrowing owl *Athene cunicularia hypugea*	CSC SSHCP	Found in open grasslands with low vegetation, golf courses, and disturbed/ruderal habitat in urban areas.	Present. Annual grassland in the WJHMP area provides foraging and nesting habitat. There is one recorded occurrence within the WJHMP area. SSHCP modeled habitat is present within portions of the WJHMP area.
Golden eagle *Aquila chrysaetos*	BEPA, CFP	Forages in open terrain such as grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats. Nests in rugged, open habitats with canyons and escarpments, typically on cliffs and rock outcroppings; however, it will also nest in large trees within open areas.	Present. The WJHMP area is out of the breeding range of this species, but suitable foraging habitats exist within the WJHMP area. There is one known wintering occurrence within the WJHMP area.
Ferruginous hawk *Buteo regalis*	SSHCP	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys. Listed for preservation of wintering habitat.	Present. The WJHMP area annual grassland provides winter foraging habitat for this species. There is one reported occurrence within the WJHMP area. SSHCP modeled habitat is present within portions of the WJHMP area.
Swainson's hawk *Buteo swainsoni*	CT, SSHCP	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah. Requires adjacent suitable foraging areas such as grasslands or grain fields supporting rodent populations (Zeiner et. al., 1990).	Present. Limited nesting habitat (i.e. trees) is present, but plentiful foraging habitat exists on the WJHMP area. There are numerous recorded occurrences within 10 miles of the WJHMP area with one occurrence approximately 0.2 mile to the north of the WJHMP area. The species has also been observed foraging within the WJHMP area. SSHCP modeled habitat is present within portions of the WJHMP area.

Species	Status	Suitable Habitat	Potential for Project to Affect
Northern harrier *Circus cyaneus*	CSC, SSHCP	Frequents meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands. The western population tend to breed in dry upland habitat.	Present. The WJHMP area annual grassland provides breeding and foraging habitat for this species. SSHCP modeled nesting and foraging habitat is present within portions of the WJHMP area.
White-tailed kite *Elanus leucurus*	CFP SSHCP	Forages in open grasslands and agricultural fields and marshes. Nests in mature trees in riparian zones, oak woodlands, or isolated trees within foraging habitat.	Present. Foraging and nesting habitat is present in the WJHMP area. This species has been observed within the WJHMP area and there is one record of nesting within the WJHMP area. SSHCP modeled foraging and nesting habitat is present within portions of the WJHMP area.
Greater sandhill crane *Grus canadensis tabida*	CT, CFP, SSHCP	Marsh and swamp, meadow and seep, wetland. Nests in wetland habitats in northeastern California; winters in the Central Valley. Prefers grain fields within 4-mile of a shallow body of water used as a communal roost site; irrigated pasture used as loafing sites.	Not Present. Although the species may be observed soaring overhead, the WJHMP area does not support habitat suitable for overwintering. The WJHMP area is outside of SSHCP modeled habitat for this species.
Loggerhead shrike *Lanius ludovicianus*	CSC, SSHCP	Loggerhead Shrikes inhabit open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns. They frequent agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, prairies, golf courses, and cemeteries. Loggerhead Shrikes are often seen along mowed roadsides with access to fence lines and utility poles.	Present. Annual grassland provides suitable foraging habitat for this species. Shrubs and trees within the WJHMP area provide suitable nesting habitat, and the species has been observed along SR 16. SSHCP modeled nesting and foraging habitat is present within portions of the WJHMP area.
Song sparrow – Modesto population *Melospiza melodia*	CSC	The Modesto population is generally associated with freshwater emergent marshes dominated by cattails, willows, or tules. Nesting has been observed within Valley Oak riparian forests with dense understories of Himalayan blackberry (Madrone, 2018).	Low Potential. The WJHMP area is outside the known range of the species. Marsh and riparian habitats onsite are marginally suitable for this species. There are no recorded occurrences of this species in the WJHMP area but there are four recorded occurrences within 10 miles. The closest is approximately 8.5 miles to the southwest.

Species	Status	Suitable Habitat	Potential for Project to Affect
Purple martin *Progne subis*	CSC	This species is a colonial nester and uses natural cavities and created nesting sites with low tree canopy cover at the nest height. Tree nest sites are often located in the upper slopes of hilly and mountainous terrain (Airola and Williams 2008). This species forages in open areas near lakes, ponds, marshes, or other water features (Madrone, 2018).	Low Potential. Both natural nesting cavities and foraging habitats exist within the WJHMP area, although the regional population is known only to nest in weepholes under bridge crossings. There are no known occurrences of nesting colonies within the WJHMP area, but this species has been reported nesting 3 miles to the northwest.
Bank swallow *Riparia riparia*	CT	Requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting. Feeds primarily over grassland, shrubland, savannah, and open riparian areas. Primarily listed for destruction of nesting habitat.	Low Potential. The WJHMP area does not support suitable breeding habitat. Grassland habitat may provide suitable foraging habitat for the species. There are no recorded occurrences within the WJHMP area but there are five recorded occurrences within 10 miles of the WJHMP area. The closest is approximately 4.5 miles to the northwest.
Least Bell's Vireo *Vireo belli pusillus*	FE, CE	This species was once abundant in riparian woodlands throughout the Central Valley but is now generally restricted to Southern California in lowland riparian corridors (Madrone, 2018).	Low Potential. This species is generally believed to be extirpated from the area. The riparian woodlands within the WJHMP area are not dense enough to provide suitable habitat for the species. There are no known occurrences of this species within the WJHMP area and there is a historical (from 1877) occurrence approximately 9.3 miles to the northwest.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	CSC	This bird breeds in California from April to June and many migrate to Mexico and Costa Rica. Some populations are known to over-winter in California. This species has often been observed in grasslands, agricultural fields, and other open areas during migration.	Low Potential. There are both suitable nesting and foraging habitats within the WJHMP area. There are no known recorded occurrences in the WJHMP area but there is an 1899 recorded occurrence approximately 8.5 miles to the southwest. However, this is a poorly documented occurrence.

Species	Status	Suitable Habitat	Potential for Project to Affect
Mammals			
Western red bat *Lasiurus frantzii (= blossevillii)*	CSC SSHCP	Cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland. Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	Moderate Potential. Riparian habitat within the WJHMP area provides habitat for this species. There are no known occurrences in the WJHMP area, but limited surveys have been conducted. SSHCP modeled roosting and foraging habitat is present within portions of the plan area.
American badger *Taxidea taxus*	CSC SSHCP	Occurs in a variety of habitats, including grasslands and oak woodlands with friable soils for digging.	Moderate Potential. Within the WJHMP area, there are open space areas consisting of grasslands and croplands that provide suitable habitats for this species. The WJHMP area has one historical occurrence in the northeast quadrant. SSHCP modeled habitat is present within portions of the plan area.

STATUS CODES:

Federal

FE = Formally listed as endangered under the ESA

FT = Formally listed as threatened under the ESA

FSC = Federal Species of Concern

PT = Proposed threatened

BEPA = Protected under Bald and Golden Eagle Protection Act

State

CE = Formally listed as endangered under CESA

CT = Formally listed as threatened under CESA

CFP = Fully Protected under California Fish and Game Code

CSC = California Species of Special Concern (no formal protection other than CEQA consideration)

California Rare Plant Rank (CRPR)

CRPR 1B = Plants rare, threatened, or endangered in California and elsewhere

CRPR 2B = Plants rare, threatened, or endangered in California, but more common elsewhere

CRPR Extensions

0.1 = Seriously endangered in California

0.2 = Fairly endangered in California

SSHCP = Species that are covered in the SSHCP and considered by Sacramento County to meet the definition of rare as described in Section 15380 of the State CEQA Guidelines

Sources: CDFW 2024, CNPS 2024, USFWS 2024, County of Sacramento 2018, Madrone 2018.

REGULATORY SETTING

FEDERAL

The two major federal laws regulating impacts to wetlands and wildlife species are the Clean Water Act (CWA) (Sections 404 and 401) and the Endangered Species Act (ESA) (Sections 7, 9, and 10). USACE is responsible for administering the CWA, Section 404, with the US Environmental Protection Agency serving in an oversight capacity. USFWS (with jurisdiction over plants, wildlife, and resident fish) and National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) (with jurisdiction over anadromous fish and marine fish and mammals) are responsible for administering ESA Sections 7, 9, and 10. The regional water quality control board (RWQCB) is the regulatory agency that enforces Section 401 of the CWA.

CLEAN WATER ACT SECTION 401 AND SECTION 404

USACE regulates discharge of dredged or fill material into waters of the United States under Section 404 of the CWA. Waters of the United States are generally defined as "navigable waters," which are traditional navigable waters that are or were used for commerce or may be used for interstate commerce; tributaries of navigable waters; and wetlands adjacent to navigable waters. "Discharge of fill material" is defined as the addition of fill material into waters of the United States, including, but not limited to the following: placement of fill that is necessary for the construction of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines (33 CFR Section 328.2[f]).

Under Section 401 of the CWA, an activity requiring a CWA Section 404 permit must obtain a state water quality certification to ensure state water quality standards are not violated. In California, the authority to grant water quality certification is delegated by the State Water Resources Control Board to the nine RWQCBs. The applicable RWQCB for the WJHMP area is the Central Valley RWQCB. Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must apply for water quality certification from the state. Therefore, all projects with a federal component that may affect state water quality (including projects that require federal agency approval, such as a Section 404 permit) must comply with CWA Section 401. As part of the permitting process under Section 404, applicants would be required to apply for water quality certification from the Central Valley RWQCB.

FEDERAL ENDANGERED SPECIES ACT

Under the ESA of 1973, the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as endangered or threatened. The ESA defines "endangered" species as any species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is any species that is likely to

become an “endangered” species within the foreseeable future throughout all or a significant portion of its range. “Candidate” species are those for which USFWS has enough information to propose listing as endangered or threatened. “Proposed” species are those candidate species that USFWS has found warrant listing as endangered or threatened and were officially proposed as such in a Federal Register notice. A species that has been “delisted” is one whose population has met its recovery goal target and is no longer in jeopardy of extinction.

Taking of federally listed fish and wildlife species is prohibited under Section 9 of the ESA. To “take” is defined by the ESA (Section 2[19]) to mean “to harass, harm, pursue, hunt, shoot, would, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 CFR Section 17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR Section 17.3).

Because Section 9 explicitly prohibits the taking of “fish or wildlife” species only and provides separate protections for plants that do not include prohibition of take, case law has determined that incidental take of plants is not prohibited under the ESA, but federal agencies need to consider the effects of their actions on listed plant species to ensure they are not likely to jeopardize the continued existence of a listed species and consultation with USFWS is required to make this determination. In the case of plants, USFWS issues ‘Conservation Recommendations’ rather than Incidental Take Statements where an action is likely to adversely affect, but not likely to jeopardize, a threatened or endangered plant species. Conservation recommendations are discretionary, not mandatory. If the conclusion is that the action is likely to jeopardize a listed plant, USFWS issues reasonable and prudent alternatives and mandatory measures to avoid jeopardy.

All federal government agencies must review their actions and determine if a “may affect” determination is made with respect to a federally listed or proposed species. If the federal agency makes a “may affect” determination, it is then required to formally consult with USFWS or NMFS.

For federal agencies, the consultation is conducted under Section 7 of the ESA. The agency submits a Biological Assessment to USFWS that evaluates the potential adverse effects to federally listed species. USFWS, or NMFS, in the case of anadromous fish, then prepares a Biological Opinion that addresses the requirements that must be followed to avoid, minimize, and compensate for impacts to federally listed species and their habitats.

For non-federal agencies or individuals (i.e., private applicants), the consultation is conducted under Section 10 of the ESA. The agency or individual submits an incidental take[2] permit application to USFWS accompanied by a habitat conservation plan (HCP). The purpose of the habitat conservation planning process associated with the permit is to ensure that there is adequate minimization and mitigation of the effects of the authorized incidental take. The purpose of the permit is to authorize the incidental take of a listed species, not to authorize the activities that result in take.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1916 established federal responsibilities for the protection of nearly all species of birds, their eggs, and nests. Section 16 USC 703–712 of the Act states “unless and except as permitted by regulations, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill” a migratory bird. A migratory bird is any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle. Currently, there are 836 migratory birds protected nationwide by the MBTA, of which 58 are legal to hunt.

State

The four most important state laws regulating wildlife species, streams, and wetlands are the California Endangered Species Act (CESA) (Section 2081), Section 1600 of the Fish and Game Code, Section 401 of the CWA, and the Porter-Cologne Water Quality Control Act. The first two are administered by CDFW, and the latter is administered by the state through the RWQCBs.

California Endangered Species Act

CESA (established in Fish and Game Code Section 2050) generally parallels the main provisions of the ESA and is administered by CDFW for most terrestrial species, with assistance from the National Oceanic and Atmospheric Administration Fisheries for most freshwater fishery species. CESA prohibits the taking of state listed species except as otherwise provided by state law. Unlike the ESA, CESA extends the take prohibitions to not only listed species but also for species petitioned for listing. “Take” is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit. If a species is protected by both the ESA and CESA, a consistency determination may be issued if CDFW finds that the federal permit is consistent with the requirements of CESA. Section 2081 of CESA identifies the following criteria that must be met for CDFW to authorize the take of endangered, threatened, or candidate species:

[2] Incidental take is take of listed fish or wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a federal agency or applicant (50 CFR 402.2).

- The taking of a listed or candidate species can be minimized and fully mitigated.
- The take would not jeopardize the continued existence of the species.
- Authorization for take must be based on the best scientific material that is reasonably available, and that due consideration will be given to the species' ability to survive and reproduce.

California Fish and Game Code

Animals and Plants

Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Fish and Game Code or any regulation made pursuant thereto. Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by the Fish and Game Code or any regulation adopted pursuant thereto. Section 1908 prohibits the import, take, possession, or sale of native plants determined by the Fish and Game Commission to be rare or endangered, except as incidental to the possession or sale of real property. Sections 3511, 4700, 5050 state that Fully Protected animals or parts thereof may not be taken or possessed at any time.

Lake and Streambed Alteration

Fish and Game Code Section 1602 requires any person, state or local governmental agency, or public utility to notify CDFW before beginning any activity that will do one or more of the following: 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state.

Notification is generally required for any project that will take place in the vicinity of a river, stream, or lake. CDFW will determine whether a Lake or Streambed Alteration Agreement is required for the activity. An agreement will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an agreement is required, it will be prepared by CDFW in coordination with the applicant. The agreement will include measures, as necessary, to protect fish and wildlife resources while conducting the project.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed CDFW to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. CESA expanded on the original NPPA and enhanced legal protection for plants.

CESA established threatened and endangered species categories and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, three listing categories for plants are employed in California: rare, threatened, and endangered. Sixty-four species, subspecies, and varieties of plants are protected as rare under the NPPA. The act prohibits take of endangered or rare native plants but includes exceptions for agricultural and nursery operations; for emergencies; and, after proper notification of CDFW, for vegetation removal from canals, roads, and other building sites, changes in land use, and other situations.

Porter-Cologne Water Quality Control Act

This Act (State Water Code Section 13020) mandates that all the waters of the state be protected, that activities and factors affecting water quality be regulated to attain the highest water quality "within reason," and that the state be prepared to exercise its power and jurisdiction to protect water quality from degradation. Waters of the state are defined as any surface or groundwater within the boundaries of the state. The RWQCBs issue permits, with varying conditions, to allow the discharge of dredge or fill material or a waiver of waste discharge into waters of the state.

State Wetland Procedures

The State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (State Wetland Procedures), as prepared by the State Water Resources Control Board, went into effect on May 28, 2020. The Procedures consist of four major elements: 1) a wetland definition; 2) a framework for determining if a wetland feature is a water of the state; 3) wetland delineation procedures; and 4) procedures for the submittal, review, and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities. The Procedures include a definition for wetland waters of the state that include (1) all wetland waters of the United States; and (2) aquatic resources that meet both the soils and hydrology criteria for wetland waters of the United States but lack vegetation.

The State Water Resources Control Board has adopted the following definition of wetlands:

> An area is wetland if, under normal circumstances, (1) the area as continuous or recurrent saturation of the upper substrate caused by groundwater or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

Local

Sacramento County 2030 General Plan

The 2030 General Plan contains numerous goals, policies, concepts, and strategies to protect and/or preserve biological resources. The following policies are applicable to the project.

- **Policy AG-17.** The establishment of conservation easements combining preservation of agricultural uses, habitat values, and open space on the same property should be encouraged where feasible.
- **Policy CI-60.** Encourage maintenance of natural roadside vegetation and landscaping with native plants which usually provide the best habitats for native wildlife.
- **Policy CO-25.** Support the preservation, restoration, and creation of riparian corridors, wetlands, and buffer zones.
- **Policy CO-58.** Ensure no net loss of wetlands, riparian woodlands, and oak woodlands.
- **Policy CO-59.** Ensure mitigation occurs for any loss of or modification to the following types of acreage and habitat function:
    - vernal pools,
    - wetlands,
    - riparian,
    - native vegetative habitat, and
    - special-status species habitat.
- **Policy CO-60.** Mitigation should be directed to lands identified on the Open Space Vision Diagram and associated component maps (please refer to the Open Space Element).
- **Policy CO-61.** Mitigation should be consistent with Sacramento County-adopted habitat conservation plans.
- **Policy CO-62.** Permanently protect land required as mitigation.
- **Policy CO-64.** Consistent with overall land use policies, the County shall support and facilitate the creation and biological enhancement of large natural preserves or wildlife refuges by other government entities or by private individuals or organizations.
- **Policy CO-65.** Create a network of preserves linked by wildlife corridors of sufficient size to facilitate the movement of species.
- **Policy CO-66.** Mitigation sites shall have a monitoring and management program including an adaptive management component including an established funding mechanism. The programs shall be consistent with Habitat Conservation Plans that have been adopted or are in draft format.
- **Policy CO-68.** Preserves shall be planned and managed to the extent feasible so as to avoid conflicts with adjacent agricultural activities (Please also refer to the Agricultural Element).

- **Policy CO-69.** Avoid, to the extent possible, the placement of new major infrastructure through preserves unless located along disturbed areas, such as existing roadways.
- **Policy CO-70.** Community Plans, Specific Plans, Master Plans, and development projects shall:
    - Include the location, extent, proximity, and diversity of existing natural habitats and special status species in order to determine potential impacts, necessary mitigation and opportunities for preservation and restoration.
    - Be reviewed for the potential to identify non-development areas and establish preserves, mitigation banks and restore natural habitats, including those for special-status species, considering effects on vernal pools, groundwater, flooding, and proposed fill or removal of wetland habitat.
    - Be reviewed for applicability of protection zones identified in this Element, including the Floodplain Protection Zone, Stream Corridor Ordinance, Cosumnes River Protection Combining Zone, and the Laguna Creek Combining Zone.
- **Policy CO-71.** Development design shall help protect natural resources by:
    - Minimizing total built development in the floodplain, while designing areas of less frequent use that can support inundation to be permitted in the floodplain,
    - Ensuring development adjacent to stream corridors and vernal pools provide, where physically reasonable, a public street paralleling at least one side of the corridor with vertical curbs, gutters, foot path, street lighting, and post and cable barriers to prevent vehicular entry.
    - Projects adjacent to rivers and streams shall integrate amenities, such as trail connectivity, that will serve as benefits to the community and ecological function.
    - Siting of wetlands near residential and commercial areas should consider appropriate measures to minimize potential for mosquito habitation.
    - Development adjacent to stream corridors and vernal pools shall be designed in such a manner as to prevent unauthorized vehicular entry into protected areas.
- **Policy CO-75.** Maintain viable populations of special-status species through the protection of habitat in preserves and linked with natural wildlife corridors.
- **Policy CO-78.** Plans for urban development and flood control shall incorporate habitat corridors linking habitat sites for special status species. (Please also refer to the Open Space Element for related policies.)
- **Policy CO-83.** Preserve a representative portion of vernal pool resources across their range by protecting vernal pools on various geologic landforms, vernal pools that vary in depth and size, and vernal pool complexes of varying densities; in order to maintain the ecological integrity of a vernal pool ecosystem.

- **Policy CO-84.** Ensure that vernal pool preserves are large enough to protect vernal pool ecosystems that provide intact watersheds and an adequate buffer, have sufficient number and extent of pools to support adequate species populations and a range of vernal pool types.
- **Policy CO-86.** Limit land uses within established preserves to activities deemed compatible with maintenance of the vernal pool resource, which may include ranching, grazing, scientific study, and education.
- **Policy CO-91.** Discourage introductions of invasive nonnative aquatic plants and animals.
- **Policy CO-134.** Maintain and establish a diversity of native vegetative species in Sacramento County.
- **Policy CO-135.** Protect the ecological integrity of California Prairie habitat.
- **Policy CO-138.** Protect and preserve non-oak native trees along riparian areas if used by Swainson ’s hawk, as well as landmark and native oak trees measuring a minimum of 6 inches in diameter or 10 inches aggregate for multi-trunk trees at 4.5 feet above ground.
- **Policy CO-139.** Native trees other than oaks, which cannot be protected through development, shall be replaced with in-kind species in accordance with established tree planting specifications, the combined diameter of which shall equal the combined diameter of the trees removed.
- **Policy CO-145.** Removal of nonnative tree canopy for development shall be mitigated by creation of new tree canopy equivalent to the acreage of nonnative tree canopy removed. New tree canopy acreage shall be calculated using the 15-year shade cover values for tree species.
- **Policy CO-147.** Increase the number of trees planted within residential lots and within new and existing parking lots.
- **Policy CO-149.** Trees planted within new or existing parking lots should utilize pervious cement and structured soils in a radius from the base of the tree necessary to maximize water infiltration sufficient to sustain the tree at full growth.
- **Policy LU-15.** Planning and development of new growth areas should be consistent with Sacramento County-adopted Habitat Conservation Plans and other efforts to preserve and protect natural resources.
- **Policy OS-1.** Actively plan to protect, as open space, areas of natural resource value, which may include but are not limited to wetlands preserves, riparian corridors, woodlands, and floodplains associated with riparian drainages.
- **Policy OS-2.** Maintain open space and natural areas that are interconnected and of sufficient size to protect biodiversity, accommodate wildlife movement and sustain ecosystems.

- **Policy OS-9.** Open space easements obtained and offered as mitigation shall be dedicated to the County of Sacramento, an open space agency, or an organization designated by the County to protect and manage the open space. Fee title of land may be dedicated to the County, the open space agency, or organization provided it is acceptable to the appropriate department or agency (Please also refer to Section V of the Conservation Element for related policies).

The major goal outlined in the Conservation Element of the General Plan is the management and protection of natural resources for the use and enjoyment of present and future generations, while maintaining the long-term ecological health and balance of the environment. In addition to the Conservation Element goals and objectives, the Open Space Element further identifies two key concepts that form the basis of the goals, objectives and policies contained in the element: (1) protecting the urban edge and (2) establishing natural area linkages.

The urban edge is defined as the Urban Services Boundary (USB) in the Land Use Element. This boundary is the ultimate boundary of the urban area and is based upon natural and environmental constraints to urban growth. Protection of the urban edge allows accommodation of large scale urban development, while maintaining substantial rural, natural open space areas. Confining urban development within the USB prevents urban sprawl into the rural and open space areas of the county; protecting the urban edge protects the existing open space and rural areas of the county from being lost to development.

Open space linkages increase the ecological value of the open space lands by connecting ecosystems and wildlife habitats. This is beneficial to species higher in the food chain since mammals and birds of prey require considerable supporting territory. When the habitat is reduced to isolated patches, the long-term viability of the species is threatened. Furthermore, the establishment of natural habitat corridors facilitates migration of species between breeding populations, thus enlarging the gene pool and helping to ensure genetically diverse and healthy populations of individual species. In the rural areas of the county, contiguous open space already exists, allowing for preservation of larger, high quality natural areas.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and the Vineyard Community Plan.

Cordova Community Plan

- **Policy ROS-7.** Protect and preserve sensitive environmental areas and wildlife habitats including wetlands, riparian corridors, annual grasslands, and floodplains; and encourage restoration and educational opportunities (e.g., public walkways and informational signage) for such areas when appropriate.

VINEYARD COMMUNITY PLAN

- **Policy NER-3.** Protect natural areas from the effects of urbanization through the utilization of appropriate zoning techniques which support local, state, and federal preservation policies.
- **Policy NER-4.** Protect vernal pools and potential endangered species such as the Sacramento Orcutt Grass by evaluating development WJHMP areas on a case-by-case basis for the presence of vernal pools and inventorying those sites where pools are found.

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN

The South Sacramento County Habitat Conservation Plan (SSHCP) is a regional approach to conserving species and addressing issues related to urban development, habitat conservation, open space preservation, and agricultural protection. To develop the SSHCP, the County is partnered with Rancho Cordova, Galt, the Sacramento Regional County Sanitation District, the Capital Southeast Connector Joint Powers Authority, and the Sacramento County Water Agency. The intent of the SSHCP is to minimize regulatory hurdles and streamline the permitting process for projects that engage in development-related activities inside the urban development area (UDA). The UDA corresponds to land within the county's urban service boundary, and to land within the city limits of Rancho Cordova and Galt, and Galt's adopted sphere of influence. The SSHCP consolidates environmental efforts to protect and enhance vernal pool habitat and other aquatic and upland habitats to provide ecologically viable conservation areas in south Sacramento County for numerous species. The SSHCP provides a mechanism by which the County and its partners are authorized to issue permits that allow landowners to engage in specific development activities (Covered Activities) that could result in the incidental take of listed species (covered species). The intent is that the County and its partners have adopted a developer-paid fee system based on loss of habitat acreage, habitat type, and long-term management costs. Fees are used to fund the habitat preservation, restoration, and management elements of the SSHCP. The final SSHCP and supporting EIR/EIS were approved and certified, respectively, by the County Board of Supervisors and the issuance of permits by the resource agencies has been completed.

Covered Activities include activities and projects related to urban development and associated infrastructure. Covered Activities are allowable under the SSHCP's Incidental Take Permits and can use the SSHCP to mitigate impacts that result from implementation of the Covered Activity. Covered Activities must comply with all SSHCP requirements, including SSHCP avoidance and minimization measures (AMMs).

The SSHCP calls for the preservation of land within the PPU that encompass areas where important SSHCP covered species resources are present. The SSHCP Conservation Strategy is based on the principles of conservation biology and landscape ecology and the nature, quality, and geographic distribution of the resources in the SSHCP plan area. The SSHCP plan area was divided into eight Preserve Planning Units (PPUs) to assist with the development of an adequate SSHCP Conservation Strategy. The plan area is in PPU 2 and PPU 3.

PPU 2 encompasses approximately 9,271 acres located in the northern portion of the SSHCP. It is anticipated that a majority of PPU 2 will eventually be urbanized. Under the SSHCP, approximately 584 total acres in PPU 2 will be preserved in a connected SSHCP Preserve System. SSHCP Preserves in PPU 2 will also be directly connected to existing preserves within PPU 2, and in PPU 3 (Vernal Pool Prairie Preserve) to the south by Linkage Preserve L-5 (Jackson Linkage), which is outside of the WJHMP area.

PPU 3 encompasses 14,303 acres located in the northwestern portion of the plan area. Approximately 1,815 acres in PPU 3 will be preserved under the SSHCP. The preserve design focus for PPU 3 is to connect two large existing preserves: 1,160 acres of existing preserve in the northern portion of PPU 3 and 560 acres of existing preserve in the central portion. This will be accomplished by establishing a new Core Preserve (Core Preserve C-3), which will total approximately 1,046 acres. Two Satellite Preserves will be established in PPU 3: Satellite Preserves S-7 (91 acres) and S-9 (31 acres). In addition, the Laguna Creek Wildlife Movement Corridor within PPU3 is approximately 250 acres. All of these proposed preserves would be outside of the WJHMP area, although there is an existing preserve west of Excelsior Road.

The plan area is within the UDA, which the SSHCP assumed would eventually be developed.

Sacramento County Tree Ordinance

The Sacramento County Tree Preservation and Protection Ordinance (Chapter 19.12 of the County Code) states that “it shall be the policy of the County to preserve all trees possible through its development review process.” In addition, the “approving body shall have the authority to adopt mitigation measures as conditions of approval for projects in order to protect other species of trees.” This protection is afforded to native oak trees, other native trees, and landmark trees (defined in Section 19.04.030 of the County Code as “an especially prominent or stately tree on any land in Sacramento County”). Furthermore, the Sacramento County General Plan Conservation Element Policy CO-138 states that the County will “protect and preserve non-oak native trees along riparian areas if used by Swainson’s Hawk, as well as landmark and native oak trees measuring a minimum of 6 inches in diameter or 10 inches aggregate for multi-trunk trees at 4.5 feet above ground.” The County has developed the following list of native oak and specific non-oak native trees which are considered during environmental analysis:

- Valley Oak/*Quercus lobata*
- Interior live oak/*Quercus wislizenii*
- Blue oak/*Quercus douglasii*
- Coast live oak/*Quercus agrifolia* (in Delta area)
- Oracle oak/*Quercus X morehus*
- Native oak hybrids
- California sycamore/*Platanus racemosa*

- Northern California black walnut/*Juglans californica v. hindsii*
- Oregon ash/*Fraxinus latifolia*
- Goodding's black willow/*Salix gooddingii*
- Box elder/*Acer negundo v. californicum*
- White alder/*Alnus rhombifolia*
- California buckeye/*Aesculus californica*

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

Impacts to biological resources would be considered significant if implementation of the project would:

- have a substantial adverse effect on protected surface waters, as defined by the California Water Code, USACE Wetland Delineation Manual (1987 ed.) and/or as defined by Sections 401 and 404 of the Clean Water Act (including, but not limited to, seeps, vernal pools, swales, drainages, and perennial waterways) through direct removal, filling, hydrological interruption, or other means;
- have a substantial adverse effect, either directly or through habitat modification, on any species identified as a special-status species in local or regional regulatory guidance, plans, policies, or regulations or by CDFW or USFWS;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources; or
- conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or approved local, regional, or state habitat conservation plan.

ISSUES NOT DISCUSSED FURTHER

All the issues identified in the significance criteria are addressed in the following analysis.

METHODOLOGY

The methodologies used to determine significance rely on documents published by or endorsed by regulatory agencies. The applicable documents and methods are cited and described in the applicable impact discussions below. In the absence of such published documents, the analyses rely on the general definitions of significance.

Due to the programmatic nature of this EIR, where more detailed site-specific information is not available, analysis from the Final Environmental Impact Report for the SSHCP has been incorporated. The SSHCP FEIR (SCH Number 2008062030) (Sacramento County 2018) was certified by the Sacramento County Board of Supervisors on September 11, 2018 (County Control No. 2003-0637). The FEIR for the SSHCP is available for review at Sacramento County Planning and Environmental Review, 827 7th Street, Room 225 Sacramento, CA 95814 and is hereby incorporated by reference in accordance with State CEQA Guidelines Section 15150.

In addition, biological surveys were conducted, and a report was prepared for portions of the WJHMP area. Information from the following report is incorporated into the impact analysis and the entire report is included in the appendices.

- Biological Resources Assessment – West Jackson Highway Master Plan prepared by Madrone Ecological Consulting, LLC dated December 2018 (Appendix F).

Note that the biological report was only prepared for participating properties within the WJHMP area. This includes most of Districts 1 and 2 but does not cover any portion of the FPAs. Therefore, this analysis uses the land cover mapping conducted for the SSHCP to approximate the habitat types and acreages within the plan area, as provided in Table 8-1 and Figure 8-1. The County then separated the prior mining projects that have had various mitigation obligations from the remaining plan area and basemap data to determine the acreages of the various SSHCP habitat types that would be subject to mitigation (i.e., those outside of the prior mining areas). Table 8-4 summarizes the acreage of each habitat type on unmined properties potentially converted due to buildout of the WJHMP. Figure 8-1 shows the unmined areas reflected in these totals. For the purpose of this evaluation, it is assumed that all remaining habitat within the illustrated land cover types shown in Table 8-4 would be fully converted to a developed land cover and the associated habitat values of these land cover types would be lost. The acreages in Table 8-4 represent a conservative estimate, as these acreages also include several areas currently under conservation easements, the value habitat of which would continue to be protected in perpetuity. This methodology provides a reasonable, programmatic assessment of the plan area.

Table 8-4 WJHMP Habitat Loss, by SSHCP Land Cover Type

SSHCP Cover type	Acres Converted
Cropland	93.46
Freshwater Marsh	2.88
Irrigated Pasture-Grassland	262.34
Mixed Riparian Woodland	12.30
Open Water	106.93
Seasonal Wetlands	7.12
Streams/Creeks	7.65
Streams/Creeks (VPIH)	0.45
Swale	21.56
Valley Grassland	1,382.28
Vernal Pool	37.41

Source: Data provided by Sacramento County in 2024.

West Jackson Highway Master Plan Policies

The proposed WJHMP does not include policies related to biological resources.

Impacts and Analysis

Impact BR-1: Result in Loss of Wetlands and Surface Waters

Project level wetland delineations have not been prepared for the WJHMP area. Based on mapping performed for the SSHCP, however, both wetlands (i.e., aquatic habitats that have wetland vegetation, hydric soils, and wetland hydrology) and other waters (i.e., aquatic habitats that have an ordinary high-water mark but do not meet all three wetland criteria) are located in the plan area (see Figure 8-1). These wetlands may be under state or federal jurisdiction. The distribution and character of the wetlands and other waters in the plan area has been influenced by former and ongoing mining operations. The mining sites were surveyed as part of the applicable use permit application and mitigation for loss of historical wetlands has occurred onsite.

The WJHMP includes 1,489 acres proposed to be open space, some of which would coincide with existing wetlands. While this open space could continue to support the existing vernal pools, the designation does not provide for in perpetuity protection of existing habitat. At this time, the WJHMP is not proposing conservation easements on site beyond what is already in effect. Only areas under easement can be assumed to not be impacted; all other waters have been conservatively assumed to have direct impacts. Areas of existing conservation easements include two separate areas along Morrision Creek, Elder Creek, and an 82-acre preserve located south of Jackson Highway and approximately 1 mile east of the intersection of Jackson Highway with Bradshaw Road that is under a conservation easement held by CDFW.

The County used ArcGIS software and the SSHCP Land Coverage map to approximate the acreage of wetlands and other waters in absence of a formal delineation report. The SSHCP assumed that all of the area within the UDA – except the existing preserves identified above - would be developed at some point and, thus, wetlands in that area would be affected or removed by covered project activities. Based on the SSHCP Land Coverage Map, 184 acres of wetlands and other waters would be disturbed or removed to accommodate development within the WJHMP area. For the WJHMP area, waters and acreage are not final and a formal verified wetland delineation and permitting pursuant to the SSHCP would be required prior to development in the WJHMP area. The WJHMP area also contains constructed/restored lands including constructed vernal pools, marshes, depressional seasonal wetlands, seasonal wetland swales, a low flow corridor, and channels adjacent to wetlands (Madrone 2018). Features constructed as part of mitigation for impacts to wetlands from mining activities would be identified through these subsequent reviews.

There are two general types of impacts to wetland habitats: direct and indirect. A direct impact refers to an effect caused by a project that occurs at the same time and place as the project itself. A direct impact occurs when a wetland is destroyed by construction activities within the wetland margin; the SSHCP analysis for Effects of the Vernal Pool Ecosystem states that if a Covered Activity project footprint overlays any portion of a vernal pool, then the entire pool is directly affected. An indirect impact occurs when activities near the wetland cause secondary effects, such as hydrologic changes that reduce the amount of water flowing to the wetland, or drift of pesticides and other pollutants into the wetland. For vernal pools and similar wetlands that may contain federally listed species, the rule of thumb for total avoidance of both direct and indirect impacts requires that construction and other activities occur at least 250 feet from the wetland[3]. For other surface waters, the County uses a buffer of 50 feet as a rule of thumb for avoiding direct and indirect impacts. Note that these rules may be supplanted by site-specific analyses of hydrologic and other conditions. Potential direct and indirect impacts are discussed further below.

Direct Impacts

Based on ArcGIS analysis of SSHCP land cover mapping, there are estimated to be 184 acres of wetlands and other waters within the WJHMP area that would be lost due to buildout of the WJHMP. Some areas included within this total are within existing conservation easements (as shown in Figure 8-1) and may be preserved. However, because final site designs are not known, this analysis assumes that all wetlands would be directly impacted by development.

No current wetland delineations have been conducted in Districts 1 and 2 and no applications for CWA Section 404 permits for wetland loss have been submitted. Thus,

[3] Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California (February 28, 1996).

the amount of waters of the United States and waters of the state within Districts 1 and 2 that would be directly removed has not been determined by USACE or the Central Valley RWQCB at this time. Future projects within the WJHMP area would be required to submit wetland delineations to the USACE for verification and the County and for extension of Clean Water Act permit coverage und the SSHCP. The acreage of affected wetlands would be refined through this process.

Indirect Impacts

As described above, all wetlands outside of existing conservation easements are assumed to be directly impacted by the WJHMP for the purpose of this analysis. Since open space areas within the plan area would allow different uses such as recreational trails and detention basins, wetlands within "Open Space" that are not directly impacted may still be indirectly affected by incompatible activities within the wetland buffer. Potential indirect impacts on water quality and hydrology could result from urban runoff, erosion, and siltation. Indirect impacts from intrusion of humans and domestic animals, litter and dumping, introduction of invasive plant species, and alterations to individual wetland watersheds could degrade habitat for vernal pool invertebrates in off-site wetlands and wetlands retained in on-site open spaces. As explained further in Chapter 14, "Hydrology, Drainage, and Water Quality," compliance with the requirements of the Sacramento County Stormwater Ordinance (Sacramento County Code 15.12), Land Grading and Erosion Control Ordinance (Sacramento County Code 16.44), and the state's General Stormwater Permit for Construction Activities, preparation and implementation of a site-specific stormwater pollution prevention plan (SWPPP) and Best Management Practices, implementation of Low Impact Development Standards, and implementation of the drainage plan outlined in the WJHMP master drainage plan, would address the project's potential to substantially impair the quality of surface waters.

Summary

Based on SSHCP GIS analysis, the WJHMP area has approximately 184 acres of wetland habitat outside of the previously mined areas that is assumed to be directly impacted by development for the purpose of this analysis. The land use plan designates approximately 1,489 acres as Open Space which has natural and created wetlands. However, the project does not propose new easements to protect the remaining habitat in perpetuity. As described above, the open space in the plan area is intended to serve several community functions, including stormwater detention, farmland, and passive recreation. As a result, the wetlands in these areas would be subject to indirect impacts from intrusion of humans and domestic animals; litter and dumping; alteration of individual wetland watershed area; and introduction of invasive plant species could degrade habitat for vernal pool invertebrates in offsite wetlands and wetlands retained onsite. Direct and indirect impacts could occur because urban development is proposed within and around wetland areas.

To address the potential loss of wetlands and surface waters, the Project Applicants and any subsequent developers within the WJHMP area would be required through Mitigation Measure BR-1a to prepare a site-specific biological resources assessment in accordance with the Sacramento County Guidelines for SSHCP Biological Resources

Reports prior to an entitlement application being deemed complete. The report shall contain information that documents existing landcover habitats as defined in the SSHCP and an assessment of species occurrences and potential habitat for SSHCP covered species. Based on the findings of this report, Mitigation Measure BR-1b would require developers to participate in the SSHCP and must obtain coverage through the Aquatic Resources Program (ARP). The ARP is a local jurisdiction based aquatic resources permit program that adds to the strength of the SSHCP framework of protection of natural communities and native plant and wildlife species, including protection of aquatic resources. A primary goal of ARP implementation is to achieve an overall no net loss of aquatic resources functions and services. While the ARP focuses on a permit program to address impacts to aquatic resources and the SSHCP focuses on permitting related to incidental take of species, both permitting processes are done in conjunction with one another and consist of:

- A programmatic general permit (PGP), founded on a local aquatic resources protection program and designed to reduce duplication with that program, for covered activities with minimal individual and cumulative effects on aquatic resources. The PGP is implemented by the three land-use authority Permit Applicants (i.e., Sacramento County, Galt, and Rancho Cordova).
- A regional general permit (RGP), for covered activities with minimal individual and cumulative effects on aquatic resources that do not qualify for the PGP.
- A procedure for issuing Letters of Permission (LOP procedure) for covered activities with more than minimal effects, but less-than-significant effects, on the human environment, including aquatic resources.
- An abbreviated process for issuing standard permits (abbreviated SP) for other covered activity impacts that do not qualify for the PGP or the LOP procedure. The abbreviated SP process is used for the small number of SSHCP covered activities requiring authorization under CWA 404 that may significantly affect the human environment under NEPA, requiring the preparation of an EIS.

The CWA 404 permit strategy relies, at all levels of permitting, on the SSHCP to address avoidance, minimization and requirements for compensatory mitigation for impacts to aquatic resources. Key to satisfying compensatory mitigation requirements, payment of SSHCP-required fees dually fulfills a USACE-approved South Sacramento In Lieu Fee Program established by the SSHCP Permittees, which relies on the compensatory mitigation ratio requirements for aquatic resources contained in the SSHCP (vs. project-by-project compensatory mitigation evaluation).

The SSHCP includes AMM's that aim to protect aquatic resources. Each subsequent project is reviewed for compliance and consistency with the SSHCP during the project design phase. These AMMs include:

- STREAM-2 (UDA Stream Setbacks), which requires a 100-foot setback from the top of bank on both sides of Morrison Creek and Elder Creek, or if a stream reach supports woody riparian vegetation, the setback must be equal to the riparian edge plus 25 feet or the 100-foot setback, whichever is greater. If trails are located within the stream setback, the nearest edge of the trail must be located at least 50 feet from the top of the bank,

- STREAM-3 (Minor Tributaries to UDA Streams), which requires a 25-foot setback measured from the top of the bank on both sides of the stream applied to all avoided first and second order tributaries to Morrison Creek and Elder Creek. Refer to Objective W6 in Chapter 7 (Table 7-1) of the SSHCP regarding avoided first and second order tributaries (which require that covered activities avoid a minimum of 20 percent of first and second order tributaries). Trails are not permitted within headwater ephemeral stream setbacks.

ROAD-2 (Wildlife Crossing Structures), which applies to road projects that are Urban Development Covered Activities (see SSHCP Section 5.2.1) or are Rural Transportation Covered Activities (see SSHCP Section 5.2.3). This AMM requires these projects to include an adequate number of wildlife crossing structures (as depicted in SSHCP Figure 5-10). An adequate number of wildlife crossing structures within the UDA and outside the UDA provide for continued dispersal and movement of native wildlife throughout the SSHCP Plan Area, as required by the SSHCP Biological Goals and Objectives (see SSHCP Chapter 7).

By obtaining all required permits, paying all required SSHCP/In Lieu fees and meeting all AMMs in the SSHCP, the impacts to wetlands and surface waters would be reduced to **less than significant with mitigation**.

MITIGATION MEASURES

MITIGATION MEASURE BR-1A: SITE SPECIFIC BIOLOGICAL REPORTS

Prior to an entitlement application being deemed complete, future projects within the WJHMP area shall prepare a site specific biological resources assessment in accordance with the Sacramento County Guidelines for SSHCP Biological Resources Reports. The report shall contain information that documents existing landcover habitats as defined in the SSHCP and an assessment of species occurrences and potential habitat for SSHCP covered species. If potentially state or federal jurisdictional waters occur onsite, then an aquatic resources delineation shall also be prepared.

MITIGATION MEASURE BR-1B: SOUTH SACRAMENTO HABITAT CONSERVATION PLAN PARTICIPATION

Future project applicants shall participate in the South Sacramento Habitat Conservation Plan (SSHCP). Prior to the approval of grading permits, civil improvement plans, or building permits (whichever occurs first),

- project applicants shall prepare project plans in accordance with the SSHCP, and follow all avoidance and minimization measures (AMMs) outlined in the SSHCP. To compensate for the permanent loss of terrestrial and aquatic SSHCP landcover types, project applicants shall complete payment of all SSHCP landcover mitigation fees pursuant to the current fee schedule, or land dedications to compensate for losses of terrestrial and aquatic landcovers AMMs currently provided in the SSHCP are included in Appendix F.

Species specific AMMs include compliance with the following, as applicable and identified in project level biological surveys per Mitigation Measure BR-1a.

- Ahart's dwarf rush,
- Boggs lake hedge-hyssop,
- legenere,
- dwarf downingia,
- pin cushion navarretia,
- Sacramento orcutt grass,
- saline clover,
- Sanford's arrowhead,
- slender orcutt grass,
- Crotch bumble bee,
- midvalley fairy shrimp,
- vernal pool tadpole shrimp,
- vernal pool fairy shrimp,
- Ricksecker's scavenger beetle,
- valley elderberry longhorn beetle,
- western spadefoot,
- giant garter snake,
- western pond turtle,
- Cooper's hawk,
- tricolored blackbird,
- western burrowing owl,
- golden eagle,
- ferruginous hawk,
- Swainson's hawk,
- northern harrier,
- white-tailed kite,
- loggerhead shrike,
- western red bat, and
- American badger.

IMPACT BR-2: HAVE A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL-STATUS MAMMALS

AMERICAN BADGER

The American badger (*Taxidea taxus*) is a California species of special concern. This burrowing mammal is carnivorous and feeds on small mammals, lizards, snakes, insects and carrion (Madrone 2018). Families may share the territory of a female, but males are usually solitary except during breeding season. The American Badger has no natural enemies and can be found in a variety of habitats, including grasslands and oak woodlands. This animal digs burrows for cover in relatively crumbly soil and frequently reuses old burrows. Mating season is during the summer and early fall and the young are born in burrows (Messick and Hornocker 1981).

Annual grassland within the WJHMP area provides suitable habitat for the American Badger and there is one known 1991 CNDDB occurrence (#73) of this species within the WJHMP area. This occurrence was located southwest of Mather Airport in mining sites that are north of Jackson Road (Granite I, Aspen V and Aspen VI)) between Bradshaw Road and Excelsior Road. Therefore, there is high potential for this species to den and forage in the WJHMP area and project development could result in direct mortality of individuals or loss of natal dens resulting in death of young either directly through destruction of the den or indirectly through disturbance that causes the mother

to abandon her kits. There have not been any recent local sightings of American badger since the 1991 CNDDB occurrence and the WJHMP area would represent the boundary between open space and the Sacramento urban area. American badger require large tracks of land for every individual territory and the area surrounding the WJHMP area is experiencing high development which would reduce the likelihood of this species from reestablishing. Nevertheless, the loss of foraging habitat from the WJHMP area is not expected to decrease survival or reproduction of the species in the area because much of the annual grassland habitat will be preserved as open space within the WJHMP area and would continue to provide adequate foraging habitat to support the local population. American badger has experienced drastic declines, particularly in the Central Valley, and has been extirpated from many areas in southern California (Williams 1986). Loss of individuals within the WJHMP area could diminish the local population of this species and decrease reproductive potential, which could contribute to further declines.

Implementing Mitigation Measures BR-1a, BR-1b, and BR-2 would reduce potentially significant impacts on American badger to **less than significant with mitigation** because these measures require project proponents to participate in the SSHCP, which includes land dedication and in-lieu fees which would offset the loss of foraging and denning habitat from the plan area, Mitigation Measure BR-2 requires pre-construction surveys for active dens in the construction area and within 500 feet of the construction area be identified, avoided, and monitored so that project construction would not result in abandonment of young or direct mortality of individuals.

MITIGATION MEASURES

Implement Mitigation Measures BR-1a and BR-1b.

MITIGATION MEASURE BR-2: AMERICAN BADGER SURVEYS AND ACTIVE DEN AVOIDANCE

Before construction activities within suitable habitat for American badger, a qualified biologist shall conduct surveys to identify any American badger burrows/dens. These surveys shall be conducted not more than 15 days before the start of construction. If occupied burrows are not found, further mitigation will not be required. If occupied burrows are found, CDFW shall be notified and impacts to active badger dens shall be avoided by establishing exclusion zones around all active badger dens, within which construction-related activities shall be prohibited until denning activities are complete or the den is abandoned. A qualified biologist shall monitor each den once per week to track the status of the den and to determine when a den area has been cleared for construction.

IMPACT BR-3: HAVE A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL-STATUS BIRDS

Based on the species table and types of habitat present on or near the WJHMP area, the following special-status bird species are identified as having potential to occur on or near the WJHMP area: burrowing owl (*Athene cunicularia*), Cooper's hawk (*Accipiter cooperii*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), Swainson's hawk (*Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*), and white-tailed kite (*Elanus leucurus*). This impact discussion also addresses nesting raptors in general, which are afforded minimum protections pursuant to the California Fish and Game Code regardless of status.

Swainson's Hawk

The Swainson's hawk is listed as a threatened species by the State of California. It is a migratory raptor typically nesting in or near valley floor riparian habitats during spring and summer months. Swainson's hawks were once common throughout the state, but various habitat changes, including the loss of nesting habitat (trees) and the loss of foraging habitat through the conversion of native Central Valley grasslands to certain incompatible agricultural and urban uses has caused an estimated 90 percent decline in their population.

Swainson's hawks feed primarily on small mammals, birds, and insects. Their typical foraging habitat includes native grasslands, alfalfa, and other hay crops that provide an abundant small mammal prey base and prey accessibility (ability to visually detect and capture the prey). Certain other row crops and open habitats also provide some foraging habitat. The availability of productive foraging habitat near a Swainson's hawk's nest site is a critical requirement for nesting and fledgling success. In central California, about 85 percent of Swainson's hawk nests are within riparian forest or remnant riparian trees; however, this is thought to be a function of nest tree availability rather than dependence on riparian forest and Swainson's hawks will use a variety nesting habitats (Estep 1989, England et al. 1997, Anderson et al. 2007). Their nest trees are almost always selected along the edges of tree stands or woodlands and not on the interior of them because this is a visually oriented species that requires large, wide-open spaces and visibility from the nest (England et al. 1997; Estep 2009).

The standard methodology for mitigating loss of Swainson's hawk foraging habitat is through participation in the SSHCP. Acreages of natural habitat are calculated on a per project basis. Projects pay mitigation fees commensurate with the impact to the site specific landcover type (i.e., cropland, irrigated pasture-grassland, valley grassland, vernal pool, seasonal wetland, and swale). The CNDDB and SSHCP show that there are known Swainson's hawks nesting occurrences within the WJHMP area. Additionally, SSHCP modeled habitat for Swainson's hawk shows that the WJHMP area supports Non-High Value Foraging Habitat. The SSHCP considers cropland, irrigated pasture-grassland, valley grassland, vernal pool, seasonal wetland, and swale land cover types as potential Swainson's hawk foraging habitat. For the purpose of this assessment, the full plan area is assumed to be developed, including open space areas that may retain limited habitat value. SSHCP land cover mapping shows that there are approximately 93 acres of cropland, 1,382 acres of valley grassland and 262 acres of irrigated pasture-grassland, 37 acres of Vernal Pool, 7 acres of seasonal wetland, and 22 acres of swale within the plan area that are outside of the previously mined areas and would be converted through development of the WJHMP.

However, because mining reclamation plans required by Sections 3708 and 3711 of the State Mining and Geology Board's (SMGB) Reclamation Regulations could potentially restore habitat within mining areas, the County supplemented this standard methodology to assess impacts to Swainson's hawk habitat. The County reviewed each mining project's environmental document to determine whether Swainson's hawk habitat has been affected by the mining project and whether the habitat would need to

be restored through a reclamation plan. Therefore, this methodology assumes a future baseline condition where some previously degraded Swainson's hawk habitat in mining areas has been restored to a condition suitable for Swainson's hawk foraging consistent with previously adopted mitigation measures, conditions of approval, or applicable SMGB regulations.

Staff prepared a set of criteria to determine whether the post-reclamation condition of a mining site would provide habitat suitable for Swainson's hawk foraging. The criteria include the following:

- The mining project's environmental document identified the loss of Swainson's hawk habitat.
- The mining project's environmental document recommends crops that are suitable for Swainson's Hawk foraging to mitigate loss of habitat as a condition for mining project approval.
- The proposed land uses in the mining project's reclamation plan include agriculture and open space.

Post-reclamation farmland and open space areas (including mining pit slopes) are expected to comprise an environmental system that supports successful Swainson's hawk foraging. The only areas within mining projects that cannot be considered habitat are stormwater detention areas. Staff also concluded that post-reclamation farmland and open space areas would maintain 100 percent of their habitat value. Thus, for purposes of assessing the project's impact to Swainson's hawk habitat, the entire mining WJHMP area, with the exception of stormwater detention areas, would have a post-reclamation habitat condition suitable for Swainson's hawk foraging and these areas will maintain 100 percent of their habitat value.

By using these criteria, staff identified eight mining projects that will have post-reclamation habitat conditions suitable for Swainson's hawk foraging (Table 8-5). Four of the projects are located north of SR 16 (Aspen V and Va, Aspen VI, and Granite 1) and share the same environmental document (*Morrison Creek Mining Reach Upstream (North) of Jackson Highway DEIR/DEIS*) while the remaining four projects are located south of Jackson Highway and also share the same environmental document (*Morrison Creek Mining Reach Downstream of Jackson Highway DEIR/DEIS*). Both environmental documents state that the mining projects affected Swainson's hawk habitat, but only the *Morrison Creek Mining Reach Downstream of Jackson Highway DEIR/DEIS* identified the impact to habitat to be significant. Both environmental documents also recommended as a mitigation measure that post-reclamation agricultural areas be planted only with crops that are suitable for Swainson's hawk foraging and use permits for all eight mining projects include this measure as a condition of approval. Proposed post-reclamation land uses in the eight mining projects would be agriculture, wetlands and open space – land uses that support successful Swainson's hawk foraging. The only proposed post-reclamation land use that does not support Swainson's hawk foraging was stormwater detention area.

Table 8-6 shows the number of acres that will have habitat value for the Swainson's hawk within mining projects after habitat is restored through implementation of reclamation plans. Reclamation of mining projects would result in creation of an estimated 2,047 acres of habitat that may be subject to impacts from the WJHMP. Mining projects that will have the most acres of habitat include Aspen VI (703 acres), Vineyard 1 (363 acres) and Granite 1 (294 acres).

Table 8-5 Criteria to Identify Swainson's Hawk Habitat in Previously Mined Areas

Mining Project	Criterion 1: Environmental Document Identifies Loss of Habitat for Swainson's Hawk	Criterion 2: The Environmental Document Recommends Crops That Are Suitable for Swainson's Hawk Foraging to Mitigate for Loss of Habitat	Criterion 3: The Proposed Land Uses in the Mining Project's Reclamation Plan Includes Farmlands and Wetlands
Aspen V, Va	**MEETS CRITERION** 10. The proposed project would result in the temporary loss of potential foraging habitat of moderate value and potential nest sites for Swainson's hawk, in those areas that would be reclaimed to wetlands and agriculture (assuming that crops suitable for Swainson's hawk foraging are planted). Those portions of the project that would serve as stormwater detention areas would represent a loss of suitable foraging habitat for Swainson's hawk. *(Morrison Creek Mining Reach Upstream (North) of Jackson Highway DEIR/DEIS, Control Numbers 89-1194, 89-1195 and 94-0654, pp. 5-30,31)*	**MEETS CRITERION** 5. The following mitigation is recommended to minimize potential impacts to Swainson's hawk, burrowing owl and other species. The measures listed below are related to the aforementioned species only. d. The post-reclamation agricultural areas shall be planted only with crops that are suitable for Swainson's hawk foraging; these crops shall be approved by the CDFG (California Department of Fish and Game). *(Morrison Creek Mining Reach Upstream (North) of Jackson Highway DEIR/DEIS, Control Numbers 89-1194, 89-1195 and 94-0654, p. 5-38)*	**MEETS CRITERION** Mining plan area to be used for agriculture. Agriculture area is suitable for Swainson's hawk foraging (with the right crops). Aspen V and Va Reclamation Plan
Aspen VI			**MEETS CRITERION** Mining plan area to be used for agriculture or pond. Agriculture area is suitable for Swainson's hawk foraging (with the right crops). The pond areas are not suitable for Swainson's hawk foraging. Aspen VI Reclamation Plan
Granite 1			**MEETS CRITERION** Mining plan area to be used for agriculture or open space. Agriculture area is suitable for Swainson's hawk foraging (with the right crops). Granite 1 Reclamation Plan

Mining Project	Criterion 1: Environmental Document Identifies Loss of Habitat for Swainson's Hawk	Criterion 2: The Environmental Document Recommends Crops That Are Suitable for Swainson's Hawk Foraging to Mitigate for Loss of Habitat	Criterion 3: The Proposed Land Uses in the Mining Project's Reclamation Plan Includes Farmlands and Wetlands
Aspen III South	**MEETS CRITERION:** "The proposed project would result in the temporary loss of approximately 880 acres of potential foraging habitat with potential nest sites for Swainson's hawk, a State threatened species in those areas that would be reclaimed to agriculture and wetlands (assuming that crops suitable for Swainson's hawk foraging are planted. *(Significant Impact)* *(Morrison Creek Mining Reach Downstream of Jackson Highway FEIR/FEIS, Control Numbers 90-1607, 91-0118, 94-0484, 94-0671, p. 5-54)*	**MEETS CRITERION:** 4."The following mitigation is recommended to minimize potential impacts to Swainson's hawk, burrowing owl and other species. The measures listed below are related to the aforementioned species only. d. The post-reclamation agricultural areas shall be planted only with crops that are suitable for Swainson's hawk foraging; these crops shall be approved by the CDFG." *(Morrison Creek Mining Reach Downstream of Jackson Highway FEIR/FEIS, Control Numbers 90-1607, 91-0118, 94-0484, 94-0671, p. 5-61)*	**MEETS CRITERION:** Reclamation Plan does not identify post-reclamation land uses. However the Project Use Permit requires the mining project proponents prepare a plan for the preservation and salvage of topsoil resources suitable for sustaining economically viable agriculture uses (Aspen III South Use Permit (94-UPB-0484), Condition 47; Aspen IV South Use Permit (90-CZB-UPB-1607), Condition 49, Aspen V South Use Permit (94-CZB-UPB-0671), Condition 42.
Aspen IV South			
Aspen V South			
Vineyard			**MEETS CRITERION:** Mining plan area to be reclaimed to agriculture or open space (including raised streambed area) Vineyard 1 Revised Reclamation Plan

Table 8-6 Swainson's Hawk Habitat Mitigation Acres in Mining Projects After Reclamation

Mining Project	Acreage	Acres with Habitat Value	Compensatory Mitigation Acres[1]
District 1			
Aspen III South	106.5	106.5	106.5
Aspen IV South	179.6	179.6	179.6
Aspen V South	230.4	230.4	230.4
Aspen V and Va	169.8	169.8	169.8
Aspen VI	703.1	672.0	672.0
Total	**1389.5**	**1,358.4**	**1,358.4**
District 2			
Granite 1	294.0	294.0	294.0
Vineyard 1	363.0	363.0	363.0
Total	**657.0**	**657.0**	**657.0**
Grand Total	**2,046.5**	**2,015.4**	**2,015.4**

Notes: 1 Compensatory mitigation acres depends on Post-Reclamation Plan requirements.

There is one additional mining project that does not meet either methodology. The newest mining project, Aspen VIII/IX, has already mitigated the permanent conversion of a total of 355 acres of Swainson's hawk foraging habitat; further mitigation is not required for these properties.

SUMMARY

The WJHMP area is within 10 miles of recorded nesting sites. A large portion of the WJHMP area currently provides habitat for the Swainson's hawk foraging and mining reclamation plans are required to provide additional foraging habitat. Sacramento County analysis of remaining farmland types and SSHCP cover types that provide suitable Swainson's hawk foraging habitat shows a total 1,804.17 acres affected by the project that will be required to obtain compensatory mitigation to offset the loss of foraging habitat.

Table 8-7 Summary of Swainson's Hawk Foraging Habitat in the WJHMP Area

Location	Total Acreage
SSHCP mapped area outside of previously mined sites	1,804
Restoration area within the previously mined sites	2,015
Total foraging habitat lost	3,819

Source: Compiled by Ascent in 2024

Construction activities during the breeding season (defined as March 1—September 15 for Swainson's hawk) near active nest trees could disturb Swainson's hawks or other raptors if they are nesting nearby. Construction disturbance could result in nest abandonment, failure, and/or mortality of chicks or eggs. Other Swainson's hawk and other raptor nests located near construction activities could also be disturbed or fail as a result of project construction during the breeding season.

Development of the WJHMP area would result in substantial loss of Swainson's hawk foraging habitat. This loss would contribute to the ongoing decline of valuable habitat in the Sacramento Valley, affecting a species already listed as threatened under CESA. The conversion of cropland, irrigated pasture-grassland, valley grassland, vernal pool, seasonal wetland, and swale to other uses would substantially reduce available foraging habitat for locally nesting Swainson's hawks. This, in turn, may lead to displacement of nesting pairs, reduced reproductive potential, and decreased survival rates. The impact extends not only to Swainson's hawks nesting in the vicinity of the WJHMP area but also those nesting within 10 miles. This would be a significant impact.

Mitigation Measures BR-1a and BR-1b would require that the Project Applicants or subsequent developers conduct site-specific habitat surveys and participate in the SSHCP, including implementation of all applicable AMMs, such as SWHA-1 (Swainson's Hawk Surveys), SWHA-2 (Swainson's Hawk Pre-Construction Surveys), SWHA-3 (Swainson's Hawk Nest Buffer), SWHA-4 (Swainson's Hawk Nest Buffer Monitoring), and SWHA-5 (Swainson's Hawk Nest Tree Avoidance). Implementation of Mitigation Measure BR-1a and BR-1b would reduce impacts on Swainson's hawk, because Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b requires participation in the SSHCP, and payment of in lieu fees for impacts to waters and terrestrial habitats which would result in preservation of Swainson's hawk foraging habitat in a coordinated and interconnected SSHCP reserve system that considers the species' requirements at a regional scale rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. Implementation of SSHCP AMMs would help avoid or minimize potential effects from construction on Swainson's hawk by requiring pre-construction surveys, implementation of nest buffers, nest buffer monitoring during construction, and Swainson's hawk nest tree avoidance. The impact of the project on Swainson's hawk would therefore be reduced to **less than significant with mitigation**.

Burrowing Owl

The burrowing owl is a California species of special concern. On March 5, 2024, the California Fish and Game Commission (Commission) received a petition to list burrowing owl as a threatened or endangered species under CESA (Fish and Game Commission 2024). The evaluation of the petition is still pending. Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and arid scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are an essential component of burrowing owl habitat. Both natural and

artificial burrows provide protection, shelter, and nesting habitat for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also use human-created structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Breeding season takes place from February 1 to August 31 and wintering takes place from September 1 to January 31. Occupancy of burrowing owl habitat can be verified at a site by detecting a burrowing owl, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984).

The annual grasslands, croplands, and restored agriculture lands within the WJHMP area provide habitats suitable for burrowing owl foraging, nesting, and wintering. There is one recorded CNDDB occurrence (#487) of this species within the WJHMP area. This occurrence was documented southwest of Mather Airport in the Granite I, Aspen V, and Aspen VI mining sites north of Jackson Road and between Bradshaw Road and Excelsior Road. There are more recent observations of burrowing owl just east of the WJHMP area (CNDDB 2024).

The potential presence of burrowing owls cannot be ruled out without protocol-level surveys. During site grading and other ground disturbances that destroy occupied burrows or nest sites, adults, eggs, and juveniles could be killed. Burrowing owls are highly dependent on burrows for survival, and displacing individuals from their burrows can have indirect impacts. These include predation risk, increased energetic costs, heightened stress, and the need to find and compete for new burrows—factors that may lead to reduced reproduction or mortality. Additionally, construction disturbances might cause nearby nesting pairs to abandon their nests, resulting in mortality of chicks and eggs. The loss of occupied burrowing owl habitat or the mortality of adults, chicks, or eggs would constitute a potentially significant impact.

The Project Applicants or subsequent developers would implement Mitigation Measures BR-1a and BR-1b which require site-specific biological resource assessments and participation in the SSHCP. To obtain coverage under the SSHCP developers would be required to and comply with the AMMs as described in the SSHCP including WBO-1 (Western Burrowing Owl Surveys), WBO-2 (Western Burrowing Owl Pre-Construction Surveys),WBO-3 (Burrowing Owl Avoidance), WBO-4 (Burrowing Owl Construction Monitoring), WBO-5 (Burrowing Owl Passive Relocation), WBO-6 (Burrowing Owl Timing of Maintenance Activities), and WBO-7 (Rodent Control). Implementation of Mitigation Measure BR-1a would require project-level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP and payment of in lieu fees for impacts to waters and terrestrial habitats which would result in preservation of burrowing owl nesting and foraging habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale, rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. Implementation of

SSHCP species specific AMMs would ensure that burrowing owls surveys are conducted, avoidance measures and construction monitoring are implemented and active nests are not disturbed during the nesting season. The impact of the project on burrowing owl would therefore be reduced to **less than significant with mitigation**.

Cooper's Hawk

According to the SSHCP's Species Accounts, the Cooper's hawk uses a variety of woodland and forest habitats within its range. In California's Central Valley and adjacent foothills, this species is associated strongly with live oak woodland (County of Sacramento et al. 2018). The Cooper's hawk can also breed in urban and suburban areas. Urban nest sites include isolated trees that are in proximity to residential houses. Using concealment, Cooper's hawks use a series of surprise attacks to catch their prey. There is no published regulatory guidance on mitigation of foraging habitat for this species.

There are no recorded CNDDB occurrences of Cooper's hawks within the WJHMP area. This species was removed from California's species of special concern list in 2008, but it is still tracked in the CNDDB. This species has been observed in the vicinity of the constructed marsh on the Granite I and Aspen VI mining sites (Madrone 2018). The WJHMP area does have riparian woodlands and adjacent annual grasslands that can provide suitable nesting and foraging habitats, respectively.

Existing riparian woodlands, which are the main nesting habitat for this species, would be preserved as open space within the WJHMP area. The project would result in loss of grassland, which is a foraging habitat for the Cooper's hawk.

Project construction could remove or disturb active nests of Cooper's hawk potentially resulting in nest abandonment by the adults and mortality of chicks and eggs. Loss of chicks and eggs of this species could reduce local population levels and contribute to a trend toward this species being added back to the California species of special concern list in the future, which would be a potentially significant impact. This seems unlikely, however, since Cooper's hawk population numbers have rebounded across the state and nationwide since the late 1990s to mid-2000s, and it appears to have adapted quite well to urban living.

However, the project is a Covered Activity and coverage under the SSHCP would be required. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP and payment of in lieu fees for impacts to waters and terrestrial habitats, as well as implementation of AMMs as described in the SSHCP including RAPTOR-1 (Raptor Surveys), RAPTOR-2 (Raptor Pre-Construction Surveys), RAPTOR-3 (Raptor Nest/Roost Buffer), and RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring). This mitigation would reduce impacts on Cooper's hawk because participation in the SSHCP would result in preservation of nesting and foraging habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term The impact of the project on Cooper's hawk would be reduced to **less than significant with mitigation**.

Northern Harrier

Northern harrier is a species of special concern. This species is a year-round resident of the Central Valley. However, it occurs more broadly and in much greater numbers during migration and winter than during the breeding season. Northern harriers breed and forage in a variety of open (treeless) habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting, plucking, and lookout perches. In the WJHMP area such habitats include weedy borders of streams, annual grassland (including those with vernal pools), weed fields, and ungrazed or lightly grazed pastures. Harriers are ground nesters, mostly within patches of dense, often tall, vegetation in undisturbed areas (Shuford et al. 2008).

Portions of the WJHMP area fall within SSHCP foraging and nesting modeled habitat. Although there are no recorded nesting occurrences of northern harriers in the CNDDB, iNaturalist has a few observations of foraging northern harriers east of the WJHMP area.

The project would potentially remove both modeled breeding and foraging habitat for northern harrier through habitat conversion. Due to ongoing disturbance at the WJHMP area, the plan area likely provides marginal breeding habitat. The analysis of loss of Swainson's hawk foraging habitat would apply to northern harrier and the mitigation for loss of Swainson's hawk foraging habitat would ensure that impacts to northern harrier are also addressed. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP and payment of in lieu fees for impacts to waters and terrestrial habitats. Implementation of AMMs described in the SSHCP, including RAPTOR-1 (Raptor Surveys), RAPTOR-2 (Raptor Pre-Construction Surveys), RAPTOR-3 (Raptor Nest/Roost Buffer), and RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring), would reduce impacts on northern harrier, because participation in the SSHCP would result in preservation of nesting and foraging habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term The impact of the project on northern harrier would be reduced to **less than significant with mitigation**.

White-Tailed Kite

White-tailed kite is a CDFW fully protected species. This species is a yearlong resident in valley lowlands and it is rarely found away from agricultural areas. Its nests are placed near the top of dense oak, willow, or other tree stand; usually 20-100 feet above ground. The nest is located near an open foraging area. Typical nests and roost are found in groves of dense, broad-leafed deciduous trees. This species seldom hunts more than 0.5 mile from nest when breeding (Zeiner et al. 1990).

Portions of the WJHMP area fall within SSHCP foraging modeled habitat. This species has been observed within Aspen VIII and Aspen IX (Madrone 2018), and the CNDDB records include one presumed extant occurrence of nesting within the WJHMP area near the west side of Aspen VIX. The larger trees within the WJHMP area provide suitable nesting habitat while the open areas, including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands provide suitable foraging habitat (Madrone 2018).

The project would potentially remove both trees potentially used for nesting and foraging habitat for white-tailed kite through habitat conversion. Construction activities may impact nesting white-tailed kites if they nest in the WJHMP area. Construction activities may also disturb raptor nests that occur within 500 feet of the WJHMP area. Project construction could remove or disturb active nests, potentially resulting in nest abandonment by the adults and mortality of chicks and eggs. Destruction of any raptor nest is a violation of MBTA and Section 3503.5 of the California Fish and Game Code and white-tailed kite is also a fully protected species.

The project is a Covered Activity and coverage under the SSHCP will be required. Implementing Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP and payment of in lieu fees for impacts to waters and terrestrial habitats. Implementation of AMMs including RAPTOR-1 (Raptor Surveys), RAPTOR-2 (Raptor Pre-Construction Surveys), RAPTOR-3 (Raptor Nest/Roost Buffer), and RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring), as described in the SSHCP, would reduce impacts on white-tailed kite. Participation in the SSHCP would result in preservation of foraging habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale, rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. The SSHCP RAPTOR AMMs would also require pre-construction surveys for nesting raptors, implementation of no-disturbance buffers around active nests, and construction nesting monitoring if needed. The impact of the project on white-tailed kite would therefore be reduced to **less than significant with mitigation**.

Ferruginous Hawk

According to the CDFW life history account for the ferruginous hawk, the species is an uncommon winter resident and migrant at lower elevations and open grasslands in the Central Valley. The species requires large, open tracts of grasslands, sparse shrub cover, or desert habitats with elevated structures for nesting. This species does not breed in California and is a migratory, seasonal visitor that generally arrives in California in September and departs by mid-April (Zeiner et al. 1990).

The project would remove winter foraging habitat for Ferruginous hawk through habitat conversion. The analysis of loss of Swainson's hawk foraging habitat would also apply to Ferruginous hawk, and the mitigation for loss of Swainson's hawk foraging habitat would ensure that impacts to foraging habitat for Ferruginous hawk are also addressed. Loss of foraging habitat in the WJHMP area would not be expected to result in a substantial adverse effect on this species because other existing and planned preserves and open grassland habitat in the vicinity would continue to provide adequate foraging habitat to support local population numbers and individuals would not be permanently displaced from the area. Thus, the project would have a **less-than-significant** impact **with mitigation** on ferruginous hawk.

Golden Eagle

The golden eagle is a Fully Protected species under California Fish and Game Code. According to the CDFW life history account for the golden eagle, the species is an uncommon permanent resident migrant throughout California, but it is not known to nest in the Central Valley. The species uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops – features that are not present in the Central Valley (Zeiner et al. 1990). There is one historical observation of wintering golden eagles in the WJHMP area, southwest of Mather Airport, between Kiefer Blvd, Bradshaw Road, Jackson Road and Excelsior Road (Madrone 2018) and there are three more recent observations east of the WJHMP area (iNaturalist 2024a). The WJHMP area has annual grasslands, croplands, and restored agricultural lands which could provide suitable foraging habitat for the golden eagle.

The project would remove foraging habitat for the species. The loss of foraging habitat from the WJHMP area would not be expected to result in a substantial adverse effect on this species because other existing and planned preserves and open grassland habitat in the vicinity would continue to provide adequate foraging habitat to transient golden eagles and individuals would not be permanently displaced from the area. The provisions of the SSHCP and the conservation strategy would still be applicable and would still benefit golden eagle, even though it is not a covered species. The project would have a **less-than-significant** impact on golden eagle.

Nesting Raptors

Raptors are defined as members of the order Falconiformes (vultures, eagles, hawks, and falcons) and the order Strigiformes (owls). Common species of raptors found locally include red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), and great horned owl (*Bubo virginianus*). The SSHCP includes loggerhead shrike within the covered raptor species; therefore, AMMs for covered raptors applies to loggerhead shrike.

Raptors and their active nests are protected by the California Fish and Game Code Sections 3503.5, 3511, and 3513. The Code states the following: “It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird.” Because most raptors migrate they are also protected by the federal MBTA, which states, “unless and except as permitted by regulations, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill” a migratory bird. As defined in Section 3(18) of the ESA, the term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Causing a bird to abandon an active nest may cause harm to egg(s) or chick(s) and is therefore considered “take.”

The WJHMP area contains large areas of open annual grassland. Mature trees of sufficient size to support tree-nesting raptors are located along Morrison Creek near Bradshaw Road. Some hawk species less susceptible to human disturbance may use these trees. Raptors, in general, build nests in large mature trees; though there are some ground-nesting species such as the burrowing owl (refer to species-specific discussions, below) and northern harrier.

The WJHMP area provides suitable nesting habitat for many common raptors and other common nesting birds. Construction activities may impact nesting raptors if they occur in the WJHMP area. Construction activities may also disturb raptor nests that occur within 500 feet of the WJHMP area. Project construction could remove or disturb active nests, potentially resulting in nest abandonment by the adults and mortality of chicks and eggs. While loss of nests of common raptor species (e.g., red-tailed hawk, American kestrel, and barn owl) would not be considered a significant impact because it would not result in a substantial effect on their populations locally or regionally, cause any population to drop below self-sustaining levels, or result in a trend toward these species being listed as threatened or endangered, destruction of any raptor nest is a violation of MBTA and Section 3503.5 of the California Fish and Game Code.

However, the project is a Covered Activity and coverage under the SSHCP will be required. Implementing Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP and payment of in lieu fees for impacts to waters and terrestrial habitats, and compliance with the plan policies and requirements. Participation in the SSHCP would result in preservation of foraging habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale, rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. Mitigation Measure BR-3 would also require pre-construction surveys for common nesting birds (including common raptors), implementation of no-disturbance buffers around active nests and construction nesting monitoring if needed. The impact of the project on common nesting raptors would therefore be reduced to **less than significant with mitigation**.

Common Nesting Birds

Vegetation removal and ground disturbances associated with implementation of the project would result in direct destruction of nests of birds protected under the MBTA and California Fish and Game Code Section 3503. Project construction would also result in disturbance of breeding birds causing nest abandonment by the adults and mortality of chicks and eggs. While loss of some nests of common migratory bird species (e.g., killdeer, house finch, mourning dove, American robin, and California scrub jay) would not be considered a significant impact because it would not result in a substantial effect on their populations locally or regionally, destruction of any migratory bird nest is a violation of the MBTA and Section 3503.5 of the California Fish and Game Code.

Mitigation Measure BR-3 would require preconstruction surveys to identify active nests and measures to avoid or minimize disturbances of active nests so that project construction would not result in nest abandonment and loss of eggs or young. The impact of the project on common nesting birds would therefore be reduced to **less than significant with mitigation**.

Tricolored Blackbird

The tricolored blackbird is state listed as threatened and is currently in decline throughout the state. According to the CDFW life history account for the tricolored

blackbird, the species is mostly a resident in California, and common locally throughout the Central Valley. The species is a colonial nester which breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. Nesting colonies usually support a minimum of 50 pairs. The species feeds in grassland and cropland habitats. The usual breeding season is mid-April to late July.

According to the CNDDB data, there have been at least 10 presumed extant occurrences of nesting colonies of tricolored blackbirds scattered throughout the WJHMP area in Granite 1, Aspen IV, Aspen V South, Aspens VI through IX, and FPA-C (CNDDB occurrences #177, #305-6, #349, #390, #483, #485, #499, #500 and #743). There were also four nesting colonies observed in the eastern portion of Aspen VIII in 2013-14 (Madrone 2018).

Both foraging and nesting habitats of the tricolored blackbird exist throughout the WJHMP area. Increased noise and human activity during construction that occurs during the breeding season (generally March through August) could disturb nesting tricolored blackbirds if an active colony is located near (within 0.25 mile) of the construction area. These activities could result in nest abandonment and the incidental loss of fertile eggs or nestlings. The loss of foraging habitat from the WJHMP area would not be expected to result in a loss of reproductive success for a nesting colony because the proposed preserve and other existing and planned preserves in the vicinity would continue to provide adequate foraging habitat to support the local population and nesting colonies would not be displaced due to this loss of foraging habitat, but project construction could cause nest abandonment if a colony is nesting within the WJHMP area. Abandonment of active tricolored blackbird colonies and associated loss of numerous nests containing eggs or young could result in a substantial decline in the local nesting population of tricolored blackbirds and contribute to the statewide decline of this species that has recently been listed as threatened by the California Fish and Game Commission because of rapid declines in population numbers and substantial widespread habitat loss.

However, the project is a Covered Activity and coverage under the SSHCP will be required. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP, payment of in lieu fees for impacts to waters and terrestrial habitats, and compliance with the plan policies and requirements, as well as implementation of SSHCP species specific AMMs, including TCB-1 (Tricolored Blackbird Surveys), TCB-2 (Tricolored Blackbird Pre-Construction Surveys), TCB-3 (Tricolored Blackbird Nest Buffer), TCB-4 (Tricolored Blackbird Nest Buffer Monitoring), and TCB-5 (Timing of Pesticide Use and Harvest Timing on Agricultural Preserves). This mitigation would reduce impacts on tricolored blackbird. Participation in the SSHCP would result in preservation of foraging habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale rather than, project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. The SSHCP AMMs would also require surveys for tricolored blackbird, pre-construction surveys for tricolored blackbird, implementation of

no-disturbance buffers around active nests, and construction nesting monitoring throughout the nesting season, and also addresses timing of pesticide use and harvest timing on Agricultural Preserves. The impact of the project on tricolored blackbird would therefore be reduced to **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measures BR-1a and BR-1b.

MITIGATION MEASURE BR-3: COMMON BIRD (INCLUDING RAPTORS) NESTING SURVEYS AND ACTIVE NEST AVOIDANCE

Tree removal and tree trimming activities shall be confined between September 1 and the end of February. If tree removal or tree trimming occurs between November 15 and the end of February, a pre-activity survey for nesting great-horned owl shall take place as they tend to start nesting in mid-November in our region.

To minimize potential loss or disturbance of raptors and active common bird nests, project activities, including removal of ground vegetation, shall occur during the non-breeding season. If all suitable nesting habitat is removed during the non-breeding season, no further mitigation is required.

If it is not feasible to remove vegetation prior to the breeding season (March 1-August 31), the project proponent will retain a qualified biologist to conduct pre-activity surveys for nesting birds on and within 500 feet of disturbance activities. The surveys will be conducted no more than 7 days before ground disturbance activities commence (including vegetation removal).

If active bird nests are found, the qualified biologist shall establish buffers around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely affected by construction. Buffers around active common bird nests will be a minimum of 50 feet. Buffers around raptor nests, besides Swainson's hawk, will be a minimum of 500 feet, unless the qualified biologist determines that smaller buffers would be sufficient or greater buffers are needed to avoid impacts to nesting birds.

Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until young have fledged or the nests become inactive.

IMPACT BR-4: HAVE A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL-STATUS REPTILES

WESTERN POND TURTLE

The western pond turtle is a California species of special concern and proposed threatened under the ESA (USFWS 2023). Western pond turtle is an aquatic turtle that usually leaves the aquatic site to reproduce, to aestivate, or to overwinter. Western pond turtles require some slack- or slow-water aquatic habitat. High-gradient streams

with minimal cover or basking habitat are not suitable. In pond environments, the species typically only leaves the water to reproduce, whereas in stream environments, the turtles more commonly leave the water to aestivate or overwinter in addition to leaving for reproduction. Western pond turtles leave the water to overwinter in October or November, and typically become active in March or April. Mating typically occurs in late-April or early-May but may occur year-round. Most egg laying occurs in May or June but may occur as early as April or as late as August. The hatchlings remain in the nest over the winter, and emerge in the spring. Suitable nesting locations have dry soils (usually in a substrate with a high clay or silt fraction) on a slope that is unshaded and may be at least partially south-facing. The nest site can be up to 1,640 feet from the aquatic habitat, but it is more typical for the nest to be within 650 feet of aquatic habitat.

According to the information presented in the Biological Resource Assessment prepared for the project, there is one known CNDDB occurrence (#433) of western pond turtle within the WJHMP area, in Morrison Creek. Suitable aquatic and upland habitat within the WJHMP area includes ponds, industrial ponds, channels, and some of the ditches and the upland areas surrounding these aquatic habitats.

Construction activities would result in grading of uplands surrounding aquatic habitats that would potentially crush or bury western pond turtle or their nests, which would result in mortality of individual turtles and loss of reproduction should western pond turtles be present and nesting onsite. The loss of aquatic habitat and nests of western pond turtle due to construction activities would further reduce the population of this species in the region.

The project is a Covered Activity and coverage under the SSHCP would be required. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP, payment of in lieu fees for impacts to waters and terrestrial habitats, and compliance with plan policies and requirements, as well as implementation of SSHCP AMMs, including WPT-1 (Western Pond Turtle Surveys), WPT-2 (Western Pond Turtle Work Window), WPT-3 (Western Pond Turtle Monitoring), WPT-4 (Western Pond Turtle Habitat Dewatering and Exclusion, WPT-5 (Avoid Western Pond Turtle Entrapment), WPT-6 (Erosion Control Materials in Western Pond Turtle Habitat), WPT-7 (Western Pond Turtle Modeled Habitat Speed Limit), WPT-8 (Western Pond Turtle Encounter Protocol), and WPT-9 (Western Pond Turtle Post-Construction Restoration) would reduce impacts on western pond turtle. Participation in the SSHCP would result in preservation of aquatic and upland habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale, rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. The SSHCP WPT AMMs also require surveys to identify and avoid western pond turtle habitat, provide work windows for work within western pond turtle habitat, require monitoring during work, and provide aquatic habitat work guidelines, entrapment avoidance, speed limit within upland habitat for western pond turtle, encounter protocol, and requirements for post-construction restoration. Implementation of Mitigation Measures BR-1a and BR-1b would reduce potential impacts on western pond turtle to **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measures BR-1a and BR-1b.

IMPACT BR-5: HAVE A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL-STATUS AMPHIBIANS

WESTERN SPADEFOOT

The western spadefoot is a California species of special concern. This species occurs in shallow, seasonal wetlands, typically vernal pools, in valley and foothill habitats such as grasslands, open chaparral, sage scrubland, short-grass plains, and pine woodlands. Western spadefoot occurs in both grazed and ungrazed habitats. Adult spadefoots occupy burrows up to 3 feet in depth in upland habitat during dry periods to avoid desiccation (Zeiner et al. 1990). Individuals may remain in these burrows for eight to nine months. Most surface activity is nocturnal. The spadefoot leave their upland burrows for seasonal wetlands or vernal pools during the breeding season, which lasts from January to August, depending on rainfall. It appears that vernal pools and other temporary wetlands may be optimal for breeding due to the absence or reduced abundance of both native and nonnative predators (bullfrogs, fish, and crawfish), many of which require more permanent water sources. Current research on amphibian conservation suggests that average upland habitat utilization falls within 1,200 feet of aquatic habitats (USFWS 2005).

The WJHMP area provides suitable breeding and non-breeding habitat to support western spadefoot. Wetland and vernal pool complexes within the WJHMP area vary in size and depth and some retain water for several months. The surrounding upland area is annual grassland. There is no published regulatory guidance on habitat mitigation for this species. According to the Vernal Pool Recovery Plan (USFWS 2005), the western spadefoot was added as a Species of Concern in 2004 by CDFW and was proposed as threatened by USFWS in 2024.

The project would result in the loss of vernal pool and surrounding upland habitat, and construction activities within the WJHMP area could result in the crushing of individual western spadefoots, the disruption of reproduction, and loss of eggs or tadpoles.

In addition to the direct removal of habitat and loss of individuals, implementation of the project could result in indirect impacts on western spadefoot as well. Potential indirect effects on individuals may include mortality related to an increase in vehicular traffic; mortality from landscaping maintenance activities including mowing, raking, weed whacking; noise and vibration disturbance causing toads to break dormancy; and exposure to herbicides, pesticides, and other toxins. Indirect effects on western spadefoot habitat retained in the WJHMP area open space areas could result in habitat degradation leading to lower reproductive success of western spadefoot, and eventual elimination of this species from the affected habitat. These indirect effects could include reduction in water quality and altered hydrology, litter and dumping, predation by domestic animals (e.g., cats), and introduction of invasive plant species.

Direct and indirect effects could reduce local population numbers of a species that is rare in the region and statewide and has already experienced substantial declines and ongoing habitat losses. Loss and degradation of habitat and reduction in population numbers could contribute to a trend toward state or federal listing for western spadefoot.

The project is a Covered Activity and participation in the SSHCP will be required. Implementation of Mitigation Measure BR-1a, Mitigation Measure BR-1b, and implementation of SSHCP AMMs, including WS-1 (Western Spadefoot Work Window), WS-2 (Western Spadefoot Exclusion Fencing), WS-3 (Western Spadefoot Monitoring), WS-4 (Avoid Western Spadefoot Entrapment), WS-5 (Erosion Control Materials in Western Spadefoot Habitat), and WS-6 (Western Spadefoot Encounter Protocol) would reduce impacts on western spadefoot to. Participation in the SSHCP would result in preservation of aquatic and upland habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale, rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. The SSHCP WS AMMs provide work windows for work within modeled western spadefoot habitat, exclusion fencing requirements, monitoring during work, entrapment avoidance, erosion control material requirements, and encounter protocol requirements. Implementation of Mitigation Measures BR-1a and BR-1b would reduce the impact on western spadefoot to **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measures BR-1a and BR-1b.

IMPACT BR-6: HAVE A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL-STATUS INVERTEBRATES

Midvalley fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp are known to occur in the WJHMP area. Ricksecker's water scavenger beetle, valley elderberry longhorn beetle, and Crotch's bumble bee have a high potential to exist within the WJHMP area. Midvalley fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and Ricksecker's water scavenger beetle are associated with vernal pool and wetland environments and are not readily observed through casual observation. Discussion of midvalley fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp is presented under "Vernal Pool Crustaceans," below, because the same mitigation requirements are applied to all three species. Ricksecker's water scavenger beetle, valley elderberry longhorn beetle, and Crotch's bumble bee are discussed separately.

VERNAL POOL CRUSTACEANS

Vernal pool habitats may be subject to either direct or indirect impacts. Indirect impacts may be caused because development in proximity of a vernal pool could deliver runoff polluted with urban contaminants and introduce non-native species associated with development landscaping. Development may also reduce the size of the watershed that supports the vernal pool, by diverting runoff that once went into the vernal pool into a

storm drainage system. This watershed reduction could cause a reduction in the depth and/or duration of ponding. Shorter inundation durations may mean a change in pool temperature, depth, and pH. Features that may have been utilized by species that required specific inundation durations for the completion of breeding cycles may no longer provide suitable habitat. The SSHCP assumes all modeled habitat to be potential habitat for vernal pool crustaceans, including vernal pools, seasonal wetlands and swales. The programmatic consultation indicates that all habitats within 250 feet of proposed development may be subject to indirect impacts. The same approach is used to assess onsite indirect impacts to vernal pools within the SSHCP. Thus, all development must occur a minimum of 250 feet from the margin of any vernal pool in order to achieve total avoidance of impacts, unless a lesser buffer is approved by USFWS. Indirect impacts to preserves are calculated using a modeled watershed approach under the SSHCP. The project is not expected to impact existing or known proposed SSHCP preserves.

The SSHCP permit strategy relies on the USFWS biological opinion (BO) that includes all future SSHCP covered activities requiring a CWA 404 permit, eliminating the need for individual project-by-project consultations under ESA Section 7. Compensatory mitigation for the loss of vernal pool habitat is satisfied through the SSHCP by purchasing credits from the South Sacramento (in-lieu fee) ILF Program. The ILF program was established compliant with the 2008 federal mitigation rule (33 CFR Part 332), and is fully synergized with the SSHCP's fees for the applicable land cover type (e.g., vernal pools). The ILF program utilizes the compensatory mitigation ratio requirements for aquatic resources required by the SSHCP, which consist of a 1:1 ratio of re-establishment/establishment (i.e., net gain) with respect to loss, for all potential waters of the United States. In addition to the ILF program, the SSHCP mitigation fees provide funding for habitat preservation to mitigate (1:1) for direct and/or indirect impacts to SSHCP covered species habitat.

Approximately 6.4 acres of the WJHMP area is within a section of the Mather Core Area of the *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* (USFWS 2005). This area is within a previously disturbed mining area, and rural residential area with annual grassland. No surveys have been conducted within the rural residential area that still supports annual grassland to assess if there is suitable habitat for vernal pool crustaceans.

Historical surveys for vernal pool crustaceans have been conducted within participating properties. Gibson & Skordal conducted protocol vernal pool crustaceans surveys during the 2009-2010 and 2010-2011 wet seasons in the following areas: the eastern part of Aspen III, Aspen V South (North Parcel), Aspen VII South, and Mayhew. These areas were evaluated because they had either been undisturbed by past mining activities, or in the case of the Mayhew property, there had been a lack of long-term maintenance. Vernal pool tadpole shrimp and vernal pool fairy shrimp were observed within the Aspen VII South Study Area during both sampling seasons. No target vernal pool crustaceans were observed within the remaining properties surveyed during the 2009 to 2011 efforts.

Because there are large areas of natural and constructed vernal pools within the WJHMP area, numerous CNDDB occurrences have been recorded. There have been five occurrences of vernal pool fairy shrimp, six occurrences of vernal pool tadpole shrimp, and two occurrences of midvalley fairy shrimp. Additionally, vernal pool tadpole shrimp were observed in a vernal pool near SR 16 within the Aspen VII Study Area during plant surveys in 2008 conducted by Gibson & Skordal. EcoAnalysts, Inc. also performed surveys on Aspen IX in 2006 and Aspen V, Aspen V South, and Aspen IV South in 2008; Vernal pool tadpole shrimp and vernal pool fairy shrimp were present within the Aspen IX survey area; vernal pool tadpole shrimp and vernal pool fairy shrimp were observed within the Aspen V and Aspen V South study areas. No vernal pool crustaceans surveys have been conducted within non-participating parcels and, thus, it is possible for suitable habitat and listed vernal pool crustaceans to be present.

The Biological Resource Assessment (Madrone 2018) for the project noted that vernal pool branchiopods have been documented in the area, and there is moderate potential for species to occur onsite. The SSHCP base-mapping efforts indicate vernal pools and seasonal wetlands are present onsite, which provide potential habitat for vernal pool crustacean species. The project site is estimated to support approximately 59 acres of aquatic resources suitable for vernal pool crustaceans that the project would directly impact. Final acreages of vernal pool habitat would be determined during the SSHCP permitting process.

Wetland and water features on and off-site may provide potential habitat for vernal pool crustaceans, and known records for vernal pool species occur in the plan area and vicinity. The protocol under the SSHCP assumes that the delineated onsite and offsite wetlands may be vernal pool habitat and potentially contain special status vernal pool crustaceans, even if there are no documented occurrences in the waters.

The project is a Covered Activity and coverage under the SSHCP would be required. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP and payment of in lieu fees for impacts to waters and terrestrial habitats. Implementation of Mitigation Measures BR-1a and BR-1b would reduce potential impacts on vernal pool crustaceans to **less than significant with mitigation**.

Ricksecker's Water Scavenger Beetle

The Ricksecker's water scavenger beetle is an aquatic beetle that lives in weedy, shallow, open water, associated freshwater seeps, springs, farm ponds, vernal pools, and slow-moving stream habitats. The USFWS species profile[4] only contains listing status and a general map, as little is known about the life history of the species. It is listed primarily due to its association with in-decline habitats, rather than based on known population trends. The beetle is known to co-occur with vernal pool fairy shrimp. There are no recorded occurrences of Ricksecker's water scavenger beetle in the

[4] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I0FE.

WJHMP area. However, because there is suitable habitat within the WJHMP area and there is a CNDDB recorded occurrence (#5) nearby at Mather Airport, this species is likely to occur in the WJHMP area.

Since population trends have not been well established, it is unclear to what extent the species relies on the rarer vernal pool and seasonal wetland habitats versus more abundant surface water types. For the purposes of this analysis, it is assumed that local populations of the species have at least some dependency on vernal pool and seasonal wetland habitats, since this is the more conservative assumption and the WJHMP area is within an area described as vital for the conservation of vernal pool habitats.

The project is a Covered Activity under the SSHCP and coverage under the SSHCP would be required. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP, including payment of in lieu fees for impacts to waters and terrestrial habitats. Compliance with the plan policies and requirements of the SSHCP would reduce impacts on Ricksecker's water scavenger beetle to **less than significant with mitigation** because participation in the SSHCP would result in preservation of aquatic and upland habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale rather than, project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle is federally listed as threatened. This species can be found in the Central Valley and adjacent foothills, below 500 feet elevation, and is associated with blue elderberry shrubs (*Sambucus mexicana*), where it spends its entire life cycle. The beetle's life is comprised of four stages; egg, larva, pupa, and adult. The eggs are deposited in the bark of an elderberry shrub and after hatching, the larvae burrow into the stems where they may remain for as long as 2 years before continuing the last two stages of their life cycle (Madrone 2018). This species often occurs within or near riparian corridors comprised of blue elderberry, willow (*Salix* spp.), cottonwood (*Populus fremontii* ssp. *fremontii*), wild grape (*Vitis californica*), and box elder.

The range of the valley elderberry longhorn beetle has diminished greatly due to the removal of 90 percent of riparian forests in the Central Valley for agriculture and urban development. Extensive use of pesticides, grazing, and other mismanagement has degraded much of the riparian habitat that remains. Besides habitat removal and degradation, the beetle has limited dispersal capabilities. All of these factors have contributed to the species' current limited habitat range comprising scattered areas in the Central Valley (Barr 1991; Madrone 2018).

There are no known CNDDB occurrences of valley elderberry longhorn beetle within the WJHMP area but there are thirty recorded occurrences within 10 miles of the WJHMP area. The closest occurrence (#282) is approximately 2 miles to the north along the American River. The riparian forest along the Morrison Creek corridor could provide habitat for elderberry shrubs and associated valley elderberry longhorn beetles. The beetle also has been known to occur outside of riparian corridors.

Although historical surveys have been conducted in different parcels, these surveys took place in 2006 for Aspen IV South parcel, 2010 for District 1 Participating Properties: Aspen II, Aspen III, Aspen III South, the northern Aspen V parcel, portions of Aspen V South, Aspen VII, Aspen VII South, and Mayhew, and 2013-2014 for Aspen VIII and Aspen IX with negative findings for elderberry shrubs (Madrone 2018). These surveys took place more than a decade ago and elderberry shrubs could have sprouted and matured since that time providing suitable habitat for the valley elderberry longhorn beetle. Portions of the WJHMP area are within SSHCP modeled habitat for the species. The non-participating properties have not been surveyed and elderberry shrubs may be present in those areas. Should elderberry shrubs occur on the non-participating properties or on the participating properties, then future construction in the plan area could remove elderberry shrubs or result in decreased vigor of shrubs due to creation of dust during construction. The loss or decrease in vigor of elderberry shrubs may result in a further reduction in the population of valley elderberry longhorn beetle, which is currently listed as threatened under the ESA.

The project is a Covered Activity and participation in the SSHCP would be required. Valley elderberry longhorn beetle is a covered species under the SSHCP. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP, including payment of in lieu fees for impacts to waters and terrestrial habitats and compliance with plan policies and requirements, as well as implementation of AMMs including VELB-1 (Valley Elderberry Longhorn Beetle Avoidance). Participation in the SSHCP would result in preservation of habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale, rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. Implementation of VELB-1 would require surveys for the presence of elderberry shrubs within 100 feet of the project area, if a covered activity is planned within modeled habitat for valley elderberry longhorn beetle. VELB-1 requires protocol level surveys if elderberry shrubs are found and directs avoidance of direct and indirect impacts within 20 feet and between 20-100 feet of construction, respectively. VELB-1 also requires that any direct loss of elderberry shrubs be compensated according to USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999). Therefore, project impacts on valley elderberry longhorn beetle would be reduced to **less than significant with mitigation**.

Crotch's Bumble Bee

Crotch's bumble bee was designated, by the California Fish and Game Commission, as a candidate for listing as endangered under CESA on June 12, 2019. A November 13, 2020, court decision by the Superior Court of Sacramento ruled that insects are not eligible for listing under CESA and vacated the candidacy of bumble bee species. CDFW appealed this decision, and on May 31, 2022, the Third District Court of Appeal in Sacramento ruled that insects are eligible for listing under CESA, and the candidacy of Crotch's bumble bee has been reinstated. The designation of Crotch's bumble bee as a candidate for listing under CESA occurred after the completion of the SSHCP, so this species is not a covered species under the plan.

Crotch's bumble bee has recently undergone a decline in abundance and distribution and is no longer present across much of its historic range. In the Central Valley, there has been extensive agricultural intensification, and the southern part of its range is experiencing rapid urbanization. In June 2023, CDFW released Survey Considerations for CESA Candidate Bumble Bee Species, which included survey and mitigation guidance for Crotch's bumble bee and three other candidate bumble bee species, as well as updated current range maps for each species (CDFW 2023). In California, Crotch's bumble bee's current range includes the Mediterranean region (ecoregion encompassing the greater Central Valley, Sierra foothills and central coast ranges of California south to Mexico), Pacific Coast, Great Valley, and adjacent foothills through most of southwestern California. This range encompasses all of Sacramento County, including the WJHMP area (CDFW 2023).

Bumble bees have three basic habitat requirements: suitable nesting sites for the colonies, availability of nectar and pollen from floral resources throughout the duration of the colony period (spring, summer, and fall), and overwintering sites for the queens. The long-term productivity of bumble bee populations is affected by the quantity and quality of nectar and pollen available and the proximity of these resources to nesting habitat. In California, Crotch's bumble bees typically inhabit open grassland and scrub habitats (Xerces Society 2018). Crotch's bumble bees nest underground and likely use, at least in part, old rodent burrows (Williams et al. 2014; Xerces Society 2018). Some bumble bees favor nest sites near woody transitional habitats and nest in holes or crevices in leaf litter, beneath woody debris, at the base of a tree, in herbaceous plant debris, or near grass clumps (Lanterman et al. 2019).

Crotch's bumble bees are generalist foragers and have been reported visiting a wide variety of flowering plants (Xerces Society 2018). Crotch's bumble bee has a very short tongue, which is best suited to forage at open flowers with short corollas (Xerces Society 2018). Very little is known about the hibernacula, or overwintering sites utilized by Crotch's bumble bees. Generally, bumble bees overwinter in soft, well-drained, disturbed soil (Goulson et al. 2010; Liczner and Colla 2019), or under leaf or needle litter or other debris (Williams et al. 2014, 2019) in woody forest edges (CDFW 2023). Overwintering likely occurs primarily in woodlands. Overwintering queens may prefer shaded areas near trees in areas without dense vegetation and north-facing slopes (Liczner and Colla 2019; Williams et al. 2019). Bumble bees in California have been documented overwintering under 1–2 inches of duff, between leaf/needle litter and mineral soil (Williams et al. 2014).

In the Survey Considerations for CESA Candidate Bumble Bee Species, CDFW recommends reviewing the CNDDB, iNaturalist (a citizen science database), and Bumblebee Watch databases for recorded observations in the vicinity of a given WJHMP area (CDFW 2023). The CNDDB includes a Crotch's bumble bee occurrence 3.6 miles northeast of the WJHMP area (CNDDB 2024). The iNaturalist and Bumblebee Watch databases include numerous recent occurrences in the vicinity of the plan area, in part due to efforts to better document these species in light of the potential listing under CESA. Crotch's bumble bees have been documented in Sacramento County during late-spring and summer months (i.e., May, June, July) from 2020–2023 (Xerces

et al 2024; iNaturalist 2024b). Reported occurrences show that Crotch's bumble bees have been observed foraging on multiple native and nonnative flowering plant species, including sage (*Salvia* spp.); yarrow (*Achillea millefolium*); milkweed (*Asclepias* sp.); hairy vetch (*Vicia villosa*); lupine (*Lupinus* spp.); wild radish (*Raphanus sativus*), and species in the genera *Phacelia*, *Monardella,* and *Penstemon*.

Implementation of the project would include ground disturbance, grading, and vegetation removal within habitats that contain foraging, nesting, or overwintering habitat, and could, therefore, result in direct loss of bumble bees. Bumble bees could be killed while foraging aboveground by vehicles, heavy machinery, or other equipment used to remove vegetation if these activities are conducted where foraging habitat Is present (i.e., flowering plants). Underground bumble bee nests could be crushed or accidentally uncovered and exposed to the elements and predators during vegetation removal, grading, or digging activities if these activities are conducted where nesting habitat is present (i.e., rodent burrows, leaf litter, woody debris, grass clumps). Overwintering queens could be crushed or accidentally uncovered and exposed to the elements and predators during vegetation removal, grading, or digging activities if these activities are conducted where overwintering habitat is present (i.e., woodlands, woody forest edges, leaf/needle litter in these areas).

Implementation of the project could result in loss of individual Crotch's bumble bees or Crotch's bumble bee nests and loss of foraging and breeding habitat for the species. It is not known if the plan area supports a high concentration of bumble bee colonies due to the historical disturbance however, as the land has sat idle or been restored during reclamation, it is possible bumble bees have recolonized these areas. While loss of individual Crotch's bumble bees or a colony as a result of project activities may not cause the population to drop below self-sustaining levels, threaten to eliminate the species, or substantially reduce the range of the species, the population status of this species is poorly understood, and loss of a colony could have a substantial adverse effect on the regional population its long-term viability.

Implementation of Mitigation Measures BR-6a, BR-6b, and BR-6c would reduce the impact on Crotch's bumble bee by requiring habitat assessment for Crotch's bumble bee, implementation of a limited operating period, if feasible or applicable, focused surveys for bumble bees, and implementation of measures to avoid mortality of the Crotch's bumble bees if nests or overwintering queens are detected. If Crotch's bumble bees are found and avoidance is not feasible, Mitigation Measure BR-6c requires project proponents to obtain an ITP from CDFW and implement all take minimization and avoidance measures included in the ITP. Impacts would be **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measure BR-1a and BR-1b.

MITIGATION MEASURE BR-6A: HABITAT ASSESSMENT FOR CROTCH'S BUMBLE BEE HABITAT

For areas that have potential to provide foraging, nesting, or overwintering habitat for Crotch's bumble bees (i.e., most areas that do not solely contain developed land covers, including gardens and some other urban landscaping in otherwise developed areas):

- A qualified biologist shall assess the WJHMP area through a desktop analysis and site visit to determine whether the WJHMP area contains foraging, nesting, or overwintering habitat for Crotch's bumble bee. If the site visit does not occur during the blooming season for most flowering plants, historic aerial imagery will be referenced and a conservative approach will be used to determine whether potential foraging habitat for the species is present.
- If habitat suitable for Crotch's bumble bee is determined not to be present on the WJHMP area, then further mitigation would not be required.
- If habitat suitable for Crotch's bumble bee is determined to be present on the WJHMP area, then Mitigation Measure BR-6b and Mitigation Measure BR-6c shall be implemented.

MITIGATION MEASURE BR-6B: LIMITED OPERATING PERIOD DURING THE CROTCH'S BUMBLE BEE COLONY ACTIVE PERIOD

For WJHMP areas that contain foraging habitat only, or foraging habitat and nesting habitat for Crotch's bumble bee (i.e., no overwintering habitat), initial ground-disturbing work (e.g., grading, vegetation removal, staging) shall take place between August 15 and March 15, if feasible, to avoid impacts on nesting Crotch's bumble bees.

If this limited operating period is determined to be infeasible, Mitigation Measure BR-6c shall be implemented.

MITIGATION MEASURE BR-6C: FOCUSED SURVEYS AND AVOIDANCE MEASURES FOR CROTCH'S BUMBLE BEE

WJHMP areas that contain overwintering habitat likely also contain foraging and nesting habitat. Therefore, Crotch's bumble bees may be present in these WJHMP areas year-round, there is no limited operating period that would completely avoid impacts on Crotch's bumble bee.

If the limited operating period for WJHMP areas that contain foraging habitat only or foraging habitat and nesting habitat (i.e., no overwintering habitat) is determined to be infeasible, or for WJHMP areas that contain overwintering habitat, the following shall be implemented:

- Future project applicants shall retain a qualified biologist familiar with bumble bees of California and experienced using survey methods for bumble bees. The qualified biologist shall conduct a habitat assessment and focused survey for Crotch's bumble bee before the start of any ground-disturbing activities. Surveys shall be performed when Crotch's bumble bee is most likely to be identified, typically from April through August when floral resources and ideal weather conditions are present, and shall follow the methods in Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (CDFW 2023) or any subsequent protocol approved by CDFW.

- Future project applicants shall submit a survey report to CDFW within 1 month of survey completion and shall notify CDFW within 24 hours if Crotch's bumble bees are detected.
- If Crotch's bumble bees are detected during the focused survey, appropriate avoidance measures shall be implemented. Avoidance measures may include, but not be limited to, the following:
    - Protective buffers shall be implemented around active nesting colonies or overwintering queens until these sites are no longer active. A qualified biologist, in consultation with CDFW, shall determine the appropriate buffer size to protect nesting colonies or overwintering queens.
    - If impacts on Crotch's bumble bee cannot be avoided, future project applicants shall obtain an incidental take permit (ITP) from CDFW and shall implement all avoidance measures included in the ITP and will provide compensatory mitigation for loss of Crotch's bumble bee habitat as specified in the terms of the ITP. While Crotch's bumble bee is not covered by the SSHCP; participation in the SSHCP would result in preservation of grassland habitat to offset the loss of Swainson's hawk foraging habitat, which could simultaneously offset the loss of habitat for Crotch's bumble bee.

IMPACT BR-7: HAVE A SUBSTANTIAL ADVERSE EFFECT ON SPECIAL-STATUS PLANTS

A variety of plant species are adapted to the hydrologic and soil conditions present in vernal pools, and are therefore endemic to these unique habitats. Vernal pool habitats have dramatically declined in California, and as a result many of the plant species associated with vernal pools have likewise declined. Vernal pool-associated special-status plant species found in Sacramento County are: Ahart's dwarf rush (*Juncus leiospermus var. ahartii*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), dwarf downingia (*Downingia pusilla*), legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii ssp. myersii*), Sacramento Orcutt grass (*Orcuttia viscida*), and slender Orcutt grass (*Orcuttia tenuis*). All these species except for pincushion navarretia have a high potential of being located within the WJHMP area.

Although special-status plant surveys have been conducted on various WJHMP area parcels, these surveys took place in 2006 for Aspen IV South parcel, 2010 for District 1 Participating Properties: Aspen II, Aspen III, Aspen III South, the northern Aspen V parcel, portions of Aspen V South, Aspen VII, Aspen VII South, and Mayhew, and 2013-2014 for Aspen VIII and Aspen IX. Negative findings for special-status plants were reported; except for Sanford's arrowhead, which was observed within several ditches on the Aspen VIII site, but these colonies were subsequently extirpated by permitted mining activities (Madrone 2018). There are large parcels where ongoing mining operations and other disturbances are taking place, but there are other parcels where there is still habitat suitable for some special-status plant species to occur and the surveys are outdated according to agency standards. Non-participating parcels have not been surveyed and they could provide suitable habitat for special-status plants; therefore, the potential for these species to occur in the WJHMP area cannot be ruled out.

Ahart's Dwarf Rush

Ahart's dwarf rush CRPR 1B species. It is an erect annual herb that grows along the edges of seasonal vernal pools and swales within Central Valley and foothill grasslands. This plant is strictly adapted to the vernal pool hydrologic cycle (South Sacramento Habitat Conservation Plan 2018). Ahart's dwarf rush blooms from March to May and can be found at elevations between 100 and 750 feet (Madrone 2018). The WJHMP area has natural and constructed vernal pools that could provide habitat for this plant species. There are no known CNDDB occurrences of this plant species in the WJHMP area, although there is one known occurrence (#8) nearby at Mather Airport, approximately 1.25 miles to the east of the WJHMP area.

Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop is state listed as endangered. This plant species is a small erect annual herb with hollow stems that grows in vernal pools but could also appear around the edges of lakes and ponds. Bogg's Lake hedge-hyssop can be found at elevations between 30 and 7,800 feet and blooms from April to August (Madrone 2018). The WJHMP area has natural and constructed vernal pools and natural and constructed ponds that provide potential habitat for this plant species. This plant is known to spread to human-made hydrologic features from occupied vernal pool landscapes. There are no known CNDDB occurrences of the Bogg's Lake hedge-hyssop within the WJHMP area but there are nine recorded occurrences within 10 miles of the WJHMP area with the closest CNDDB occurrence (#84) located approximately 1.25 miles to the east at Mather Airport.

Dwarf Downingia

Dwarf Downingia is a CRPR 2B species. This small herb is strongly associated with vernal pools and similar seasonal wetland features. Like other vernal pool plant species, such as the Ahart's dwarf rush, dwarf downingia is strictly adapted to the vernal pool hydrologic cycle. This plant blooms from March to May at elevations between 1 and 1,500 feet (Madrone 2018). Shorter stemmed plants can be erect while longer stemmed plants can sprawl horizontally, forming dense colonies or mixing with other vernal pool species (County of Sacramento et al. 2018).

There are no known CNDDB occurrences within the WJHMP area but there are four recorded occurrences within 10 miles of the WJHMP area, with the closest CNDDB occurrence (#54) approximately 5 miles to the southwest. In 2016, this plant species was observed during rare plant surveys for a mining project (Vineyard South) adjacent to the WJHMP area to the south; however, this observation was not reported to the CNDDB. The WJHMP area has natural and constructed vernal pools and natural and constructed ponds that provide potential habitat for dwarf downingia. This plant species is known to spread to human-made hydrologic features from nearby occupied vernal pool landscapes.

Legenere

Legenere is a CRPR 1B species. It is a weakly erect or decumbent annual herb that grows in medium to large vernal pools that are relatively deep. The plant has yellow flowers, which are produced between May and June and extend from the main body of the plant on long, slender pedicels; however, the flowers often lack petals making them inconspicuous and difficult to find. This species occurs in drying beds of vernal pools in valley grassland habitat ranging from sea level to 1,400 feet in elevation. It has been found throughout the Sacramento Valley. There are no CBDDB occurrences of Legenere within the WJHMP area but there are 26 CNDDB occurrences within 10 miles with the closest (#44) located at Mather Airport, approximately 0.2 miles to the east of the WJHMP area.

Slender Orcutt Grass

Slender Orcutt grass is state listed as threatened and federally listed as endangered. This species is an annual herb found in vernal pools. The plant has stems that are 5 to 15 centimeters long, are weakly tufted, and mostly erect with leaves that are sparsely hairy and covered with sticky fluid. Flowering stems often branch from the upper half of the stem with each branch ending in a single spike-like flower. Slender Orcutt grass grows at elevations between 100 and 5,800 feet and blooms from May to October (Madrone 2018). This plant is strictly adapted to the vernal pool hydrological cycle. It occupies a wider range of vernal pool sizes and vernal wetland types and occurs over a greater geographical area and variety of landform types than other Orcutt grasses. Slender Orcutt grass also has a tendency to occupy newly available habitats including stock ponds (where seed sources are available) and constructed or hydrologically enhanced vernal pools.

There are no CNDBB occurrences within the WJHMP area but there are three recorded occurrences within 10 miles of the WJHMP area, with the closest (#16) located approximately 1.3 miles to the south on the west side of Laguna Creek. There is potential habitat within the WJHMP area for the slender Orcutt grass due to the presence of natural and constructed vernal pools.

Sacramento Orcutt Grass

Sacramento Orcutt grass is listed as an endangered species under the ESA and CESA. It is a small, densely tufted, annual grass. It grows to about 1 to 4 inches tall. Like all species of Orcutt grasses, plants are covered with small glandular hairs that are sticky and aromatic. The plant has few to many stems and spike-like inflorescences clustered near the apex. Orcutt grasses are strongly adapted to the more extreme hydrological cycles encountered in the spectrum of vernal pool types. For example, they are typically associated with larger and/or deeper vernal pools. Orcutt grass plants are able to produce most of their aboveground vegetative growth, as well as flowers and seed as the vernal pools dry down in late spring and early to mid-summer (Crampton 1959). Sacramento Orcutt grass seeds germinate during the later spring months after cessation of winter rains as the shallow water at the pool margins begins to warm and recede. Sacramento Orcutt grass plants flower and set seed as the margins and basin of the vernal pools dry from April through July.

There are no known CNDDB occurrences of Sacramento Orcutt grass in the WJHMP area but there are nine occurrences within 10 miles of the WJHMP area with the closest CNDDB occurrence (#17) approximately 3 miles to the east. Habitat for Sacramento Orcutt grass exists within the WJHMP area due to the presence of natural and constructed vernal pools.

According to the USFWS 5-year review report prepared as part of the Recovery Plan, there are eight identified populations of Sacramento Orcutt grass within the county. The greatest threats to Sacramento Orcutt grass are development and invasive species. Invasive species may be introduced from private gardens and landscaping that surround preserved areas (USFWS 2008). Measures should be taken to reduce the threat of invasive species to existing wetland complexes that are retained within the WJHMP area.

Summary

Project implementation would result in removal of vernal pool habitat suitable for special-status vernal pool plants. The loss of occupied habitat could reduce local and regional population numbers of plant species that are rare, increasing the potential that these species could become listed as threatened or endangered under CESA or the ESA in the future. The loss of vernal pool grasses already listed as threatened/endangered, and loss of their habitat, would interfere with recovery goals for these species and could further reduce their overall population numbers.

The project is a Covered Activity and participation in the SSHCP would be required. Ahart's dwarf rush, Boggs Lake hedge-hyssop, dwarf downingia, legenere, pincushion navarretia, Sacramento Orcutt grass, slender Orcutt grass and Sanford's arrowhead are covered species under the SSHCP. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP, payment of in lieu fees for impacts to waters and terrestrial habitats, and compliance with SSHCP policies and requirements, as well as implementation of AMMs including PLANT-1 (Rare Plant Surveys), PLANT-2 (Rare Plant Protection), ORCUTT-1 (Orcutt Grass Surveys), and ORCUTT-2 (Orcutt Grass Protection). Participation in the SSHCP would result in preservation of habitat in a coordinated and interconnected SSHCP reserve system that considers the species requirements at a regional scale rather than project-by-project, and presents a coordinated conservation strategy to maintain species viability in the region over the long term. Implementation of AMMs PLANT-1, PLANT-2, ORCUTT-1, and ORCUTT-2 would require rare plant protocol surveys if the covered activity occurs within modeled habitat for any of the covered plant species. These AMMs also require the protection of covered plant species detected within an area proposed to be disturbed by a covered activity, or that is detected within 250 feet of the area proposed to be disturbed, until the implementing entity assures one unprotected occurrence of the species is protected within a SSHCP Preserve before any ground disturbance occurs at the project site. ORCUTT-1 requires that if a covered activity project site is located within or adjacent to (within 1 mile of) the Mather Core Recovery Area and contains vernal pool land cover type, the project will be surveyed for Sacramento and slender Orcutt grass by an

approved biologist following CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities dated March 20, 2018 or most recent CDFW guidelines to determine if Sacramento and/or slender Orcutt grass is present. ORCUTT-2 requires that where known or new Sacramento or slender Orcutt grass occurrences are found, they will be protected within an SSHCP Preserve that is at least 50 acres. The occurrence will be located interior to the Preserve at a distance of no less than 300 feet from the edge of the Preserve boundary. If a Third-Party Project Proponent encounters a previously undiscovered occurrence of Sacramento or slender Orcutt grass on a Covered Activity project site, the Third-Party Project Proponent will contact the Implementing Entity or Land Use Authority Permittee with authority over the project, who will coordinate with the Wildlife Agencies for written concurrence of avoidance to ensure that the project does not cause take of the species. Therefore, project impacts on special-status plants would be reduced to **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measures BR-1a and BR-1b.

IMPACT BR-8: RESULT IN THE LOSS OF TREES

NATIVE TREES

Sacramento County has identified the value of its native and landmark trees and has adopted measures for their preservation. The Tree Ordinance (Chapter 19.04 and 19.12 of the County Code) provides protections for landmark trees and heritage trees. The County Code defines a landmark tree as “an especially prominent or stately tree on any land in Sacramento County, including privately owned land” and a heritage tree as “native oak trees that are at or over 19” diameter at breast height (dbh).” Chapter 19.12 of the County Code, titled Tree Preservation and Protection, defines native oak trees as valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), blue oak (*Quercus douglasii*), or oracle oak (*Quercus morehus*) and states that “it shall be the policy of the County to preserve all trees possible through its development review process.” It should be noted that to be considered a tree, as opposed to a seedling or sapling, the tree must have a diameter at breast height (dbh) of at least 6 inches or, if it has multiple trunks of less than 6 inches each, a combined dbh of 10 inches. The Sacramento County General Plan Conservation Element policies CO-138 and CO-139 also provide protections for native trees.

Native trees other than oaks include Fremont cottonwood, California sycamore, California black walnut, Oregon ash, western redbud (*Cercis occidentalis),* gray pine (*Pinus sabiniana*), California white alder (*Alnus rhombifolia*), boxelder, California buckeye (*Aesculus californica*), narrowleaf willow (*Salix exigua*), Goodding’s black willow, red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), shining willow (*Salix lucida*), Pacific willow (*Salix lasiandra*), and dusky willow (*Salix melanopsis*).

Due to multiple participating and non-participating landowners in the WJHMP area, no comprehensive tree survey exists for the entire WJHMP area. Site specific surveys

were conducted prior to the approval of each previously mining project within the WJHMP area. The previously mining projects were subject to mitigation requirements associated with the tree removal at the time of mining. To satisfy mitigation requirements, a number of new tree plantings have taken place in the WJHMP area over the last several decades (see Table 8-2).

Nonnative Tree Species

The distribution of nonnative trees varies within the WJHMP area based on whether an area has been disturbed by mining activity. In active and closed mining sites, nonnative trees are sparse due to the removal of vegetation and topsoil by mining activity. Without the project, both active and closed mining areas would likely remain treeless because reclamation plans for mining sites usually require the planting of crops. Most of the nonnative trees that exist in mining areas are planted along the edge of excavation sites to be used as visual screening. Other nonnative trees established themselves along the edges of industrial ponds, along ditches, or on mining pit slopes.

In areas that have not been disturbed by mining, there are clusters of nonnative trees planted as landscaping at homesteads and businesses. The Bethany Slavic Missionary Church near the intersection of Bradshaw Road and Jackson Road has a large parking lot with shade trees. There are two large clusters of nonnative trees at two cemeteries within the WJHMP area.

The goal of the General Plan policies related to nonnative trees is to replace existing urban tree canopy that is removed due to development. Urban tree canopies provide many benefits: improved air quality by removing pollutants, shading structures, reducing the urban heat island effect and reducing energy costs associated with cooling buildings, and capturing and filtering stormwater. In the context of a large master plan such as the project, tree removal is anticipated to occur in phases. As each development phase happens, new tree plantings would occur. The Countywide Design Guidelines, in general, require the planting of new trees in all new single-family lots, commercial building sites, parking lots, and street frontages. In general, these planting requirements result in a tree canopy that far exceeds what currently exists in the WJHMP area, particularly in former mining areas.

Summary

The degree of impact on native trees that would result from development and redevelopment associated with the WJHMP area is uncertain at this time because specific parcel development plans are not part of the project. Based on the project's land use plan, oak tree mitigation sites within the WJHMP area where over 2,600 native oak trees have been planted (Table 8-2) are within designated open space areas. Impacts (i.e., direct removal or tree mortality from damage to tree roots or soil compaction) could occur to native trees that are in areas designated for development. As project-level plans are developed, subsequent project submittals would be required to submit a site-specific arborist report, identify all native and non-native trees onsite as well as any proposed tree removal, and identify remaining trees on and off-site that would be potentially subject to impacts during construction. I of Mitigation Measure BR-

8a provides for the protection and preservation of native tree resources within the WJHMP area, or compensation for the loss of healthy native trees consistent with General Plan policy. Mitigation Measure BR-8b establishes construction protocol for the protection of native trees during construction. Impacts to native trees from development in accordance with the project would be **less than significant with mitigation**.

MITIGATION MEASURES

MITIGATION MEASURE BR-8A: ARBORIST REPORT AND NATIVE TREE PROTECTION

i. Project proponents of subsequent development projects within the WJHMP area shall submit an arborist report for the project impact areas when appropriate habitat exists. The report shall include the species, diameter at breast height (dbh), dripline, and health of the trees present, and shall be prepared by an ISA certified arborist. The report shall include an exhibit that shows the trees and their driplines in proximity to the project improvements. The report shall identify any tree proposed for removal and shall quantify any encroachment from project equipment or facilities within driplines of native trees.

ii. The removal of native trees shall be compensated for by planting in-kind native trees equivalent to the dbh inches lost, based on the ratios listed below, at locations that are authorized by the Environmental Coordinator. On-site preservation of native trees that are less than 6 inches dbh may also be used to meet this compensation requirement.

    Replacement tree planting shall be completed prior to approval of grading or improvement plans, whichever comes first.

    Equivalent compensation based on the following ratio is required:

    - one preserved native tree < 6 inches dbh on-site = 1 inch dbh,
    - one D-pot seedling (40 cubic inches or larger) = 1 inch dbh,
    - one 15-gallon tree = 1 inch dbh,
    - one 24-inch box tree = 2 inches dbh, and
    - one 36-inch box tree = 3 inches dbh,

Prior to the approval of Improvement Plans or Building Permits, whichever occurs first, a Replacement Tree Planting Plan shall be prepared by a certified arborist or licensed landscape architect and shall be submitted to the Environmental Coordinator for approval. The Replacement Tree Planting Plan(s) shall include the following minimum elements:

1. species, size and locations of all replacement plantings and < 6-inch dbh trees to be preserved;
2. method of irrigation;

3. if planting in soils with a hardpan/duripan or claypan layer, include the Sacramento County Standard Tree Planting Detail L-1, including the 10-foot deep boring hole to provide for adequate drainage;
4. planting, irrigation, and maintenance schedules;
5. identification of the maintenance entity and a written agreement with that entity to provide care and irrigation of the trees for a 3-year establishment period, and to replace any of the replacement trees which do not survive during that period; and
6. designation of 20-foot root zone radius and landscaping to occur within the radius of trees < 6 inches dbh to be preserved on-site.

No replacement tree shall be planted within 15 feet of the driplines of existing native trees or landmark size trees that are retained on-site, or within 15 feet of a building foundation or swimming pool excavation. The minimum spacing for replacement native trees shall be 20 feet on-center. Examples of acceptable planting locations are publicly owned lands, common areas, and landscaped frontages (with adequate spacing). Generally unacceptable locations are utility easements, under overhead utility lines, private yards of single-family lots (including front yards), and roadway medians.

Native trees <6 inches dbh to be retained on-site shall have at least a 20-foot radius suitable root zone. The suitable root zone shall not have impermeable surfaces, turf/lawn, dense plantings, soil compaction, drainage conditions that create ponding (in the case of oak trees), utility easements, or other overstory tree(s) within 20 feet of the tree to be preserved. Trees to be retained shall be determined to be healthy and structurally sound for future growth by an ISA Certified Arborist subject to Environmental Coordinator approval.

If tree replacement plantings are demonstrated to the satisfaction of the Environmental Coordinator to be infeasible for any or all trees removed, then compensation shall be through payment into the County Tree Preservation Fund. Payment shall be made at a rate of $325.00 per dbh inch removed but not otherwise compensated, or at the prevailing rate at the time payment into the fund is made.

MITIGATION MEASURE BR-8B: NATIVE TREE CONSTRUCTION PROTECTION

a) With the exception of the native trees removed and compensated for through Mitigation Measure BR-8a, all healthy native trees that are 6 inches dbh or larger on the WJHMP area, all portions of adjacent off-site healthy native trees that are 6 inches dbh or larger and have driplines that extend onto the WJHMP area, and all off-site healthy native trees that are 6 inches dbh or larger and could be damaged by utility installation and/or improvements associated with this project, shall be preserved and protected as follows:
    1. A circle with a radius measurement from the trunk of the tree to the tip of its longest limb shall constitute the dripline protection area of the tree. Limbs shall not be cut back to change the dripline. The area beneath the dripline is a critical portion of the root zone and defines the minimum protected area to sustain the tree. Removing limbs which make up the dripline does not change the protected area.

2. Chain link fencing or a similar protective barrier shall be installed one foot outside the driplines of the native trees prior to initiating project construction to avoid damage to the trees and their root systems.
3. No signs, ropes, cables (except cables which may be installed by a certified arborist to provide limb support) or any other items shall be attached to the native trees.
4. No vehicles, construction equipment, mobile home/office, supplies, materials or facilities shall be driven, parked, stockpiled or located within the driplines of the native trees.
5. Any soil disturbance (scraping, grading, trenching, and excavation) is to be avoided within the driplines of the native trees. Where this is necessary, an ISA Certified Arborist will provide specifications for this work, including methods for root pruning, backfill specifications and irrigation management guidelines.
6. All underground utilities and drain or irrigation lines shall be routed outside the driplines of native trees. Trenching within protected tree driplines is not permitted. If utility or irrigation lines must encroach upon the dripline, they should be tunneled or bored under the tree under the supervision of an ISA Certified Arborist.
7. If temporary haul or access roads must pass within the driplines of oak trees, a roadbed of six inches of mulch or gravel shall be created to protect the root zone. The roadbed shall be installed from outside of the dripline and while the soil is in a dry condition, if possible. The roadbed material shall be replenished as necessary to maintain a 6-inch depth.
8. Drainage patterns on the site shall not be modified so that water collects or stands within, or is diverted across, the dripline of oak trees.
9. No sprinkler or irrigation system shall be installed in such a manner that it sprays water within the driplines of the oak trees.
10. Tree pruning that may be required for clearance during construction must be performed by an ISA Certified Arborist or Tree Worker and in accordance with the American National Standards Institute (ANSI) A300 pruning standards and the International Society of Arboriculture (ISA) “Tree Pruning Guidelines”.
11. Landscaping beneath the oak trees may include non-plant materials such as boulders, decorative rock, wood chips, organic mulch, and non-compacted decomposed granite. Landscape materials shall be kept 2 feet away from the base of the trunk. The only plant species which shall be planted within the driplines of the oak trees are those which are tolerant of the natural semi-arid environs of the trees. Limited drip irrigation approximately twice per summer is recommended for the understory plants.
12. Any fence/wall that will encroach into the dripline protection area of any protected tree shall be constructed using grade beam wall panels and posts or piers set no closer than 10 feet on center. Posts or piers shall be spaced in such a manner as to maximize the separation between the tree trunks and the posts or piers in order to reduce impacts to the trees.

13. For a project constructing during the months of June, July, August, and September, deep water trees by using a soaker hose (or a garden hose set to a trickle) that slowly applies water to the soil until water has penetrated at least 1 foot in depth. Sprinklers may be used to water deeply by watering until water begins to run off, then waiting at least an hour or two to resume watering (provided that the sprinkler is not wetting the tree's trunk). Deep water every 2 weeks and suspend watering 2 weeks between rain events of 1 inch or more.

IMPACT BR-9: DISTURBANCE OF RIPARIAN HABITATS

Morrison Creek and Elder Creek run through the WJHMP area. For the most part, these streams do not support riparian vegetation within the WJHMP area; however, there are small stands of riparian vegetation in some portions of these streams, such as the area along Morrison Creek west of Bethany Slavic Missionary Church continuing through the Mayhew and Aspen IV South parcels and the natural Morrison Creek channel within FPA A west of Hedge Avenue. Since these areas are within unsurveyed parts of the WJHMP area, the condition, species composition, and function of riparian habitat is not known. These areas would be subject to disturbance from future construction.

Future development projects within the WJHMP area are a Covered Activity and participation in the SSHCP would be required. Implementation of Mitigation Measure BR-1a would require project level reports to identify resources on site and Mitigation Measure BR-1b would require participation in the SSHCP, payment of in lieu fees for impacts to waters and terrestrial habitats, and compliance with SSHCP policies and requirements. Implementation of AMMs such as STREAM-2 (UDA Stream Setbacks) which requires a minimum setback of 100 feet from the top of bank measured in aerial perspective on both side of Elder and Morrison Creek, STREAM-3 (Minor Tributaries to UDA Streams) which requires a 25-foot setback measured from the top of the bank on both sides of the stream channel that would be applied to all avoided first and second order tributaries and also prohibits trails within headwater ephemeral stream setbacks, STREAM-4 (Minimize Effects from Temporary Channel Re-Routing) which provides measures to follow to minimize effects from temporary channel re-routing for urban development covered activities, and STREAM-5 (Design for Stream Channel Re-Routing, Widening, or Deepening) which also provides project design guidelines for urban development covered activities that require a stream, creek, or drainage re-routing would reduce impacts on streams and associated riparian habitat. Participation in the SSHCP would result in preservation of habitat in a coordinated and interconnected SSHCP reserve system that considers minimizing indirect effects of adjacent Covered Activities on hydrologic functions of WJHMP area waterways, including water quality, and would avoid or reduce undesired disturbances to sensitive resources at a regional scale, rather than project-by-project. This presents a coordinated conservation strategy to maintain species viability in the region over the long term; therefore, project impacts on riparian habitat will be reduced to **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measures BR-1a and BR-1b.

IMPACT BR-10: INTERFERE WITH THE MOVEMENT OF ANY NATIVE RESIDENT OR MIGRATORY SPECIES OR IMPEDE THE USE OF NATIVE WILDLIFE NURSERY SITES

The WJHMP area is to the west of Mather Preserve and other undeveloped lands. The WJHMP area may facilitate local movement of terrestrial and aquatic species to and from these areas; however, due to ongoing mining activities, the value of the north section of the WJHMP area for movement of native or migratory species may be limited. The WJHMP area borders urban and industrial areas to the north and west and, thus, there is limited available habitat that facilitates movement to the north and west outside of the WJHMP area except through existing developed drainage channel corridors. The project includes open space and open space/urban farm areas generally along and connecting Morrisson and Elder Creeks that could allow local continued movement of species between the existing preserve and undeveloped areas. Furthermore, implementation of Mitigation Measure BR-3 requires that tree removal and tree trimming activities occur between September 1 and the end of February. It also requires that if tree removal or trimming occurs between November 15 and the end of February a pre-activity survey for great horned owl be conducted. Implementation of Mitigation Measure BR-3 also requires that project activities, including removal of ground vegetation occur during the non-breeding season and if that is not feasible, then pre-activity nesting bird surveys are required. If active bird nests are found, non-disturbance buffers around the nests would be implemented to ensure that breeding is not likely to be disrupted. Implementation of Mitigation Measures BR-1a and BR-1b, along with BR-3 and covered species-specific AMMs as well as ROAD-1 (Road Project Location), ROAD-2 (Wildlife Crossing Structures), ROAD-3 (Roadside Pesticide Use) would reduce the potential for the WJHMP to interfere substantially with the movement of native resident species, migratory species, or nursery sites and the impacts of the project would be **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measures BR-1a, BR-1b, and BR-3.

IMPACT BR-11: RESULT IN POTENTIAL INCONSISTENCY WITH THE SOUTH SACRAMENTO HABITAT CONSERVATION PLAN

The proposed project's design and construction must comply with all SSHCP requirements, including SSHCP AMMs. The SSHCP is a habitat-based plan in which mitigation fees are based on impacts to habitat or land cover rather than impacts to individual species.

The baseline mapping for the SSHCP Landcovers is illustrated in Figure 8-1. The landcover outlined in the baseline map is an interpretation of habitat based on remote sensing analysis over a number of years prior to adoption of the SSHCP. Therefore, these landcovers are intended to serve as a guide as to what may be present on the project site and are intended to be updated. During the local impact authorization process, these landcovers would be refined, and calculation of project mitigation impact fees would be based on project specific survey and wetland delineation data.

As discussed in Impact BR-6, a small portion of the project site (approximately 6.4 acres) is located within the Mather Core Area of the Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (USFWS 2005), which is a Zone 1 core area having the highest priority for recovery. As stated in the Recovery Plan, the Mather Core Area has specific conservation goals, including protecting 95 percent of suitable habitat for vernal pool tadpole shrimp, slender Orcutt grass, and Sacramento Orcutt grass, and protecting 85 percent of suitable habitat for vernal pool fairy shrimp. The SSHCP developed the Conservation Strategy by using the best available scientific information including the Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon, and the most recent (to 2018) USFWS 5-Year Reviews of each federally listed covered species. Thus, the recovery needs for this region identified in the recovery plans and reviews informed, and are incorporated into, the SSHCP Conservation Strategy. Additional design features and SSHCP AMMs would also be employed to ensure that habitat linkage function are maintained (such as AMM Road-2) adjacent to the existing PPU 3 preserve west of Excelsior Road.

The plan area is within the UDA, which the SSHCP assumed would eventually be developed. The WJHMP is outside of the known planned preserves for PPU 2 and conceptual preserves for PPU 3. The mitigation contained in this chapter, including application of SSHCP AMMs, would be consistent with the SSHCP Conservation Strategy and the adopted SSHCP mitigation and monitoring protocols. The Project Applicants or subsequent developers would be required to obtain a signed SSHCP authorization form from the Environmental Coordinator for potential impacts to terrestrial and aquatic habitats. The project will comply with the requirements of the SSHCP, including adherence to the Avoidance and Minimization Measures (Appendix F), as well as payment of fees to support the overall SSHCP Conservation Strategy. The project is consistent with, and aids in the goals set forth in the proposed SSHCP. Impacts with regard to consistency with the SSHCP would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

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9 CLIMATE CHANGE

INTRODUCTION

This chapter presents a summary of the current state of climate change science and greenhouse gas (GHG) emissions sources in California, a summary of applicable regulations, quantification of GHG emissions generated by the project, a discussion about their potential contribution to global climate change. For the purposes of this analysis, GHG emissions are measured as metric tons of carbon dioxide equivalent ($MTCO_2e$). The atmospheric impact of a GHG is based on the global warming potential (GWP) of that gas. GWP is a measure of the heat trapping ability of one unit of a gas over a certain timeframe relative to one unit of carbon dioxide (CO_2). The GWP of CO_2 is one (IPCC 2014). Consistent with the methodology used by the California Air Resources Board (CARB) in estimating statewide GHG emissions, this analysis uses GWP values from the Fourth Assessment Report Values by the Intergovernmental Panel on Climate Change (IPCC). This analysis relies on the findings of the *West Jackson Highway Master Plan Air Quality and Greenhouse Gas Technical Report* (AQMP/GHGRP) prepared by ESA in April 2024 (Appendix B).

Comments expressing concern regarding increased traffic and associated GHG emissions in the plan area were submitted in response to the notice of preparation (NOP). These issues are considered below. The NOP and comments received in response to it are presented in Appendix A.

ENVIRONMENTAL SETTING

THE PHYSICAL SCIENTIFIC BASIS OF GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface

temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcing (IPCC 2014).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with any certainty, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 55 percent are estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remain stored in the atmosphere (IPCC 2013).

The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is considered to be enormous. No single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

Greenhouse Gas Emission Sources

Emissions of CO_2 are byproducts of fossil fuel combustion. Methane, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices, landfills, and forest fires. Nitrous oxide is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water) and are two of the most common processes for removing CO_2 from the atmosphere.

As discussed previously, GHG emissions are attributable in large part to human activities. The total GHG inventory for California in 2020 was 370 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (CARB 2022c). This is less than the 2020 target of 431 $MMTCO_2e$ as mandated by Assembly Bill (AB) 32.

A GHG inventory for the county of was prepared in 2023 for the year 2021 and is summarized in Table 9-1. As shown below, on-road vehicles and residential, commercial, and industrial energy consumption constitute the greatest sources of emissions.

Table 9-1 Sacramento County Greenhouse Gas Emissions Inventory for 2021

Emissions Sector	2021 ($MTCO_2e$/year)	Percent of Total
On-Road Vehicles	1,740,212	43%
Off-Road Vehicles	107,174	3%
Residential Building Energy	878,308	22%
Commercial Industrial Building Energy	555,596	14%
High-Global Warming Potential Gases	317,796	8%
Agriculture	266,470	7%
Solid Waste	156,744	4%
Water and Wastewater	33,262	<1%
Total	**44,055,562**	**100%**

Notes: Totals may not equal the sum of the numbers because of independent rounding.

$MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Sacramento County 2023.

EFFECTS OF CLIMATE CHANGE ON THE ENVIRONMENT

According to IPCC, which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature will increase by 3.7 to 4.8 degrees Celsius (°C) (6.7 to 8.6 degrees Fahrenheit [°F]) by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2014: 10). According to *California's Fourth Climate Change Assessment*, with global GHGs reduced at a moderate rate California will experience average daily high temperatures that are warmer than the historic average by 2.5 °F from 2006 to 2039, by 4.4 °F from 2040 to 2069, and by 5.6 °F from 2070 to 2100; and if GHG emissions continue at current rates then California will experience average daily high temperatures that are warmer than the historic average by 2.7 °F from 2006 to 2039, by 5.8 °F from 2040 to 2069, and by 8.8 °F from 2070 to 2100 (OPR et al. 2018).

Since its previous climate change assessment in 2012, California has experienced several of the most extreme natural events in its recorded history: a severe drought in 2012–2016, an almost nonexistent Sierra Nevada winter snowpack in 2014-2015, increasingly large and severe wildfires, and back-to-back years of the warmest average temperatures (OPR et al. 2018). According to the California Natural Resource Agency's *Safeguarding California Plan: 2018 Update*, California experienced the driest 4-year statewide precipitation on record from 2012 through 2015; the warmest years on average in 2014, 2015, and 2016; and the smallest and second smallest Sierra snowpack on record in 2015 and 2014 (CNRA 2018). According to the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration, 2016, 2017, and 2018 were the hottest recorded years in history (NOAA 2019). In contrast, the northern Sierra Nevada experienced one of its wettest years on record during the 2016-2017 water year (CNRA 2018). The changes in precipitation exacerbate wildfires throughout California through a cycle of high vegetative growth coupled with dry, hot periods which lowers the moisture content of fuel loads. As a result, the

frequency, size, and devastation of forest fires has increased. In November 2018, the Camp Fire destroyed the town of Paradise in Butte County and caused 85 fatalities, becoming the state's deadliest fire in recorded history, and the largest fires in the state's history have occurred in the 2018–2020 period. Moreover, changes in the intensity of precipitation events following wildfires can also result in devastating landslides. In January 2018, following the Thomas Fire, 0.5 inch of rain fell in 5 minutes in Santa Barbara, causing destructive mudslides formed from the debris and loose soil left behind by the fire. These mudslides resulted in 21 deaths.

As temperatures increase, the amount of precipitation falling as rain rather than snow also increases, which could lead to increased flooding because water that would normally be held in the snowpack of the Sierra Nevada and Cascade Range until spring would flow into the Central Valley during winter rainstorm events. This scenario would place more pressure on California's levee/flood control system (CNRA 2018). Furthermore, in the extreme scenario involving the rapid loss of the Antarctic ice sheet and the glaciers atop Greenland, the sea level along California's coastline is expected to rise 54 inches by 2100 if GHG emissions continue at current rates (OPR et al. 2018).

Temperature increases and changes to historical precipitation patterns will likely affect ecological productivity and stability. Existing habitats may migrate from climatic changes where possible, and those habitats and species that lack the ability to retreat will be severely threatened. Altered climate conditions will also facilitate the movement of invasive species to new habitats, thus outcompeting native species. Altered climatic conditions dramatically endanger the survival of arthropods (e.g., insects, spiders) which could have cascading effects throughout ecosystems (Lister and Garcia 2018). Conversely, a warming climate may support the populations of other insects such as ticks and mosquitos, which transmit diseases harmful to human health such as the Zika virus, West Nile virus, and Lyme disease (European Commission Joint Research Centre 2018).

Changes in temperature, precipitation patterns, extreme weather events, wildfires, and sea-level rise have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018; OPR et al. 2018). The effects of climate change will also have an indirect adverse impact on the economy as more severe natural disasters cause expensive physical damage to communities and the state.

Regulatory Setting

Federal

Clean Air Act

In *Massachusetts et al. v. Environmental Protection Agency et al.,* 549 U.S. 497 (2007), the Supreme Court of the United States ruled that CO_2 is an air pollutant as defined under the federal Clean Air Act (CAA) and that the US Environmental Protection Agency (EPA) has the authority to regulate GHG emissions. In 2010, EPA started to address GHG

emissions from stationary sources through its New Source Review permitting program, including operating permits for “major sources” issued under Title V of the CAA.

Corporate Average Fuel Economy Standards

The National Highway Traffic Safety Administration regulates vehicle emissions through the Corporate Average Fuel Economy (CAFE) standards. On April 1, 2022, the Secretary of Transportation unveiled new CAFE standards for 2024–2026 model year passenger cars and light-duty trucks. These new standards require new vehicles sold in the United States to average at least 40 miles per gallon and apply to all states except those that enforce stricter standards.

State

Plans, policies, regulations, and laws established by the state agencies are generally presented in the order they were established.

Statewide GHG Emission Targets and Climate Change Scoping Plan

Reducing GHG emissions in California has been the focus of the State government for approximately two decades. GHG emission targets established by the State legislature include reducing statewide GHG emissions to 1990 levels by 2020 (AB 32 of 2006) and reducing them to 40 percent below 1990 levels by 2030 (Senate Bill [SB] 32 of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. This target was superseded by AB 1279, which codifies a goal for carbon neutrality and reduced emissions by 85 percent below 1990 levels by 2045. These targets are in line with the scientifically established levels needed in the U.S. to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (United Nations 2015).

CARB adopted the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 16, 2022, which traces the State’s pathway to achieve carbon neutrality and an 85 percent reduction in 1990 emissions goal by 2045 using a combined top-down, bottom-up approach under various scenarios. It identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals (CARB 2022a).

The state has also passed more detailed legislation addressing GHG emissions associated with transportation, electricity generation, and energy consumption, as summarized below.

Transportation-Related Standards and Regulations

As part of its Advanced Clean Cars program, CARB established more stringent GHG emission standards and fuel efficiency standards for fossil fuel–powered on-road

vehicles than EPA. The program's initial goal requiring zero-emission vehicle (ZEV) regulation (i.e., battery, fuel cell, and plug-in hybrid electric vehicles [EVs]) to account for up to 15 percent of California's new vehicle sales by 2025 was superseded by Executive Order N-79-20, which directed the state to scale out the sales of internal combustion engines to 100 percent ZEV sales by 2035. The Advanced Clean Cars II Program was adopted by CARB in August 2022, and provides the regulatory framework for ensuring the sales requirement goal of Executive Order N-79-20 to ultimately reach 100 percent ZEV sales in the state by 2035.

Executive Order B-48-18, signed into law in January 2018, requires all State entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as 200 hydrogen-fueling stations and 250,000 EV-charging stations installed by 2025. It specifies that 10,000 of these charging stations must be direct-current fast chargers.

CARB adopted the Low Carbon Fuel Standard (LCFS) in 2007 to reduce the carbon intensity (CI) of California's transportation fuels. Low-CI fuels emit less CO_2 than other fossil fuel–based fuels such as gasoline and fossil diesel. The LCFS applies to fuels used by on-road motor vehicles and off-road vehicles, including construction equipment (Wade, pers. comm., 2017).

In addition to regulations that address tailpipe emissions and transportation fuels, the state legislature has passed regulations to address the amount of driving by on-road vehicles. Since passage of SB 375 in 2008, CARB requires metropolitan planning organizations (MPOs) to develop and adopt sustainable communities strategies (SCSs) as a component of the federally-prepared regional transportation plans (RTPs) to show reductions in GHG emissions from passenger cars and light-duty trucks in their respective regions for 2020 and 2035 (CARB 2018). These plans link land use and housing allocation to transportation planning and related mobile-source emissions.

The Sacramento Area Council of Governments (SACOG) serves as the MPO for Sacramento, Placer, El Dorado, Yuba, Sutter, and Yolo Counties, excluding those lands located in the Tahoe Basin. The plan area is in Sacramento County. Under the most recent targets of SB 375 (i.e., achieve a per capita reduction in automobile emissions of 7 percent and 19 percent below the 2005 level by 2020 and 2035, respectively), SACOG completed and adopted its most recent 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) in November 2019 (SACOG 2019). CARB's technical evaluation of the 2020 MTP/SCS confirmed that the plan is sufficient to meet the reduction targets of SB 375 (CARB 2020). SACOG is currently in the process of updating its MTP/SCS with approval scheduled for late 2025.

Legislation Associated with Electricity Generation

The State has passed legislation requiring the increasing use of renewables to produce electricity for consumers. California utilities are required to generate 33 percent of their electricity from renewables by 2020 (SB X1-2 of 2011); 52 percent by 2027 (SB 100 of 2018); 60 percent by 2030 (also SB 100 of 2018); and 100 percent by 2045 (also SB 100 of 2018).

Building Energy Efficiency Standards (Title 24, Part 6)

The energy consumption of new residential and nonresidential buildings in California is regulated by the California Energy Code. The code was established by California Energy Commission (CEC) in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy-efficiency standards for residential and nonresidential buildings. CEC updates the California Energy Code every 3 years, typically including more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions.

The 2022 California Energy Code went into effect on January 1, 2023. The 2022 California Energy Code advances the onsite energy generation progress started in the 2019 California Energy Code by encouraging electric heat pump technology and use, establishing electric-ready requirements when natural gas is installed, expanding solar photovoltaic (PV) system and battery storage standards, and strengthening ventilation standards to improve indoor air quality. CEC estimates that the 2022 California Energy Code will save consumers $1.5 billion and reduce GHG emissions by 10 million $MTCO_2e$ over the next 30 years (CEC 2021).

California Green Building Standards (Title 24, Part 11)

The California Green Building Standards, also known as CALGreen, is a reach code (i.e., optional standards that exceed the requirements of mandatory codes) developed by CEC that provides green building standards for statewide residential and nonresidential construction. The current version is the 2022 CALGreen Code, which took effect on January 1, 2023. As compared to the 2019 CALGreen Code, the 2022 CALGreen Code strengthened sections pertaining to EV and bicycle parking, water efficiency and conservation, and material conservation and resource efficiency, among other sections of the CALGreen Code. The CALGreen Code sets design requirements equivalent to or more stringent than those of the California Energy Code for energy efficiency, water efficiency, waste diversion, and indoor air quality. These codes may be adopted by local agencies that enforce building codes and used as guidelines by state agencies for meeting the requirements of Executive Order B-18-12.

Local

Sacramento County 2030 General Plan

The Sacramento County General Plan contains the following GHG-related policies that are applicable to the project:

- **Policy AQ-4.** Developments which meet or exceed thresholds of significance for ozone precursor pollutants, and/or Greenhouse Gases (GHG) as adopted by the Sacramento Metropolitan Air Quality Management District (SMAQMD), shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan and/or a Greenhouse Gas Reduction Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation

as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.

- **Policy LU-115.** It is the goal of the County to reduce greenhouse gas emissions to 1990 levels by the year 2020. This shall be achieved through a mix of State and local action.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan does not include objectives or policies specific to GHG emissions or climate change.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan does not include objectives or policies specific to GHG emissions or climate change.

SACRAMENTO COUNTY CLIMATE ACTION PLANNING

The Sacramento County Phase 1 Climate Action Plan Strategy and Framework document (Phase 1 CAP) was adopted on November 9, 2011, by the Sacramento County Board of Supervisors. The Phase 1 CAP includes a GHG inventory for the unincorporated areas of Sacramento County for 2005, a GHG emission reduction target, and goals and implementation measures developed to help the County reach these goals. Reduction strategies address GHG emissions associated with transportation and land use, energy, water, waste management and recycling, and agriculture and open space. The County's goals related to transportation and energy use include the following:

- Increase the average fuel efficiency of County-owned vehicles powered by gasoline and diesel and encourage increased fuel efficiency in community vehicles;
- Increase the use of alternative and lower carbon fuels in the County-owned vehicle fleet and facilitate their use in the community;
- Reduce total vehicle miles traveled per capita in the community and region;
- Improve energy efficiency of existing and new buildings in the unincorporated county;
- Improve energy efficiency of operating County-owned infrastructure (roads, water, waste, buildings, etc.); and
- Decrease use of fossil fuels by transitioning to renewable energy sources.

- The Phase 1 CAP is a strategy and framework document. The County adopted the Phase 2A CAP (Government Operations) on September 11, 2012. Neither the Phase 1 CAP nor the Phase 2A CAP are "qualified" plans through which subsequent projects may receive CEQA streamlining benefits.
- Sacramento County began work on an updated communitywide CAP (Phase 2B CAP) in 2016. The commitment to a Communitywide CAP is identified in General Plan Policy LU-115 and associated Implementation Measures F through J on page 117 of the General Plan Land Use Element. This commitment was made in part due to the County's General Plan Update process and potential expansion of the Urban Policy Area to accommodate new growth areas. General Plan Policies LU-119 and LU-120 were developed with SACOG to be consistent with smart growth policies in the SACOG Blueprint, which are intended to reduce vehicle miles traveled (VMT) and GHG emissions. In addition to reducing GHG emissions in Sacramento County, the CAP is intended to serve as a climate change resiliency plan to ensure that the County is prepared for the physical effects of climate change. In 2021, the County released an updated GHG inventory (see Table 9-1, above) and a Climate Change Vulnerability Assessment, which identified extreme heat and increased flooding as the most likely adverse impacts on Sacramento County.

The Phase 2B CAP was re-initiated in early 2020. In March of 2021, the draft Phase 2B CAP was released by the County for public review. On September 7, 2021, a Final Draft CAP and Addendum to the 2030 General Plan EIR was released for public review. The County revised the CAP a second time and released the Revised Final Draft CAP and Revised Addendum to the 2030 General Plan EIR on February 17, 2022. These documents were presented at a Board of Supervisors workshop on March 23, 2022. The County received more than 85 comment letters on the Revised Final Draft CAP leading up to the Board workshop on March 23, 2022. Based on input from the Board of Supervisors during the September 27, 2022, hearing on the CAP, a revised CAP and subsequent EIR are being prepared.

Sacramento Metropolitan Air Quality Management District

SMAQMD is the primary agency responsible for addressing air quality concerns in all of Sacramento County. Its role is discussed further in Chapter 6, "Air Quality," of this EIR. In its CEQA Guide, SMAQMD recommends methods for analyzing GHG emissions in CEQA analyses for project- and program-level analyses and offers multiple potential GHG reduction measures for land use development projects. SMAQMD developed thresholds of significance to provide a uniform scale to measure the significance of GHG emissions from land use and stationary source projects in compliance with CEQA to align with the statewide GHG target of 40 percent below 1990 levels by 2030 with the passage of SB 32 for land use development projects (SMAQMD 2021).

SMAQMD's newly published guidance to address GHG emissions was released in February 2021. SMAQMD recommends that a 1,100 $MTCO_2e$ be applied as a bright-line threshold of significance for evaluating construction emissions of GHGs. SMAQMD also recommends a tiered approach to evaluating the significance of operational

emissions. All projects are required to implement the following tier 1 best management practices (BMPs):

- BMP 1 – Projects shall be designed and constructed without natural gas infrastructure.
- BMP 2 – Projects shall meet the current CalGreen Tier 2 standards, except all-electric vehicle capable spaces shall instead be electric vehicle ready.

Projects can be screened out by comparing their attributes to the SMAQMD's operational screening levels table (when project emissions would equivalent to 1,100 $MTCO_2e$ per year or less), including the implementation of tier 1 BMPs. If the project emissions exceed the screening level, or the project fails to implement tier 1 BMPs, projects must implement tier 2 practices (i.e., BMP 3), which consists of reducing the project's VMT to meet the following requirements of the standards developed by the Governor's Office of Planning and Research pursuant to SB 743 (see Chapter 19, "Transportation," for a summary of this bill):

- BMP 3 – Achieve the following VMT reduction targets compared to a county regional average:
  - 15 percent for residential projects,
  - 15 percent for office projects, and
  - a no net increase in VMT for retail projects.

Projects that cannot meet the tier 2 BMP 3 requirements must implement all feasible mitigation to reduce emissions.

Notably, while SMAQMD's guidance was developed in consideration of nearer-term statewide GHG reduction goals (i.e., a 40-percent reduction from 1990 statewide inventory by 2030), SMAQMD's recommended BMPs are reflective of the Bay Area Air Quality Management District's (BAAQMD's) thresholds for determining significance in its 2022 CEQA Air Quality Guidelines. As stated in its Justification Report, BAAQMD's thresholds were designed to ensure that local governments do their "fair share" to contribute to the statewide goal of achieving carbon neutrality by 2045, as codified in AB 1279 (BAAQMD 2023). Moreover, SMAQMD's tier 1 and tier 2 BMPs are similar to the direction provided in Appendix D, "Local Actions," of the 2022 Scoping Plan which identifies building decarbonization, VMT reductions, and the electrification of the mobile source sector as key priority areas that local jurisdictions can target to do their "fair share" in assisting the state in meeting its long-term goal of carbon neutrality by 2045 (CARB 2022b).

Because SMAQMD's tier 1 and tier 2 BMPs would result in building decarbonization, VMT reductions, and the infrastructure to support EVs, they are considered appropriate thresholds for use in this analysis.

Chapter 9, "Program-Level Analysis of General Plans and Area Plans," of SMAQMD's CEQA Guide also provides guidance for assessing the significance of a general plan or

area plan's GHG emissions. As a master plan, the project would meet the criteria of an area plan and, therefore, SMAQMD's guidance for area plans will be used in this analysis (SMAQMD 2020). SMAQMD recommends that program-level analyses "incorporate development policies, standards, and mitigation measures achieving GHG reductions that result in a less-than-significant impact with respect to GHG emissions, this could alleviate the need to evaluate and mitigate GHGs at the project level for projects that are found to be consistent with the general or area plan" (SMAQMD 2020: 9-9). This recommendation for program level analysis can also be satisfied through the development of a qualified CAP that accompanies a general plan.

As noted in Chapter 9 of SMAQMD's CEQA Guide, '[t]he construction-generated emissions associated with the build-out of a general or area plan should be evaluated in the same manner as construction emissions associated with an individual project, as discussed in Chapter 3, Construction Generated Air Pollutant and Precursor Emissions. In summary, maximum daily construction-generated emissions should be estimated and then compared to the District's thresholds of significance" (SMAQMD 2020). Additionally, program-level analyses must consider incorporating the project-level operational BMPs enumerated above.

Significance Criteria and Methodology

Significance Criteria

A climate change resources impact would be significant if implementation of the project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or that would otherwise conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The significance criteria used to evaluate project impacts on climate change under CEQA are based on Section 15064 of the CEQA statute and relevant portions of Appendix G of the State CEQA Guidelines, which recommend that a lead agency consider a project's consistency with relevant, adopted plans and discuss any inconsistencies with applicable regional plans, including plans to reduce GHG emissions.

With respect to GHG emissions, State CEQA Guidelines Section 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or performance-based standards" (Section 15064.4[a]). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change" (Section 15064.4[c]). The

CEQA Guidelines provide that the lead agency should consider the following factors when determining the significance of impacts from GHG emissions on the environment (Section 15064.4[b]):

- The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

CEQA Guidelines Appendix G is a sample Initial Study checklist that includes a number of factual inquiries related to the subject of climate change, as it does on a whole series of additional environmental topics. Notably, lead agencies are under no obligation to use these inquiries in fashioning thresholds of significance on these subjects, or indeed on any subject addressed in the checklist. (*Save Cuyama Valley v. County of Santa Barbara* (2013) 213 Cal.App.4th 1059, 1068.) Rather, with few exceptions, "CEQA grants agencies discretion to develop their own thresholds of significance." (*Ibid*.) Even so, it is a common practice for lead agencies to take the language from the inquiries set forth in Appendix G and to use that language in fashioning thresholds. The County has done so here. SMAQMD as provided written approval and concurrence with the net zero threshold applied in this analysis (see Appendix B).

Since California's legislative mandate to reduce total projected GHG emissions to 1990 levels by the year 2020 has been achieved, the focus is now on reducing emissions 40 percent below 1990 levels by the year 2030 (SB 32), 85 percent below 1990 levels by 2045 (AB 1279), and carbon neutrality by 2045 (AB 1279). To achieve these targets, future development must be planned and implemented in the most GHG-efficient manner possible. As noted above under the Heading, "Sacramento County Climate Action Plan," the County does not currently have an adopted CAP for CEQA streamlining.

Development under the project would extend beyond 2030 (i.e., assumed buildout year of 2055). Therefore, the most relevant legislation applied to this analysis are the goals of AB 1279 (i.e., an 85 percent reduction from 1990 GHG levels and carbon neutrality by 2045). To demonstrate that the project would be consistent with the statewide goal of carbon neutrality by 2045, a net zero threshold has been applied in this analysis. This threshold has been endorsed by the County and is considered more stringent than what is recommended by SMAQMD; however, it is not intended to set precedent or formally endorsed by the County for all future projects.

A net zero increase of GHG emissions would eliminate a project's incremental contribution to climate change. With no increase in GHG emissions compared to existing conditions, any potential inconsistencies with relevant GHG reduction plans would be avoided. Therefore, if a project demonstrates that it may be implemented and

operated without increasing emissions of GHGs as compared to baseline conditions, the project's contribution to global climate change would be less than significant.

Issues Not Discussed Further

All the issues identified in the significance criteria are addressed in the following analysis.

Methodology

Construction-related emissions of criteria air pollutants and precursors were estimated using the California Emissions Estimator Model (CalEEMod) Version 2020.4.0 computer program (CAPCOA 2020), which was reviewed and approved for use in the project analysis by the SMAQMD (see Appendix B). Modeling was based on the proposed land use plan and project-specific information (e.g., size, number of residential units proposed, area to be graded, area to be paved), where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location (e.g., meteorology, emissions factors) and land use types. This analysis relies on the findings of the AQMP/GHGRP prepared for the project (ESA 2024).

Since the WJHMP would be built out based on market demand, the exact phasing of construction is unknown. It is anticipated that the buildout period would occur over 30 years based on the MTP/SCS economic analyses showing the overall anticipated development horizon for the region. A buildout period of 30 years is a conservative estimate given the size and amount of development allowed in the WJHMP. The WJHMP covers almost 6,000 acres of land and provides 16,484 residential units and over 13 million square feet of non-residential development. As noted in the text above, the MTP/SCS contains a projected level of economic growth for the SACOG region and then estimates the number of new housing units to meet the employment levels that will support that economic growth. Projected growth patterns (i.e., the location of growth) are estimates, only, and growth may occur in areas identified in the MTP/SCS or in other areas approved later by local agencies. In addition, construction of the future planning areas under the WJHMP likely would occur beyond the 30-year horizon.

For this analysis, the first year of construction was modeled to approximate the worst-case construction emissions. Equipment used during the first year of construction would be equipped with engines that are expected to emit more criteria pollutant emissions than construction equipment used in later construction years. This is because construction equipment becomes cleaner over time as older, less efficient equipment is replaced through fleet turnover with newer, cleaner equipment that meets more stringent emission standards as required by CARB and EPA. Since the project would likely be built out over a 30-year period as discussed above, it is assumed that 1/30th of the proposed developments would be constructed in the year 2025. The assumptions were used in CalEEMod to estimate emissions for year 1 (2025) construction activities are discussed further below.

It is assumed that implementing the WJHMP would require 500,000 cubic yards of soil to be imported during the grading phase. Assuming the haul trucks used during project construction can carry 16 cubic yards of soil each and construction would be completed over a 30-year period, the first year of construction could result in 2,083 one-way haul truck trips associated with 16,667 cubic yards of exported soil. Assuming 1/30th of the project would be constructed in 2025, total soil import or 50,000 cubic yards, which would result in 6,250 one-way haul truck trips. CalEEMod defaults for number of construction equipment per construction phase and daily worker and vendor trips were used. Additional information and model results for each of the analyses described above are presented in Appendix B.

The WJHMP is assumed to be fully built out in the year 2055. Since CalEEMod version 2020.4.0 allows the user to enter operational years only up to the year 2050, it was not possible to model an operational year 2055 in CalEEMod. Therefore, for this analysis, GHG emissions under the WJHMP were modeled for operational year 2050 using CalEEMod version 2020.4.0. This approach is conservative as emissions rates will likely be higher in 2050 than in 2055 due to continual improvements in vehicle technology, emission controls, and fuel efficiency. Although there are existing uses within the plan area, GHG emissions for these uses were not modeled due to their limited number, and emissions from these uses would be minor. It is also conservative to assume zero emissions from existing uses because these emissions would be subtracted from WJHMP emissions to determine the net change in emissions under the WJHMP. Since construction under the WJHMP is anticipated to begin in 2025, it is assumed that all buildings would be constructed to 2022 Title 24 energy efficiency standards (which was adopted August 11, 2021). Future Title 24 requirements were not modeled because the specific requirements are not known this time. The 2022 energy efficiency standards require solar for all new single-family homes and for all multifamily buildings up to three stories.

For on-road vehicles, criteria pollutant emissions and GHG emissions were calculated using EMFAC2021 v1.0.2, which only allows the user to enter operational years up to 2050. VMT per speed bin was based on data provided in the VMT Analysis Memos (DKS Associates 2023; Kimley-Horn 2023), which evaluate the VMT effects of the WJHMP. Additional information and model results of the operational analysis of GHG emissions described above are presented in Appendix B. Refer to Chapter 19, “Transportation,” in this EIR for further discussion of VMT.

Solid waste, area sources (i.e., landscaping equipment), and water and wastewater were derived using CalEEMod defaults for the proposed land uses under the project.

Additionally, implementation of the WJHMP would result in a potential net addition in carbon sequestration capacity due to land use change and the planting of new trees. The carbon sequestration credit from these activities was estimated using project-specific information provided by the Project Applicants and vegetation defaults provided by CalEEMod. For the purposes of a conservative analysis of GHG sequestration, trees associated with open space parcels were excluded from the total to avoid double-counting credit from open space land use changes.

WEST JACKSON HIGHWAY MASTER PLAN POLICIES

The WJHMP includes the following policies related to climate change:

- **Policy 5.2.** Future development applications shall work with the County to implement the mobility system as shown in Figure 5.13 Transit Plan and Figure 5.14 Proposed Trails, which illustrates the non-vehicular system of multi-use trails, on-street bike lanes and transit facilities.
- **Policy 6.27.** A tree planting plan shall accompany all tentative map applications and can be provided in the form of a conceptual landscape plan.
- **Policy 9.2.** Future development shall provide access to multi-modal transit opportunities and access to a healthy mix of businesses, childcare, senior services, and housing. This is to encourage development that reduces VMT, decreases distances between jobs and housing, reduces traffic impacts, and improves housing affordability.
- **Policy 9.3.** Future development shall achieve improvements in overall public health by encouraging a healthier living environment that includes walkable neighborhoods, access to recreation and open space, healthy foods and public transit.
- **Policy 10.1.** Any codes, covenants and restrictions (CC&R's) shall permit the installation of facilities to collect, store or utilize solar energy on buildings.
- **Policy 10.2.** Shopping centers, office complexes, parks 5 acres or greater and public places will have preferentially located parking spaces and charging stations for electric vehicles.
- **Policy 10.3.** All buildings and landscaping shall be designed to conserve water in compliance with the water agency requirements, which may include the use of advanced plumbing fixtures, high efficiency irrigation systems, low water use plant palette, water use monitoring systems and rain water harvesting systems.
- **Policy 10.4.** Within open space areas, support urban farms and the preservation of grasslands and planting of native trees, where feasible, to provide habitat and foraging for wildlife, as well as for carbon sequestration, shade for residents, and open space users. Plant native plants and trees where feasible and remove non-native trees that are potential fire hazards and high voc-emitting species, such as eucalyptus.

IMPACTS AND ANALYSIS

IMPACT CC-1: RESULT IN PROJECT-GENERATED GHG EMISSIONS AND POTENTIAL INCONSISTENCY WITH PLANS AND REGULATIONS

As explained above, a net zero threshold has been applied in this analysis to demonstrate that the project would be consistent with the statewide goal of carbon

neutrality by 2045. Because this threshold is established relative to total emissions, GHG emissions from construction and operation of the WJHMP are evaluated together.

Construction-related activities would generate emissions of GHGs from the operation of off-road equipment, material delivery, worker commute trips, and other miscellaneous activities. Construction activities in the modeling were estimated for a worst-case scenario in 2025. GHG emissions from construction equipment are anticipated to become progressively less as emissions factors for off-road construction equipment improve and the availability of higher-tiered engines increases. Construction emissions are not factored into the total CO_2e emissions presented in Table 9-2; however, for specific construction assumptions and modeling inputs, refer to Appendix B. Based on the modeling performed for the project, construction of the project would generate a total of approximately 4,370 $MTCO_2e$ per year in 2025. These construction emissions would exceed SMAQMD's construction threshold of significance of 1,100 $MTCO_2e$ per year. For projects expected to exceed the 1,100 $MTCO_2e$ threshold, SMAQMD has established specific best management practices that are understood to effectively reduce construction emissions.

Mitigation Measure CC-1a would require future project applicants to implement various construction-related measures that reduce GHG emissions including efficient engines, use of renewable fuels and electric equipment, limiting idling, and promotion of carpooling for construction workers. Construction emissions would be further reduced through the implementation of Mitigation Measure AIR-1a, which mirrors many measures under Mitigation Measure CC-1a. Measures included in the project design and proposed mitigation measures would fulfill SMAQMD's construction best practice requirements.

The project is assumed to be built out in 2055. Project operations would generate GHG emissions from routine operation of the proposed land uses, such as travel to and from the project, and landscaping equipment. GHGs would be indirectly emitted from electricity consumption, solid waste disposal at the landfills, water and wastewater treatment, and refrigerants. Based on the modeling prepared for the project, during the first year of project buildout, the project (assumed 2050 based on limitations in CalEEMod) would generate approximately 81,292 $MTCO_2e$ per year (19,291 $MTCO_2e$ per year and 62,011 $MTCO_2e$ per year for residential and nonresidential development, respectively).

Table 9-2 summarizes the total emissions from the project. Notably, while the project is proposed as fully electric, the unmitigated scenario captures emissions from the combustion of natural gas. The following project design features have been included in this analysis, based on the requirements of Mitigation Measures CC-1b and CC-1b:

- energy efficient street lighting fixtures,
- solar panel roofs,
- compliance with 2022 CALGreen Code, including mandatory energy efficiency measures,

- compliance with the 2022 Title 24 Energy Standards,
- restriction of wood-burning devices (i.e., only natural gas fireplaces permitted, if any),
- water conservation measures (turf reduction [approximately 28 percent reduction from residential and 20 percent for parks] and irrigation controllers),
- conversion of existing maintained industrial supporting property to support different vegetation land use types, and
- planting of over 82,000 new trees.

Table 9-2 Summary of Project Annual (Unmitigated) Operational Emissions of Greenhouse Gases at Full Buildout (2050)

Source Type	$MTCO_2e$/year	
	Residential	Nonresidential
Area[1]	284	1
Energy[2]	9,052	12,177
Mobile	18,865	42,032
Solid Waste	6,032	16,322
Water and Wastewater	666	1,361
Sequestration (Planted Trees)	-2,094	-991
Sequestration (Land Use Cover Changes)	-13,525	-9,890
Total GHG Emissions	19,281	62,011
Threshold of Significance[3]	0	0
Exceeds Threshold?	Yes	Yes

Notes: $MTCO_2e$/year = metric tons of carbon dioxide equivalent per year.

1. Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings. It was assumed that none of the residential units would be equipped with a fireplace.

2. Energy emissions include emissions associated with natural gas consumption for space heating/cooling, and appliance use.

Source: Modeling conducted by ESA in 2024.

For unmitigated conditions, a majority of the projected operational GHG emissions for the project are from mobile sources (57 percent), followed by solid waste (21 percent) and energy (20 percent). This level of emissions exceeds the net zero threshold applied to the project.

Table 9-3 summarizes the project's mitigated emissions. This emissions estimate accounts for fully electric development and EV charging stations meeting the tier 2 voluntary requirements of the current 2022 CALGreen Code.

Table 9-3 Summary of Project Annual (Mitigated) Operational Emissions of Greenhouse Gases at Full Buildout (2050)

Source Type	$MTCO_2e$/year	
	Residential	Nonresidential
Area[1]	284	1
Energy[2]	129	241
Mobile	4,906	11,190
Solid Waste	6,032	16,322
Water and Wastewater	666	1,361
Sequestration (Planted Trees)	-2,094	-991
Sequestration (Land Use Cover Changes)	-13,525	-9,890
Total GHG Emissions	-3,601	18,234
Threshold of Significance[3]	0	0
Exceeds Threshold?	No	Yes

Notes: $MTCO_2e$/year = metric tons of carbon dioxide equivalent per year.

1. Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings. It was assumed that none of the residential units would be equipped with a fireplace.

2. Energy emissions include emissions associated with natural gas consumption for space heating/cooling, and appliance use.

Source: Modeling conducted by ESA in 2024.

As shown in Table 9-3, after implementation of identified on-site mitigation measures and allowing for sequestration credit associated with land use cover changes throughout the plan area, it is estimated that residential land uses would emit -3,601 $MTCO_2e$ per year total or -0.22 $MTCO_2e$ per dwelling unit and nonresidential land uses would emit 18,234 $MTCO_2e$ per year total or 1.02 $MTCO_2e$ per year per thousand square feet of development.

Additionally, Mitigation Measure CC-1b would require future development to demonstrate to the County the use of low-GWP refrigerants in appliances. Mitigation Measure AIR-2 would reduce GHG emissions directly through incorporating EV charging stations throughout the plan area, improved fuel efficiency and idling restrictions of heavy-duty trucks, electrification of transport refrigeration units (TRUs), and use of alternative fuel–powered or electric generators.

Mitigation Measure CC-1c would require that each future nonresidential and mixed-use development project implemented under the project shall prepare a GHGRP prior to the start of project construction activities. The GHGRP shall document project-related GHG emissions, including the effect of GHGRP measures and the net incremental emissions reductions required to achieve the net-zero threshold relative to the buildout year of each project. The GHGRP shall quantify how each future nonresidential and mixed-use development would be required to meet the net zero GHG emissions thresholds required at buildout. Implementation of the GHGRPs for each future development project is intended to show how total project GHG emission reductions by the year 2050

would meet the net-zero threshold. Projects that demonstrate a net zero threshold would not conflict with the ultimate statewide goal of carbon neutrality by 2045 as described in the 2022 Scoping Plan; therefore, meeting the net zero target discussed in this analysis would not conflict with the 2022 Scoping Plan. Construction and operational GHG emissions impact would be **less than significant with mitigation**.

MITIGATION MEASURES

Implement Mitigation Measures AQ-1a and AQ-2.

MITIGATION MEASURE CC-1A: CONSTRUCTION GHG EMISSIONS REDUCTION

County approval of any grading or improvement plans shall include the following SMAQMD Construction GHG Emissions Reduction Measures:

- Improve fuel efficiency from construction equipment:
  - Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 2 minutes (5-minute limit is required by the state airborne toxics control measure [Title 13, Sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
  - Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
  - Train equipment operators in proper use of equipment.
- Perform on-site material hauling with trucks equipped with on-road engines.
- Use alternative fuels for generators at construction sites such as propane or solar, or
- Use electrical power, as feasible for each construction site and development project.
- Use a CARB-approved low carbon fuel for construction equipment, such as renewable diesel, if commercially available and feasible for use, in construction equipment for each construction site and development project (NOx emissions from the use of low carbon fuel must be reviewed and any increases in NOx through the use of low carbon fuel must be mitigated.)
- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- Reduce electricity use in the construction office by using compact fluorescent bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones.
- Recycle or salvage non-hazardous construction and demolition debris (goal of at least 75 percent by weight).

- Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials, and based on volume for roadway, parking lot, sidewalk and curb materials). Wood products utilized should be certified through a sustainable forestry program.
- Minimize the amount of concrete for paved surfaces or utilize a low carbon concrete option.
- Produce concrete on-site if determined to be less emissive than transporting ready mix and if feasible for each construction site and development project.
- Use SmartWay certified trucks for deliveries and equipment transport.
- Develop a plan to efficiently use water for adequate dust control.

MITIGATION MEASURE CC-1B: REFRIGERANT EMISSIONS

Prior to the issuance of building permits, the future project applicants shall demonstrate to the County that low-global warming potential refrigerants in heat pumps shall be installed in residential and nonresidential buildings, such as for HVAC systems, water heaters, and refrigeration.

MITIGATION MEASURE CC-1C: GREENHOUSE GAS REDUCTION PLAN

Prior to the approval of entitlements, improvement plans, or grading permits, each future nonresidential or mixed-use development project implemented under the plan area buildout shall prepare a GHG Reduction Plan meeting the requirements stipulated in Appendix B of this Draft EIR. Future nonresidential development must demonstrate that additional measures contribute its "fair share" toward reducing project-wide GHG emissions 18,234 $MTCO_2e$ per year or 1.02 $MTCO_2e$ per year per 1,000 square feet of non-residential development. Considering the total development area, a hypothetical 100,000 square foot nonresidential project would represent 0.56 percent of the total nonresidential development area and would be required to show a GHG emissions reduction or savings of 102 $MTCO_2e$ per year, which would represent 0.56 percent of the 18,234 $MTCO_2e$ per year reduction required for the nonresidential development in the plan area.

A combination of the following mechanisms may be used to demonstrate compliance with the project's reduction targets:

- *Compliance with the Sacramento County Communitywide Climate Action Plan (CAP).* If Sacramento County has adopted a Revised CAP that aligns with the long-term targets of AB 1279, compliance with provisions of the CAP may be applied.
- *Reduce Vehicle Miles Traveled*. Reduce VMT traveled by project residents and employes through the implementation of reasonable design measures such as:
  - improve or increase access to transit;
  - increase access to common goods and services, such as groceries, schools, and daycare;

- incorporate affordable housing into the project;
- orient the project toward transit, bicycle and pedestrian facilities;
- improve pedestrian or bicycle networks, or transit service;
- provide traffic calming;
- provide bicycle parking;
- limit or eliminate parking supply;
- unbundle parking costs;
- provide parking cash-out programs;
- implement roadway pricing;
- implement or provide access to a commute reduction program;
- provide car-sharing, bike sharing, and ride-sharing programs;
- provide transit passes;
- shift single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services;
- provide telework options;
- provide incentives or subsidies that increase the use of modes other than single-occupancy vehicle;
- provide on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms;
- provide employee transportation coordinators at employment sites; and
- provide a guaranteed ride home service to users of non-auto modes.

- *Promote Electric and Alternative-Fuel Vehicles*. Promote the use of alternative fuel and electric vehicles through implementation of reasonable and feasible design measures, such as:
  - develop and implement electric vehicle charging infrastructure plan;
  - install electric vehicle charging stations at residential and commercial buildings; and
  - install electric vehicle charging and natural gas fueling stations at public facilities, such as at parking lots and retail centers.
- *Minimize Energy Demand*. Construct and operate an environmentally sound project that minimizes electricity demand through implementation of reasonable and feasible design measures, such as:
  - exceed 2022 Title 24 Energy Efficiency requirements;
  - electrify loading docks to reduce emission from engine idling of transport refrigeration units;

  - install all-electric appliances, including water heaters and heating, ventilation, and air conditioning (HVAC) systems;
  - implement indoor water use efficiency;
  - use energy efficient street lighting fixtures;
  - include of electric vehicle parking infrastructure;
  - institute a composting and recycling program in excess of local standards; and
  - implement an Urban Forestry Management Plan to reduce the urban heat island effect.
- *On-Site Renewable Energy Use*. During the design phase, conduct analysis to optimize on-site renewable energy use to reduce further reduce project GHG emissions, based on the site layout, environmental factors, and viable technology available as confirmed in a formal report submitted for County approval. Specific actions may include:
  - On-site carbon-zero renewable energy capable of serving energy needs of any urban development in the plan area, including energy needed for streetlights, sewer pumps, drainage pumps, traffic signals, and water pumps.
  - Residential photovoltaic systems designed to be scalable over time to accommodate varying energy demands.
- *Renewable Power Purchase Agreement*. Procure renewable energy from off-site sources within California via purchases from one or more of the following, depending on regulatory feasibility and availability: (a) Sacramento Municipal Utility District (SMUD); (b) a community choice aggregator such as the joint SMUD agreement with Valley Clean Energy and the East Bay Community Energy; or (c) other renewable energy provider.
- *Renewable Energy Certificates*. Procure and retire Renewable Energy Certificates (also known as RECs, green tags, Renewable Energy Credits, Renewable Electricity Certificates, or Tradable Renewable Certificates) for projects or activities located in California as confirmed in a formal report submitted for County approval.
- *Purchase Real, Quantifiable, Permanent, Verifiable, Enforceable, and Additional Carbon Offsets.* If, following the application of all feasible on-site GHG reduction measures listed above would continue to generate GHG emissions exceeding the nonresidential target of 102 $MTCO_2e$ per year per 1,000 square feet, the future project applicants shall offset the remaining GHG emissions by funding activities that directly reduce or sequester GHG emissions or by purchasing and retiring carbon credits as confirmed in a formal report submitted for County approval.

  To the degree that a project relies on GHG mitigation measures, Sacramento County, SMAQMD, and CARB recommend that project applicants prioritize on-site design features, such as those listed under above and direct investments in

GHG reductions within the vicinity of the plan area to provide potential air quality and economic co-benefits locally. While emissions of GHGs and their contribution to climate change is a global problem, emissions of air pollutants, which have an adverse localized effect, are often emitted from similar activities that generate GHG emissions (i.e., mobile, energy, and area sources). For example, direct investment in a local building retrofit program could pay for cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting, energy efficient appliances, energy efficient windows, insulation, and water conservation measures for homes in the plan area. Other examples of local direct investments include financing installation of regional electric vehicle charging stations, paying for electrification of public school buses, and investing in local urban forests. These investments would not only achieve GHG reductions, but would also directly improve regional and local ambient air quality. However, to adequately mitigate GHG emissions 102 $MTCO_2e$ per year per 1,000 square feet, it is critical that any such investments in actions to reduce GHG emissions meet the criteria of being real, quantifiable, permanent, verifiable, enforceable, and additional, consistent with the standards set forth in Health and Safety Code Section 38562, subdivisions (d)(1) and (d)(2) through the submittal of a formal report for County approval demonstrating that offsets meet these criteria. Such credits shall be based on protocols approved by CARB, consistent with Section 95972 of Title 17 of the California Code of Regulations. The future project applicants shall not use offset projects originating outside of California, except to the extent that the quality of the offsets, and their sufficiency under the standards set forth herein, can be verified by the County or SMAQMD. Such credits must be purchased through one of the following: (i) a CARB-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard; (ii) any registry approved by CARB to act as a registry under the California Cap and Trade program; or (iii) through the California Air Pollution Control Officers Association's (CAPCOA's) GHG Rx and SMAQMD.

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10 CULTURAL RESOURCES

INTRODUCTION

Under CEQA, lead agencies must consider the effects of their projects on cultural resources. This chapter describes the potential impacts on cultural resources that could occur as a result of implementation of the proposed project.

Cultural resources may include historic buildings and structures, historic districts, historic sites, culturally sacred sites, precontact and historic-era archaeological sites, and other precontact and historic objects and materials.

This chapter includes both environmental and regulatory settings followed by an accounting of the archival research that was conducted within the plan area and an analysis of any potential impacts on cultural resources associated with implementing the proposed project.

No comments on the notice of preparation (NOP) pertain to cultural resources. The NOP and comments received on the NOP are presented in Appendix A.

ENVIRONMENTAL SETTING

PRECONTACT HISTORY

Occupation in the Sacramento Valley during the precontact period is estimated to have occurred as early as 12,000 years ago, but only a few archaeological sites have been identified that predate 5,000 years ago. Precontact material culture in central California (including the Sacramento Valley) subsequent to the Paleoindian Period has been categorized according to “horizons” or “patterns” that define broad technological, economic, social, and ideological elements over long periods of time and large areas. The taxonomic system historically used for central California is a tripartite classification scheme with Early, Middle, and Late Horizons. This Central California Taxonomic System (CCTS) was the result of efforts of a number of researchers and was refined after the advent of radiocarbon dating. Today, a series of generalized periods associated with regionally based “patterns” are typically used as part of the CCTS for the Sacramento Delta area, San Francisco Bay area, and North Coast ranges. Smaller units of patterns are referred to as “aspects” and “phases” (WAVE 2013).

Several regionally based patterns have been described, of which three are specific to Central Valley prehistory and the current project area. Referred to as the Windmiller Pattern, Berkeley Pattern, and Augustine Pattern, each represents a general pattern of resource exploitation, as identified between 4500 years before present (BP) and the beginning of Euro-American contact. These patterns are present within the following

horizon sequences: Early Horizon/Windmiller Pattern, Middle Horizon/Berkeley Pattern, and Late Horizon/Augustine Pattern (WAVE 2013).

Windmiller Pattern (4500–2500 BP)

Some of the earliest well-documented evidence for human occupation in the region is found at sites characteristic of the Windmiller Pattern during the Middle Archaic Period. The Windmiller Pattern was first identified at the Windmiller site near the Cosumnes River in Sacramento County. The archaeological record during the Windmiller period indicates that people practiced a mixed procurement strategy of both game and wild plants as a part of a seasonal round (WAVE 2013).

Windmiller Pattern sites often contain manos and metates (grinding stones), as well as many mortar fragments, indicating that acorns and/or various seeds formed an important part of the diet. Numerous faunal remains (e.g., deer, elk, pronghorn, rabbits, and waterfowl) have been documented at Windmiller Pattern sites, along with large quantities of projectile points. The presence of angling hooks and baked clay artifacts possibly used as net or line sinkers, along with the remains of sturgeon, salmon, and smaller fishes, indicate that fishing was an additional source of food. Ground and polished charmstones, impressions of twined basketry, shell beads, bone tools, and other baked clay items also have been found at Windmiller Pattern sites. Mortuary practices included burials, accompanied by grave goods, in cemeteries that were separate from the habitation sites (WAVE 2013).

Berkeley Pattern (2500 BP–500)

Over a 1,000-year period, a more specialized subsistence regime called the Berkeley Pattern or Middle Horizon emerged. The Berkeley Pattern was initially identified at the West Berkeley site in Alameda County on the east side of the San Francisco Bay. Artifactual and chronological evidence suggest that this subsistence pattern developed in the San Francisco Bay region and spread to surrounding coast and Central Valley locales. An increase in the occurrence of mortars and pestles, along with a decrease in manos and metates, likely signifies a greater reliance on acorns as a dietary staple during the Berkeley Pattern. The archaeological record, which is dominated by large shell-midden/mound sites, also demonstrates that most Berkeley Pattern sites located near or in the vicinity of water (both fresh and salt) made intensive use of aquatic resources. The artifact assemblage also includes shell beads and ornaments, as well as numerous types of bone tools. Interment, the act of burial in the ground, continues to dominate mortuary practices, but some evidence of cremation is also found at Berkeley Pattern sites (WAVE 2013).

Augustine Pattern (500–1769)

The Augustine Pattern is evidenced by a number of changes in subsistence, foraging, and land use patterns that reflect the beginnings of patterns associated with post-contact period Native American groups in the area. The Augustine Pattern was identified at the Augustine site in the Sacramento–San Joaquin Delta. Tools and cooking implements associated with the Augustine Pattern include shaped mortars and pestles, hopper mortars, bone awls, and the bow and arrow. Pottery vessels, known as

Cosumnes Brownware, are found in some parts of the Central Valley and most likely developed during this period from the earlier baked clay industry (WAVE 2013).

A substantial increase in the intensity of subsistence exploitation, including fishing, hunting, and gathering (particularly acorns), is evident in the archaeological record, correlating directly with evidence for population growth. During this period, an increase in sedentism led to the development of social stratification, accompanied by a shift to elaborate ceremonial and social organization. Exchange networks, with the use of clamshell disk beads as currency, also developed during the Augustine Pattern. Mortuary practices during this period included flexed burials and pre-interment burning of offerings in a grave pit, as well as cremation of high-status individuals (WAVE 2013).

Post-Contact History

Mexican Period (1822-1848)

With the opening by Mexico of California to Americans after the revolution, the fur trappers began exploring west of the Sierra Nevada mountains. The first trapper to enter California was Jedediah Smith, whose small party trapped and explored along the Sierra Nevadas in 1826. They entered the Sacramento Valley in 1827, traveling along the Cosumnes and American Rivers and camping near Wilton and the Rosemont section of modern-day Sacramento (WAVE 2013).

Between 1830 and 1833, large numbers of the indigenous population in the Sacramento Valley died from disease, likely introduced by the American trappers and/or the local Mexican population. Disease exterminated whole tribes along the American, Merced, Tuolumne, and Yuba Rivers. In 1837, the Sacramento Valley was hit by a second epidemic, which further decimated indigenous Californians. A number of land grants were issued in the Sacramento area; John Sutter received the two largest land grants in the Sacramento Valley. In 1839, Sutter founded a trading and agricultural empire called New Helvetia, which was headquartered at Sutter's Fort near the divergence of the Sacramento and American Rivers, in Valley Nisenan territory (WAVE 2013).

American Period (1848-Present)

Victory in the Mexican–American War (1846–1848) resulted in Mexico releasing its northern territories (now the states of California, Arizona, Colorado, New Mexico, and part of Utah) to the United States under the Treaty of Guadalupe Hidalgo in 1848. Even though California became a territory of the United States, the full impact of "Americanization" would not occur until the discovery of gold in 1848. The discovery of gold on the American River at Sutter's Mill had a devastating impact on the lives of indigenous Californians in the Central Valley and all along the foothills of the Sierra Nevada (WAVE 2013).

One year after the discovery of gold, nearly 90,000 people had journeyed to the gold fields of California, creating the bustling Gold Rush boomtown of Sacramento. As the more easily obtainable gold (i.e., placer gold) disappeared along the rivers and other waterways, mining shifted toward more industrialized methods of extraction, including

hydraulic and dredge mining. Hydraulic mining was outlawed in the 1880s, although dredge mining continued at a smaller scale than during the Gold Rush in the western Sierra foothills into the 1950s. Extensive dredge tailings along the American River bear witness to this environmentally destructive mining method (WAVE 2013).

With the completion of the transcontinental railroad in 1869, thousands of new settlers poured into the state during the second half of the nineteenth century. California was fast becoming a national leader in the production of agricultural products. The vast Central Valley's fertile soil, combined with numerous irrigation canals, promoted the growth of large amounts of fruits, vegetables, and nuts, as well as vineyards, livestock (cattle and sheep), and field crops, such as hay, cotton, rice, and barley. In the Sacramento area, land-based agriculture and livestock (sheep, beef, and dairy cattle) became the dominant industry. Primary agricultural products included rice, vegetables, and hay, as well as fruits and nuts (WAVE 2013).

LOCAL HISTORY

A portion of the plan area is within the Rio de Los Americanos land grant, a parcel of 35,521 acres granted to William Alexander Leidesdorff by Governor Manuel Micheltorena in 1844. When Leidesdorff died without leaving a will in 1848, Joseph L. Folsom acquired the land, thus giving the present-day town of Folsom, which is located in the northern portion of the rancho, its name (WAVE 2013).

Jackson Road, which bisects the plan area, was initially a stagecoach route that connected Sacramento with the goldfields during the Gold Rush era. An 1866 Government Land Office (GLO) plat map shows the road meandering to the southeast of the Rancho de Los Americanos land grant and is called the "new road to Jackson." By 1911, Jackson Road was in its present-day location as shown by the USGS 1911 Mills (scale 1:31,680) historic quadrangle map (WAVE 2013:18).

CENTRAL CALIFORNIA TRACTION COMPANY RAILROAD

The abandoned tracks of the Central California Traction Company Railroad (CCTC-RR) run approximately 1 kilometer southwest of the project area. The railroad was incorporated in 1905 as one of several interurban railways operating in the Sacramento Valley in the early part of the twentieth century. Originally an electric railway, parts of the railroad line remained operational as a diesel-powered freight line until June 1998. The main line ran between Sacramento and Stockton, with a branch line running to Lodi. Passenger service was discontinued in 1933, and the CCTC-RR's original electric equipment was replaced by diesel engines in 1947. Freight service through Sacramento ended in 1998, but the CCTC-RR is still in operation, servicing the Port of Stockton (WAVE 2013).

19TH-20TH CENTURY AGRICULTURE

During the latter half of the 19th century, new immigrants raised cattle, maintained dairy operations, and cultivated dry crops and row crops, transforming the plan area and surrounding areas into a major agricultural area once referred to as the "Strawberry Capital of the World." In the early 20th century, many farmers in the area were part of a

growing Japanese American community. With the advent of rail service, and then roadways and the automobile in the 1920s, farming operations began to move outward from Sacramento and the need for farming in close proximity to urban areas began to fade. The years leading up to World War II brought numerous changes to the plan area as the demand increased for homes, businesses, and roadways to serve the Sacramento region. In response to these changes, mining operations began in the area during the 1930s to provide the construction materials necessary to support growth in the Sacramento region. In the years following World War II, growth in the Sacramento region surged and mining activity with pockets of industrial and rural residential development dotted the landscape (Peper and Lemke Waste 2009).

SACRAMENTO MATHER AIRPORT

Mather Field (originally Mills Field) is located adjacent to the northeast portion of the plan area and was built during World War I as a pilot training base and airfield. Besides field training exercises, the base was not in use between 1923 and the beginning of World War II. During World War II, the base was reconstructed and became the primary stopover point for troops traveling to and from the Pacific theater of combat. After the war, the Air Force made the field a permanent facility and renamed the field Mather Air Force Base. From 1958 to 1989, Mather Air Force Base was the home of the Strategic Air Command B-52 squadron and the 3535th Navigator Training Wing (redesignated as the 323rd Flying Wing in 1973), which was responsible for training pilots, navigators, and bombardiers. Mather Field went through another transition when it was closed as an Air Force base as a result of the Base Realignment and Closure Act, and was reopened in 1995 as Sacramento Mather Airport, servicing cargo flights (WAVE 2013:19).

REGULATORY SETTING

FEDERAL

NATIONAL HISTORIC PRESERVATION ACT

Cultural resources are considered during federal undertakings chiefly under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties). Section 106 of NHPA (16 USC 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register of Historic Properties (NRHP) and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected cultural resource is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Significant cultural resources are those resources that are listed, or are eligible for listing, on the NRHP per the criteria listed at 36 CFR 60.4 (Advisory Council on Historic Preservation 2000) below:

> In order for a cultural resource to be considered a “historic property” under NRHP criteria (i.e., eligible for inclusion on the NRHP), it must be demonstrated that the

resource possesses *integrity* of location, design, setting, materials, workmanship, feeling and association, and must meet at least one of the following four criteria delineated by Section 106, as listed in 36 CFR 60.4:

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history.

STATE

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires public agencies to consider the effects of their actions on “historical resources,” “unique archaeological resources,” and “tribal cultural resources.”

A *historical resource* is a resource listed, or determined to be eligible for listing, in the California Register of Historical Resources (CRHR) (Section 21084.1); a resource included in a local register of historical resources (Section 15064.5[a][2]); or any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (Section 15064.5[a][3]). Sacramento County does not currently have a local register.

Public Resources Code (PRC) Section 5024.1, Section 15064.5 of the Guidelines, and Sections 21083.2 and 21084.1 of the Statutes of CEQA were used as the basic guidelines for the cultural resources study. PRC Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing on the CRHR. The purpose of the register is to maintain listings of the state's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing on the NRHP.

If it can be demonstrated that a project will cause damage to a *unique archaeological resource*, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2[a], 21083.2[b], and 21083.2[c]). Section 21083.2(g) describes a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

California Register of Historical Resources

The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing on the NRHP, enumerated above, and require similar protection to what NHPA Section 106 mandates for historic properties. According to PRC Section 5024.1(c)(1-4), a resource is considered *historically significant* if it meets at least one of the following criteria:

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

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

Similar to the NRHP, a historical resource must meet one of the above criteria and retain integrity to be listed in the CRHR. The CRHR uses the same seven aspects of integrity used by the NRHP.

Inadvertent Discovery of Human Remains

California law protects Native American burials, skeletal remains and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains (Section 7050.5 of the Health and Safety Code and PRC 5097.9).

When human remains are discovered, the protocol to be followed is specified in California Health and Safety Code, which states:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government

> Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

State CEQA Guidelines Section 15064.5(e) requires that excavation activities be stopped whenever human remains are uncovered and that the County coroner be called in to assess the remains. If the County coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the NAHC. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the State CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5(f), these provisions should include "an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

LOCAL

SACRAMENTO COUNTY 2030 GENERAL PLAN

The 2030 General Plan Conservation Element contains the following policies:

- **Policy CO-150**. Utilize local, state and national resources, such as the NCIC [North Central Information Center], to assist in determining the need for a cultural resources survey during project review.
- **Policy CO-154.** Protection of significant prehistoric, ethnohistoric and historic sites within open space easements to ensure that these resources are preserved in situ for perpetuity.
- **Policy CO-155.** Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archeological significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that off site reinterment is the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.

- **Policy CO-157.** Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.
- **Policy CO-158.** As a condition of approval for discretionary permits, a procedure shall be included to cover the potential discovery of archaeological resources during development or construction.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

Cordova Community Plan

The Cordova Community Plan does not contain specific policies related to cultural resources.

Vineyard Community Plan

The Vineyard Community Plan does not contain specific policies related to cultural resources.

Significance Criteria and Methodology

Significance Criteria

An impact on cultural resources would be significant if implementation of the project would:

- cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 of the State CEQA Guidelines;
- cause a substantial change in the significance of an archaeological resource pursuant to Section 15064.5 of the State CEQA Guidelines; or
- disturb and human remains, including those interred outside of dedicated cemeteries.

Issues Not Discussed Further

All the issues identified in the significance criteria are addressed in the following analysis.

Methodology

For the purposes of the impact discussion, “historical resource” is used to describe built-environment historic-period resources. Archaeological resources (both precontact and historic-period), which may qualify as “historical resources” pursuant to CEQA, are analyzed separately from built-environment historical resources.

DISCLOSURE OF CULTURAL RESOURCES INFORMATION

Public disclosure of site-specific cultural resources information is expressly exempt from the California Public Records Act, Government Code Sections 6250-6270. Furthermore, information obtained during Native American consultation or through consultation with the local and state agencies, including NCIC, should remain confidential and is exempt from public disclosure under Senate Bill 922. Additionally, Sacramento County staff has signed an "Agreement to Confidentiality" with the NCIC that states that site specific information will not be distributed or released to the public or unauthorized individuals. An authorized individual is a professional archaeologist or historian that qualifies under the Secretary of the Interior's standards to view confidential cultural resources materials.

INFORMATION CENTER RECORD SEARCH

In accordance with Sacramento County General Plan Policy CO-150 and standard professional practice, an extensive search of data maintained by the NCIC of the California Historical Resources Information System at California State University, Sacramento, including state and federal listings of significant cultural resources and associated data bases was conducted by WAVE Consulting (WAVE) on August 19, 2013, and September 4, 2013. In addition to official maps and records, the following sources of information at the NCIC were conducted as part of the record search.

- NRHP – Listed Properties;
- CRHR;
- California Inventory of Historical Resources;
- California State Historical Landmarks;
- California Points of Historical Interest;
- Office of Historic Preservation Historic 2012 Property Directory and Determinations of Eligibility;
- 2010 Caltrans Bridge Inventory;
- 1857 Rio de Los Americanos Rancho Plat for Township 7 North, Range 6 East;
- 1857 Rio de Los Americanos Rancho Plat for Township 8 North, Range 6 East;
- 1856 GLO Plat of Township 7 North, Range 6 East;
- 1866 GLO Plat of Township 8 North, Range 6 East;
- 1908 USGS Elk Grove quadrangle scale 1:31,680, and;
- 1911 USGS Mills quadrangle scale 1:31,680.

The records search by WAVE indicates that 27 cultural resources studies have been conducted within the plan area and three more studies have been conducted within a 0.5-mile radius of the plan area. As a result of these previous surveys, 24 cultural resources have been previously recorded within the plan area and an additional six resources have been recorded with a 0.5-mile radius of the plan area. Of the resources

found within the plan area, 16 are historic buildings, three are historic structures (irrigation system, reservoir system, and well system), two are historic artifact scatters, two are historic objects (concrete trough and well/pump system), and one is the foundational remains of an historic farmstead (WAVE 2013: 21).

WAVE also looked at early plat and USGS maps, which can provide additional information regarding historic use of a study area.

Previous Field Assessments

In 2006, Peak & Associates and NORCAL Geophysical Consultants, Inc. conducted surveys of a portion of the plan area (Figure 10-1). A pedestrian survey was completed of the entire site and in select areas ground penetrating radar and trenching was also used to identify potential resources. Three new historic period sites were recorded as a result and documented in their 2007 report, *Determination of Eligibility and Effect for Aspen VIII and Aspen IX Projects, Sacramento County, California*.

In 2009, SWCA conducted a pedestrian survey of a portion of the plan area (Figure 10-1). The results of this effort are documented in their report, *Draft Cultural Resources Survey for the Rock Creek County Phase of the Rock Creek Project, Sacramento, Sacramento County, California*.

In 2013, WAVE archaeologists conducted a pedestrian survey of the plan area (Figure 10-1). The field survey was broken into two methods, one method for mined properties and one method for unmined properties. All previously recorded cultural resources identified during the literature search were re-visited in order to ascertain current resource condition and provide DPR series 523 form updates if necessary (WAVE 2013: 29). Of the 24 previously recorded resources within the plan area, 11 of these resources had been destroyed, six resources were unaltered, four resources were on non-participant properties, two resources were updated by WAVE, and one resource location could not be verified. The pedestrian and reconnaissance surveys conducted by WAVE (during 2013 and for SWCA's 2009 study) did not identify any precontact resources in the plan area. These surveys did not include the non-participant properties.

The results of their field study and review of existing documentation led WAVE to conclude that none of the resources surveyed in the plan area meet the criteria of eligibility for the CRHR or the NRHP and are not considered historical resources or unique archeological resource as defined by CEQA.

West Jackson Highway Master Policies

The proposed WJHMP does not include policies related to cultural or tribal cultural resources.

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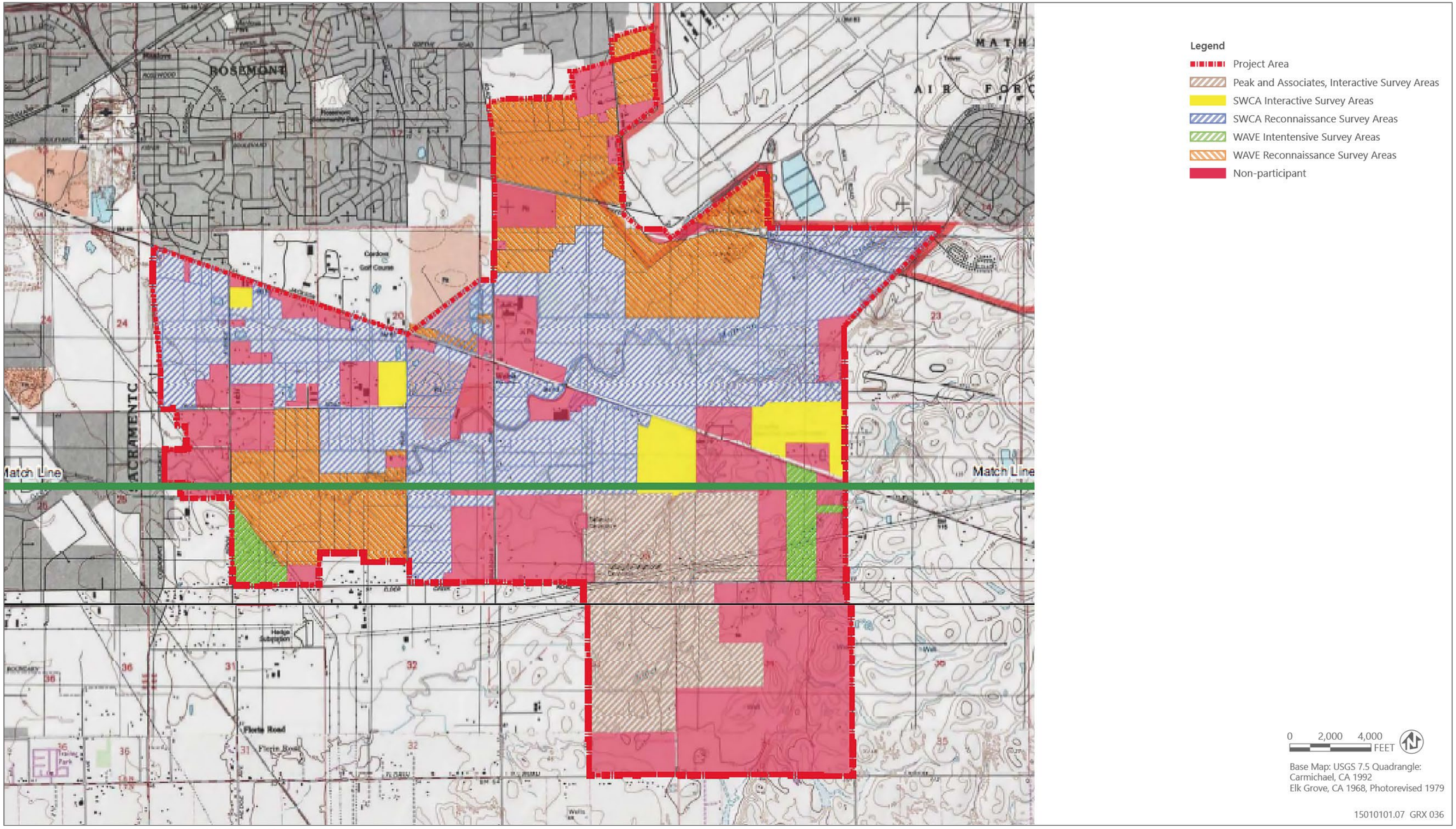

Source: Image produced and provided by WAVE Consulting, adapted by Ascent in 2024.

Figure 10-1 Survey Areas

IMPACTS AND ANALYSIS

This analysis is based on the Cultural Resources Survey of the West Jackson Highway Master Plan, Sacramento County, California (WAVE 2013).

IMPACT CR-1: CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A BUILT-ENVIRONMENT HISTORICAL RESOURCE

As discussed previously, the results of the field survey and review of prior surveys within the plan area led WAVE to conclude that none of the resources surveyed in the plan area meet the criteria of eligibility for the NRHP or CRHR and are therefore not considered historical resources as defined by CEQA.

There are no previously recorded historical resources on the non-participant properties (see Figure 10-1); however, there are existing and former homesteads that have not been surveyed or evaluated on the non-participant properties. There is a potential that some of these buildings could be historically significant. With implementation of the project, there would be the potential for alteration to or destruction of a building or structure that has not been evaluated as eligible for listing as a historic resource; this could result in a substantial adverse change in its historical significance. Programmatically, the alteration or demolition of these historic age buildings and structures that have not been surveyed and evaluated is potentially significant.

Future environmental analysis, including a survey and evaluation of all previously unevaluated, historic-age buildings and structures, would need to be completed prior to land development. Mitigation is recommended below to ensure that surveys and evaluations are completed for the historic-age buildings and structures within the FPAs. The mitigation would require that historical resources are recorded prior to alteration or demolition. Nevertheless, State CEQA Guidelines Section 15126.4(b)(2) notes that in some circumstances, documentation of a historical resource will not mitigate the effects of demolition of that resource to a less-than-significant level because the historic resources would no longer exist. Therefore, impacts associated with non-participant properties would be **significant and unavoidable**.

MITIGATION MEASURES

MITIGATION MEASURE CR-1: HISTORIC RESOURCE SURVEYS ON NON-PARTICIPANT PROPERTIES PRIOR TO DEVELOPMENT

Prior to the development or redevelopment of non-participant properties, during the entitlement phase or design review, whichever is first, intensive historic resources surveys will be required for all historic-age buildings and structures. Buildings or structures 50 years old or older will be documented on a California Department of Parks and Recreation 523 forms and their significance shall be assessed by a qualified architectural historian and evaluated against National Register of Historic Places and

California Register of Historical Resources criteria. For buildings or structures that do not meet significance and integrity criteria, no further mitigation is required.

If historical resources are determined to be present, then the potential impacts of any proposed future projects must be determined and all appropriate measures will be implemented. If the project cannot avoid modifications to a historic building or structure, the following protocol shall be followed:

(i) If the building or structure can be preserved on-site, but remodeling, renovation or other alterations are required, this work shall be conducted in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.

(ii) If a significant historic building or structure is proposed for major alteration or renovation, or to be moved and/or demolished, a qualified architectural historian shall thoroughly document the building and associated landscaping and setting. Documentation shall include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey or Historic American Engineering Record, including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site specific and comparative archival research, and oral history collection as appropriate. A copy of the record shall be provided to the appropriate repositories, which could include the Center for Sacramento History and the North Central Information Center.

IMPACT CR-2: CAUSE A SUBSTANTIAL ADVERSE CHANGE TO AN ARCHAEOLOGICAL RESOURCE

The cultural resource reports, prepared for the majority of the plan area, did not identify any significant archaeological resources. In addition, approximately half of the plan area has been mined for aggregate resources, resulting substantial excavation and ground disturbance that diminishes the potential for future discovery of archeological resources on these sites. However, this does not preclude the possibility of buried archaeological materials or previously undiscovered surface resources within the plan area. In addition, a portion of the plan area has not been surveyed and it is unknown whether there may be archaeological resources. CEQA requires that lead agencies protect both known and unknown resources. This is supported by County General Plan Policies CO-157 and CO-158. Additionally, mitigation is recommended to ensure that all work shall be halted until a qualified archaeologist may evaluate the resource encountered and next steps are identified if significant archaeological resources are discovered in the event that archaeological resources are discovered during implementation phases.

During implementation of future project-specific activities, there remains a potential to encounter buried or as yet undiscovered archaeological resources during land clearing

and construction work. Buried resources may consist of historic remains such as structural features (e.g., foundations, cellars) or buried trash deposits containing glass, ceramics and metal, or the resources may be of precontact origin containing chipped stone, shell, bone, and other remains. Significant impacts could result if a resource is damaged accidentally during construction or removed from its original location. Implementation of mitigation measures would reduce impacts associated with archaeological resources to a **less-than-significant level** because they would require the performance of professionally accepted and legally compliant procedures for the discovery and protection of previously undocumented significant archaeological resources.

MITIGATION MEASURES

MITIGATION MEASURE CR-2A: ARCHAEOLOGICAL SURVEYS

If ground disturbing activities are planned within areas that have not been surveyed for archaeological resources within 5 years, the following shall be required:

1. Future project applicants shall retain an archaeologist meeting the Secretary of the Interior's Professional Standards to conduct intensive archaeological surveys of the site. If archaeological material is discovered, the archaeologist shall prepare a site record, and determine whether it qualifies as a historical resource or a unique archaeological resource under the criteria of CEQA Guidelines Section 15064.5. If the archaeological site does not qualify, or if no resource is present within the project's area of effects, no further mitigation is required. Following field investigations, a technical report describing the survey should be prepared and filed with the appropriate Information Center of the California Historical Resources Information System.

2. Based on this review, if deemed necessary by the qualified professional archaeologist appropriate, a subsurface testing program will be developed and implemented to determine if the property meets criteria to be listed on the CRHR and/or the NRHP. The course of the testing program should be clearly delineated in a research design which outlines prehistory of the area; research domains, questions, and data requirements; research methods inclusive of field and laboratory studies; report preparation; and significance criteria.

3. If, based on the results of field investigations, resources were identified as being significant the following mitigation would apply:

    a. Total Avoidance: Redesign the proposed project to preserve and protect all significant cultural resources. This would reduce impacts to less than significant levels.

    OR, if a redesign is determined infeasible by the Environmental Coordinator, then,

b. Data Recovery: After all design options have been exhausted that would result in the preservation of significant resources, institute a data recovery program to the satisfaction of the Environmental Coordinator.

MITIGATION MEASURE CR-2B: ARCHAEOLOGICAL MONITORING BY AN SOI-QUALIFIED ARCHAEOLOGIST

A cultural resources awareness training program will be provided to all construction personnel active on the project site during earth moving activities. The first training will be provided prior to the initiation of ground disturbing activities. The training will be developed and conducted in coordination with a qualified archaeologist meeting the United States Secretary of Interior guidelines for professional archaeologists. The program will include relevant information regarding sensitive cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The worker cultural resources awareness program will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site and will outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered.

For all initial ground disturbing activities, a qualified archaeologist meeting the United States Secretary of Interior guidelines for professional archaeologists will monitor ground- disturbing activities. The monitor shall complete daily monitoring logs that describe each day's activities, including construction activities, locations, soil, and any cultural materials identified.

MITIGATION MEASURE CR-2C: INADVERTENT DISCOVERIES

If subsurface deposits believed to be cultural in origin are discovered during construction, then all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for precontact and historic-period archaeology, shall be retained at the expense of future project applicants to evaluate the significance of the find. If it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the future project applicants' expense.

Work cannot continue within the 100-foot radius of the discovery site until the archaeologist conducts sufficient research and data collection to make a determination that the resource is either 1) not cultural in origin; or 2) not potentially eligible for listing on the National Register of Historic Places or California Register of Historical Resources.

If a potentially eligible resource is encountered, then the archaeologist, Sacramento County, and the future project applicants shall arrange for either 1) total avoidance of the resource, if possible; or 2) test excavations or total data recovery as mitigation. The determination shall be formally documented in writing and submitted to Sacramento

County Planning and Environmental Review as verification that the provisions of CEQA for managing unanticipated discoveries have been met.

IMPACT CR-3: DISTURB HUMAN REMAINS

Based on documentary research, no evidence suggests that any precontact or historic-period marked or un-marked human interments are present within or in the immediate vicinity of the plan area. However, the location of grave sites and Native American remains can occur outside of identified cemeteries or burial sites. Therefore, there is a possibility that unmarked, previously unknown Native American or other graves could be present within the plan area and could be uncovered by project-related construction activities.

PRC Section 5097.94 and Section 7050 of the California Health and Safety Code protect Native American burials, skeletal remains and grave goods, regardless of age and provide method and means for the appropriate handling of such remains. If human remains are encountered, work would halt in that vicinity and the County coroner would be notified immediately. If the human remains are of Native American origin, the coroner must notify the NAHC within 24 hours of such identification. Sacramento County Policy CO-155 requires that if burials are discovered that they remain in situ whenever possible. Through compliance with existing regulations, this impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

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11 ENERGY

INTRODUCTION

This chapter describes the existing conditions for energy in the unincorporated county and evaluates the potential effects that implementation of the project may have on energy. Specifically, this chapter evaluates the potential for the project to result in impacts related to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction and operation, and conflicts with state or local plan for renewable energy or energy efficiency.

Comments submitted in response to the notice of preparation (NOP) related to energy and the potential need for additional electrical infrastructure and the need to preserve some existing infrastructure. These concerns, as applicable, are addressed below. The NOP and comments received in response to it are presented in Appendix A.

EXISTING ENERGY ENVIRONMENTAL SETTING

ENERGY FACILITIES AND SERVICES

ENERGY FACILITIES AND SERVICES IN SACRAMENTO COUNTY

Electric services are provided to the county by the Sacramento Municipal Utility District (SMUD).

ENERGY TYPES AND SOURCES

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. One-third of energy commodities consumed in California is natural gas. In 2022, renewable resources, including hydroelectric power and small-scale, customer-sited solar power, accounted for 49 percent of California's in-state electricity generation. Natural gas fueled another 42 percent while nuclear power supplied almost all the rest (EIA 2023).

In 2022, SMUD provided its customers with 23 percent eligible renewable energy (i.e., biomass combustion, geothermal, small scale hydroelectric, solar, and wind) and 25 percent and 46 percent from large-scale hydroelectric and natural gas, respectively (CEC 2023a). The contribution of in- and out-of-state power plants depends on the precipitation that occurred in the previous year, the corresponding amount of hydroelectric power that is available, and other factors.

ALTERNATIVE FUELS

A variety of alternative fuels are used to reduce demand for petroleum-based fuel. The use of these fuels is encouraged through various statewide regulations and plans (e.g., Low Carbon Fuel Standard, Assembly Bill (AB) 32 Scoping Plan and subsequent

updates). Conventional gasoline and diesel may be replaced (depending on the capability of the vehicle) with many transportation fuels, including:

- biodiesel,
- electricity,
- ethanol (E-10 and E-85),
- hydrogen,
- natural gas (methane in the form of compressed and liquefied natural gas),
- propane,
- renewable diesel (including biomass-to-liquid),
- synthetic fuels, and
- gas-to-liquid and coal-to-liquid fuels.

California has a growing number of alternative fuel vehicles through the joint efforts of California Energy Commission (CEC), California Air Resources Board (CARB), local air districts, federal government, transit agencies, utilities, and other public and private entities. As of April 2024, California contained nearly 19,000 publicly available alternative fueling stations (AFDC 2024).

Energy Use for Transportation

In 2021, the transportation sector comprised the largest end-use sector of energy in the state totaling 37.8 percent, followed by the industrial sector totaling 23.2 percent, the residential sector at 20.0 percent, and the commercial sector at 19.0 percent (EIA 2023). On-road vehicles use about 90 percent of the petroleum consumed in California. CEC reported retail sales of 448 million and 45 million gallons of gasoline and diesel, respectively, in Sacramento County in 2021 (the most recent data available) (CEC 2023b).

Energy Use and Climate Change

Scientists and climatologists have produced evidence that the burning of fossil fuels by vehicles, power plants, industrial facilities, residences, and commercial facilities has led to an increase of the earth's temperature. For an analysis of greenhouse gas (GHG) production and the project's impacts on climate change, refer to Chapter 9, "Climate Change."

EXISTING ENERGY REGULATORY SETTING

FEDERAL

ENERGY POLICY AND CONSERVATION ACT AND CAFE STANDARDS

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Pursuant to this act, the National Highway Traffic and Safety Administration, part of the US Department of Transportation (DOT), is responsible for revising existing fuel economy standards and establishing new vehicle economy standards.

The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturers' compliance with the government's fuel economy standards. Compliance with the CAFE standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the county. EPA calculates a CAFE value for each manufacturer based on the city and highway fuel economy test results and vehicle sales. The CAFE values are a weighted harmonic average of the EPA city and highway fuel economy test results. Based on information generated under the CAFE program, DOT is authorized to assess penalties for noncompliance. Under the Energy Independence and Security Act of 2007 (described below), the CAFE standards were revised for the first time in 30 years.

ENERGY POLICY ACT OF 1992 AND 2005

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. The EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. The EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in the EPAct. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

ENERGY INDEPENDENCE AND SECURITY ACT OF 2007

The Energy Independence and Security Act of 2007 is designed to improve vehicle fuel economy and help reduce US dependence on oil. It represents a major step forward in expanding the production of renewable fuels, reducing dependence on oil, and confronting global climate change. The Energy Independence and Security Act of 2007 increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly fivefold increase over current levels. It also reduces US

demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020—an increase in fuel economy standards of 40 percent.

By addressing renewable fuels and the CAFE standards, the Energy Independence and Security Act of 2007 builds upon progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century.

STATE

WARREN-ALQUIST ACT

The 1974 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as CEC. The creation of the act occurred as a response to the state legislature's review of studies projecting an increase in statewide energy demand, which would potentially encourage the development of power plants in environmentally sensitive areas. The act introduced state policy for siting power plants to reduce potential environmental impacts and sought to reduce demand for these facilities by directing CEC to develop statewide energy conservation measures to reduce wasteful, inefficient, and unnecessary uses of energy. Conservation measures recommended establishing design standards for energy conservation in buildings, which ultimately resulted in the creation of the Title 24 Building Energy Efficiency Standards (California Energy Code). These standards are updated regularly and remain in effect today. The act additionally directed CEC to cooperate with the Governor's Office of Planning and Research, the California Natural Resources Agency, and other interested parties in ensuring that a discussion of wasteful, inefficient, and unnecessary consumption of energy is included in all CEQA documents required on local projects.

STATE OF CALIFORNIA ENERGY ACTION PLAN

CEC is responsible for preparing the state energy plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 2003 *Energy Action Plan* (2008 update), which calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assisting public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, as well as encouraging urban design that reduces vehicle miles traveled (VMT) and accommodates pedestrian and bicycle access.

ASSEMBLY BILL 2076: REDUCING DEPENDENCE ON PETROLEUM

Pursuant to AB 2076 (Chapter 936, Statutes of 2000), CEC and CARB prepared and adopted a joint agency report in 2003, *Reducing California's Petroleum Dependence.* Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, increase the efficiency of motor vehicles, and reduce per capita VMT (CEC and CARB 2003).

Further, in response to CEC's 2003 and 2005 Integrated Energy Policy Reports (IEPRs), the governor directed CEC to take the lead in developing a long-term plan to increase alternative fuel use.

A performance-based goal of AB 2076 was to reduce petroleum demand to 15 percent below 2003 demand by 2030.

Integrated Energy Policy Report

Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) required CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety (PRC Section 25301[a]). This work culminated in preparation of the first IEPR.

CEC adopts an IEPR every 2 years and an update every other year. The 2023 IEPR, which is the most recent IEPR, was adopted February 2024. The 2023 IEPR provides a summary of priority energy issues currently facing the state, outlining strategies and recommendations to further the state's goal of ensuring reliable, affordable, and environmentally responsible energy sources. Energy topics covered in the report include progress toward statewide renewable energy targets and issues facing future renewable development; efforts to increase energy efficiency in existing and new buildings; progress by utilities in achieving energy efficiency targets and potential; improving coordination among the state's energy agencies; streamlining power plant licensing processes; results of preliminary forecasts of electricity, natural gas, and transportation fuel supply and demand; future energy infrastructure needs; the need for research and development efforts to statewide energy policies; and issues facing California's nuclear power plants (CEC 2024).

California Renewables Portfolio Standard

SB X1-2 of 2011 required all California utilities to generate 33 percent of their electricity from renewables by 2020. SB 100 of 2018 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 52 percent of their electricity from renewables by December 31, 2027; 60 percent by December 31, 2030; and 100 percent carbon-free electricity by December 31, 2045. On September 16, 2022, SB 1020 was signed into law. This bill supersedes the goals of SB 100 by requiring that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, and 100 percent of electricity procured to serve all state agencies by December 31, 2035.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires doubling of the energy efficiency savings in electricity and natural gas for retail customers through energy efficiency and conservation by December 31, 2030.

California Building Energy Efficiency Standards (Title 24, Part 6)

The energy consumption of new residential and nonresidential buildings in California is regulated by the California Energy Code. The code was established by CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy-efficiency standards for residential and nonresidential buildings. CEC updates the California Energy Code every 3 years, typically including more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions.

The 2022 California Energy Code went into effect on January 1, 2023. The 2022 California Energy Code advances the on-site energy generation progress started in the 2019 California Energy Code by encouraging electric heat pump technology and use, establishing electric-ready requirements when natural gas is installed, expanding solar photovoltaic (PV) system and battery storage standards, and strengthening ventilation standards to improve indoor air quality. CEC estimates that the 2022 California Energy Code will save consumers $1.5 billion and reduce GHGs by 10 million metric tons of carbon dioxide-equivalent over the next 30 years (CEC 2022).

California Green Building Standards (Title 24, Part 11)

The California Green Building Standards, also known as CALGreen, is a reach code (i.e., optional standards that exceed the requirements of mandatory codes) developed by CEC that provides green building standards for statewide residential and nonresidential construction. The current version is the 2022 CALGreen Code, which took effect on January 1, 2023. As compared to the 2019 CALGreen Code, the 2022 CALGreen Code strengthened several sections, including those pertaining to electric vehicle (EV) and bicycle parking, water efficiency and conservation, and material conservation and resource efficiency. The CALGreen Code sets design requirements equivalent to or more stringent than those of the California Energy Code for energy efficiency, water efficiency, waste diversion, and indoor air quality. These codes are adopted by local agencies that enforce building codes and used as guidelines by state agencies for meeting the requirements of Executive Order B-18-12.

Legislation Associated with Greenhouse Gas Reduction

The state has passed legislation that aims to reduce GHG emissions. The legislation often has an added benefit of reducing energy consumption. SB 32 requires a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. Executive Order S-3-05 sets a long-term target of reducing statewide GHG emissions by 80 percent below 1990 levels by 2050.

SB 375 aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. The Advanced Clean Cars II program, approved by CARB in 2023, combines the control of GHG emissions and criteria air pollutants and the increase in the number of zero-emission vehicles into a single package of standards. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 100 percent of California's new vehicle sales by 2035.

Implementation of the state's legislation associated with GHG reduction will have the co-benefit of reducing California's dependency on fossil fuel and making land use development and transportation systems more energy efficient.

More details about legislation associated with GHG reduction are provided in the regulatory setting of Chapter 9, "Climate Change."

LOCAL

SACRAMENTO COUNTY 2030 GENERAL PLAN

The following 2030 General Plan policies pertaining to energy use are applicable to the project:

- **Policy EN-5.** Reduce travel distances and reliance on the automobile and facilitate increased use of public transit through appropriate land use plans and regulations.
- **Policy EN-10.** Continue implementation of the Bikeways Master Plan and develop standards for neighborhood bikeways and pedestrian-ways, incorporating them into Neighborhood Planning Standards.
- **Policy EN-11.** Promote the location within the Sacramento area of those industries which are labor intensive, utilize solar energy systems, and are consistent with other policies in terms of environmental protection.
- **Policy EN-12.** Encourage industry located or locating in the Sacramento area to participate in cogeneration of power.
- **Policy EN-14.** Develop or revise design standards relating to building solar orientation, landscaping, impervious surfaces, and parking space requirements to conserve energy.
- **Policy EN-16.** Promote the use of passive and active solar systems in new and existing residential, commercial, and institutional buildings as well as the installation of solar swimming pool heaters and solar water and space heating systems.
- **Policy EN-17.** Support the development and improvement of solar space cooling systems.
- **Policy EN-18.** Develop and implement standards for the protection of the solar rights of property owners.

- **Policy EN-19.** Support the development and use of renewable sources of energy, including but not limited to biomass, solar, wind, and geothermal.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities within the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

Cordova Community Plan

The Cordova Community Plan does not contain objectives related to energy that would apply to the project.

Vineyard Community Plan

The Vineyard Community Plan, which was developed in 1985, provides guidance for growth and development in the community planning area. Policies identified in the plan that are applicable to the project include:

- **Policy FU 6.** Water conservation, waste handling and energy-efficient designs at least to minimum County standards will be encouraged in all residential developments.

Sacramento County Climate Action Planning

On November 9, 2011, the County of Sacramento adopted the Climate Action Plan – Strategy and Framework, which presented a framework for reducing GHG emissions and developing the second phase of the Climate Action Plan (CAP). The County is currently working to develop the Sacramento County Climate Action Plan 2024 (2024 CAP) to address communitywide emissions. The 2024 CAP has not yet been adopted and is, therefore, not applicable to this project. In addition, because crucial laws and regulations, such as AB 1279 and Executive Order B-48-18, have been passed and implemented since the development of the 2011 CAP (the next most-recent iteration of the County's CAP), the GHG reduction goals and strategies in the 2011 CAP are outdated. For this reason, the 2011 CAP is not used in this analysis.

Sacramento County Zoning Code

Sacramento County Zoning Code (Zoning Code) Section 5.9.3.A, Electric Vehicle Parking, contains regulations specific to energy. Specifically, the Zoning Code states that electric vehicle parking spaces shall be provided as required by the California Green Building Standards Code and subject to approval by the Chief Building Inspector. Electric vehicle charging stations above the number required by the Green Building Standards may qualify for parking reductions, as addressed in Section 5.9.5.C.1. Parking spaces designated for electric vehicle charging stations shall be counted toward meeting the minimum parking requirement.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

An impact related to energy resources would be significant if implementation of the project would:

- result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation or
- conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

ISSUES NOT DISCUSSED FURTHER

All the issues identified in the significance criteria are addressed in the following analysis.

METHODOLOGY

This analysis utilizes modeling methods and data from an air quality- and GHG-focused technical report prepared for the project by ESA (ESA 2024). See Appendix B for the complete technical report and associated modeling details.

Construction- and operation-related energy consumption by the project was measured in megawatt-hours (MWh) of electricity, million British thermal units (MMBtu) of natural gas, gallons of gasoline, and gallons of diesel fuel. Energy consumption estimates were calculated using a combination of the California Emissions Estimator Model (CalEEMod) version 2020.4.0 computer program and fuel efficiency and consumption estimations for on-road operational vehicles which were derived from EMFAC 2021 data. Where project-specific information was not known, CalEEMod default values based on the project's location were used.

Modeling construction-related fuel consumption requires detailed information about the construction schedule, the number and type of construction equipment used, the daily usage hours of equipment, specific equipment horsepower, and other information that cannot be known at the master plan stage. Therefore, model defaults were utilized and scaled to the approximate fleet size required to carry out construction activities at the plan scale. As the emissions factors for construction equipment represent current data, the construction fuel consumption estimate is considered conservative as it is likely that newly developed construction equipment will become progressively more fuel efficient throughout the 30-year construction period.

The proposed developments under the WJHMP are assumed to be fully built-out in the year 2055. Since CalEEMod version 2020.4.0 only allows the user to enter operational years up to the year 2050, it is not possible to model an operational year 2055 in CalEEMod. Therefore, for the purpose of this analysis, criteria pollutant emissions were

modeled for operational year 2050 using CalEEMod version 2020.4.0. This approach and the resulting emissions estimates are considered conservative as emissions rates will likely be higher in 2050 than in 2055 due to continual improvements in vehicle technology, emission controls, and fuel efficiency.

Regarding operations, VMT data was provided by DKS Associates. Model defaults were used to estimate electricity use based on land use type. Notably, the energy and fuel consumption estimations for on-road operational vehicles from EMFAC 2021 only project out to the year 2050. Therefore, projected energy and fuel consumption by vehicle category for 2050 were used to estimate operational vehicle fuel consumption.

WEST JACKSON HIGHWAY MASTER POLICIES

The WJHMP includes the following guiding goals and objectives related to energy.

- **Policy 9.2.** Future development shall provide access to multi-modal transit opportunities and access to a healthy mix of businesses, childcare, senior services, and housing. This is to encourage development that reduces VMT, decreases distances between jobs and housing, reduces traffic impacts, and improves housing affordability.
- **Policy 10.1.** Any codes, covenants and restrictions (CC&R's) shall permit the installation of facilities to collect, store or utilize solar energy on buildings.
- **Policy 10.3.** All buildings and landscaping shall be designed to conserve water in compliance with the water agency requirements, which may include the use of advanced plumbing fixtures, high efficiency irrigation systems, low water use plant palette, water use monitoring systems and rain water harvesting systems.

IMPACTS AND ANALYSIS

IMPACT EN-1: RESULT IN WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY

CONSTRUCTION ENERGY

Energy would be required to operate construction equipment and to produce and transport construction materials associated with construction of the project. It is assumed that this construction would occur over a period of 30 years with activities commencing in 2025 and concluding in 2055. The one-time energy expenditure required to construct the physical buildings and infrastructure associated with the project would be nonrecoverable. Most energy consumption would result from operation of construction equipment and vehicle trips associated with commutes by construction workers and haul trucks supplying materials. See Table 11-1, below, for an estimate of fuel needed for construction activities associated with the project.

Table 11-1 Construction Energy Consumption

Vehicle Type	Diesel (Gallons)[1]	Gasoline (Gallons)[2]
Annual Project Construction Fuel Consumption		
Off-Road Equipment	123,823	—
On-Road Trucks	809,504	—
Worker Commute Vehicles	—	1,417
Total	**933,326**	**1,417**
Total Project Construction Fuel Consumption (30 Years)		
Off-Road Equipment	3,714,679	—
On-Road Trucks	24,285,115	—
Worker Commute Vehicles	—	**42,500**
Total	**27,999,794**	**42,500**

[1] Diesel gallons include off-road equipment and on-road gallons from worker and vendor trips.

[2] Gasoline gallons include on-road gallons from worker trips.

Source: Modeling conducted by ESA in 2024; calculations by Ascent in 2024.

Approximately 31,618,000 gallons of gasoline and 28,000,000 gallons of diesel would be consumed to enable project construction over the 30-year construction phase. Annually, project construction would consume approximately 1,054,000 gallons of gasoline and 933,000 gallons of diesel. The energy needs for project construction would be temporary and would not be anticipated to require additional capacity or increase peak or base period demands for electricity or other forms of energy. Construction equipment use and associated energy consumption would be typical of that associated with the construction of new residential and commercial projects in a suburban setting.

Building Energy

Implementation of the project would increase electricity consumption in the region relative to existing conditions. The total increase in electricity demand associated with the project is estimated at 407.5 gigawatt hours per year. All development in the plan area would be all-electric and would, therefore, not result in the consumption of natural gas. Consequently, this would result in increased electricity demand. For a list of assumptions made to estimate operational energy consumption, see the full technical report prepared by ESA in Appendix B. Table 11-2, below, provides a summary of the estimated annual energy consumption associated with operation of the project.

Table 11-2 Operational Energy Consumption

Land Use/Energy Type	Energy Consumption	Units
Electricity	407.5	GWh/year
Natural Gas	0	MMBTU/year

Notes: GWh/year = gigawatt-hours per year; MMBTU = million British thermal units.

Source: Modeling conducted by ESA in 2024; calculations by Ascent in 2024.

All development under the proposed project would, at a minimum, be built to meet the 2022 California Energy Code requirements. The 2022 California Energy Code requires the use of efficient electric heat pumps, establishes electric-ready requirements for new homes, expands solar photovoltaic and battery storage standards, and strengthens ventilation standards (CEC 2022). All buildings that would be developed in the plan area would be required to comply with the California Energy Code standards for building energy efficiency. As construction of the land uses proposed under the project proceeds through 2055, the California Energy Code will continue to be updated on a triennial basis with the expectation that the mandatory requirements of the code will require increasingly more stringent energy efficiency requirements. This would result in increased building energy efficiency over time as buildings continue to be developed. Indirect energy use would include wastewater treatment and solid waste removal.

In addition to planning for the development of new commercial and industrial uses, the project would also serve the purpose of creating additional housing in Sacramento County. According to the Sacramento County 2023 Affordable Housing Needs Report prepared by the California Housing Partnership Corporation in collaboration with the Sacramento Housing Alliance, 55,711 low-income renter households in Sacramento County do not have access to an affordable home. Additionally, in 2022 there were only 3,706 beds available in the interim and permanent housing supply for persons experiencing homelessness in Sacramento County (CHPC and SHA 2023). As stated in Chapter 15, “Land Use,” the project is required to accommodate greater than 90 percent of its share of the unincorporated county’s proportional obligation of the regional housing needs allocation (RHNA). Current RHNA obligation is 33.6 percent of the housing stock. Ninety percent of that obligation would require that 30.2 percent of the housing stock in the WJHMP is suitable for low and very-low income units. The project includes 5,660 residential units designated High Density Residential or Mixed Use with target densities of 30 units per acre. This accounts for 34 percent of the units in the WJHMP and satisfies the WJHMP’s share of the County’s overall RHNA obligation. Therefore, the use of energy is necessary to provide additional housing to the region and would not be considered inefficient or wasteful.

Transportation Energy

Residential and commuter trips would make up the majority of VMT associated with the project, while truck trips associated with industrial land uses and occasional maintenance and delivery trips would account for the remaining VMT. The net fuel consumption associated with project-related vehicle trips would not be considered wasteful, inefficient, or unnecessary in comparison to other similar developments in the region. As described further in Chapter 19, “Transportation,” total VMT would be reduced to below County thresholds through the implementation of the WJHMP TMA.

State and federal regulations regarding fuel efficiency standards for vehicles in California are designed to reduce wasteful, inefficient, and unnecessary use of energy for transportation. Additionally, regulations pertaining to EV vehicle use and EV infrastructure would reduce energy consumption over time by reducing the combustion

of fossil fuel used for transportation and increasing the use of electricity generated by renewables for the purpose of powering EVs.

Annual VMT associated with the project would be approximately 1,124,159,173 and would result in fuel demand of an estimated 31,435,834 gallons of gasoline per year and 9,913,396 gallons of diesel per year. Operational transportation-related fuel estimates are summarized in Table 11-3.

Table 11-3 Operational Fuel Use

Source	Gasoline (gal/year)	Diesel (gal/year)
Mobile (Total for Project)	31,435,834	9,913,396

Notes: gal/year = gallons per year.

Source: Modeling conducted by ESA in 2024; calculations by Ascent in 2024.

Summary

The project would increase energy consumption for temporary construction activities related to vehicle use and material transport. However, construction activities would be temporary and would not increase long-term energy or fuel demand. Construction activities would consume the necessary amount of fuel and energy to complete work in an efficient and timely manner. Once operational, the project would increase transportation and building energy demand, as well as provide additional housing in the county by meeting the requirement of the percentage of low and very low-income residential units required by state law per the County's current Housing Element based on the RHNA.

According to Appendix F of the State CEQA Guidelines, the means to achieve the goal of conserving energy include decreasing overall per capita energy consumption, decreasing reliance on oil, and increasing reliance on renewable energy sources.

The Master Plan addresses the topic of energy efficient design and on-site energy production. New residential construction will adhere to the most current Title 24 standards and strive to incorporate the latest green technology. The WJHMP includes goals and objectives to improve energy efficiency and increase the utilization of renewable energy. For example, Objective 4.2.1 aims to maximize energy efficiency through compact development within the plan area while Objective 4.2.3 would increase the utilization of passive energy efficient features such as cool roofs and/or solar PV production. Policy 9.2 requires future development to provide access to multi-modal transit opportunities to reduce VMT and transportation-related energy consumption. Energy consumption associated with the built environment would be reduced through water efficiency requirements (Policy 10.3) and Policy 10.1 establishes that any CC&Rs for future developments in the plan area shall permit the installation of facilities to collect, store or utilize solar energy on buildings. This would increase energy efficiency and, therefore, reduce per capita energy consumption, by increasing the number of people served by energy infrastructure in the plan area. The use of public transit and

alternative modes of transportation would reduce single-occupancy vehicle trips and, therefore, reduce the consumption of fossil fuel for transportation.

Additionally, all development within the WJHMP would be all-electric and would, therefore, not include any natural gas utilities. In terms of utilities, electricity is considered more efficient than natural gas because electricity from the grid may be sourced from renewable sources such as hydroelectric, solar, wind, and geothermal. As stated above under "Existing Energy Environmental Setting," SMUD, which supplies electricity to the project area, provided its customers with 23 percent eligible renewable energy (i.e., biomass combustion, geothermal, small scale hydroelectric, solar, and wind) and 25 percent and 46 percent from large-scale hydroelectric and natural gas, respectively (CEC 2023a). Being that SB 1020 requires that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, and 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, electricity supplied to the project area would become increasingly renewable over the project's buildout period.

For these reasons, the use of energy for construction and operation (i.e., building and transportation energy) of the project would not be considered wasteful, inefficient, or unnecessary. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT EN-2: CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY

Relevant plans that pertain to the efficient use of energy include the Energy Efficiency Action Plan, which focuses on energy efficiency and building decarbonization (CEC 2019), as well as the 2022 Scoping Plan. Because the project would be-all electric, would result in increasingly energy efficient buildings, and would reduce VMT by 43,003 compared to the regional average by increasing development density (see Impact TR-3 in Chapter 19, "Transportation"), the project would align with the building decarbonization and fossil fuel reduction goals of both the 2022 Scoping Plan and the Energy Efficiency Action Plan. The WJHMP would, therefore, not impede the implementation of these plans to achieve the state's goals of reducing fossil fuel consumption and increasing energy efficiency.

A key focus of the 2022 Scoping Plan is strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs. The electricity sector is identified as one of the largest contributors to GHG emissions in the state (CARB 2022: 182). The 2022 Scoping Plan identifies actions needed to achieve the AB 1279 target of 85 percent below 1990 levels by 2045. These actions include transitioning to all electric appliances beginning in 2026 for residential land uses and

2029 for commercial land uses (CARB 2022). The 2022 Scoping Plan also states that vehicles must transition to zero-emission technology to decarbonize the transportation sector (CARB 2022: 185). Therefore, improving energy efficiency and transitioning to all-electric energy in the built environment and transportation sectors is a crucial component to achieving the state's GHG reduction and carbon neutrality goals. As discussed in the preceding impact, although implementation of the project has the potential to result in the overall increase in consumption of energy resources during construction and operation of new buildings and facilities, energy conservation and generation features would be incorporated into new development through compliance with existing regulations (including the installation of energy efficient appliances aligning with the Energy Efficiency Action Plan). These features would also align with the GHG reduction and energy efficiency goals of the 2022 Scoping Plan. Additionally, the 2022 CALGreen requires installation of EV charging stations, which would also align with the goal of reducing fossil fuel consumption set forth in the 2022 Scoping Plan. Similarly, the project includes high-density housing and mixed-use development. This would reduce VMT by decreasing the length of commuter and residential trips as well as by increasing the viability of alternate modes of transportation such as public transportation, walking, and biking. This would align with the VMT reduction goals of both the 2022 Scoping Plan and the Energy Efficiency Action Plan. Furthermore, the project would also align with many of the energy-related policies and implementation measures included in the 2030 General Plan. Specifically, Policy EN-5, which encourages projects that reduce travel distances and reliance on the automobile.

All future buildings under the project would be all electric and would not feature natural gas utilities. The 2022 Scoping Plan identifies the transition away from the use of fossil fuels in all applications as key to the achievement of the goal of reducing statewide GHG emissions (CARB 2022). Because the project would not include natural gas infrastructure, it would align with the fossil fuel reduction goals of the 2022 Scoping Plan. The Energy Efficiency Action Plan identifies decarbonization as one of its primary goals. Building decarbonization is the effort to reduce or eliminate GHG emissions from buildings (CEC 2019). According to the Energy Efficiency Action Plan, buildings account for about 12 percent of statewide direct emissions (emissions generated on-site), primarily from onsite natural gas combustion for space and water heating. By excluding natural gas from future building design, the project would align with the goal of the Energy Efficiency Action Plan to decarbonize buildings. Therefore, the project would not conflict with the Energy Efficiency Action Plan.

Because the project would be all-electric, would result in increasingly energy efficient buildings, and would reduce VMT by increasing development density, the project would align with the building decarbonization and fossil fuel reduction goals of both the 2022 Scoping Plan and the Energy Efficiency Action Plan and would, therefore, not impede the implementation of these plans to achieve the state's goals of reducing fossil fuel consumption and increasing energy efficiency. For these reasons, the project would align with the reduction goals of both the 2022 Scoping Plan and the Energy Efficiency Action Plan. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

12 GEOLOGY, SOILS, AND MINERAL RESOURCES

INTRODUCTION

This chapter describes the geologic and soil setting within the plan area and vicinity, including descriptions of potential geologic hazards and the presence of mineral resources. Paleontological resources are also addressed. The agricultural suitability of the plan area is addressed in Chapter 5, “Agricultural Resources,” of this EIR. No comments regarding geology, soils, or mineral resources were received in response to the notice of preparation.

ENVIRONMENTAL SETTING

REGIONAL GEOLOGY

The present-day landscape of Sacramento County has been shaped over time by the ongoing processes of erosion and deposition. Material eroded from the ancestral Sierra Nevada, formed over 100 million years ago, was deposited onto the Sacramento Valley floor. Approximately 10 to 15 million years ago tectonic uplifts altered the geomorphology of the Sierra Nevada. Glaciation, volcanism, and erosion followed the uplifting, adding layers of sediment to the valley floor. Under the present geologic conditions, the alteration of the local geomorphology continues through stream erosion of the valley sediments and subsequent deposition in adjacent floodplains.

A "geomorphic province" is composed of an area of similar geologic origin and erosional/depositional history. Sacramento County is situated in portions of two geomorphic provinces. By far the largest portion of the county lies in the Great Valley province. A small area in the eastern part of the county is in the Sierra Nevada province. The Great Valley province is further divided into four geomorphic subunits; the plan area is within the Alluvial Plain geomorphic subunit, as described below:

> Alluvial Plain - To the east of the Sacramento River floodplain is an extensive area of former floodplain that has been highly dissected by subsequent stream erosion. This geomorphic subunit is comprised of older, Quaternary, deposits. This area is underlain by soil, which is characterized by layers of hardpan or dense, impervious clay.

PLAN AREA GEOLOGY

The plan area is located in an area heavily underlain by sediment. Aggregate mining has been a dominant activity near and within the plan area since the 1930s. A large portion of the plan area is still in various stages of gravel mining (e.g., active sand and gravel extraction areas, sedimentation ponds, drying beds, material conveyance, reclamation). A result of past and present mining activity is a landscape characterized by large mining pits with floors that are between 25 and 40 feet below grade with steep

slopes. Some of the mined areas have fill of variable thicknesses. This fill includes documented and undocumented fill, drying beds, and sediment within wash water ponds (see Figure 12-1).

Seismic Hazards

Faults in the Vicinity

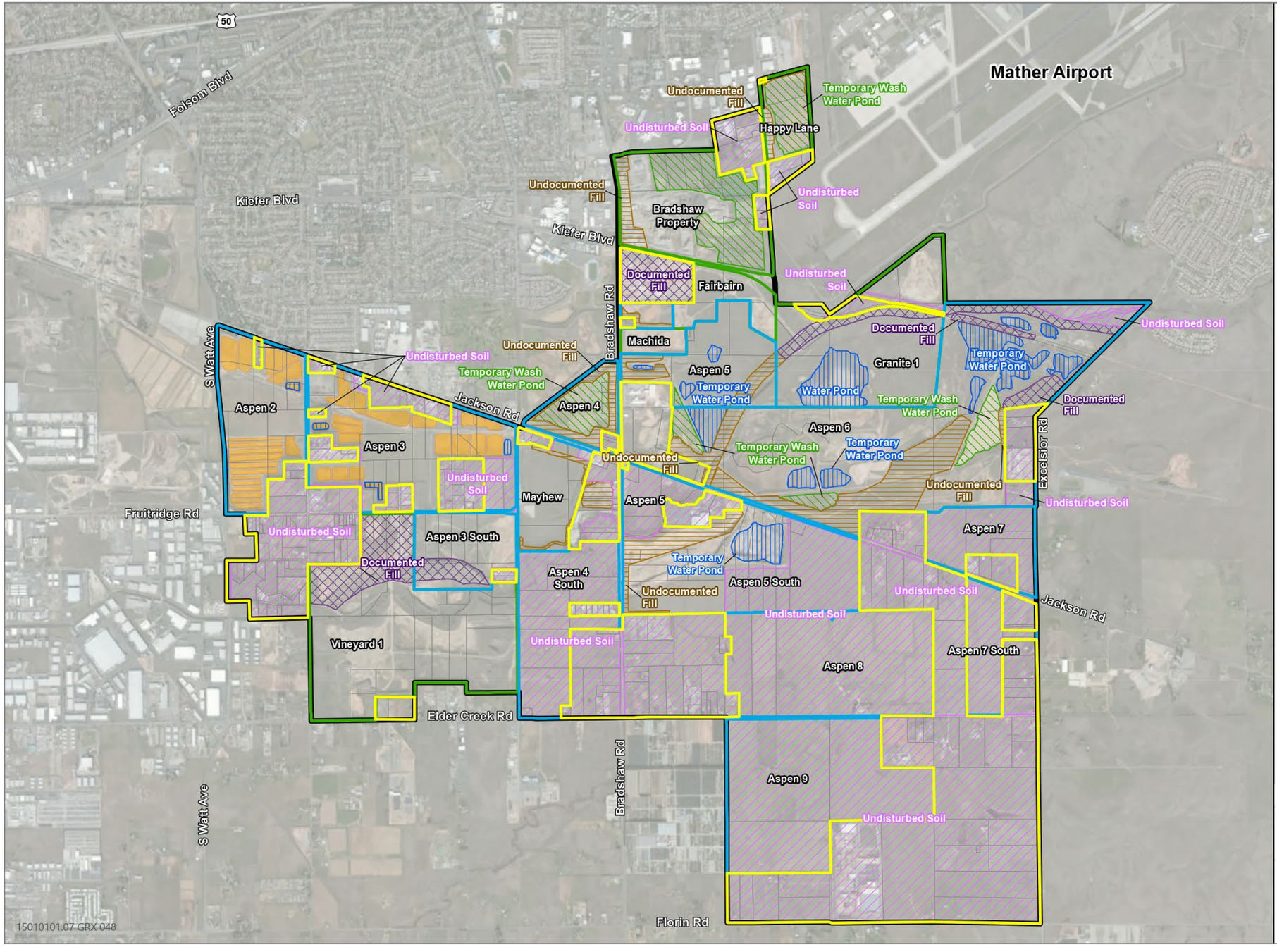
Active faults are largely considered those that have had movement within the last 11,000 years (within the Holocene or Historic time periods). There are no active faults located in the county; however, there is one known subsurface, inactive fault in northern Sacramento County, called the Willows Fault, which is in the vicinity of Citrus Heights near Antelope Road and is presumably inactive, with its last activity occurring 1.6 million years ago or longer. In addition to the Willows Fault, there are several subsurface inactive faults in the Delta. The Midland fault extends north from Bethel Island in the Delta to east of Lake Berryessa. Studies done on this fault suggest that activity may have occurred during the Pleistocene age and potentially even the Holocene age (10,000 to 200 years old); however, according to the California Geological Survey (CGS), Holocene activity is unconfirmed. This fault has been identified to be a pre-Quaternary fault (active 1.6 million years ago or longer). Another unnamed Delta fault is located further west of the Midland Fault. It is concealed where it passes beneath the westernmost tip of Sacramento County and may have been active within the past 11,000 years, although exact times of displacement are unknown. Oil and gas companies exploring the Delta area's energy potential have identified several subsurface faults, none of which show any recent surface rupture.

The Bear Mountain fault zone, which is associated with the Foothills Fault system, is located east of Sacramento County and trends northwest-southeast through Amador and El Dorado Counties. The portion of this fault zone closest to the county was last active at least 1.6 million years ago. According to CGS, faults in the Foothills Fault system are largely characterized by very slow slip rates (generally less than 0.01 millimeter per year) and seismic events occur in infrequent intervals.

The nearest known active fault that has been mapped on the C.W. Jennings Fault Activity Map is the Dunnigan Hills Fault located approximately 44 miles to the northwest of the plan area, although evidence of Holocene displacement is questionable (CGS 2010).

Potential for Seismic Activity

The intensity of ground shaking and its potential impact on structures is determined by the physical characteristics of the underlying soil and rock, building materials and workmanship; earthquake magnitude; location of the epicenter; and the character and duration of ground motion. Much of the county is located on alluvium, which increases the amplitude of earthquake waves. Ground motion lasts longer and waves are amplified on loose, water-saturated materials as compared with solid rock. As a result, structures located on alluvium typically suffer greater damage than those located on solid rock.



Legend

- Master Plan Boundary
- Documented Fill
- Temporary Water Pond
- Undisturbed Soil
- Undocumented Fill
- Temporary Wash Water Pond
- Drying Beds
- Granite Properties
- Teichert Properties
- Non-Participating Property

Notes:

1. Size and location of identified features are approximate and representative of their locations. Future conditions may be different.
2. World aerial imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source of aerial imagery is Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community.
3. Map displayed in California State Plane Coordinate System, Zone II, North American Datum of 1983 (NAD83), US Survey Feet.

0 0.25 0.5 1
Miles

Source: Image produced and provided by Langan, Treadwell & Rollo, adapted by Ascent in 2024.

Figure 12-1 Geotechnical Constraints in the Plan Area

While Sacramento County has experienced relatively little seismic activity, faulting in neighboring regions, especially the San Francisco Bay area and the Sierra Nevada, suggests that the county could be affected by future ground motion originating elsewhere.

The CGS has prepared a map of the state which shows the earthquake shaking potential of areas throughout California based primarily on an area's distance from known active faults. The map shows the east and central portions of the county in a relatively low intensity groundshaking zone, while the westernmost portion of the county is in a relatively moderate groundshaking zone (see Figure 12-2). The county, including the plan area, is located in an area which is noted to have some of the lowest groundshaking potential in the state.

LIQUEFACTION

Liquefaction is a process whereby the strength and stiffness of a soil is reduced by earthquake shaking or rapid cyclic loading. Sacramento County has two areas that have been suggested as posing potential liquefaction problems - the downtown Sacramento area and the Delta. The plan area is not located within or near the Delta or downtown Sacramento. However, past mining activities within the plan area could have created areas that are vulnerable to liquefaction particularly in areas where there are loose soils such as sedimentation ponds, wash water ponds, and drying beds.

SOILS AND SOIL HAZARDS

SOIL TYPES

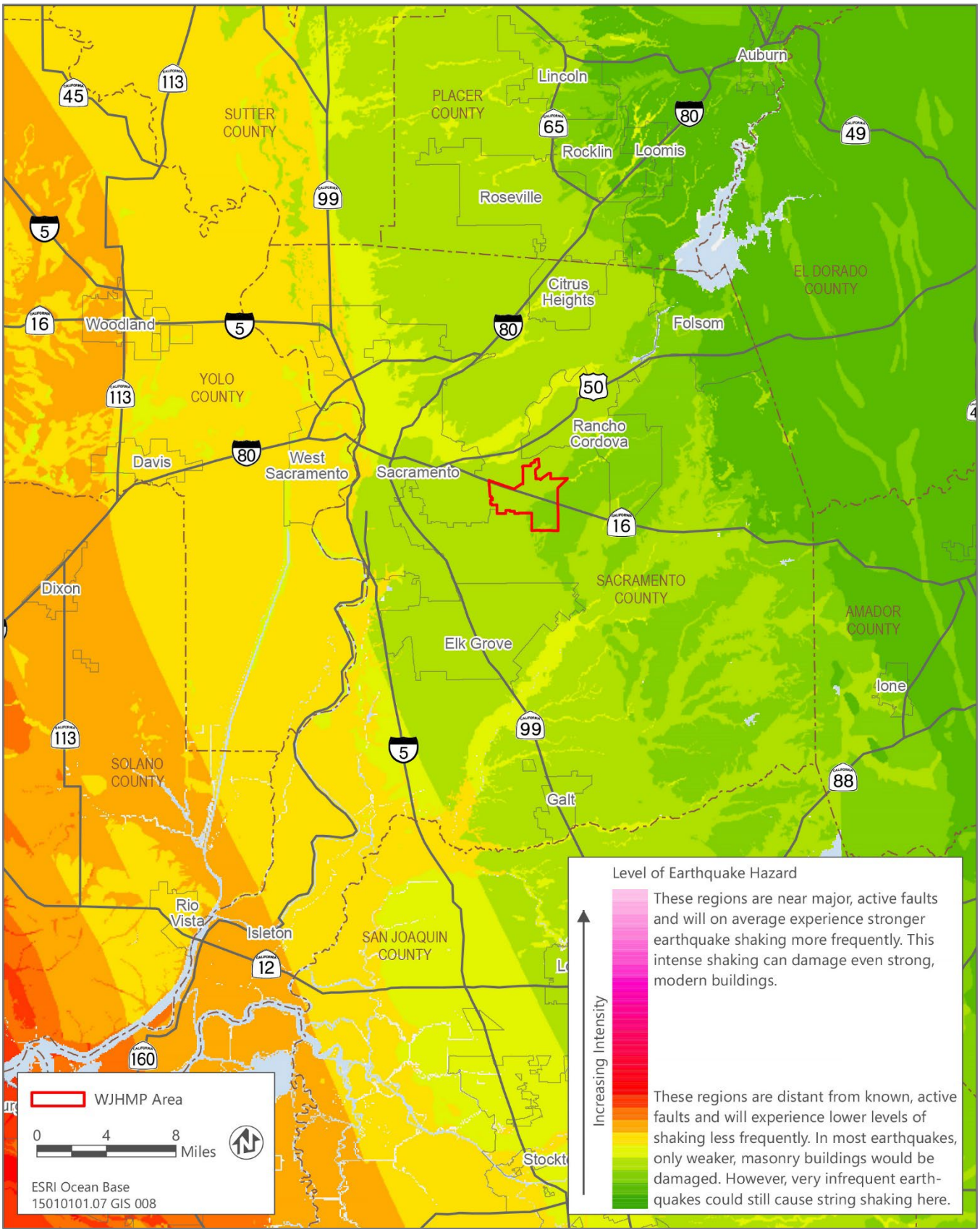
The soils of Sacramento County can be separated into three general classifications based on geographic factors: Delta soils, flood basin soils, and bench soils. The plan area is located within a portion of the county generally underlain by bench soils. Bench soils, elevated above the spreading basins, are river terraces. Due to erosion and leaching, these soils lack the high percentage of organic material found in the Delta and flood basin soils.

GENERAL SOIL MAP UNITS

Soils in Sacramento County can also be divided into eight broad landscape classifications, or groups, which are further divided into 16 soil associations. These soil associations are landscapes that have distinctive patterns of soils, relief, and drainage. The majority of soils located in the plan area are moderately well-drained soils that are moderately deep over a cemented hardpan, and well-drained and moderately well-drained soils that are very deep.

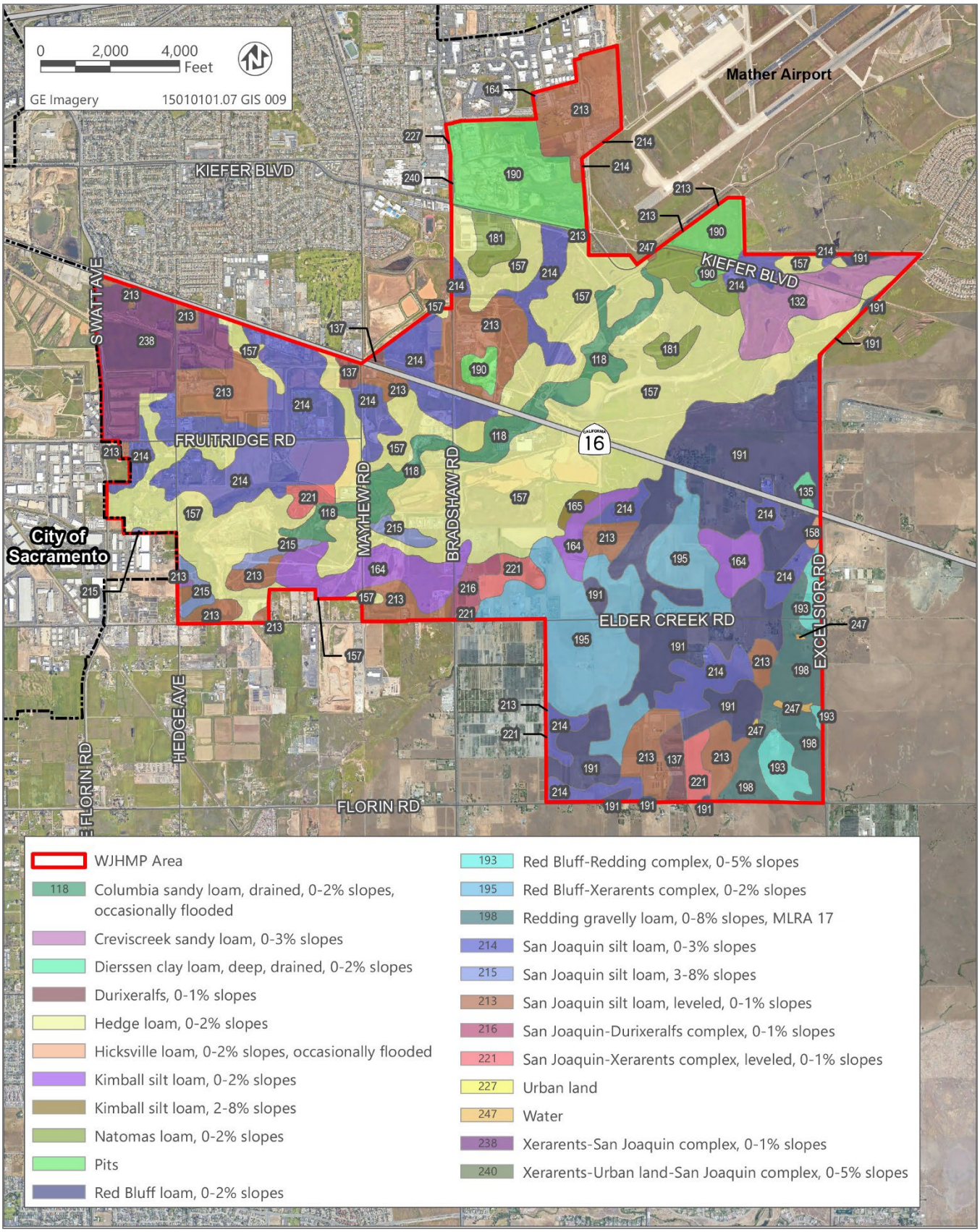
DETAILED SOIL MAP UNITS

Soil types can also be further classified into detailed soil map units, which can be used more specifically to determine the suitability and development potential of specific uses within a soil unit. For example, some soil units may have more potential for erosion or expansion, which may affect what types of land uses or structures are appropriate within that area. Each soil map unit is given a number, as shown in Figure 12-3 and Table 12-1. The plan area contains 20 specific soil units and areas of water, pits, and urban land.



Source: Adapted by Ascent in 2023.

Figure 12-2 Earthquake Shaking Potential for Sacramento County



Sources: Data downloaded from NRCS in 2022; adapted by Ascent in 2023.

Figure 12-3 Soils in the Plan Area

Table 12-1 Plan Area Soil Types

Map Unit Symbol	Map Unit Name	Acres in Plan Area	Percent of Plan Area
118	Columbia sandy loam, drained, 0 to 2 percent slopes, occasionally flooded	193.7	3.3%
132	Creviscreek sandy loam, 0 to 3 percent slopes	149.1	2.5%
135	Dierssen clay loam, deep, drained, 0 to 2 percent slopes	10.5	0.2%
137	Durixeralfs, 0 to 1 percent slopes	39.1	0.7%
157	Hedge loam, 0 to 2 percent slopes	1,573.8	26.6%
158	Hicksville loam, 0 to 2 percent slopes, occasionally flooded	6.4	0.1%
164	Kimball silt loam, 0 to 2 percent slopes	231.5	3.9%
165	Kimball silt loam, 2 to 8 percent slopes	10.6	0.2%
181	Natomas loam, 0 to 2 percent slopes	123.7	2.1%
190	Pits	300.3	5.1%
191	Red Bluff loam, 0 to 2 percent slopes	745.2	12.6%
193	Red Bluff-Redding complex, 0 to 5 percent slopes	75.0	1.3%
195	Red Bluff-Xerarents complex, 0 to 2 percent slopes	430.2	7.3%
198	Redding gravelly loam, 0 to 8 percent slopes, MLRA 17	181.3	3.1%
213	San Joaquin silt loam, leveled, 0 to 1 percent slopes	634.3	10.7%
214	San Joaquin silt loam, 0 to 3 percent slopes	794.3	13.4%
215	San Joaquin silt loam, 3 to 8 percent slopes	55.8	0.9%
216	San Joaquin-Durixeralfs complex, 0 to 1 percent slopes	26.6	0.4%
221	San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes	87.1	1.5%
227	Urban land	0.9	0.0%
238	Xerarents-San Joaquin complex, 0 to 1 percent slopes	234.9	4.0%
240	Xerarents-Urban land-San Joaquin complex, 0 to 5 percent slopes	1.8	0.0%
247	Water	7.9	0.1%
Totals for Plan Area		**5,913.8**	**100.00%**

Source: Natural Resources Conservation Service, Web Soil Survey, National Cooperative Soil Survey. November 21, 2023.

Soil Hazards

Different types of soil have different characteristics, and some may be more suitable for development than others. Based on these characteristics, some soil types may be more prone to certain soil hazards, such as those described below.

Subsidence

Subsidence is the gradual settling or sinking of the earth's surface with little or no horizontal motion. Sacramento County is affected by five types of subsidence: compaction of unconsolidated soils by earthquake shaking, compaction by heavy structures, the erosion of peat soils, peat oxidation, and fluid withdrawal. The pumping of water for residential, commercial, and agricultural uses from subsurface aquifers causes the greatest amount of subsidence in Sacramento County.

Settlement

Settlement (downward soil movement due to settling or weight from above) can cause major structural damage to a building. The plan area is vulnerable to settlement because of the presence of existing fill, drying beds, and wash water ponds. Settlement will occur in fill areas due to the weight of new fill and foundation pressures. Settlement will also occur in drying beds and wash water ponds due to consolidation-related settlement of drying bed material and sediment in wash water ponds. Factors that can influence the extent and rate of settlement include the amount of new fill placed, foundation system type, foundation loads, and thickness of drying bed material where present (LTR 2014: 21).

Expansive Soils

Expansive soils represent approximately one-third of all soil types in Sacramento County. These soils are largely composed of clays, which greatly increase in volume when water is absorbed and shrink when dried. Expansive soils are of concern because building foundations may rise during the rainy season and fall during the dry season in response to the clay's action. If movement varies under different parts of the building, the result is that foundations crack, structural portions of the building are distorted, and doors and windows are warped so that they do not function properly.

The plan area is vulnerable to soil expansion due to the presence of drying beds and wash water ponds. Soil in drying beds and wash water ponds includes sand, clay, and silt with moderate to high expansion potential.

Landslides

Landslide is a general term used for a falling mass of soil and rock. The topography of the unmined area is relatively flat, so the potential for landslide risk would be very low. The plan area does include mining pit slopes which have the potential for landslides, particularly if the slopes are comprised of less stable material. However, mining pit slopes are required to maintain slope stability standards during mining as well as part of quarry reclamation during closure to protect the public safety and the environment, which would reduce the potential for landslide risk.

SOIL EROSION

Erosion is a natural geological process by which landforms are worn down or reshaped by wind and water and the eroded material is deposited elsewhere. While natural erosion of undisturbed areas occurs in Sacramento County, it does not appear to pose a significant hazard to property. The principal area of erosion in the county is along portions of the American River bluffs.

Sacramento County, through grading and drainage ordinances, provides measures to limit or restrict construction practices which might cause erosion. For mining sites within the plan area, the State requires reclamation plans that have site-specific sediment and erosion control criteria that are used for the monitoring and reclamation of these mining sites through the Surface Mining and Reclamation Act (SMARA).

NATURALLY OCCURRING ASBESTOS

Asbestos is a naturally occurring, fibrous silicate mineral mined for its useful properties, such as thermal insulation, chemical and thermal stability, and high tensile strength (greater resistance to longitudinal stress before rupturing). It was at one time commonly used as an acoustic insulator and for thermal insulation in building materials. It is often found occurring naturally in ultramafic rock, a rock closely related to serpentinite, but can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock.

Asbestos is classified as a known human carcinogen by state, federal, and international agencies and is identified as a toxic air contaminant. Asbestos poses a health risk only when it becomes friable, such as through disturbance or damage, and can cause serious health problems including lung disease and cancer if inhaled into the lungs.

Because it occurs naturally, asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations (broken or crushed serpentinite and ultramafic rocks) in areas where is occurs. The Sacramento Metropolitan Air Quality Management District (SMAQMD) determined that naturally occurring asbestos is present within areas of eastern Sacramento County, particularly along the county's boundary within El Dorado County, including within the city of Folsom and the unincorporated community of Rancho Murieta. However, all of the areas with naturally occurring asbestos are located east of Grant Line Road. Asbestos is not anticipated to be located within, or in the vicinity of, the plan area.

MINERAL RESOURCES

Mineral resources in Sacramento County include sand, gravel, clay, gold, silver, peat, topsoil, lignite, natural gas, and petroleum. The principal resources in production are aggregate (sand and gravel) and natural gas. Resource conservation issues associated with natural gas production and the lesser minerals are not currently considered vital within Sacramento County and conservation issues related to mineral resources focus primarily on aggregate production.

The Aggregate Resource Areas (ARAs) are areas identified by the County as having valuable mineral resources and are to be protected by the County as open space until the area is mined. According to Figure 12-4, approximately two-thirds of the plan area is within an area that has significant aggregate deposits. The western and northern portions of this area have been mined out, but the remainder are still Prime ARAs, as identified by the Department of Conservation.

SMARA requires the State Geologist to classify land into Mineral Resource Zones (MRZ) based on the known or inferred mineral resource potential of that land. MRZs are divided into six categories. The categories for establishing MRZ's are as follows:

MRZ-1: Areas where available geologic information indicates that little likelihood exists for the presence of significant mineral resources.

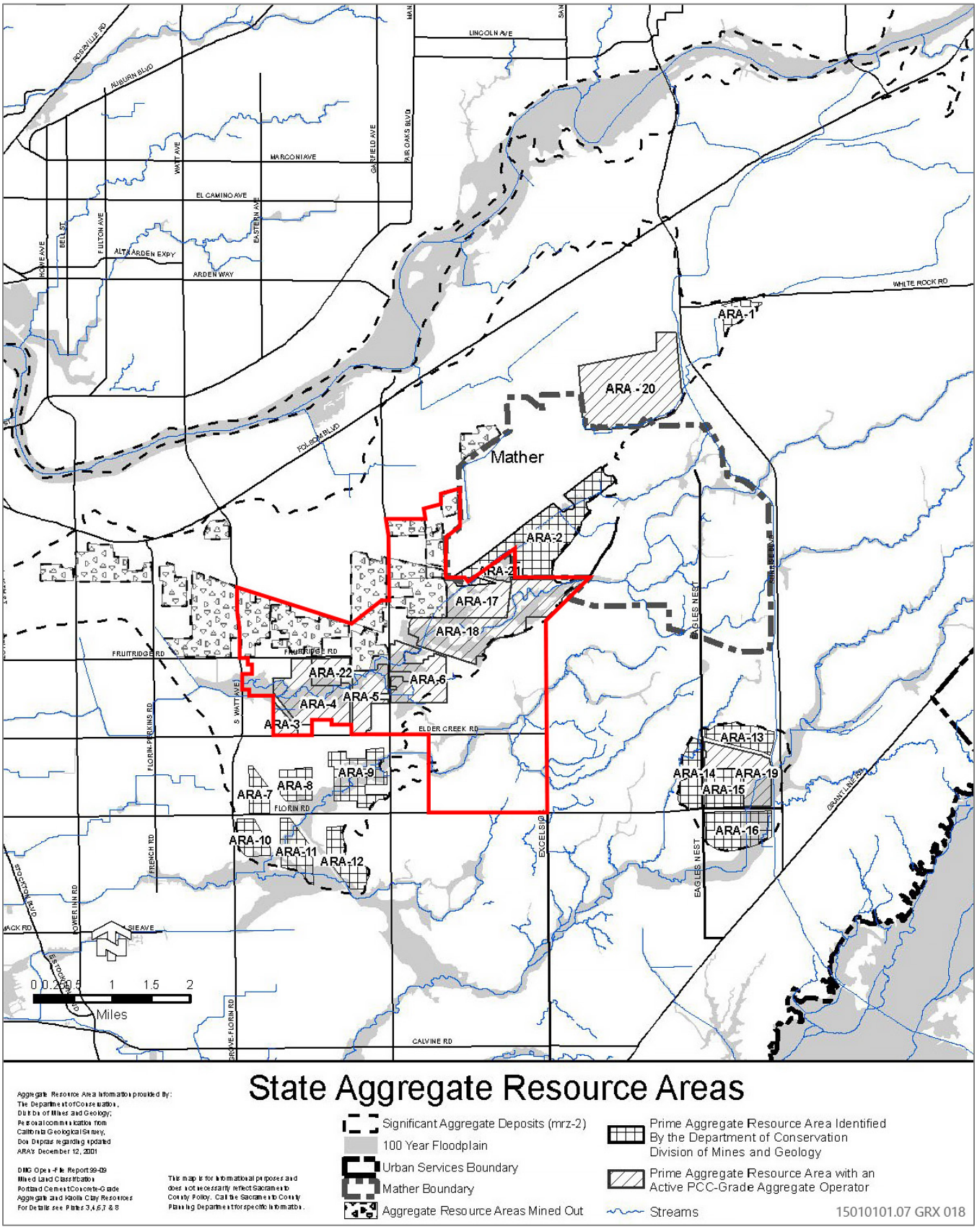
MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered mineral deposits that are significant inferred resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration work could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration work within these areas could result in the reclassification of specific localities into MRZ-2a or MRZ-2b categories. MRZ-3 is divided on the basis of knowledge of economic characteristics of the resource.

MRZ-3b: Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration work could result in the reclassification of all or part of these areas into the MRZ-2a or MRZ-2b categories.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources.



Source: Conservation Element, Sacramento County General Plan of 2005-2030.

Figure 12-4 Aggregate Resource Areas

As shown in the MRZ definitions above, MRZ-2a and MRZ-2b are the areas containing substantial aggregate resources. These areas contain geologic evidence which indicates that valuable resources are available and are of primary concern. The areas within the plan area identified by Figure 12-4 as Prime ARAs are located in these zones. Mining areas within the plan area are located in MRZ-1.

PALEONTOLOGICAL

The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources (SVP 2010). Most practicing paleontologists in the United States adhere closely to the SVP's assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists and reflect the currently accepted standard practices. Many federal, state, county, and city agencies have either formally or informally adopted the SVP's standard guidelines for the mitigation of adverse construction-related impacts on paleontological resources. The SVP has helped define the value of paleontological resources and, in particular, indicates the following:

- Vertebrate fossils and fossiliferous (fossil-containing) deposits are considered significant nonrenewable paleontological resources and are afforded protection by federal, state, and local environmental laws and guidelines.
- A paleontological resource is considered to be older than recorded history, or 5,000 years before present, and is not to be confused with an archaeological resource.
- Invertebrate fossils are not significant paleontological resources unless they are present within an assemblage of vertebrate fossils or they provide undiscovered information on the origin and character of the plant species, past climatic conditions, or the age of the rock unit itself.
- A project paleontologist, special interest group, lead agency, or local government can designate certain plant or invertebrate fossils as significant.

In accordance with these principles, the SVP outlined criteria for screening the paleontological potential of rock units and established assessment and mitigation procedures tailored to such potential (SVP 2010). Table 12-2 lists the criteria for high-potential, undetermined, and low-potential rock units.

Table 12-2 Paleontological Potential Criteria

Paleontological Potential	Description
High	Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.
Undetermined	Geologic units for which little to no information is available.
Low	Geologic units that are not known to have produced a substantial body of significant paleontological material.

Source: SVP 2010.

Sacramento County is not located in an area considered to be highly sensitive for paleontological resources present in fossil-bearing soils and rock formations, although few areas are considered sensitive. The plan area is not located within an area considered sensitive paleontological resources and most of the area has been excavated and/or filled. Although not discussed in the SVP standards, artificial fills, surface soils, and high-grade metamorphic rocks do not contain paleontological resources. While such materials were originally derived from rocks, they have been altered, weathered, or reworked such that the discovery of intact fossils would be rare. Therefore, there is little potential for the plan area to contain fossils or paleontological resources (Sacramento County 2010:15-9).

REGULATORY SETTING

FEDERAL

UNIFORM BUILDING CODE

Development within the State of California is required to at least adhere to the provisions of the Uniform Building Code (UBC). The UBC sets forth minimum standards related to development, seismic design, building siting and grading. Local jurisdictions typically adopt standards that are as stringent, if not more stringent, than those of the UBC. California has adopted the UBC but has amended it to better meet the need of the specific conditions of California.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR CONSTRUCTION

The National Pollutant Discharge Elimination System (NPDES) permit program in California has been delegated to the SWRCB and RWQCBs. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the “maximum extent practicable” through the use of best management practices (BMPs). Compliance with the NPDES General Construction Permit requires that any construction activity affecting 1 acre or more obtain the General Construction Activity Storm Water Permit. Permit applicants are required to submit a notice of intent to the SWRCB and to prepare a stormwater pollution prevention plan

(SWPPP), which identifies BMPs that will be implemented to reduce construction effects on receiving water quality. The BMPs include sediment and erosion control measures and other measures to control potential chemical contaminants. Examples of construction BMPs identified in SWPPPs include: using temporary mulching, seeding, or other stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw wattles or silt fencing, to minimize the amount of uncontrolled runoff that could enter drains or surface water.

Construction activities subject to the general construction activity permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce nonstormwater discharges to storm sewer systems and other waters. The permit also requires dischargers to consider the use of post-construction permanent BMPs that would remain in service to protect water quality throughout the life of the project. All NPDES permits also have inspection, monitoring, and reporting requirements. The General Permits also require permittees to develop a Construction Site Storm Water Runoff Control Program and a Post Construction Storm Water Management Program.

State

Alquist-Priolo Earthquake Fault Zoning Act

The 1972 Alquist-Priolo Earthquake Fault Zoning Act regulates development near active faults to mitigate the hazard of surface fault rupture. Under this act, the State Geologist is required to delineate earthquake fault zones along known active faults in California. Cities and counties affected by these zones must regulate certain developments within these zones and withhold development permits for sites until geologic investigations demonstrate that they are not threatened by surface displacements from future faulting. For the purposes of this act, an active fault is defined as a fault that has “had surface displacement within Holocene time” (about the last 11,000 years). Sacramento County is not affected by Earthquake Fault Zones.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 requires the State Geologist to delineate liquefaction and earthquake-induced landslide hazard zones in the state. Cities and counties affected by these hazard zones must regulate certain developments within these zones and withhold development permits for sites until geologic investigations demonstrate they are not threatened by liquefaction, earthquake, or induced landsliding during future earthquakes. Sacramento County is located outside of the Seismic Hazard Mapping Zones (CGS 2023).

California Uniform Building Code

The California Uniform Building Code (CBC) contains the minimum standards for design and construction in California. All development in California is subject to the regulations of

the CBC. Local standards other than the code may be adopted if those standards are stricter. The code adopts all the standards associated with seismic engineering detailed in the UBC. The CBC is adopted and incorporated into Title 16 of the Sacramento County Code and all construction, alteration, moving, demolition, repair and use of any building or structure within Sacramento County shall be made in conformance with the CBC.

Surface Mining and Reclamation Act

SMARA establishes state policy for the reclamation of mined lands and the conduct of surface mining operations to minimize adverse environmental impacts and to reclaim mined land to a usable condition. SMARA is comprised of two primary elements that together govern the reclamation of mined lands:

- California Surface Mining Reclamation Act of 1975, as amended (Public Resource Code §2710 et seq.); and
- State Mining and Geology Board implementing regulations (California Code of Regulations, Title 14, §3500 et seq.).

This law and its implementing regulations require review and enforcement of mandated reclamation plans for each mine. These plans are required to identify the proposed or potential end uses that mined land will be returned to after completion of mining. Financial assurances (guarantees, such as a performance bond or letter of credit) are required to be posted by the operator with the County to ensure that reclamation can still be accomplished in the case of abandonment or in the event that the mine operator does not fulfill its reclamation obligations. SMARA also requires that an annual inspection be conducted to review the progress of reclamation, compliance with an approved reclamation plan, and to ensure that the financial guarantee amount is appropriate.

SMARA reclamation plans are required to have the following components that are related to geology and soils of mining sites:

- A map showing the existing and final topography of the mined lands.
- A description of measures to protect public health and safety.
- A description of proposed or potential end uses.
- A description of the impact of reclamation on future mining in the area.
- A description of the environmental setting of the mine, including geology, soils, and seismicity.
- A description of the effects of reclaimed conditions on surrounding land uses.
- A demonstration that final slopes will have a minimum factor of safety for the end use.
- A description of the manner in which backfilling, regrading, slope stabilization, scarification, ripping, and recontouring will occur.
- A description of drainage, sediment, and erosion control measures, with an emphasis on protecting surrounding land and water resources.

- A description of the manner in which topsoil will be salvaged and resoiling will occur.
- A description of the manner in which the site will be revegetated, including performance standards and monitoring.

Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations

The California Air Resources Board has adopted an Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (17 CCR 93105). SMAQMD has mapped areas of serpentine and ultramafic rock in eastern Sacramento County and determined that these areas are subject to the ATCM (SMAQMD 2017). The plan area is not in the portion of the county subject to the ATCM.

NPDES Construction General Permit for Stormwater Discharges Associated with Construction Activity

Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under SWRCB's Construction General Permit (Order WQ 2022-0057-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation.

Coverage under the Construction General Permit is obtained by submitting permit registration documents to SWRCB that include a risk-level assessment and a site-specific storm water pollution prevention plan (SWPPP) that identifies an effective combination of erosion control, sediment control, and non-stormwater best management practices (BMPs). The Construction General Permit requires that the SWPPP define a program of regular inspections of the BMPs and, in some cases, sampling of water quality parameters.

NPDES Industrial General Permit for Stormwater Discharges Associated with Industrial Activity

Businesses, including but not limited to manufacturing, mining, recycling, salvage, auto dismantling, transportation with on-site maintenance or fueling, hazardous waste storage or treatment, and cement production, are required to obtain coverage under the State General Industrial Permit (SWRCB's Water Quality Order No. 97-03-DWQ). The State of California requires that these facilities file a Notice of Intent (NOI), which is an application for permit coverage, and develop a SWPPP, as well as conduct monitoring and sampling to determine if pollutants are leaving the facility in stormwater runoff.

Local

Land Grading and Erosion Control

The Sacramento County Land Grading and Erosion Control Ordinance (Sacramento County Code Ch. 16.44) was established to minimize damage to surrounding properties

and public rights-of-way; limit degradation to the water quality of watercourses; and curb the disruption of drainage system flow caused by the activities of clearing, grubbing, grading, filling, and excavating land. The ordinance establishes administrative procedures, minimum standards of review, and implementation and enforcement procedures for the control of erosion and sedimentation that are directly related to land grading activities.

Surface Mining Ordinance

The County's Surface Mining Ordinance is established in Chapter 20.04 of the County Code. The purpose and intent of Chapter 20.04 of the County Code is to ensure the continued availability of important mineral resources, while regulating surface mining operations as required by SMARA, PRC Section 2007 (relating to annual reporting requirements), and State Mining and Geology Board regulations for surface mining and reclamation practice, to ensure that:

- Adverse environmental effects are prevented or minimized and mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses.
- The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment.
- Residual hazards to public health and safety are eliminated.

Sacramento County 2030 General Plan

The following 2030 General Plan policies pertaining to geology and soils are applicable to the project.

- **Policy SA-1.** The County shall require geotechnical reports and impose the appropriate mitigation measures for new development located in seismic and geologically sensitive areas.
- **Policy AG-28.** The County shall actively encourage conservation of soil resources.
- **Policy CO-161.** As a condition of approval for discretionary projects, require appropriate mitigation to reduce potential impacts where development could adversely affect paleontological resources.
- **Policy CO-162.** Projects located within areas known to be sensitive for paleontological resources, should be monitored to ensure proper treatment of resources and to ensure crews follow proper reporting, safeguards and procedures.
- **Policy CO-163.** Require that a certified geologist or paleoresources consultant determine appropriate protection measures when resources are discovered during the course of development and land altering activities.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community Plans relevant to the WJHMP are the Cordova Community Plan and the Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan does not contain specific policies related to geology, soils, or mineral resources.

VINEYARD COMMUNITY PLAN

- **Policy NER 7.** Continue to utilize the Surface Mining Combining Zone for the preservation of aggregate resources and for the protection of area residents through mitigation provisions contained within that zone.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

Impacts to geology, soils, and mineral resources would be significant if implementation of the project would:

- directly or indirectly cause potentially substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist of the area or based on other substantial evidence of a known fault,
    - strong seismic ground shaking,
    - seismic-related ground failure, including liquefaction,
    - landslides, or
    - unsafe exposure to naturally occurring asbestos;
    - result in substantial soil erosion or the loss of topsoil;
- be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code, creating substantial direct or indirect risks to life or property;

- have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or
- result in the loss of availability of a known mineral resource that would be of value to the region or the state or a locally important mineral resource recovery site delineated on a land use plan.

ISSUES NOT DISCUSSED FURTHER

ADVERSE EFFECTS ASSOCIATED WITH RUPTURE OF AN EARTHQUAKE FAULT, SEISMIC GROUND SHAKING, SEISMIC-RELATED GROUND FAILURE, OR LANDSLIDES

There are no known earthquake faults located within the plan area, or in the vicinity, so there would be no risk of fault rupture. In addition, Sacramento County is in one of the areas least prone to earthquake shaking potential, as depicted in Figure 12-2. Further, compliance with the Uniform Building Code would ensure that buildings are built to withstand minor groundshaking. Though there is topographical variation on the site, there are no major bluffs or other features that would make the plan area susceptible to damage related to landslides. Based on the existing regulatory framework that governs new development within Sacramento County, which addresses safety issues and requires that development adhere to the CBC and other relevant policies, regulations, and design standards related to seismic activity, seismically induced groundshaking effects are not expected to be substantial hazards. The project would not exacerbate any risk of exposure of people or structures to adverse effects related to fault rupture, strong seismic ground-shaking, or landslides. Therefore, the potential for these geologic hazards will not be discussed further in this chapter.

It is also important to note that environmental impact analyses under CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents unless the project might cause or risk exacerbating environmental hazards or conditions that already exist (CCR Section 15126.2[a]). In those specific instances, it is the project's impact on the environment and not the environment's impact on the project that compels an evaluation of how future residents or users may be affected by exacerbated conditions (*California Building Industry Association v. Bay Area Air Quality Management District* [2015] 62 Cal. 4th 369). Project construction and operation would not create new seismic events or exacerbate existing seismic hazards, because the project improvements would involve limited excavation that would not alter existing geologic, seismic, and fault conditions in the region.

EXPOSURE TO NATURALLY OCCURRING ASBESTOS

The plan area is not located in or near an area with naturally occurring asbestos. There is no potential for substantial adverse effects due to naturally occurring asbestos exposure and this topic is not discussed further.

USE OF SEPTIC TANKS OR ALTERNATIVE WASTEWATER DISPOSAL SYSTEMS

All future development within the plan area would be connected to the public sewer system, and the use of septic tanks or alternative wastewater disposal systems would not be required. As a result, there would be no impact involving septic systems.

METHODOLOGY

In general, the geotechnical characteristics of the plan area determine the potential for structural and safety hazards, as well as mineral resource impacts that could occur with development of the project. Existing conditions data was summarized from the previously identified documents and resources as well as geotechnical reports prepared by LTR which can be found in Appendix G of this EIR. LTR has divided its analysis between participant properties (i.e., the applicant-controlled properties in Districts 1 and 2) and non-participant properties in the Future Planning Areas. The project was analyzed in terms of its consistency with Sacramento County General Plan policies and potential for geologic or soils-related hazards to people and property in the plan area, as well as potential for mineral resource impacts.

WEST JACKSON HIGHWAY MASTER POLICIES

The proposed WJHMP does not include policies related to geology, soils, and mineral resources.

IMPACTS AND ANALYSIS

IMPACT GS-1: EXACERBATE UNSTABLE SOIL CONDITIONS

The results of LTR's preliminary geotechnical investigation showed that in general the fill and native soil within the plan area are not saturated and are "sufficiently stiff and dense to resist soil liquefaction, lateral spreading[1], and cyclic densification[2] with the exception of sediments in wash water ponds." The locations of the wash water ponds are shown in Figure 12-1. Some of the sediments in the wash water ponds in mining sites may consist of fine grained, loose silty sand and sand. However, the magnitude of liquefaction-induced settlements in the wash water ponds has not been evaluated. Therefore, mitigation for these areas should include prohibiting development in former wash pond areas until the magnitude of potential liquefaction in these areas is evaluated (LTR 2014: 20-21). Common geotechnical practices and soil conditioning could be used to effectively remediate the liquefaction potential. Impacts would be **less than significant with mitigation**.

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[1] Lateral spreading is the limited, lateral movement of gently to steeply sloping, saturated soil deposits caused by earthquake-induced liquefaction.

[2] Cyclic densification is a phenomenon in which non-saturated, loose soil is densified by earthquake vibrations, causing ground-surface settlement.

MITIGATION MEASURES

MITIGATION MEASURE GS-1: LIQUEFACTION REMEDIATION OF WASH WATER PONDS

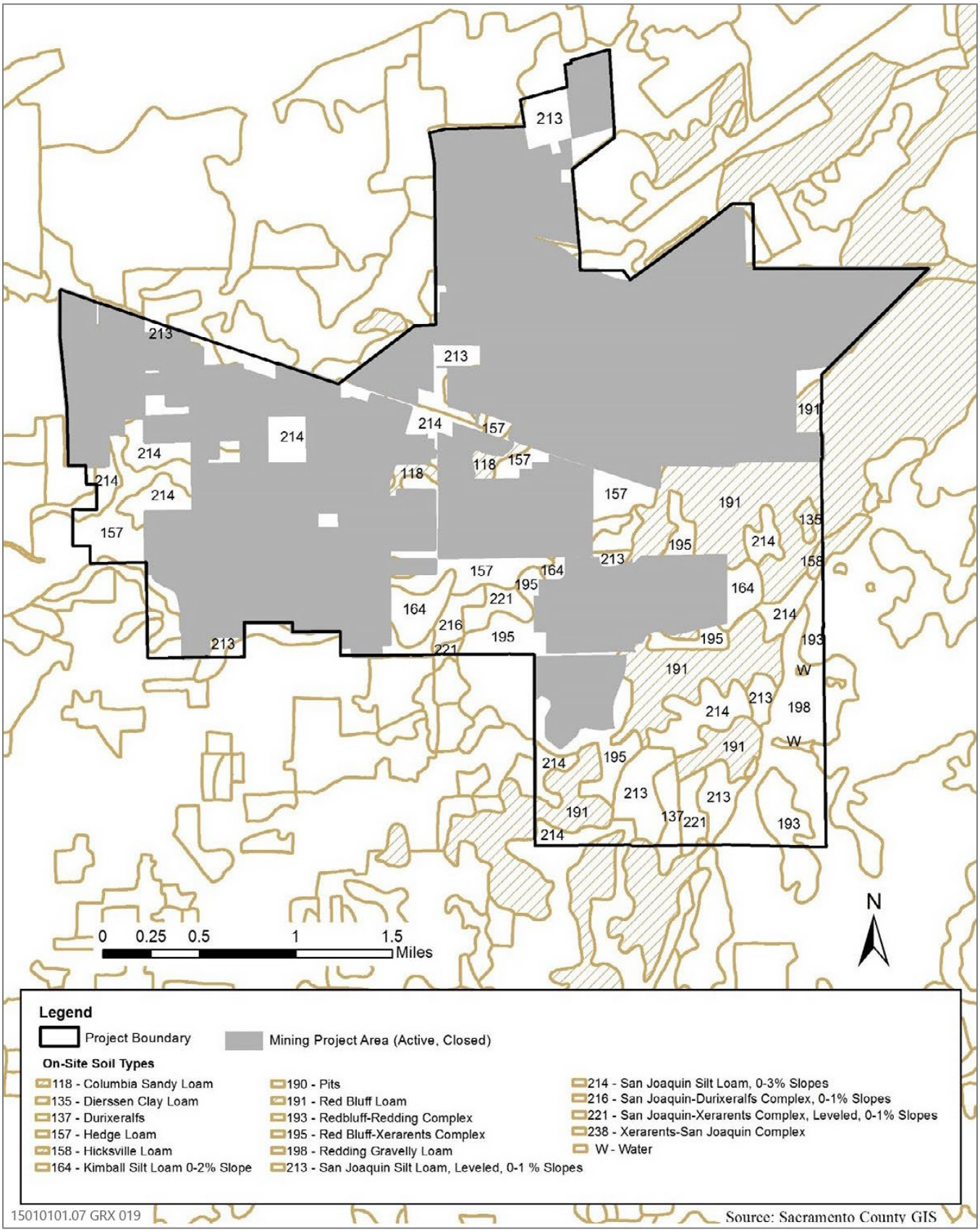
Prior to development in areas that have sediment from wash water ponds future project applicants or their designee shall prepare a technical study to identify the liquefaction potential of the area. The technical study shall include all necessary measures to provide sufficient stability to resist soil liquefaction. A technical report documenting the effectiveness of such measures in eliminating soil liquefaction shall be provided to the County prior to approval of future entitlements.

IMPACT GS-2: RESULT IN SUBSTANTIAL SOIL EROSION

According to the National Resources Conservation Service (NRCS) web soil survey, there are 20 different soil units within the plan area. However, aggregate mining activity of applicant properties has disturbed or removed many of the soil units identified in the NRCS survey. Figure 12-5 shows active and closed/reclaimed mining sites and NCRS survey soil units outside of mining sites. Most of the soil units outside of mining sites are located in the southeastern portion of the plan area. The Soil Survey of Sacramento County, California, issued by the US Department of Agriculture Natural Resources Conservation Service (2023) indicates that soils outside of mining sites range in depth from very deep to shallow and range in hazard of erosion potential from slight to moderate. The soil units identified as having a moderate erosion hazard (units 193 and 198) are comprised of more than one soil type – one of which was determined to have a slight to moderate erosion hazard. Both soil units are located in the southeastern corner of the plan area where residential and commercial uses are proposed.

The project would comply with the Sacramento County Land Grading and Erosion Control Ordinance (Sacramento County Code Ch. 16.44). The ordinance was established to minimize damage to surrounding properties and public rights-of-way; limit degradation to the water quality of watercourses; and curb the disruption of drainage system flow caused by the activities of clearing, grubbing, grading, filling, and excavating land. The ordinance establishes administrative procedures, minimum standards of review, and implementation and enforcement procedures for the control of erosion and sedimentation that are directly related to land grading activities.

The project would also comply with the NPDES Construction General Permit, which requires that any construction activity affecting 1 acre or more of soil implement a SWPPP, which identifies BMPs to reduce construction effects on receiving water quality. Development of industrial facilities within the plan area would comply with the NPDES Industrial General Permit, which also requires development of a SWPPP and implementation of BMPs to reduce pollutants in stormwater runoff. The BMPs include sediment and erosion control measures and other measures to control potential chemical contaminants. Also refer to Chapter 14, “Hydrology and Water Quality.”



Source: Provided by Sacramento County in 2017

Figure 12-5 Mining Areas

Because development projects are subject to the County Land Grading and Erosion Control Ordinance and the State Water Resources Control Board stormwater permitting requirements, any development in the plan area would be subject to erosion and sediment control measures as a matter of course. As such, the project would not result in substantial soil erosion or the loss of topsoil and impacts to soil resources are considered to be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT GS-3: RESULT IN SOIL SUBSIDENCE

Areas that potentially have large amounts of fill within the plan area are along proposed roadways and in drying beds located in mining areas. Fill areas that are underlain by drying bed material would have potential for additional settlement caused by the consolidation of the drying bed material. Compression may vary from 0.5 inch for fill up to 5 feet thick to about 5 inches for fill on the order of 35 feet thick. Most of this settlement would occur during and shortly after construction (LTR 2014: 21). Because site grades over drying beds would be raised from 5 feet to 20 feet, with some areas requiring 30 feet of fill, the resulting weight of this new fill would result in consolidation settlement of approximately 1.5 to 12 inches. Building foundations underlain by 15 or more feet of new fill would not have additional settlement because of relatively light foundation pressures. However, building foundations underlain by less than 15 feet of new fill *and* drying bed material may settle an additional 0.25 to 0.66 inches (LTR 2014: 22).

Because the amount of settlement would vary by location, the ability of fills and disturbed native soil to safely support planned structures should be evaluated on a case-by-case basis through site-specific geotechnical studies (LTR 2014: 21). Sacramento County requires completed geotechnical reports for each project within areas known to contain fill in order identify potential hazards that may impact a project, as well as measures to eliminate the hazardous soil conditions. The geotechnical report would identify appropriate actions to address subsidence, such as soil amendments to achieve a specific soil composition and requirements for soil compaction. These projects would also adhere to the CBC, which would ensure the maximum necessary protection available for development within areas known to contain documented and undocumented fill and would avoid substantial risk to life and property. Therefore, although the WJHMP would result in development of potentially unstable soils, which could be affected by construction, the project would not result in substantial on- or offsite subsidence following completion of required studies and compliance with established building regulations. Impacts would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT GS-4: EXPOSURE TO LANDSLIDES

LTR conducted a slope stability analysis on mining areas that had the tallest and steepest slopes. This included permanent fill slopes between 1.5:1 and 2:1 (horizontal:vertical). The LTR analysis indicated that permanent slopes in the range of 1.5:1 to 2:1 have a Factor of Safety ranging from 1.65 to 1.88. A Factor of Safety is the ratio of the allowable stress to the actual stress. A Factor of Safety of 1 represents that the stress is at the allowable limit; less than 1 represents likely failure, and greater than 1 represents the stress is within the allowable limit. The higher the number of Factor of Safety, the safer the structure or product is. The minimum static Factor of Safety for permanent slopes should typically be 1.5:1 or greater, which is a typical standard by which Sacramento County and the State Department of Conservation's Division of Mine Reclamation evaluate the long-term stability of reclaimed mining slopes. Thus, permanent slopes within the plan area would not be susceptible to landslides during static conditions. LTR also conducted a seismic stability evaluation and concluded that the risk of landslide on slopes inclined at 1.5:1 or shallower during a strong earthquake is low (LTR 2014: 24).

Slopes with exposed sand and gravel may be susceptible to erosion and shallow surface instability. However, according to LTR, these types of failures would generally be less than 5 feet thick and pose no risk to the overall stability of the slopes. For mitigating this condition, LTR recommends making the slope shallower, landscaping, installing slope armor such as rip rap, and/or performing routine maintenance (LTR 2014: 24).

Permanent slopes in the plan area have Factors of Safety that are considered appropriate for permanent slopes. Mitigation is required to address the potential for minor slope failures on exposed slopes of 1.5:1 or steeper. Possible minor failures such as sloughing or slumping pose minimal risk to overall slope stability and could be mitigated; impacts would be **less than significant with mitigation**.

MITIGATION MEASURES

MITIGATION MEASURE GS-4: EROSION PROTECTION ON EXPOSED SLOPES

To prevent erosion and shallow surface instability, there shall be a condition of approval for the project that slope stabilization features such as landscaping and/or slope armor (such as rip rap) shall be installed on all exposed slopes of 1.5:1 or steeper during construction of urban development. Conditions of approval for the project shall also require the project applicant to provide routine maintenance of the landscaping and slope armor.

IMPACT GS-5: EXPOSURE TO EXPANSIVE SOILS

Low to moderate expansion potential exists in near-surface soil and the majority of fill, both of which are comprised of sand, clay, and silt. Moderate to high expansion potential exists in some of the soil (also comprised of sand, silt, and clay) located in drying beds and wash water ponds (LTR 2014: 23).

Development in the plan area may result in the addition of new structures and roadways located in areas containing expansive soils that could cause structural damage to both foundations and roads. To address this, the construction permitting process within Sacramento County requires completed geotechnical reports for development located within areas known to contain expansive soils; the purpose of this is to identify potential hazards that may impact a project as well as measures to eliminate the hazardous soil conditions. Measures related to eliminating potential hazards of expansive soils can include the excavation of silts and clays to a suitable depth, the replacement of these materials with engineered fill and compacted granular fill material, or the mixing of onsite soils to achieve a consistent soil composition. Implementation of these measures effectively removes expansive soils from an area or ensures that any expansion and contraction under the foundation is evenly distributed. In addition, structural design of any development in the plan area must conform to the criteria detailed in the UBC and CBC (Chapters 16, 18, 33 and the Appendix to Chapter 33).

Any project-related development would need to adhere to the existing UBC and CBC, which would ensure the maximum necessary protection available for development within areas known to contain expansive soils. Therefore, implementation of the project would not exacerbate any risk to life or property from impacts related to expansive soils; this impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT GS-6: POTENTIAL DESTRUCTION OF BURIED PALEONTOLOGICAL RESOURCES

Construction of the project would involve grading activities and trenching for infrastructure development. As described above, the plan area is not located within an area considered sensitive paleontological resources and most of the area has been excavated and filled. However, ground disturbing activities would have the potential to unearth buried paleontological resources.

With the implementation of the Mitigation Measure GS-6, below, impacts would be reduced to **less than significant with mitigation** because construction workers and operational personnel would be alerted to the possibility of encountering paleontological resources and professionally accepted and legally compliant procedures for the discovery of paleontological resources would be implemented in the event of a find.

MITIGATION MEASURES

MITIGATION MEASURE GS-6: ON-SITE TRAINING FOR PALEONTOLOGICAL RESOURCES

Future project applicants, subsequent developers, or their designee, shall retain a qualified paleontologist to conduct an on-site training that will alert all construction personnel and operational staff about the possibility of encountering fossils. The appearance and types of fossils likely to be seen during construction will be described.

Construction personnel shall be trained in the proper notification procedures should fossils be encountered.

If paleontological resources are discovered during earthmoving activities, operations shall immediately be immediately halted within 100 feet of the find and the County Environmental Coordinator shall be notified. Future project applicants, subsequent developers, or their designee, shall retain a qualified paleontologist for identification and salvage of fossils so that construction delays can be minimized. If large specimens are discovered, the paleontologist shall have the authority to halt or divert grading and construction equipment while the finds are removed. The paleontologist shall be responsible for implementing all tasks summarized below:

- In the event of discovery, salvage of unearthed fossil remains, typically involving simple excavation of the exposed specimen but possibly also plaster-jacketing of large and/or fragile specimens, or more elaborate quarry excavations of richly fossiliferous deposits.
- Recovery of stratigraphic and geologic data to provide a context for the recovered fossil remains, typically including description of lithologies of fossil-bearing strata, measurement and description of the overall stratigraphic section, and photographic documentation of the geologic setting.
- Laboratory preparation (cleaning and repair) of collected fossil remains to a point of curation, generally involving removal of enclosing rock material, stabilization of fragile specimens (using glues and other hardeners), and repair of broken specimens.
- Cataloging and identification of prepared fossil remains, typically involving scientific identification of specimens, inventory of specimens, assignment of catalog numbers, and entry of data into an inventory database.
- Preparation of a final report summarizing the field and laboratory methods used, the stratigraphic units inspected, the types of fossils recovered, and the significance of the curated collection.

IMPACT GS-7: OBSTRUCTION OF ACCESS TO MINERAL RESOURCES

As noted above, mineral resources in Sacramento County have been classified in a number of ways over the years, including as MRZs, ARAs, and MRAs. Although the MRZs (broad categories that take into account only geological factors) indicate that much of the county lies over mineral resources ranging from areas with “known mineral occurrences of undetermined mineral resource significance” to “areas underlain by mineral deposits where geologic data indicate that significant measured resources are present,” only a relatively small portion of the county lies over known high-quality mineral resources that are available for extraction. These areas, which reflect the most recent mineral resource classification for the county, are the ARAs.

Mining operations have been occurring within the plan area vicinity since the 1930s but there are still a number of ARAs within the plan area where the aggregate has not been completely extracted. Figure 12-4 shows that ARAs 3, 4, 5, 6, 17, 18 and 21 are located

within the plan area. It is reasonable to assume that the project would not obstruct access to mineral resources in these ARAs. Both Project Applicants are in the mineral extraction business and their primary goal is to remove as much aggregate from the plan area as possible before developing the plan area with urban uses. This is reflected in the Project Applicants' request to keep the existing Aggregate Resource Area overlay in place on the General Plan Land Use Diagram and the existing Surface Mining Combining Zone overlay in the Cordova and Vineyard Community Plan land use diagrams.

The only scenario where the project may obstruct access to mineral resources is where urban development in applicant properties obstructs the extraction of minerals in non-applicant properties. However, most of the mining in the plan area is complete. There are limited mineral resources within the plan area that are suitable for resources extraction. Although non-applicant properties may lack access to an on-site processing plant, mined materials can be transported by truck or conveyor to existing plants for processing. The project would not obstruct extraction of the remaining minerals in the plan area. In addition, because most of the mining is complete, the project would result in a beneficial use of the plan area to provide housing and employment opportunities to the region. Therefore, implementation of the WJHMP would have a low potential to result in the loss of availability of mineral resources; impacts will be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

13 HAZARDS AND HAZARDOUS MATERIALS

INTRODUCTION

This chapter describes the hazardous materials and waste in the plan area resulting from past and ongoing uses of the property, includes a description of applicable federal, state and local regulations and policies that influence hazardous materials and waste, and identifies the project's potential to create a significant hazard for the public or the environment. The term "hazardous substances," as used herein, refers to both hazardous materials and hazardous wastes. Sacramento County uses the definition of "hazardous materials" from the California Health and Safety Code, Division 20, Chapter 6.95, Section 25501, which states:

> "Hazardous material" means a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous wastes, and any material that a handler or the unified program agency (administering agency) has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment."

This definition is not limited to just those chemicals with long-term detrimental effects. It also includes materials that present a hazard because of their physical nature (i.e., those that are explosive, corrosive, or flammable). In addition to hazardous materials, this chapter also addresses emergency response plans and wildland fire hazards. Airport land use consistency, including potential safety hazards, is addressed in Chapter 7, "Airport Compatibility." No comments regarding hazards and hazardous materials were received in response to the notice of preparation.

ENVIRONMENTAL SETTING

HAZARDOUS MATERIALS

The plan area is located in an area historically used for mining, agriculture, and rural home sites. In addition, there are industrial areas which include warehouses, landscape supply yards, construction materials processing plants, and truck and equipment yards. Typical sources of hazardous materials include known contaminated properties; businesses that handle (use and/or collect) contaminants; household contaminants; landfills; lead-based paint; asbestos (in buildings predating 1970); and pesticides, fertilizers, and petrochemicals associated with agriculture. These sources can contaminate soil, ground and/or surface water, and buildings.

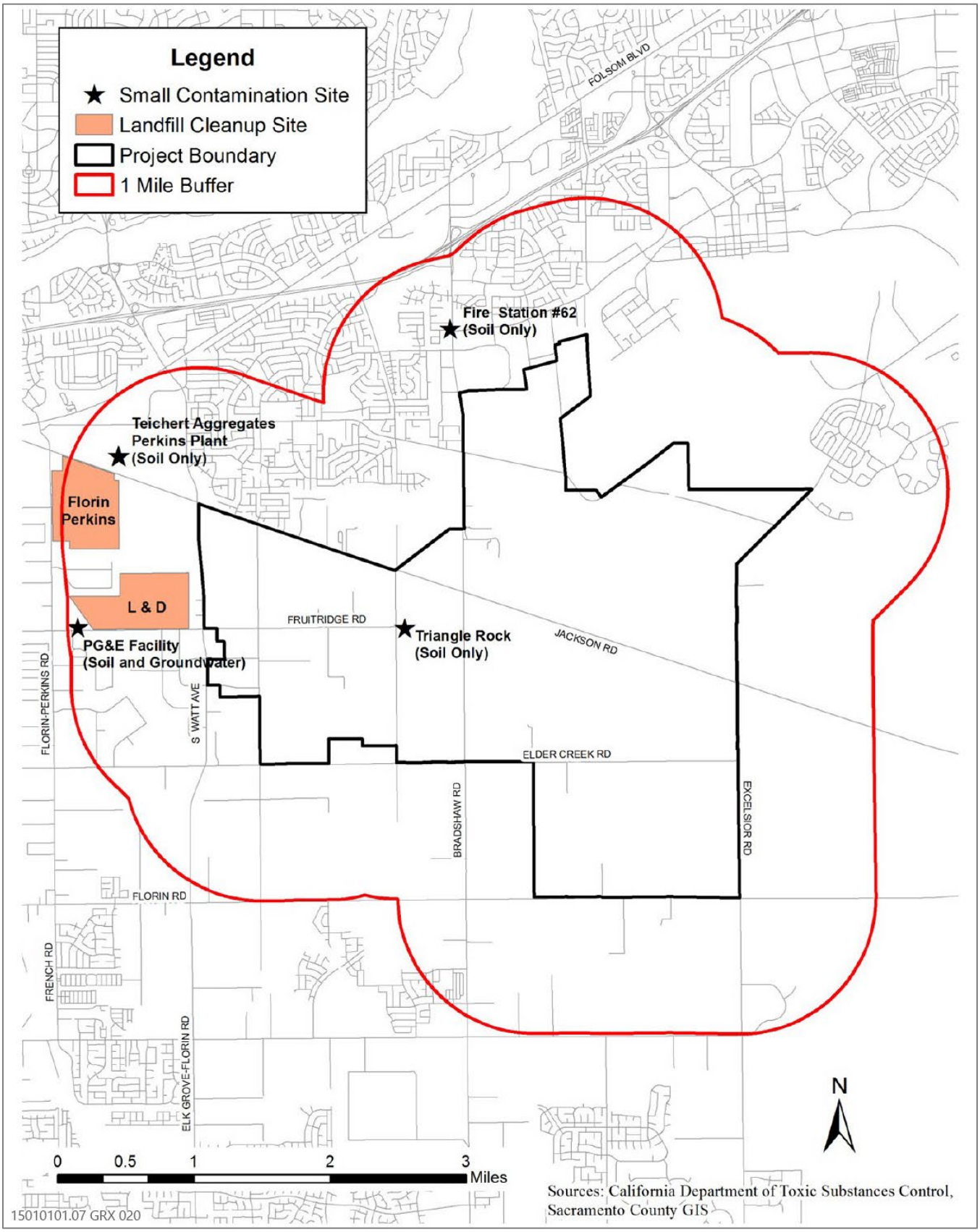
As described further below, former and existing uses of the plan area and immediate vicinity have resulted in a couple large remediation sites, as well as landfill sites, with known contamination documented by local, state, and federal agencies.

Known Small Contamination Sites

There are many types of businesses that handle hazardous wastes or materials, including automotive businesses, gas stations, buildings supplies (concrete, painting, lumber, etc.), and dry cleaners. For many of these businesses, the contamination source is an above-ground or underground storage tank that has developed a leak. The contaminants may be contained solely within the surrounding soils, or they may pass into groundwater and cause a migrating contamination plume. There are four small disclosed known contaminated sites within one 1 mile of the plan area (Figure 13-1). The following is a description of each site.

- Triangle Rock (within the plan area): Minor petroleum contamination occurred at this Leaking Underground Storage Tank (LUST) cleanup site within the plan area. According to Sacramento County Environmental Management Department (EMD) staff (Hawkins, pers. comm., 2015), the leaking tank was removed from the site in 1997 and soil remediation has subsequently been completed. Central Valley Water Board evaluated Site conditions against the criteria in the Low-Threat Closure Policy and determined the Site poses a low threat to human health, safety, and the environment. The Central Valley Water Board issued a No Further Action letter and closed the case on October 30, 2022 (SWRCB 2024a).
- PG&E Facility (outside the plan area): This is another LUST cleanup site that is 0.9 miles west of the plan area. Remediation efforts included both soil and groundwater remediation. Groundwater monitoring was initiated in October 2003. Nine wells were monitored quarterly. According to Sacramento County Environmental Management Department (EMD) staff (Erickson, pers. comm., 2015), the groundwater plume moved south across Fruitridge Road and not east toward the plan area. Remediation has since been completed, and the case was closed on December 20, 2017 (SWRCB 2024b).
- Teichert Aggregates Perkins Plant (outside the plan area): Soil contamination resulting from mercury was discovered at the facility. Remediation has since been completed, and the case was closed on January 21, 2009 (SWRCB 2024b).
- Fire Station #62 (outside the plan area): Soil contamination resulting from gasoline was discovered at the station. Remediation has since been completed, and the case was closed on November 10, 1987 (SWRCB 2024c).

All known small contamination sites identified above have since remediated and the cases have been closed. There is no further action needed, and there is no potential for impacts.



Source: Data adapted by Ascent in 2024.

Figure 13-1 Small Contamination Sites and Landfill Cleanup Sites

KNOWN LARGE CONTAMINATED SITES

The nearest Superfund sites listed in the US Environmental Protection Agency's (EPA's) National Priorities List are within the former Mather Air Force Base (AC&W Disposal Site) approximately 1.0 mile to the northeast and the former Sacramento Army Depot approximately 1.4 miles to the west (EPA 2023). These sites are large areas of contamination and are discussed below.

MATHER AIR FORCE BASE

Mather Air Force Base (Mather AFB) hosted military operations from 1918 until it was decommissioned in 1993. Since the base was decommissioned, most of the land formerly occupied by the base has been transferred to the ownership of Sacramento County, and the airfield now operates as a public airport. As is common with operational and decommissioned military bases, several areas of Mather AFB have been contaminated with or contain hazardous materials that were used during base operations. Approximately 89 contaminated sites have been identified within Mather AFB as a result of aircraft fueling and maintenance activity, fire protection training, corrosion control, past disposal activities, and landfilling; 75 of these sites have been remediated. Key contaminants include solvents, petroleum products, and various solid wastes. In addition, pesticides, herbicides, asbestos, PCBs, radon, ordnance, metals (including lead), low-level radioactive waste, landfill gases, and medical waste that were used, stored, or generated as part of base operations have been identified as potential sources of contamination.

Because Mather AFB was operated as a federal military installation, EPA, US Department of Defense, US Air Force, California EPA, and the California Department of Toxic Substance Control (DTSC) oversee hazardous substances investigations and remediation. Remediation is currently underway at several locations at the former Mather AFB. Existing soil contamination is undergoing remediation using in situ treatment (soil vapor extraction [SVE] and/or bioventing) and excavation and transport of contaminated soils to an on-site ex situ bioremediation facility. There are currently nine sites with active SVE/biovent remediation. Three on-site landfills have been capped and closed, and a minimum of 30 years of post-closure monitoring and maintenance is being conducted. Soil sampling is also occurring at the location of two above-ground storage tanks.

Two contaminated groundwater plumes have migrated beyond the property boundaries of Mather AFB and have extended into the plan area. The Site 7 Plume has migrated approximately 4,000 feet to the southwest, beyond Mather AFB's southern boundary and into the northeast portion of the plan area. The source of this plume was a former borrow pit used as a landfill that was located near the plan area.

Remediation is currently underway at several locations at the former Mather AFB. A complex network of extraction wells has been installed to control the plume migration. Groundwater is extracted from these wells, treated and then discharged back into the groundwater system. This process is being used to remediate the Site 7 Plume. Long-

term groundwater monitoring supplements active remediation. Post-closure groundwater monitoring is also required for the closed Site 7 landfill (URS Group 2015: ES-3).

FORMER SACRAMENTO ARMY DEPOT

The Sacramento Army Depot (Depot) was a supply depot operated by the US Army (Army) that functioned primarily as a receiving, maintenance, and disposal site for various electronic materials. The Depot was in operation as a military base between 1945 and 1995. The main source of contamination within the Depot was from the metal-plating operations and associated solid waste and waste waters. The wastes were burned and/or buried or discharged into unlined sewage lagoons at the Depot site (EPA 1995). Investigations by the Army during the 1980s identified a former burn pit as a source of volatile organic compound (VOC) groundwater contamination. Groundwater sampling yielded evidence of contamination expanding beyond Depot boundaries. Additional investigations identified four sites that had the highest potential for release of contaminants to the environment. Contaminants detected at the site include semi-volatile and VOCs, pesticides, polychlorinated biphenyls (PCBs), and metals (EPA 2024).

VOCs have been detected in groundwater on- and offsite. Heavy metals have also been detected in onsite groundwater in Morrison Creek sediment immediately downstream of the Depot. Two contaminated plumes were identified beneath the Depot with one plume containing the greatest concentration of VOC detected at the Depot while the other plume was a smaller VOC-contaminated plume (EPA 1995).

Soil remediation was conducted on three of the contamination sites and groundwater extraction and treatment was conducted on the fourth site. Soil vapor extraction was performed on the former burn pit and another site that had contamination due to tank leakage. Soil excavation, stabilization and consolidation were implemented for the third soil remediation site that was an oxidation lagoon. During the 1990s the Army installed groundwater treatment units and a network of vertical and horizontal groundwater extraction wells for groundwater remediation. The groundwater treatment units were shut down in February 2000 due to VOC concentrations in the groundwater meeting Sacramento County sanitary sewer system discharge requirements. Currently, groundwater is being pumped from eight extraction wells and discharged directly to the Sacramento Regional Wastewater Treatment Plant (EPA 1995). Furthermore, the Depot is located southwest of the plan area where groundwater flows east to west, advancing groundwater further away from the plan area.

LANDFILL SITES

L AND D LANDFILL

The L and D Landfill site is near the western boundary of the plan area (0.1 miles to the west) and is comprised of two waste management units, LF-1 and LF-2. LF-1 is the original unlined portion of the landfill and is comprised of the East Pit and the West Pit. LF-2 is lined and includes a leachate collection and removal system. Disposal activities occurred in the LF-1 management unit from the mid-1970s to the 1990's. In 1996,

disposal activities were transferred to the LF-2 unit and this unit is still in operation (SCS Engineers 2017:1).

Since 1987, monitoring wells at the landfill have detected VOCs in groundwater samples. There are two distinct aquifer zones beneath the site. The current groundwater extraction system is comprised of seven extraction wells along the southern perimeter of the site and one well on the eastern border (SCS Engineers 2017:3). In addition to this groundwater extraction system, the landfill operates a landfill gas (LFG) extraction system to prevent VOC's from escaping to groundwater and to control lateral migration of LFG. This system will continue to be inspected and maintained during the 30-year post-closure period, or as long a gas continues to be detected at levels requiring control (Raney 2015:6.0-26). There are also networks of background and detection monitoring wells and corrective action wells. Groundwater monitoring includes groundwater, leachate, surface water, and air stripper sampling (SCS Engineers 2017:26).

FLORIN PERKINS LANDFILL

The Florin Perkins Landfill (FPL) is a closed landfill site that is 0.6 miles to the west of the plan area. Groundwater flows to the southeast (toward the plan area) from the FPL site.

Located on a site that was extensively mined, FPL operated between February 1994 and February 2005. The landfill is comprised of three fill areas – the North Fill Area, South Fill Area, and East Fill Area. Prior to January 2005, the landfill was permitted to accept non-hazardous solid and inert waste. There are eleven monitoring wells on site, which are designated as background, detection, or corrective action monitoring wells, depending on their location relative to a fill area. Some of these monitoring wells function as both detection and background monitoring wells, depending on which fill area is monitored. Samples from offsite ground water monitoring wells are also collected. Since 2002, groundwater samples have been collected semi-annually. Tests on groundwater below the landfill have detected elevated concentrations of two VOCs, methylene chloride, and trichlorofluoromethane (TCFM). TCFM in groundwater could be hazardous to receptors because it is a dense slightly soluble organic compound that could be inhaled in vapor form (Raney 2015:4.0-11). As of October 29, 2021, the latest compliance inspection reported minor violations and determined that the FPL was between 90 to 95 percent successfully remediated (DTSC 2023).

LEAD, ASBESTOS, AND OTHER HAZARDOUS MATERIALS IN BUILDINGS

Lead and lead compounds have historically been used in many products found around our homes, for example: paint, ceramics, pipes, plumbing materials, gasoline, batteries, ammunition and cosmetics. In 1978, the Federal government banned the use of lead-based paint in housing. There are a few structures within the plan area that were built prior to 1978 and could contain lead-based paint.

Asbestos is a naturally occurring, fibrous silicate mineral that was commonly used as an acoustic insulator and in thermal insulation (fire proofing and other building materials) prior to 1989, when it was banned by the US EPA due the health issues it can cause if

the fibers are inhaled. Some of the older structures within the plan area could contain asbestos. In addition to being used in building materials, asbestos can also be found occurring naturally in portions of eastern Sacramento County, within Folsom, south of Folsom, and Rancho Murieta. As discussed in Chapter 12, “Geology, Soils, and Mineral Resources,” asbestos does not occur naturally within the plan area or the vicinity.

In addition, other common items present in buildings, such as electrical transformers, fluorescent lighting, electrical switches, heating/cooling equipment, and thermostats, can contain hazardous materials that may pose a health risk if not handled and disposed of properly. Among these hazardous materials are PCBs, which were used in hundreds of industrial and commercial applications because of their non-flammability, chemical stability, high boiling point, and electrical insulating properties. Equipment in the plan area that might contain PCBs includes electrical equipment and thermal insulation material (e.g., fiberglass, felt, foam, or cork). Older, pole-mounted electrical transformers can also contain PCBs.

Transport of Hazardous Materials

Hazardous materials, hazardous wastes, and petroleum products are a subset of the goods routinely shipped along the transportation corridors adjacent to the plan area. In California, unless specifically exempted, it is unlawful for any person to transport hazardous waste unless the person holds a valid registration issued by the DTSC. Three agencies maintain searchable databases that track hazardous material releases in reportable quantities: EPA maintains the Hazardous Materials Incident Report System that contains data on hazardous material spill incidents reported to the US Department of Transportation (DOT); the California Office of Emergency Services (OES) maintains the California Hazardous Materials Incident Report System that contains information on reported hazardous material accidental releases or spills; and SWRCB’s Site Cleanup Program maintains information on reported hazardous material accidental releases or spills. DOT also provides grants to local agencies for preparation and training for hazardous materials incidents through its Hazardous Materials Emergency Preparedness Program administered by OES.

Sensitive Receptors

There are sensitive receptors within the plan area boundaries but because of the semi-rural nature of the area, the density of these receptors is low. There are no hospitals, daycare centers, or senior care facilities currently located within the plan area. However, there is an elementary school (Sierra Enterprise) within the plan area. Additional sensitive receptors located near the plan area are depicted in Chapter 6, “Air Quality”, Figure 6-1.

Schools

Children are particularly susceptible to long-term effects from emissions of hazardous materials. Therefore, locations where children spend extended periods of time, such as schools, are particularly sensitive to hazardous air emissions and accidental release associated with the handling of extremely hazardous materials, substances, or wastes.

The only school located within the plan area is Sierra-Enterprise Elementary School, located along the western plan area boundary. Other nearby schools include Golden Empire Elementary School and Rosemont High School in the Elk Grove School District, which are located roughly 0.4 miles and 0.5 miles northwest of the plan area, respectively.

Wildland Fire Hazards

While all of California is subject to some degree of wildfire hazard, there are specific features that make certain areas more hazardous. The California Department of Forestry and Fire Protection (CAL FIRE) is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (Public Resources Code [PRC] 4201-4204 and Government Code 51175-89). When development spreads into less densely populated, often hilly areas, it increases the number of people living in areas that are prone to wildfire.

The plan area is within a local responsibility area that CAL FIRE has identified as a non–very high fire hazard severity zone (CAL FIRE 2023). The Sacramento Metropolitan Fire District is responsible for providing fire protection services to the plan area.

Regulatory Setting

Federal

EPA has primary responsibility for enforcing and implementing federal laws and regulations pertaining to hazardous materials. Applicable regulations are contained mainly in Titles 29, 40, and 49 of the CFR. Hazardous materials, as defined in the CFR, are listed in 49 CFR 172.101. Management of hazardous materials is governed by the laws summarized below. These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials.

40 CFR 112 requires specific facilities to prepare, amend and implement Spill Prevention Control and Countermeasures (SPCC) plans. The SPCC rule is part of the Oil Pollution Prevention regulation, the purpose of which is to prevent oil discharges to navigable waters and adjoining shorelines. The SPCC rule applies to facilities that are engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using or consuming of oil and store oil above or below ground in volumes greater than 1,320 U.S. gallons and 42,000 U.S. gallons, respectively.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) is the principal federal legislation regulating hazardous waste. Under the RCRA, EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous substances. RCRA imposes reporting, permitting, and operational control requirements on businesses or individuals that generate, treat, store, or dispose of hazardous materials or hazardous waste. RCRA is implemented by Title 40 of the Code of Federal Regulations. The 1984 amendments to RCRA involve stringent monitoring of landfills and underground storage

tanks for hazardous substances. EPA has delegated authority for many RCRA requirements to DTSC.

Comprehensive Environmental Response, Compensation and Liability Act

In response to the need to clean up hazardous waste sites created before implementation of RCRA, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in 1980. CERCLA, also called the Superfund Act, provided broad federal authority and created a trust fund for addressing releases and threatened releases of hazardous substances that could endanger public health or the environment.

EPA is responsible for compiling the National Priorities List for known or threatened release sites of hazardous substances, pollutants, or contaminants and provides oversight of Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards. The former Mather AFB and Depot are listed as national Superfund sites with ongoing remediation activities at several sites on each former base property.

Superfund Amendments and Reauthorization Act

The risk of exposure to hazardous waste as a result of RCRA and CERCLA was addressed in the Superfund Amendments and Reauthorization Act (SARA) of 1986. As a result of SARA, the federal Occupational Safety and Health Administration (OSHA) published hazardous waste cleanup regulations in 29 CFR 1910.120.

Toxic Substances Control Act

The Toxic Substances Control Act provides EPA with authority to require reporting, recordkeeping and testing, and restrictions related to chemical substances and/or mixtures. The Toxic Substances Control Act addresses the production, import, use, and disposal of specific chemicals including PCBs, asbestos, radon, and lead-based paint.

Clean Air Act

Regulations under the Clean Air Act (42 USC 7401 et seq., as amended) are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store more than a threshold quantity of regulated substances to develop a risk management plan that includes hazard assessments and response programs to prevent accidental releases of listed chemicals.

Occupational Safety and Health Administration Worker Safety Requirements

OSHA is responsible for ensuring worker safety. OSHA sets federal standards for implementation of workplace training, exposure limits, and safety procedures for handling hazardous substances and addressing other potential industrial hazards. OSHA also establishes criteria by which each state can implement its own health and safety program. The Hazard Communication Standard (CFR Title 29, Part 1910) requires that workers be informed of the hazards associated with the materials they

handle. Workers must be trained in safe handling of hazardous materials, use of emergency response equipment, and building emergency response plans and procedures. Containers must be labeled appropriately, and material safety data sheets must be available in the workplace.

Hazardous Materials Transportation Act

DOT has developed regulations in Titles 10 and 49 of the CFR pertaining to the transport of hazardous substances and hazardous wastes. The Hazardous Materials Transportation Act is administered by the Research and Special Programs Administration of DOT. The act provides DOT with a broad mandate to regulate the transport of hazardous materials, with the purpose of adequately protecting the nation against the risk to life and property that is inherent in the commercial transportation of hazardous materials. DOT regulations that govern the transportation of hazardous materials are applicable to any person who transports, ships, causes to be transported or shipped, or who is involved in any way with the manufacture or testing of hazardous materials packaging or containers.

Federal Insecticide, Fungicide, and Rodenticide Act

Pesticides are regulated under the Federal Insecticide, Fungicide and Rodenticide Act by EPA. This includes labeling and registration of pesticides as to how they may be used. EPA delegates pesticide enforcement activities in California to the California Department of Pesticide Regulation, under Title 3 of the California Code of Regulations and the California Food and Agriculture Code. The California Department of Pesticide Regulation registers pesticides for use in California, and licenses pesticide applicators and pilots, advisors, dealers, brokers, and businesses.

State

California Hazardous Materials Release Response Plans and Inventory Law

This law requires preparation of hazardous materials business plans and disclosure of hazardous materials inventories. Such plans must include an inventory of hazardous materials handled, as well as facility floor plans showing where hazardous materials are stored, an emergency response plan, and emergency response procedures that provide for employee training (California Health and Safety Code, Division 20, Chapter 6.95, Article 1). The business plan program is administered by the California Emergency Management Agency.

Occupational Safety and Health Administration Worker Safety Requirements

The California Occupational Safety and Health Administration (Cal/OSHA) regulations for the use of hazardous materials in the workplace (CCR Title 8) require safety training, available safety equipment, accident and illness prevention programs, hazardous-substance exposure warnings, and preparation of emergency action and fire prevention plans. Cal/OSHA enforces regulations on hazard communication programs and

mandates specific training and information requirements. These requirements include procedures for identifying and labeling hazardous substances, providing hazard information about hazardous substances and their handling, and preparing health and safety plans to protect workers and employees at hazardous-waste sites. Employers must make material safety data sheets available to employees and document employee information and training programs.

California Accidental Release Prevention Program

The goal of the California Accidental Release Prevention Program (CCR Title 19, Division 2, Chapter 4.5) is to reduce the likelihood and severity of consequences of any releases of extremely hazardous materials. Any business that handles regulated substances (i.e., chemicals that pose a major threat to public health and safety or the environment because they are highly toxic, flammable, or explosive, including ammonia, chlorine gas, hydrogen, nitric acid, and propane) must prepare a risk management plan. The risk management plan is a detailed engineering analysis of the potential accident factors present at a business and the measures that can be implemented to reduce this accident potential. The plan must provide safety information, hazard data, operating procedures, and training and maintenance requirements. The list of regulated substances is found in Article 8, Section 2770.5 of the program regulations.

Emergency Response to Hazardous Materials Incidents

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local governments and private agencies. Response to hazardous material incidents is one part of this plan. The plan is managed by the California Emergency Management Agency, which coordinates the responses of other agencies, including the California Environmental Protection Agency (Cal/EPA), the California Highway Patrol, the California Department of Fish and Wildlife, and regional water quality control boards (RWQCBs).

California Government Code Section 65962.5 (Cortese List)

The provisions of California Government Code Section 65962.5 are commonly referred to as the “Cortese List” (after the legislator who authored the law). The Cortese List is a planning document used by State and local agencies to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Section 65962.5 requires Cal/EPA to develop an updated Cortese List at least annually. DTSC is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies in California, such as the State Water Resources Control Board, must provide additional information. There are no sites on the Cortese list in the plan area.

Asbestos Abatement

Asbestos abatement efforts must be completed in compliance with 7 CCR Section 5208, 8 CCR Section 1529, and 8 CCR Sections 341.6 through 341.14. The regulations in 7 CCR Section 5208 implement worker exposure limits, require exposure monitoring, implement compliance programs, require employee protection and hazard

communication, and require employee medical surveillance and reporting. Asbestos exposure for construction work is regulated by 8 CCR Section 1529, which includes exposure limits and procedures for handling and removal. Requirements for transport and disposal are included in 8 CCR Sections 341.6 through 341.14.

Section 19827.5 of the California Health and Safety Code, adopted January 1, 1991, prohibits local agencies from issuing demolition or alteration permits until the applicant has demonstrated compliance with applicable regulations. If there is 100 square feet or more of asbestos-containing material, renovation or demolition of buildings containing asbestos must be conducted by a licensed contractor and the work must comply with requirements included in 8 CCR Sections 1529 and 341.6 through 341.14. Cal/OSHA must be notified 10 days before the start of construction and demolition activities. Asbestos encountered during demolition of an existing building must be transported and disposed of at an appropriate facility. The contractor and hauler of the material must file a hazardous-waste manifest that provides disposal details.

Lead and Lead-Based Paint Abatement

Regulation of lead and lead-based paint is described in 29 CFR 1926.62 and 8 CCR Section 1532.1. These regulations cover the demolition, removal, cleanup, transportation, storage, and disposal of lead-containing material. The regulations outline the permissible exposure limit, protective measures, and monitoring. Cal/OSHA's Lead in Construction Standard requires notification and a lead compliance plan with safe work practices.

California Education Code

Sections 17071.13, 17072.13, 17210, 17210.1, 17213.1-3, and 17268 of the California Education Code became effective January 1, 2000. Together, they establish requirements for assessments and approvals regarding toxic and hazardous materials that school districts must follow before receiving final site approval from the Department of Education and funds under the School Facilities Program. For example, the site approval package must include written determinations regarding the presence of hazardous wastes or pipelines carrying hazardous substances on the site (the adopted CEQA document is often used for these purposes). In addition, Section 17213(b) requires the local education agency to consult with the applicable air district to identify facilities within 0.25 mile of the proposed site that might reasonably be anticipated to emit hazardous air emissions or handle hazardous materials, substances, or wastes and prepare written findings that either there are not such facilities, the facilities do not pose a health risk, or corrective measures will be taken (consistent PRC Section 21151.8). The code also requires that a Phase I Environmental Site Assessment (ESA) is conducted according to the American Society of Testing and Materials standards (ASTM E-1527-2000) and transmitted to DTSC. If the Phase I ESA concludes that further investigation is needed or DTSC requires it, a preliminary endangerment assessment (PEA) must be completed under DTSC oversight and review. The PEA includes the sampling of soils and risk assessment to determine whether a release of hazardous material has occurred, if there is a threat of release, and if a naturally occurring hazardous material poses a significant health risk.

California Fire Code

The California Fire Code (CFC) is Chapter 9 of CCR Title 24. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The CFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The CFC and the California Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the CFC employs a permit system based on hazard classification. The CFC is updated every 3 years.

California Code of Regulations, Title 14

Title 14 of the CCR sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply, which help prevent damage to structures or people by reducing wildfire hazards.

Local

Sacramento County Emergency Management Department

The Hazardous Materials Division of Sacramento County EMD is the designated Certified Unified Program Agency (CUPA) for Sacramento County. The Sacramento County EMD has a 24-hour hazardous materials incident response team and responds to incidents involving chemical releases, as well as any other hazardous materials situations. As the CUPA, the Hazardous Materials Division is responsible for implementing the following hazardous materials and hazardous waste program elements for Sacramento County:

- Aboveground Petroleum Storage Act (APSA),
- California Accidental Release Prevention Program (Cal ARP),
- Hazardous Material Release Response Plans and Inventories,
- Hazardous Waste Generation, including on-site treatment under Tiered Permitting,
- Spill Prevention Control and Countermeasure Plan (SPCC),
- Underground Storage Tanks (UST), and
- Uniform Fire Code Hazardous Materials Management Plans and Inventories.

Sacramento County Office of Emergency Services

The Sacramento County Office of Emergency Services (SacOES) has the primary responsibility for preparedness and response activities and addresses disasters and emergency situations within Sacramento County. SacOES is responsible for alerting and notifying appropriate agencies when disaster strikes; coordinating all agencies that respond; ensuring resources are available and mobilized in times of disaster;

developing plans and procedures in response to and recovery from disasters; and developing and providing preparedness materials for the public.

Sacramento Metropolitan Air Quality Management District Asbestos Program

The Sacramento Metropolitan Air Quality Management District regulates asbestos in building materials. The program applies to renovations or demolitions of jurisdictional structures in Sacramento County that include asbestos. This program requires an asbestos survey to identify all of the asbestos in building materials and abatement by a licensed asbestos contractor.

Sacramento County Local Hazard Mitigation Plan

The *Sacramento County Local Hazard Mitigation Plan* (Sacramento County 2021), as amended, includes a risk assessment of existing hazards such as severe weather, dam failure, flooding, earthquakes, wildfire, drought, health hazards, landslides, and volcanoes, and a mitigation strategy. The plan includes countywide recommended action items to reduce the economic effects and the loss of life and property.

Sacramento County Evacuation Plan

The Sacramento County Evacuation Plan is developed as an Annex to the Sacramento County 2008 All-Hazards Emergency Operations Plan (Sacramento County 2008). The purpose of this evacuation plan is to document the agreed upon strategy for the County's response to emergencies that involve the evacuation of persons from an impacted area to a safe area. This involves coordination and support for the safe and effective evacuation of the general population, and for those who need additional support to evacuate. Focus areas within this evacuation plan include public alert and warning, transportation, and care and shelter.

Primary evacuation routes are established for each of the seven County Sheriff Districts. These include major interstates, highways, and prime arterials within Sacramento County, including Jackson Hwy (SR 16). Local jurisdictions work with the County, and especially the Operation's Section, Law Enforcement Branch and the Evacuation Movement Unit to identify and update evacuation routes and evacuation transfer points. The primary evacuation routes will usually be major interstates and other highways, and major roadways within and out of the county - unless otherwise determined by the County DOT. During an evacuation, County DOT traffic engineers calculate traffic flow capacity and decide which of the available traffic routes should be used to move people in the correct directions.

Sacramento County 2030 General Plan

The following policies of the 2030 General Plan would apply to the project:

- **Policy HM-4.** The handling, storage, and transport of hazardous materials shall be conducted in a manner so as not to compromise public health and safety standards.

- **Policy SA-23.** The County shall require that all new development meets the local fire district standards for adequate water supply and pressure, fire hydrants, and access to structures by firefighting equipment and personnel.
- **Policy SA-27.** The County shall require, where appropriate, the use of fire resistant landscaping and building materials for new construction developments that are cost effective.
- **Policy SA-29.** The County and fire districts will work together to regulate hazardous materials to mitigate emergency responses.
- **Policy SA-31.** The County shall continue to maintain, periodically update, and test the effectiveness of its Emergency Response Plan.
- **Policy SA-33.** The County shall continue its coordinative efforts, including evacuation planning, with service agencies, the cities within the County, and cities within surrounding counties.
- **Policy SA-35.** The County shall ensure that the siting of critical emergency response facilities such as hospitals, fire, sheriff's offices and substations, and other emergency service facilities and utilities have minimal exposure to flooding, seismic and geological effects, fire, and explosions.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

Cordova Community Plan

The Cordova Community Plan does not contain objectives related to hazardous materials that are applicable to the project.

Vineyard Community Plan

The Vineyard Community Plan does not contain policies related to hazardous materials that would apply to the project.

Significance Criteria and Methodology

Significance Criteria

Impacts to hazards and hazardous materials would be significant if implementation of the project would:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

- 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;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Issues not Discussed Further

Airport Safety Hazards

Project impacted related to airport safety hazards are addressed in Chapter 7, “Airport Compatibility.” Therefore, this issue is not discussed further in this chapter.

Methodology

A review of two databases and two lists was conducted to assemble a list of hazardous materials storage and use, and known contaminated sites within the vicinity of the plan area. Envirostor is a database maintained by the State DTSC and holds information on investigation, cleanup, permitting, and corrective actions that are planned, are being conducted, or have been completed under the DTSC’s oversight. Envirostor was reviewed and a list of sites was generated. GeoTracker is a second database that is maintained by the State Water Resources Control Board and tracks regulatory data about underground fuel tanks, fuel pipes, and public drinking water supplies. Toxic Site Clean-Up Site Specific Report (Toxic Site) is a County-generated and maintained list that shows a list of known contaminated sites. Finally, the County’s Master List of Business Facilities identifies businesses in Sacramento County that store and use hazardous materials. Each of these databases lists sites with active, inactive, certified, de-listed, no further action, and refer to other agency statuses. A site that is listed as closed is one at which remediation and cleanup activities are complete. Finally, this analysis is further based on the information and recommendations in the 2014 Mather Groundwater Monitoring Report prepared by URS Group, Inc. and the Final 2018 Five-Year Review Report of the Depot prepared by the Department of Defense.

West Jackson Highway Master Policies

The proposed WJHMP does not include policies related to hazards and hazardous materials.

IMPACTS AND ANALYSIS

IMPACT HAZ-1: ACCIDENTAL RELEASE DUE TO TRANSPORT, USE, OR DISPOSAL OF HAZARDOUS MATERIALS

CONSTRUCTION

Construction activities associated with future development would temporarily increase the regional transport, use, storage, and disposal of hazardous materials and petroleum products (such as diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals) that are commonly used at construction sites. Hazardous waste generated during construction may consist of welding materials, fuel and lubricant containers, paint and solvent containers, and cement products containing strong basic or acidic chemicals.

Hazardous materials transported by truck use many of the same freeways, arterials, and local streets as other traffic. This creates a risk of accidents and associated release of hazardous materials for other drivers and for people along these routes. Although the transport of hazardous materials could result in accidental spills, leaks, toxic releases, fire, or explosion, the US DOT Office of Hazardous Materials Safety prescribes strict regulations for the safe transportation of hazardous materials, as described in Title 49 of the CFR. These standard accident and hazardous materials recovery training and procedures are enforced by the State and followed by private State-licensed, certified, and bonded transportation companies and contractors.

Further, pursuant to 40 CFR 112, the project would be required to prepare a spill prevention and treatment plan for rapidly, effectively, and safely cleaning up and disposing of any spills or releases that may occur during construction. As required under state and federal law, notification and evacuation procedures for site workers and local residents would be included as part of the plan in the event of a hazardous materials release during construction. In addition to 40 CFR 112, SWRCB Construction General Permit (2023-0102 DWQ) requires spill prevention and containment plans to avoid spills and releases of hazardous materials and wastes into the environment. Inspections would be conducted to verify consistent implementation of general construction permit conditions and best management practices (BMPs) to avoid and minimize the potential for spills and releases, and of the immediate cleanup and response thereto. BMPs include, for example, the designation of special storage areas and labeling, containment berms, coverage from rain, and concrete washout areas. In addition, workplace rules administered by the California Occupational Safety and Health Administration (enacted by the California Code of Regulations) ensure that the hazards of all chemicals are evaluated and that information concerning chemical hazards is transmitted to employees. This is accomplished through container labeling and other warnings, Material Safety Data Sheets, and employee training. Compliance with the aforementioned regulations would minimize the potential risk of a spill or accidental release of hazardous materials during construction.

Operation

Development of the project would increase the commercial, industrial and household use of potentially hazardous materials within the plan area. Specific uses, such as dry cleaners and gas stations, would involve routine transport, use, and disposal of hazardous materials. Exposure to hazardous materials could cause various short-term and/or long-term health effects. Possible health effects could be acute (immediate, or of short-term severity), chronic (long-term, recurring, or resulting from repeated exposure), or both. Acute effects, often resulting from a single exposure, could result in nausea, vomiting, headache, dizziness, or burns. Chronic exposure could result in systemic damage or damage to organs, such as the lungs, liver, or kidneys. Health effects would be specific to each hazardous material.

The operation of businesses that use, create, or dispose of hazardous materials is regulated and monitored by federal, State, and local regulations that provide protection to the public and the environment from the hazardous materials manufactured within, transported to, and disposed within the region. RCRA, Title 22 of the CCR, and the Hazardous Waste Control Law regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. In addition, 40 CFR 112 requires facilities that have an aggregate aboveground oil (e.g., petroleum, oil mixed with wastes other than dredged spoil, and vegetable oil) storage capacity greater than 1,320 gallons, or a completely buried storage capacity greater than 42,000 gallons to prepare and implement a spill prevention and treatment plan. These laws impose regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

Facilities that would use hazardous materials on-site would be required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases and protect public health. Regulated activities would be managed by the Sacramento County EMD, the designated CUPA, and would be required to comply with CCR Title 8, “Industrial Relations,” for workplace regulations addressing hazardous materials, as well as Title 26, “Toxics.” Title 26, Division 6 contains requirements for California Highway Patrol (CHP) enforcement of hazardous materials storage and rapid-response cleanup in the event of a leak or spill. Compliance with these regulations would reduce the potential for accidental release of hazardous materials during future construction and operation and would minimize both the frequency and the magnitude if such a release occurs.

For household materials use, all products offered for sale are required to be labeled appropriately to ensure safe use, storage, and disposal, and residents are required to use these materials consistent with labeling requirements. Laws regarding the safe disposal of hazardous materials apply to residents, just as they apply to businesses. The Sacramento County Department of Waste Management and Recycling operates multiple household hazardous waste drop-off locations, and also transports garbage collected from bins to the North Area Recovery Station, where household hazardous waste is separated for proper disposal. For more information about solid waste collection, refer to Chapter 18, “Public Utilities.”

Because future projects within the WJHMP would implement and comply with federal, state, and local hazardous materials regulations and codes monitored by the state (e.g., Cal/OSHA, DTSC, CHP, California DOT) and/or local jurisdictions (e.g., Sacramento Metropolitan Fire District and Sacramento County Environmental Management Department), impacts related to creation of significant hazards for employees and the general public through routine transport, use, and disposal of hazardous materials would be unlikely; this impact would be **less than significant**.

MITIGATIONS MEASURES

No mitigation is required.

IMPACT HAZ-2: POTENTIAL FOR RELEASE OF HAZARDOUS MATERIALS FROM UNDOCUMENTED OR DOCUMENTED SITES OF CONTAMINATION

The plan area consists mostly of vacant, undeveloped land; however, there are industrial areas which include warehouses, landscape supply yards and truck and equipment yards. Further, the plan area was historically used for mining, agriculture, and rural home sites. Mining and construction material processing activities are still occurring within the plan area. Construction would involve site grading, excavation, trenching, and demolition and construction of buildings. Future construction and groundwork activities within the plan area could result in the exposure of construction workers and the public to hazardous materials if they are present within the soil and/or groundwater within the site. Such exposure could pose health risks to those who come in contact with contaminated soil and groundwater.

UNDOCUMENTED ON-SITE HAZARDOUS MATERIALS

Construction activities that disturb subsurface materials could encounter previously unidentified contamination from past practices, or placement of undocumented fill, or even unauthorized disposal of hazardous wastes. Due to historical use for agricultural purposes, it is anticipated that residue from pesticides, fertilizers, and other agricultural chemicals may be present on the site. In addition, build-up of agricultural chemicals and potential for fuel tanks constitutes a risk during ground disturbance. Although current agricultural practices do not generally employ toxic chemicals with long-persistence, chemicals formerly used in agriculture included heavy metals and organic compounds, such as DDT, which may persist in soil for decades. These residues could potentially pose a health risk to persons coming into contact with those chemicals. Similarly, lands used for operations associated with mining, construction materials processing, and equipment yards could contain existing contamination; particularly if use predates regulations related to the proper use and disposal of potentially hazardous materials. Encountering these hazardous materials could expose workers, the public, or the environment to adverse effects depending on the volume, materials involved, and concentrations.

If contaminated soils and/or groundwater (i.e., identifiable by soil staining or odors) are encountered during construction activities, work would cease until appropriate worker health and safety precautions, as specified by CCR Title (Section 5194) promulgated by

Cal/OSHA, are implemented. A qualified hazardous materials specialist would be notified for an evaluation and the appropriate regulatory agency would be contacted. If deemed necessary by the appropriate agency, remediation would be undertaken in accordance with existing federal, State, and local regulations/requirements and guidelines established for the treatment of hazardous substances. Work would cease in the contaminated area until the nature and extent of contamination have been established, and proper disposal or remediation has occurred. This would likely require removal from the site and transportation to an EPA-approved disposal facility by a USDOT-certified hazardous waste transporter. The designation of encountered contamination would be based on the chemicals present and chemical concentrations detected through laboratory analysis. Based on the analytical results, appropriate disposal of the material in accordance with EPA, DTSC, and RWQCB guidelines would be implemented.

Lead, Asbestos, and Other Hazardous Building Materials

Existing structures are believed to contain hazardous materials, including asbestos, lead, and heavy metals – primarily because many of the existing structures were constructed when the use of these materials was not heavily restricted. Demolition of structures could result in inadvertent release or improper disposal of debris containing potentially hazardous materials; however, federal, state, and local regulations have been developed to address potential impacts related to the handling and disposal of hazardous materials during demolition. Potential impacts would be minimized through adherence to regulatory standards that prescribe specific methods of material characterization and handling.

Federal and state regulations govern the demolition of structures where materials containing lead and asbestos are present. Asbestos and lead abatement must be performed and monitored by contractors with appropriate certifications from the State Department of Health Services. In addition, Cal/OSHA has regulations concerning the use of hazardous materials, including requirements for safety training, availability of safety equipment, hazardous materials exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces the hazard communication program regulations, which include provisions for identifying and labeling hazardous materials, describing the hazards of chemicals, and documenting employee-training programs. All demolition that could result in the release of lead and/or asbestos must be conducted according to Cal/OSHA standards. Specific actions required by law include the following:

- **Asbestos**. When a project applicant applies for a demolition or renovation permit through the County Building Department, the applicant would be required to get a permit from the local air district (Sacramento Metropolitan Air Quality Management District). As part of the permit process, the applicant would need to show compliance with federal regulations and Air District Rule 902, which requires a survey for asbestos before demolition. Any asbestos found would require abatement. Any asbestos would be removed and disposed of by an accredited contractor in compliance with federal, state, and local regulations

(including the Toxic Substances Control Act and the National Emission Standard for Hazardous Air Pollutants). Compliance with these regulations would result in the safe disposal of asbestos-containing materials.

- **Lead-based paint or other coatings.** Exposure to, and containment of, lead is regulated by DTSC and the California Code of Regulations Title 8 and Title 22. A survey for indicators of lead-based coatings would be conducted before demolition to further characterize the presence of lead. For the purposes of compliance with Cal/OSHA regulations, all coated surfaces would be assumed to potentially contain lead. There is also a potential for soil contamination because of deposition of deteriorated (i.e., flaked, peeled, chipped) lead-based paint adjacent to structures where lead-based exterior paints were used. Loose or peeling paint may be classified as a hazardous waste if concentrations exceed total threshold limits. Cal/OSHA regulations require air monitoring, special work practices, and respiratory protection during demolition where even small amounts of lead have been detected.
- **Heavy metals and PCBs.** Spent florescent light bulbs and ballasts, thermostats, and other electrical equipment may contain heavy metals, such as mercury, or PCBs. If concentrations of these materials exceed regulatory standards, they would be handled as hazardous waste in accordance with hazardous waste regulations.

DOCUMENTED SITES OF HAZARDOUS MATERIALS RELEASE

The project would result in the construction adjacent to land that was previously used in conjunction with Mather AFB, which is a Superfund site with ongoing cleanup activities. There are 89 cleanup sites identified in the Marth AFB. Although, it is unknown if groundwater contamination from past Marh AFB activities has affected any of the properties located within the plan area, 75 of the 89 identified in Mather AFB have gone through remediation. The remaining sites are undergoing remediation or awaiting official closure documentation (AFCEC 2011). However, the district area designated for open space/urban farm north of Jackson Highway is downgradient from the Site 7 Plume that extends from the former Mather AFB. If the urban farm is planning to use on-site groundwater, then mitigation measures such as installation of monitoring wells and regular sample testing from those wells will be required.

The former Depot is approximately 1.4 miles west of the plan area and downgradient. Groundwater remediation was discontinued at this Superfund site after VOC concentrations in the groundwater met Sacramento County sanitary sewer system discharge requirements (DOD 2018). The latest 5-year review (2018) concluded that remedial actions at the site are consistent with the remedy selected by EPA and, thus, the actions continue to be effective in protecting human health and the environment in the short term. Enforcement of institutional controls and maintenance of the soil cover will ensure long-term protection (DOD 2018). Additionally, groundwater flows from east to west, away from the plan area.

Besides the Superfund sites, there are two landfill sites that are in proximity to the plan area that are sources of contaminated groundwater. L and D Landfill is 0.1 mile to the

west of the plan area. VOCs have been detected in groundwater under the landfill site. In response, an extensive network of groundwater extraction wells, landfill gas extraction wells, and groundwater monitoring wells have been installed. Groundwater elevation monitoring during the third and fourth quarters of 2016 indicated a groundwater cutoff along the south boundary of the landfill site. The groundwater gradient has consistently been observed to flow to the south towards the groundwater extraction wells. Along the eastern border of the landfill site (border closest to the plan area), the flow appears to be in southwesterly direction away from the plan area and toward the extraction wells. The Semi-Annual and Annual 2016 Monitoring Report for the L and D Landfill concluded that this southerly flow pattern is evidence that the groundwater extraction wells are effective in capturing and treating groundwater before it leaves the site (SCS Engineers 2017:26).

The Florin Perkins Landfill is a closed landfill site that is 0.6 mile west of the plan area. Elevated levels of VOCs (methylene chloride and TCFM have been detected in groundwater below the landfill. Groundwater flow is to the southeast (toward the plan area); however, it appears that TCFM contamination is generally localized at the landfill site. Recent detections of TCFM off site are at levels that are lower than what was measured in 2015 and are far below the California maximum contaminant level (MCL) of 150 ppb and the Public Health Goal MCL level of 700 ppb (Dunn Environmental 2017:54).

Conclusion

Based on the above information, groundwater contamination from the known contamination sites are contained or are in the process of being contained. Furthermore, the potable water needs for the residential and commercial components of the project will not be met through extraction of local groundwater, but will be served by the Sacramento County Water Agency and Cal American Water. However, due to the possibility of encountering contaminated groundwater during ground disturbance, these portions of the plan area require further investigation. This impact would be **less than significant with mitigation**.

Mitigation Measures

Mitigation Measure HAZ-2a: Phase I Environmental Site Assessment

Prior to approval of projects plans, grading permits, and/or demolition permits for properties in the plan area that have not already been evaluated for the presence of hazardous materials and hazardous conditions, Phase I Environmental Site Assessments (ESAs) shall be prepared by a qualified professional. Each Phase I ESA shall assess the potential for hazards and provide recommendations whether additional investigation (Phase II ESA, see Mitigation Measures HAZ-2B) should be completed. The County shall not issue a grading or building permit for a site where contamination has been identified until remediation or effective site management controls appropriate for the site use have been completed consistent with applicable regulations and to the satisfaction of the Sacramento County Planning and Environmental Review Division, the California Department of Substances Control, and/or Central Valley Regional Water

Quality Control Board, as appropriate. All applicable recommendations from the Phase I ESA shall be incorporated into the future project as required conditions of approval.

If the Phase I ESA determines there are no recognized environmental conditions, no further action is required. However, the County shall ensure any grading or project plan or building permit includes a statement that if hazardous materials contamination is discovered or suspected during construction activities, all work in the vicinity of the contamination shall stop immediately until a qualified professional has evaluated the site and determined an appropriate course of action.

MITIGATION MEASURE HAZ-2B: PHASE II ENVIRONMENTAL SITE ASSESSMENT

If determined necessary, a Phase II ESA shall be conducted to determine the lateral and vertical extent of soil, groundwater, and/or soil vapor contamination, as recommended by the Phase I ESA. The Phase II ESA shall be prepared by the project applicant prior to issuance of grading or building permit. The Phase II shall include recommendations for remediation activities if contaminants are detected in the subsurface at the project site and/or contaminants are present at concentrations exceeding hazardous waste screening thresholds for contaminants in soil and/or groundwater (CCR Title 22, Section 66261.24 Characteristics of Toxicity). All recommendations for remediation activities and additional studies from the Phase II ESA shall be incorporated into the future project as required conditions of approval.

MITIGATION MEASURE HAZ-2C: HAZARDOUS MATERIALS CONTINGENCY PLAN

Prior to issuance of a grading or building permit, the County shall require that the applicant provide a hazardous materials contingency plan to Sacramento County EMD. The plan will describe the necessary actions that would be taken if evidence of contaminated soil or groundwater is encountered during construction. The contingency plan shall identify conditions that could indicate potential hazardous materials contamination, including soil discoloration, petroleum or chemical odors, and presence of underground storage tanks or buried building material.

The plan shall include the provision that, if at any time during the course of constructing the project, evidence of soil and/or groundwater contamination with hazardous material is encountered, the contractor, future project applicants, or their designee, shall immediately halt construction and contact Sacramento County EMD. Work shall not recommence until the discovery has been assessed/treated appropriately (through such mechanisms as soil or groundwater sampling and remediation if potentially hazardous materials are detected above threshold levels) to the satisfaction of Sacramento County EMD, RWQCB, and DTSC (as applicable). The plan, and obligations to abide by and implement the plan, shall be incorporated into the construction and contract specifications of the project.

Impact HAZ-3: Result in Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile within an Existing or Proposed School

The only existing school within the plan area is Sierra-Enterprise Elementary School. However, five new schools are proposed as part of the project: a joint high school and middle school campus located in the center of the plan area and four elementary schools throughout the plan area. The school sites would be generally surrounded by parks and residential development.

For new schools, the California Education Code, including *Education Code* Section 17213(b), establishes requirements for assessments and approvals that address the potential for existing contamination on the site, and whether nearby land uses might reasonably be anticipated to emit hazardous air emissions or handle hazardous materials. Assessment of existing contamination is conducted in coordination with DTSC's School Property Evaluation and Cleanup Division, which is responsible for assessing, investigating, and cleaning up proposed school sites. This Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy a new school. All proposed school sites that would receive State funding for acquisition or construction are required to go through a rigorous environmental review and cleanup process under DTSC's oversight.

Further, because the plan area would be developed in phases, there is a potential that schools proposed as part of the project would be in operation during both construction and operation of adjacent land uses. During construction, demolition, and excavation activities, projects could potentially produce hazardous air emissions or involve the handling of hazardous wastes. During operation, projects could use and produce hazardous materials that may be transported on roadways in the plan area. As discussed above, all projects would comply with federal and state regulations that are designed to reduce the potential for the release of large quantities of hazardous materials and wastes into the environment to an acceptable level. As a result, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact HAZ-4: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan

Emergency response plans are maintained at the federal, state, and local level for all types of disasters, including human-made and natural. Emergency response plans include elements to maintain continuity of government, emergency functions of governmental agencies, mobilization, and application of resources, mutual aid, and public information. In the event of an emergency that would require citizens to evacuate,

Sacramento County would implement its emergency operations plan, evacuation plan, and mass care and shelter plan, as provided in the Sacramento County Evacuation Plan (Sacramento County 2008).

Construction activities could result in temporary lane closures, increased truck traffic, and other roadway effects that could slow or stop emergency vehicles, temporarily increasing response times and impeding existing services. Construction activities in the plan area do not, however, have the potential to substantially hinder emergency response activities or physically interfere with established evacuation routes. Projects requiring encroachment permits for temporary construction activities in public roadways that could be used for emergency response or evacuation are required to prepare traffic mitigation plans that address traffic control during the period the project is occurring within public right-of-way. To address any temporary road closures that would be required during construction, standard construction mitigation includes notification of emergency responders.

The project does not contain any uses or features that would create interference with emergency response once the plan area is built out. The proposed roadway network would be a connected grid pattern, consistent with County Department of Transportation (County DOT) standards, which would provide for easy navigation of streets throughout the plan area. Proposed roadway improvements include some of the thoroughfares within the plan area, which include Jackson Highway, South Watt Avenue, Bradshaw Road, Kiefer Boulevard, Routier Road Extension, Florin Road, and Elder Creek Road. Direct access points would be located at sufficient intervals from each other and from public roads to maintain the safety and the traffic carrying capacity of the roadway. In addition, the project includes two new fire stations within the plan area that would provide emergency response to the entire plan area and beyond in less than 4 minutes (refer to Chapter 17, “Public Services,” for additional discussion).

Although the project would result in new population of residents and employees in an area of the county that does not currently support these types of dense land patterns, the project is not anticipated to impair the implementation of existing emergency response or evacuation plans. This is because the buildout of the project would be gradual, over a roughly 30-year period, and the County’s emergency plans are adaptive. It is anticipated that these plans would be updated to reflect changes in land use patterns. Although the plan area is located within the 100-year flood hazard areas and designated as Special Flood Hazard Areas, the project would include new flood control facilities and other improvements (e.g., raising areas above the floodplain, constructing levees for protection, and construction of spur levees to tie into existing high ground) to achieve required flood protection (as discussed in Chapter 14, “Hydrology and Water Quality”). Implementation of these flood control improvements would protect the plan area from the 100-year and 200-year flood events and would not impair flood evacuation routes. The potential for construction activities or development to impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT HAZ-5: EXPOSE PEOPLE OR STRUCTURES TO WILDLAND FIRES

CAL FIRE has designated the areas as a non–very high fire hazard severity zone (CAL FIRE 2023), which is defined as an area not prone to intense, damaging wildfires. The plan area is within a Local Response Area (LRA) where fire protection is provided by Metro Fire. (See Chapter 17, "Public Services," for further discussion of Metro Fire Department's facilities and response times).

However, the project proposes siting relatively dense residential land use within proximity to a large open space area. In the event of a grass fire within or adjacent to the plan area, Metro Fire would respond. To address potential hazards and increased demand, the project includes provisions for two new fire stations. Further, new construction is subject to the CFC and Title 14 of the CCR, which includes safety measures to minimize the threat of fire damage to people and structures. As required by Policy SA-23 in the Sacramento County General Plan, plans for specific facilities would be provided to Metro Fire for review and comment regarding: adequacy of water supply; site design for fire department access into and around structures; ability for a safe and efficient fire department response; traffic flow and ingress/egress for residents and emergency vehicles; site-specific built-in fire protection; and potential impacts to emergency services and fire department response. Therefore, future development within the plan area would not be exposed to significant risks of wildfire. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

14 HYDROLOGY, DRAINAGE, AND WATER QUALITY

INTRODUCTION

This chapter identifies the regulatory context and policies related to hydrology and water quality, describes the existing hydrologic conditions in the plan area, and evaluates potential hydrology and receiving water-quality impacts of the project. Potential effects on sewer/wastewater, and drainage/stormwater facilities are addressed in Chapter 18, "Public Utilities." Potential effects on the capacity of Sacramento County's water supply and groundwater are discussed in Chapter 20, "Water Supply."

In response to the release of the notice of preparation (NOP), the County received information from the Central Valley Regional Water Quality Control Board (RWQCB) and the Central Valley Flood Protection Board regarding applicable permit requirements. As appropriate, these regulatory requirements are described below and considered in the analysis. The NOP and comments received in response to it are presented in Appendix A.

ENVIRONMENTAL SETTING

HYDROLOGY AND DRAINAGE

REGIONAL AND LOCAL HYDROLOGY

The plan area is located within the Sacramento River Hydrologic Region. The Sacramento River is the largest watershed in the state of California, encompassing approximately 27,000 square miles and carries approximately 30 percent of the state's total surface water (NOAA 2022). The Sacramento River Hydrologic Region extends from Chipps Island in Solano County to Goose Lake in Modoc County and is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, the Cascade Range and Trinity Mountains to the north, and the Sacramento-San Joaquin River Delta to the south (DWR 2013). Several principal rivers are located within the Sacramento River Hydrologic Region such as the Feather River, Yuba River, American River, Clear Creek, Battle Creek, Cottonwood Creek, Mill Creek, Deer Creek, and Butte Creek.

The plan area is within the Morrisson Creek and Elder Creek watersheds, which are both components of the Morrison Creek Stream Group that contribute flows to the Sacramento River (NOAA 2022). The Morrison Creek stream group ultimately drains to the Beach Stone Lakes (BSL) area, which has a history of flooding because of upstream runoff, direct precipitation in the area, and backwater from the Cosumnes and Mokelumne Rivers during periods of flooding and high river stages. Sacramento County has elected not to undertake structural flood protection in this area considering various environmental and institutional factors.

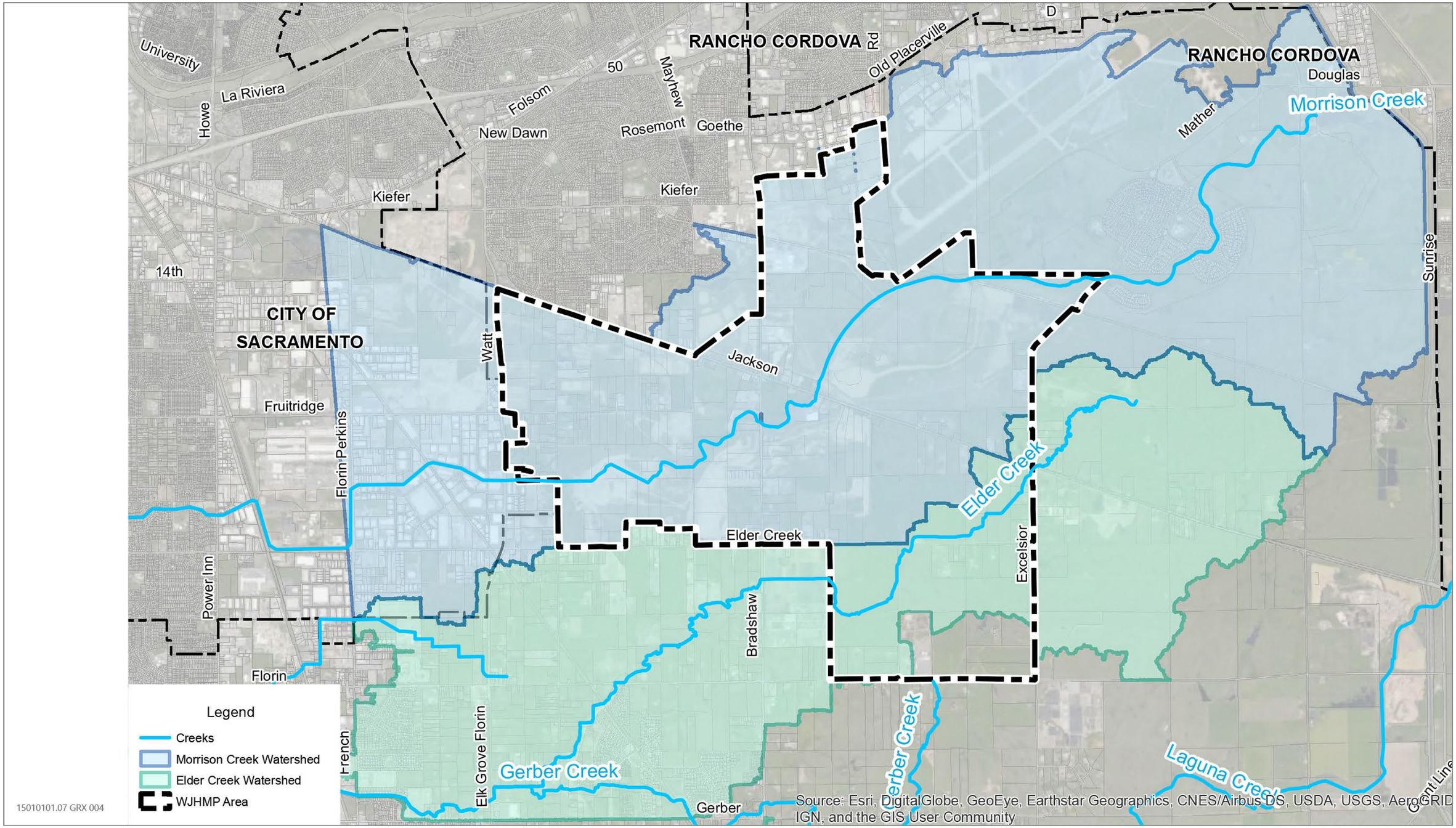
The Folsom and Nimbus Dams are located on the American River. The Nimbus Dam, located approximately 7.5 mile northeast of the plan area, re-regulates water released from the Folsom Dam and diverts water to the Folsom South Canal. Water that is not diverted to the canal is released into the Lower American River (DWR 2013). The Folsom Dam, approximately 13.6 miles northeast of the plan area, was built for flood control and provides water storage for municipal, irrigation and hydroelectric purposes (NOAA 2022). The Folsom Dam is part of the Central Valley Project (CVP), a complex, multi-purpose network of dams, reservoirs, canals, hydroelectric powerplants, and other facilities used to reduce flood risk for the Central Valley. The CVP supplies domestic and industrial water to the valley and major urban centers in the greater Sacramento area and San Francisco Bay Area, enhances water quality, produces electrical power, and provides water to restore and protect fish and wildlife (Reclamation 2023).

Plan Area Hydrology and Drainage

Two waterways traverse the plan area, Morrison Creek and Elder Creek (Figure 14-1). Morrison Creek is located within the northern portion of the plan area and Elder Creek is located within the southern portion of the plan area. The Elder Creek watershed consists of the main creek fed by three upstream branches; the confluence of these branches is about 1,900 feet northwest of the intersection of Elder Creek Road and Excelsior Road, located in the southeast edge of the plan area. Both Morrison and Elder Creek are characterized as meandering streams with relatively shallow depths (3-6 feet) and narrow streambed (6-20 feet wide), which are bordered by a shallow, broad floodplain (100-2,000 feet wide). As shown in Figure 14-1, approximately 80 percent of plan area is within the Morrison Creek watershed.

Given the generally undeveloped nature of the plan area, existing drainage facilities are limited primarily to Morrison Creek, Elder Creek, roadside ditches, bridges, and culverts. A Master Drainage and Flood Control Study was prepared by Wood Rodgers in support of the WJHMP. As discussed in the *West Jackson Highway Master Plan Master Drainage and Flood Control Study* (Appendix H), significant mining activity has occurred within the plan area over the last several decades, which has modified the landscape and drainage patterns of the Morrison Creek watershed.

As described in Chapter 2, “Project Description,” heavy modification from mining of the plan area has resulted in topography that is varied, with site elevations ranging from approximately 30 to 65 feet above mean sea level (see Figure 2-4). Numerous parcels bordering Morrison Creek to the north and south have been mined for construction-grade aggregates, which caused Morrison Creek to be realigned along two reaches. The first reach from Hedge Avenue to Mayhew Avenue was completed in 2014 and the second reach from Jackson Highway to Excelsior Road was completed in the early 2000s. The mined areas adjacent to Morrison Creek, as well as other mined areas several thousand feet north and south of the creek, are now below existing grade. The realigned Morrison Creek is retained within its banks by existing ground or embankments functioning as levees. Although portions of the mined areas historically flowed to Morrison Creek, many currently do not drain and the areas function as stormwater retention basins. Upstream of Jackson Highway, in the northeastern portion of the plan area, Morrison Creek spills over



Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent in 2023.

Figure 14-1 Watersheds

an approximately 800-foot-long weir structure during periods of high flow and the plan area detains runoff from the upstream watershed (Wood Rodgers 2022). Historically, runoff from Morrison Creek drained into the Sacramento River; however, when levees were constructed along the Sacramento River, the flows were diverted into Beach Lake and Stone Lake. Eventually, these flows ultimately drain to the Sacramento/San Joaquin Delta via Snodgrass Slough and the Mokelumne River.

The upstream watershed contains a non-jurisdictional dam facility (Mather Dam) which holds approximately 850 acre-feet of storage at a depth of less than 6 feet. Several of the mined areas are connected by conveyor tunnels, interim facilities for mining operations, at South Watt Avenue, Hedge Avenue, Bradshaw Road, Jackson Highway and Fruitridge Road. The conveyor tunnels are interim facilities for mining operations and are not intended to alter the future drainage pattern.

Flood Conditions

The Federal Emergency Management Agency (FEMA) National Flood Hazard Layer maps predict flood conditions. Flood hazards can be defined based on the potential to be affected by a 100-year (1 percent chance of flooding), 200-year (0.5 percent annual chance of flooding), or 500-year flood (0.2 percent annual chance of flooding). A majority of the plan area is within the 100-year flood zone. There are also areas within the 500-year floodplain (DWR 2023). Figure 14-2 displays the flood zone locations of the 100-year and 500-year floodplains within the plan area.

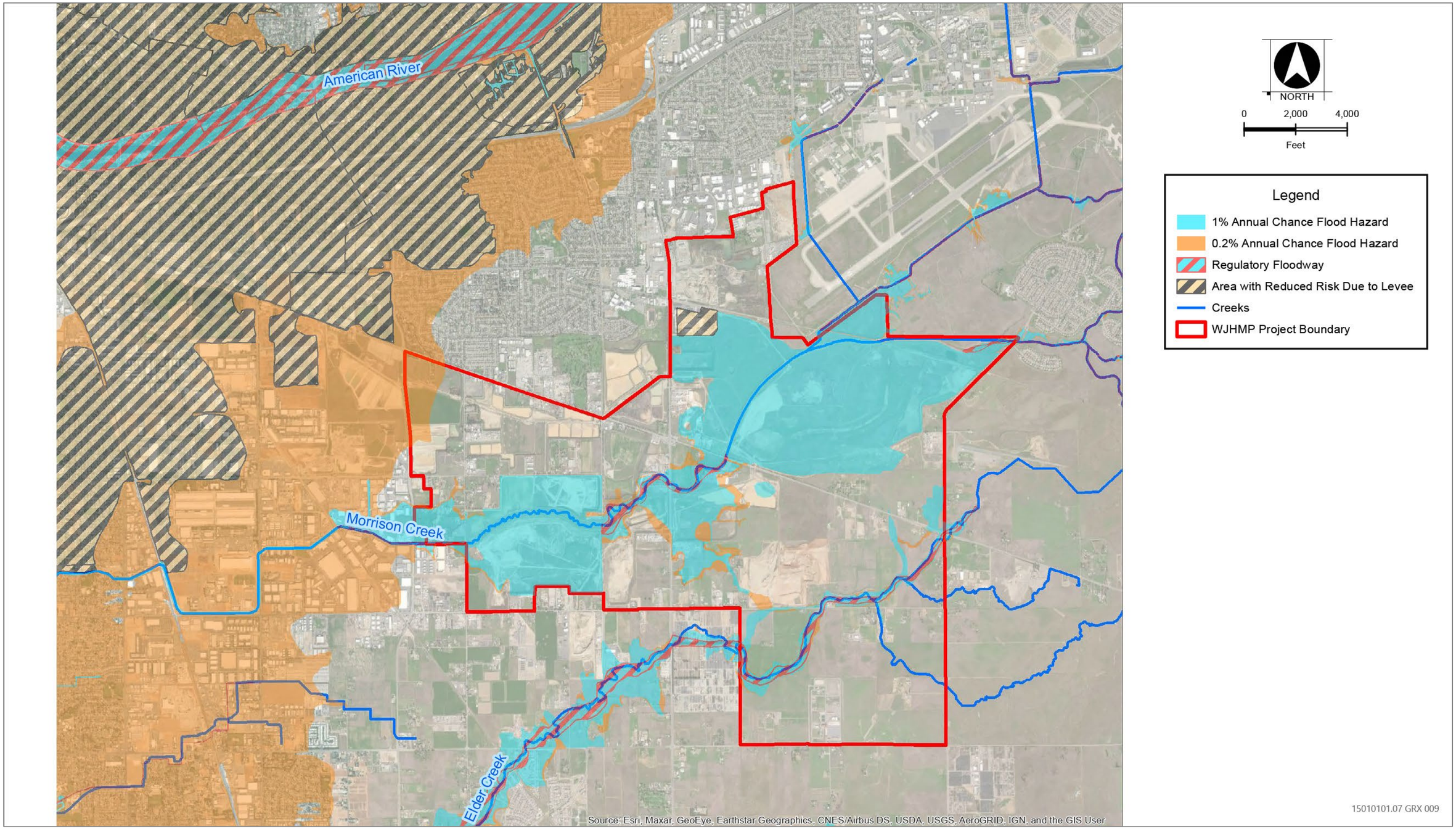
The plan area is within inundation zone of the Folsom Dam, particularly the northwestern portion of the plan area, shown in Figure 14-3. The northwestern portion of the plan area that is within the Folsom Dam's inundation zone, also contains active and closed/reclaimed mining sites, further discussed in Section 3.12, "Geology and Soils." The plan area is within the 0.5-1 feet of maximum depth zones of inundation, taking approximately two to three hours for maximum water depth to be met. However, the maximum depth zones of inundation do not account for depths of mined areas. While the potential for dam failure is low, damage and potential loss of life is high. Additionally, Mather Dam is approximately 2.3 miles northeast of the plan area. While there are no inundation maps for the Mather Dam, in the event of a dam failure, it is assumed that the weir on Morrison Creek and associated basin would have the capacity accommodate inflow, preventing the potential of flooding (Wood Rodgers 2022). Failure of either the Cordova Meadows Levee or the Sunriver Levee along the American River could also potentially result in the inundation of properties north of the plan area (City of Rancho Cordova 2006).

Groundwater Hydrology

The Sacramento River Hydrologic Region contains 88 recognized alluvial groundwater basins and subbasins and underlies approximately 7,800 square miles (DWR 2013). The largest and most heavily used groundwater basins in the hydrologic region are located within the Sacramento Valley Groundwater Basin. The Sacramento Valley Groundwater Basin is comprised of 21 subbasins, four of which are located within Sacramento County; the North American, South American, Cosumnes, and Solano

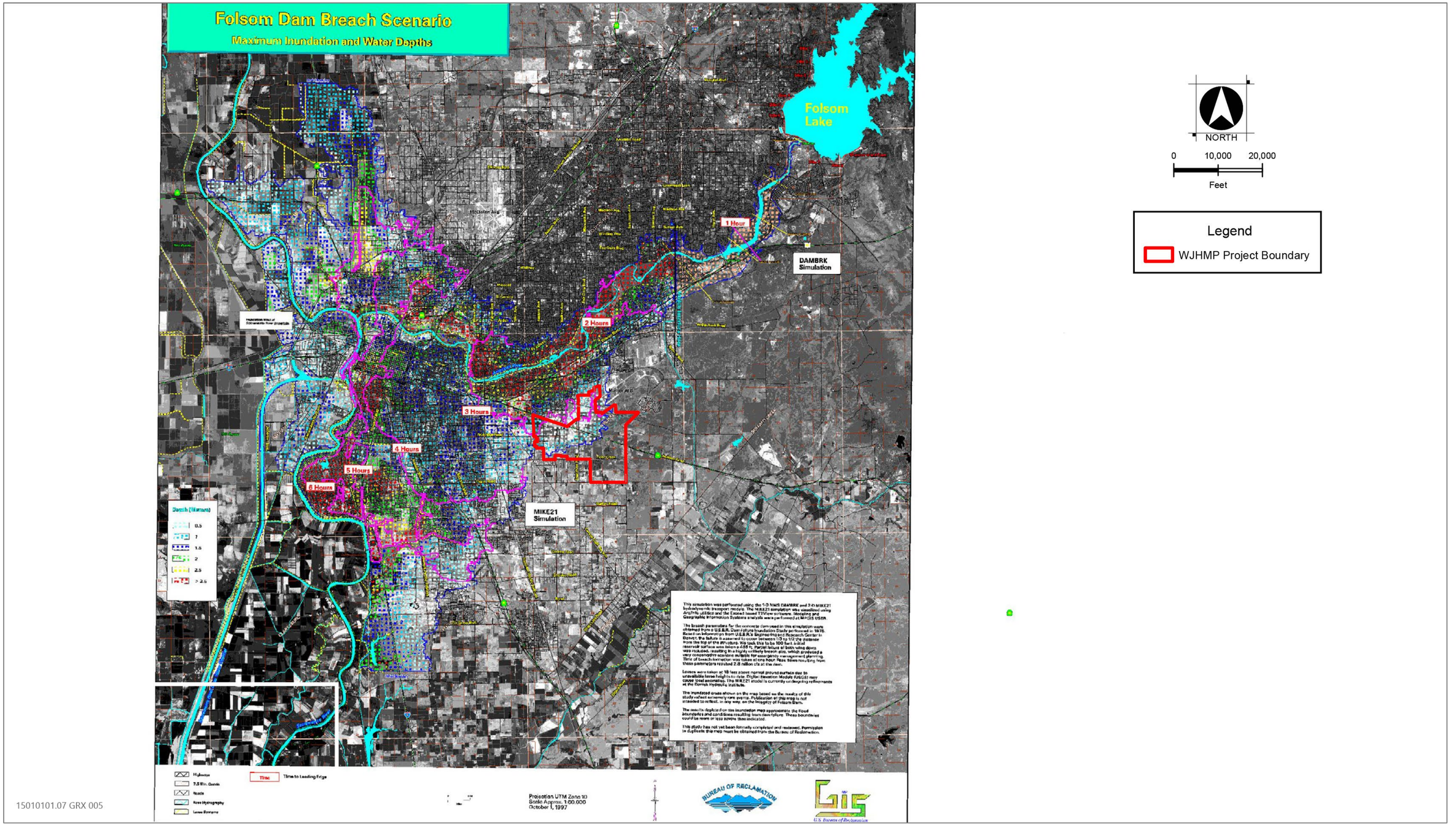
subbasins. Under the Sustainable Groundwater Management Act (SGMA), the formation of Groundwater Sustainability Agencies (GSAs) is required to provide governance over each groundwater subbasin in the state. Sacramento County accepted GSA responsibility for unmanaged areas in three of the four subbasins. The plan area is located within the Sacramento Valley Groundwater Basin, specifically within the South American Subbasin. The South American Subbasin is a high priority subbasin and is generally bounded by the American River, the Sacramento River, the Cosumnes River, and the eastern Sacramento County line. The South American Subbasin shares boundaries with five adjacent subbasins; the Yolo Subbasin to the northwest, Solano Subbasin to the southwest, North American Subbasin to the north, and the Eastern San Joaquin and Cosumnes Subbasins to the south. Within the South American Subbasin, six local entities formed GSAs; Sacramento Central Groundwater Agency (SCGA), Omochumne-Hartnell Water District (OHWD), Sloughhouse Resource Conservation District (SRCD), North Delta GSAs (NDGSA), Reclamation District 551 (RD 551), and Sacramento County. The GSAs agreed to work together and developed and implemented a Groundwater Sustainability Plan (GSP) for the South American Subbasin. The GSP includes a comprehensive groundwater subbasin description, which was used in the development of a regional surface water and groundwater model that quantifies current water budgets and projects future conditions associated with population growth, land use changes, water conservation, climate change, and consideration of beneficial projects that are planned to occur the next five to ten years. The GSP also includes an assessment of the impacts of predicted future groundwater levels on beneficial users, including groundwater-dependent ecosystems, shallow wells, and interconnected surface water (SASb 2021).

Groundwater levels within the South American Subbasin have fluctuated within each year due to seasonal recharge and use variations; over a year or series of years due to short-term droughts and wet periods; and over decades due to changes in land and water use or longer-term hydrologic conditions. Like most of California, groundwater levels in the South American Subbasin typically decline in summer and fall and increase in winter and spring. The summer and fall are periods of reduced natural recharge from precipitation and streamflow and also are periods of higher groundwater production to meet higher urban and agricultural demands during that period. Conversely, the winter and spring have higher recharge and lower groundwater production. The magnitude of seasonal fluctuation in groundwater levels depends on the connectivity of the aquifer with surface recharge sources, the volume and depth of groundwater production in the area, and aquifer characteristics. Several wells in the eastern portion of the subbasin, specifically wells located generally along Laguna Creek from near Douglas Road to just south of Jackson Highway, show a relatively steady decline in groundwater levels (SASb 2021).



Source: Image produced and provided by Wood Rodgers in 2022, adapted by Ascent in 2023.

Figure 14-2 FEMA Floodplain



Source: Image produced and provided by Wood Rodgers in 2022, adapted by Ascent in 2023.

Figure 14-3 Folsom Dam Breach Inundation

The Central Basin, a locally defined subarea of the Sacramento Groundwater Basin, overlaps with the South American Subbasin. The Central Basin lies south of the American River, east of I-5 and the Sacramento River, and north of the southern boundary of the Omochumne-Hartnell Water District and the Cosumnes and Mokelumne Rivers. The plan area resides within the central northern portion of the Central Basin. Groundwater in the Central Basin is generally classified as occurring in a shallow aquifer zone or in an underlying deeper aquifer zone. Within the Central Basin, the shallow aquifer extends approximately 200 to 300 feet below the ground surface and, in general, water quality in this zone is considered to be good with the exception of arsenic detections in a few locations. The shallow aquifer is typically used for private domestic wells requiring no treatment unless high arsenic values are encountered, causing owners to possibly target other water-bearing strata. The deep aquifer is separated from the shallow aquifer by a discontinuous clay layer that serves as a semi-confining layer for the deep aquifer. The base of the potable water portion of the deep aquifer averages approximately 1,400 feet below ground surface. Water in the deep aquifer typically has higher concentrations of total dissolved soils (TDS), iron, and manganese. Groundwater used in the Central Basin is supplied from both the shallow and deeper aquifer systems (SCGA 2006).

Recharge to the local aquifer system occurs along active river and stream channels where extensive sand and gravel deposits exist, particularly along the American, Cosumnes, and Sacramento River channels. Additional recharge occurs along the eastern boundary of Sacramento County at the transition point from the consolidated rocks of the Sierra Nevada to the alluvial deposited basin sediments. This typically occurs through fractured granitic rock that makes up the Sierra Nevada foothills. This recharge is classified as subsurface recharge along with underground flow into and out of the Central Basin with adjacent groundwater basins. Other sources of recharge within the area include deep percolation from applied surface water, precipitation, and small streams (SCGA 2006). The Central Basin is currently managed by the Sacramento Central Groundwater Authority, which has also adopted a management plan, the Central Sacramento County Groundwater Management Plan (CSCGMP), consistent with the Sacramento Water Forum objectives that addresses groundwater decline and quality in the Central Basin. Although the plan area includes streams that may have historically provided groundwater infiltration, aggregate mining has removed the permeable substrate in portions of the plan area. Where the impermeable clay layer is exposed (for example, in the northeastern portion of the plan area), groundwater recharge is likely limited.

Water Quality

Surface Water Quality

Surface water quality conditions of the rivers and streams within Sacramento County are affected by natural watershed conditions, such as seasonal weather and temperature patterns; seasonal surface hydrologic runoff and groundwater exchange characteristics of the watershed; runoff or atmospheric deposition of natural chemical or biological matter associated with soil, vegetation, and animal wastes; and long-term climatic patterns (e.g.,

droughts). The primary sources of potential contamination discharges associated with human-related activities in the county include urban stormwater runoff, agricultural runoff, and municipal wastewater treatment plant discharges.

EPA has identified existing water quality impairments in both Morrison Creek and Elder Creek downstream of the plan area. Morrison Creek and Elder Creek are both listed on the Clean Water Act (CWA) Section 303(d) Impaired Waters List. The 2022 Waterbody Report for Morrison Creek identifies the creek's warm freshwater habitat as impaired with diazinon from urban runoff/storm sewers, and pentachlorophenol and pyrethroids from unknown sources. The 2022 Waterbody Report for Elder Creek identifies the creek's warm freshwater habitat as impaired for chlorpyrifos and diazinon from urban runoff/storm sewers and pyrethroids from unknown sources (EPA 2022a, 2022b).

Groundwater Quality

Groundwater quality can be affected by many things, but the chief controls on the characteristics of groundwater quality are the source and chemical composition of recharge water, properties of the host sediment, and history of discharge or leakage of pollutants.

Groundwater quality in the subbasin is generally good and meets local needs for municipal, domestic, and agricultural uses. Several water quality parameters including nitrate, TDS, arsenic, hexavalent chromium, and per- and polyfluoroalkyl substances (PFASs) have been monitored at numerous wells in the subbasin over time (SASb 2021). As discussed further in Chapter 13, "Hazards and Hazardous Materials," there are known occurrences of groundwater contamination in the vicinity of the plan area. However, exceedances of water quality parameters may be caused by localized conditions and generally are not reflective of regionally poor groundwater quality (SASb 2021).

Per the CSCGMP, water quality analysis of the aquifers underlying the Central Basin has shown that groundwater found in the upper aquifer system is of higher quality than that found in the lower aquifer system. This is due to the lower aquifer containing higher concentrations of iron and manganese. The lower aquifer system also has higher concentrations of TDS, although this aquifer typically meets water quality standards as a potable water source. At depths of approximately 1,400 feet or greater, the TDS concentration exceeds 2,000 milligrams per liter and groundwater is considered non-potable unless treated by reverse osmosis. Water from the upper aquifer generally does not require treatment, other than disinfection for public drinking water systems, unless high arsenic values are encountered (SCGA 2006). Additionally, per the Sacramento County Water Agency (SCWA) Zone 40 Water Supply Master Plan, source groundwater in Zone 40 meets all primary and secondary California Code of Regulations Title 22 drinking water quality standards, with the exception of iron, manganese, and arsenic. As discussed in Chapter 20, "Water Supply", the groundwater supplied to Zone 40 wells are connected to groundwater treatment plants (GWTPs) and from wells that pump directly into the distribution system. Each GWTP facility consists of wells that are manifolded into a treatment plant, a ground level storage tank, and a pump station. Treated water from the GWTPs then flows into the ground level storage tanks and is pumped into the distribution system. Cal Am customers are served by direct feed

groundwater wells, with iron and manganese treatment facilities in its Suburban-Rosemont system.

Climate Change

As discussed and analyzed in Appendix H, Morrison Creek was evaluated for potential impacts from climate change. The study showed that climate change would increase the volume and flow rates within Morrison Creek, above the existing weir and basin in the northeastern portion of the plan area.

Regulatory Setting

Federal

Clean Water Act

The US Environmental Protection Agency (EPA) is the lead federal agency responsible for water quality management. The CWA is the primary federal law that governs and authorizes water quality control activities by EPA, as well as the states. Various elements of the CWA address water quality. These are discussed below.

CWA Water Quality Criteria/Standards

Pursuant to federal law, EPA has published water quality regulations under Title 40 of the Code of Federal Regulations (CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the act, water quality standards consist of designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. As described in the discussion of state regulations below, the State Water Resources Control Board (SWRCB) and its nine RWQCBs have designated authority in California to identify beneficial uses and adopt applicable water quality objectives.

CWA Section 303(d) Impaired Waters List

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that do not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of the pollutant that the water body can receive and still comply with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. No TMDL has been recorded by EPA for Morrison Creek or Elder Creek. In California, implementation of TMDLs is achieved through water quality control plans, known as Basin Plans, of the RWQCBs.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. NPDES permit regulations have been established for broad categories of discharges including point source waste discharges and nonpoint source stormwater runoff. Each NPDES permit identifies limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits.

"Nonpoint source" pollution originates over a wide area rather than from a definable point. Nonpoint source pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. Two types of nonpoint source discharges are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving water to the maximum extent practicable. The RWQCBs in California are responsible for implementing the NPDES permit system (see the "State" section, below).

NATIONAL FLOOD INSURANCE ACT

FEMA is tasked with responding to, planning for, recovering from and mitigating against disasters. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that aid with mitigating future damages from natural hazards.

FEMA prepares Flood Insurance Rate Maps (FIRMs) that delineate the regulatory floodplain to assist local governments with the land use planning and floodplain management decisions needed to meet the requirements of NFIP. Floodplains are divided into flood hazard areas, which are areas designated per their potential for flooding, as delineated on FIRMs. Special Flood Hazard Areas are the areas identified as having a 1 percent chance of flooding in each year (otherwise known as the 100-year flood). In general, the NFIP mandates that development is not to proceed within the regulatory 100-year floodplain if the development is expected to increase flood elevation by 1 foot or more.

STATE

CALIFORNIA PORTER-COLOGNE ACT

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants SWRCB and each of the nine RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the CWA. The applicable RWQCB for the proposed project is the Central Valley RWQCB. SWRCB and the Central Valley RWQCB have the authority and responsibility to adopt plans and policies, regulate discharges to surface and groundwater, regulate waste disposal sites, and require

cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substances, sewage, or oil or petroleum products.

Under the Porter-Cologne Act, each RWQCB must formulate and adopt a Water Quality Control Plan (known as a “Basin Plan”) for its region. The Basin Plan for the Central Valley Region includes a comprehensive list of water bodies within the region and detailed language about the components of applicable Water Quality Objectives (WQOs). The Basin Plan recognizes natural water quality, existing and potential beneficial uses, and water quality problems associated with human activities throughout the Sacramento and San Joaquin River Basins. Through the Basin Plan, the Central Valley RWQCB executes its regulatory authority to enforce the implementation of TMDLs, and to ensure compliance with surface WQOs. The Basin Plan includes both narrative, and numerical WQOs designed to provide protection for all designated and potential beneficial uses in all its principal streams and tributaries. Applicable beneficial uses include municipal and domestic water supply, irrigation, non-contact and contact water recreation, groundwater recharge, freshwater replenishment, hydroelectric power generation, and preservation and enhancement of wildlife, fish, and other aquatic resources.

The Central Valley RWQCB also administers the adoption of waste discharge requirements (WDRs), manages groundwater quality, and adopts projects within its boundaries under the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) and NPDES General Permit for Stormwater Discharges Associated with Industrial Activities (Industrial General Permit).

NPDES Construction General Permit for Stormwater Discharges Associated with Construction Activity

Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under SWRCB’s Construction General Permit (Order WQ 2022-0057-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation.

Coverage under the Construction General Permit is obtained by submitting permit registration documents to SWRCB that include a risk-level assessment and a site-specific storm water pollution prevention plan (SWPPP) that identifies an effective combination of erosion control, sediment control, and non-stormwater best management practices (BMPs). The Construction General Permit requires that the SWPPP define a program of regular inspections of the BMPs and, in some cases, sampling of water quality parameters.

NPDES Industrial General Permit for Stormwater Discharges Associated with Industrial Activity

The Statewide General Permit for Stormwater Discharges Associated with Industrial Activities, Order 2014-0057-DWQ (Industrial General Permit) implements the federally

required stormwater regulations in California for stormwater associated with industrial activities discharging to waters of the United States. The Industrial General Permit regulates discharges associated with 9 federally defined categories of industrial activities. The SWRCB and RWCB implement and enforce the Industrial General Permit. This General Permit regulates industrial storm water discharges and authorized non-storm water discharges (NSWDs) from specific categories of industrial facilities, and industrial storm water discharges and authorized NSWDs from facilities designated by the Regional Water Boards to obtain coverage under this General Permit. This General Permit does not apply to industrial storm water discharges and NSWDs that are regulated by other individual or general NPDES permits.

NPDES Stormwater Permit for Discharges from Small Municipal Separate Storm Sewer Systems

CWA Section 402 mandates permits for discharges from municipal separate storm sewer systems (MS4s). Phase I MS4 regulations cover municipalities with more than 100,000 residents, certain industrial processes, and larger-site (5 acres and up) construction activities. Phase II small MS4 regulations require stormwater management plans to be developed by municipalities with fewer than 100,000 residents and construction activities that disturb 1 to 5 acres of land. In 2013, SWRCB adopted a Statewide Phase II Small MS4 General Permit to efficiently regulate discharges from numerous qualifying MS4s under a single permit. Small MS4s are characterized as either “traditional” or “non-traditional.” Stormwater is runoff from rain or snow melt that runs off surfaces such as rooftops, paved streets, highways or parking lots and can carry with it pollutants such as oil, pesticides, herbicides, sediment, trash, bacteria and metals. The runoff can then drain directly into a local stream, lake or bay. Often, the runoff drains into storm drains which eventually drain untreated into a local water body.

Permittees covered under the General Permit must develop and implement an education and outreach program, a public involvement and participation program, a construction site runoff control program, and a post-construction stormwater management program. The post-construction stormwater management program must include the implementation of site design measures for all projects that create and/or replace between 2,500 and 5,000 square feet of impervious surfaces. Projects that create and/or replace 5,000 square feet or more of impervious surfaces must implement low-impact development design standards addressing site planning/design, stormwater pollutant source control, runoff reduction, stormwater treatment, and hydromodification management.

Basin Plans

NPDES permits and Erosion Control Programs are required for the construction of infrastructure and pumping facilities. The CWA requires that water resources be protected from degradation caused by waste discharges and requires that identified beneficial uses be maintained. The RWQCB’s basin plan for the Central Valley Region identifies the designated beneficial uses of groundwater and surface water bodies and contains water quality objectives and standards established to protect those uses.

The County of Sacramento received a municipal NPDES permit for stormwater discharges from the Central Valley RWQCB. Under this permit, permittees are required to develop, administer, implement, and enforce a comprehensive stormwater management program (CSWMP) to reduce pollutants in urban runoff to the maximum extent practicable. The CSWMP implemented by the County is a multi-faceted, dynamic program which is designed to reduce stormwater pollution to the maximum extent practicable. The CSWMP emphasizes all aspects of pollution control including but not limited to public awareness and participation, source control, regulatory restrictions, water quality monitoring, and treatment control. The County has established a Stormwater Ordinance (Sacramento County Code Chapter 15.12), as described below. The Stormwater Ordinance prohibits the discharge of unauthorized non-stormwater to the County's stormwater conveyance system and local creeks. It applies to all private and public projects in the county, regardless of size or land use type. In addition, Sacramento County Code Chapter 16.44 (Land Grading and Erosion Control) requires private construction sites disturbing one or more acres or moving 350 cubic yards or more of earthen material to obtain a grading permit. To obtain a grading permit, project proponents must prepare and submit for approval an erosion and sediment control plan describing erosion and sediment control BMPs that will be implemented during construction to prevent sediment from leaving the site and entering the County's storm drain system or local receiving waters. Construction projects not subject to Sacramento County Code Chapter 16.44 are subject to the Stormwater Ordinance (Sacramento County Code Chapter 15.12), described above.

Applicable projects applying for a County grading permit must show proof that a notice of intent (NOI) has been filed and must submit a copy of the SWPPP. Although the County has no enforcement authority related to the Construction General Permit, the County is required by its Municipal Stormwater Permit (Order Number R5-2008-0142) to verify that the SWPPP program includes six minimum components (public education and outreach on stormwater impacts, public involvement participation, illicit discharge detection and elimination, construction site storm water runoff control, post-construction storm water management in new development and redevelopment, and pollution prevention/good housekeeping for municipal operations).

In addition to the above construction controls, new development is required to include treatment of urban runoff using the BMPs required by the current standard defined in the Stormwater Quality Design Manual for the Sacramento Region. The BMPs include a number of options for treatment including simple grassy swales and rain gardens, to more complex systems that use cisterns, pumps, and sand filters.

CALIFORNIA WATER CODE

The California Water Code is enforced by the California Department of Water Resources (DWR). The mission of DWR is "to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments." DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide.

GROUNDWATER MANAGEMENT

Groundwater Management is outlined in the California Water Code, Division 6, Part 2.75, Chapters 1-5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030, and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and the SGMA (SB 1168, SB 1319, and AB 1739) in 2014. The intent of the Acts is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan.

The SGMA became law on January 1, 2015, and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting the SGMA, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction (Water Code Section 10720.1). Pursuant to the SGMA, any local agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be a "groundwater sustainability agency" for that basin (Water Code Section 10723). The Sacramento Central Groundwater Authority has notified DWR that it has elected to become a GSA pursuant to Water Code Section 10723.8, and intends to undertake sustainable groundwater management in area roughly coincident with the Sacramento Valley Groundwater Basin, South American Subbasin.

STATE PLAN OF FLOOD CONTROL

Section 9110(f) of the California Water Code defines the SPFC as follows, "'State Plan of Flood Control' means the state and federal flood control works, lands, programs, plans, policies, conditions, and mode of maintenance and operations of the Sacramento River Flood Control Project described in Section 8350, and of flood control projects in the Sacramento River and San Joaquin River watersheds authorized pursuant to Article 2 (commencing with Section 12648) of Chapter 2 of Part 6 of Division 6 for which the board or the department has provided the assurances of nonfederal cooperation to the United States, and those facilities identified in Section 8361."

The SPFC encompasses a wide network of facilities, which range from major structures such as levees, drainage pumping plants, drop structures, dams and reservoirs, and major channel improvements, to minor components such as stream gauges, pipes, and bridges.

CENTRAL VALLEY FLOOD PROTECTION ACT

The Central Valley Flood Protection Act of 2008 establishes the 200-year flood event as the minimum level of protection for urban and urbanizing areas. As part of the state's FloodSAFE program, those urban and urbanizing areas protected by flood control project levees must receive protection from the 200-year flood event level by 2025. The DWR and Central Valley Flood Protection Board (CVFPB) collaborated with local governments and planning agencies to prepare the 2012 Central Valley Flood Protection Plan (CVFPP) (DWR 2012), which the CVFPB adopted on June 29, 2012. The objective of the 2012 CVFPP is to create a system-wide approach to flood management and protection improvements for the Central Valley and San Joaquin

Valley. The Central Valley Flood Protection Act calls for updates to the CVFPP every 5-years. The 2022 CVFPP Update is the latest update of the plan.

Urban Levee Design Criteria

The purpose of the Urban Levee Design Criteria (ULDC) is to provide engineering criteria and guidance for civil engineers to follow in meeting the requirements of California's Government Code Sections 65865.5, 65962, and 66474.5 with respect to Findings that levees and floodwalls in the Sacramento-San Joaquin Valley provide protection against a flood that has a 1-in-200 chance of occurring in any given year, and to offer this same guidance to civil engineers working on levees and floodwalls anywhere in California. The ULDC also provides engineering criteria and guidance for DWR's urban levee evaluations and participation in urban levee projects. The ULDC may be updated from time to time, either in its current form or as regulations in the California Code of Regulations. The ULDC was developed through a collaborative stakeholder involvement process with representatives from cities, counties, flood agencies, and state and federal agencies.

Local

Sacramento County 2030 General Plan

The Agricultural, Conservation, and Safety Elements of the 2030 General Plan contain the following policies that are applicable to the project:

- **Policy AG-29.** The County shall minimize flood risks to agricultural lands resulting from new urban developments by:
    - Requiring that such developments incorporate adequate runoff control structures and/or
    - Assisting implementing comprehensive drainage management plans to mitigate increased risks of farmland flooding resulting from such developments.
- **Policy CI-65.** Incorporate Low Impact Design (LID) techniques to the greatest extent feasible to improve water quality runoff and erosion control, infiltration, groundwater recharge, visual aesthetics, etc. LID techniques may include but are not limited to:
    - Bioretention techniques, such as filtration strips, swales, and tree box filters
    - Permeable Hardscape
    - Green roofs
    - Erosion and sediment controls
    - Reduced street and land widths where appropriate

- **Policy CO-24.** Comply with the Sacramento Areawide National Pollutant Discharge Elimination System Municipal Stormwater Permit (NPDES Municipal Permit) or subsequent permits, issued by the Central Valley Regional Water Quality Control Board (Regional Board) to the County, and the Cities of Sacramento, Elk Grove, Citrus Heights, Folsom, Rancho Cordova, and Galt (collectively known as the Sacramento Stormwater Quality Partnership [SSQP]).
- **Policy CO-26.** Protect areas susceptible to erosion, natural water bodies, and natural drainage systems.
- **Policy CO-28**. Comply with other water quality regulations and NPDES permits as they apply to County projects or activities, such as the State's Construction General Permit and Aquatic Pesticides Permit.
- **Policy CO-30.** Require development projects to comply with the County's stormwater development/design standards, including hydromodification management and low impact development standards, established pursuant to the NPDES Municipal Permit.
- **Policy CO-31.** Require property owners to maintain all required stormwater measures to ensure proper performance for the life of the project.
- **Policy CO-93.** Discourage fill in the 100-year floodplain (Please also refer to CO-117).
- **Policy CO-94.** Development within the 100-year floodplain and designated floodway of Sacramento streams, sloughs, creeks or rivers shall be:
  - Consistent with policies to protect wetlands and riparian areas; and
  - Limited to land uses that can support seasonal inundation.
- **Policy CO-107.** Maintain and protect natural function of channels in developed, newly developing, and rural areas.
- **Policy CO-114.** Protect stream corridors to enhance water quality, provide public amenities, maintain flood control objectives, preserve and enhance habitat, and offer recreational and educational opportunities.
- **Policy CO-117.** Public roads, parking, and associated fill slopes shall be located outside of the stream corridor, except at stream crossings and for purposes of extending or setting back levees. The construction of public roads and parking should utilize structural materials to facilitate permeability. Crossings shall be minimized and be aesthetically compatible with naturalistic values of the stream channel.
- **Policy CO-118.** Development adjacent to waterways should protect the water conveyance of the system, while preserving and enhancing the riparian habitat and its function.
- **Policy CO-126.** Prohibit obstruction or underground diversion of natural waterways.

- **Policy SA-5.** A comprehensive drainage plan for major planning efforts shall be prepared for streams and their tributaries prior to any development within the 100-year floodplain defined by full watershed development without channel modifications. The plan shall:
  a. Determine the future 100-year flood elevations associated with planned and full development of the watershed;
  b. Determine the future 100-year floodplain boundaries for both flood elevations (planned and full development) based on minimum 2-foot contour intervals;
  c. Assess the feasibility of gravity drainage into the existing flowline of the stream;
  d. Assess the feasibility of alternative means of drainage into the stream;
  e. Identify potential locations for sedimentation ponds and other stormwater treatment facilities;
  f. Determine practical channel improvements and/or detention basins to provide the flood control needs of the proposed development;
  g. Determine the location and extent of marsh, vernal pool and riparian habitat;
  h. Develop measures for protecting and mitigating natural habitat;
  i. Develop measures for protecting and mitigating for federal and state listed endangered species;
  j. Develop and ensure implementation of measures that would reduce vector larvae;
  k. Identify appropriate plant species to be included as part of the natural features of the comprehensive drainage plan.

- **Policy SA-14.** The County shall require, when deemed to be physically or ecologically necessary, all new urban development and redevelopment projects to incorporate runoff control measures to minimize peak flows of runoff and/or assist in financing or otherwise implementing Comprehensive Drainage Plans.
- **Policy SA-16.** Deny creation of parcels that do not have buildable areas outside the 100- year floodplain unless otherwise allowed in the Floodplain Management Ordinance.
- **Policy SA-17.** For residential zoning, the area outside the 100-year floodplain must be contiguous or reasonably situated to provide buildable area for a residence and associated structures. Examples of structures include swimming pools, sheds, barns, detached garages, and other outbuildings that are normally associated with residential development. There may be exceptions (such as the Delta area) as allowed in the Floodplain Management Ordinance.
- **Policy SA-18.** Vehicular access to the buildable area of newly created parcels must be at or above the 10-year flood elevation. Exceptions may be made when the existing public street from which access is obtained is below the 10-year

flood elevation. There may be exceptions (such as the Delta area) as allowed in the Floodplain Management Ordinance.

- **Policy SA-22.** Areas within a 100-year floodplain shall not be upzoned to a more intensive use unless and until a Master Drainage Plan is prepared that identifies areas of the floodplain that may be developed.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities within the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan, which was last updated in 2003, provides guidance for both new development and the redevelopment of existing land uses within the community planning area. Objectives identified in the plan that are applicable to the project include:

- **Policy PS-3.** Provide adequate drainage and flood protection for all urbanized portions of the community.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan, which was developed in 1985, provides guidance for growth and development in the community planning area. Policies identified in the plan that are applicable to the project include:

- **Policy PF 3.** Restrict urban and rural development from encroaching into the 100-year floodplain.
- **Policy PF 6.** All types of urban development proposals must be accompanied by a detailed public services plan and specific timing and funding programs for the implementation and maintenance of services.

SACRAMENTO COUNTY DEPARTMENT OF WATER RESOURCES

The Sacramento County Department of Water Resources (County DWR) maps local 100-year floodplains that may not be identified by FEMA. Local floodplains in the county are typically mapped either in response to an area having flooding problems, or in response to a request by a property owner to make modifications to their parcel. In such circumstances, County DWR staff investigate the property and determine the floodplain elevation on the property, if feasible, or require a drainage study. Floodplains, whether local or FEMA, are regulated by the provisions of the Sacramento County Floodplain Management Ordinance, Improvement Standards, and Local Floodplain Management Plan.

All new developments and drainage improvements within the county are required to follow specific guidelines in design, rehabilitation, and maintenance of drainage facilities and natural waters as set forth by County DWR. The County's 2030 General Plan and Drainage Master Plan Program require that no adverse downstream impact shall occur

due to development. This is achieved by ensuring that the proposed improvements result in no water surface increases outside of the plan area upstream or downstream and that there are no peak flow increases downstream (i.e., the maximum rate of discharge and corresponding water levels would not be greater than under existing conditions). Other elements for consideration revolve around public health and safety issues, maintaining compliance with regulatory agencies, and providing the public with natural-appearing features. Additionally, dual use facilities including parks (active and passive) and trails are encouraged.

SACRAMENTO COUNTY FLOODPLAIN MANAGEMENT ORDINANCE

A Local Floodplain Management Plan is required for a community to participate in the NFIP Community Rating System. The original plan for Sacramento County was prepared in 1997 and was adopted by the Sacramento County Board of Supervisors on September 16, 1997 (Resolution 97-1112). The plan was later updated in 2001. The Floodplain Management Ordinance specifically describes what types of development activities are allowed and how proposed development may be permitted.

A Floodplain Management Plan is a comprehensive plan that describes how a community will deal with its flooding problem(s) and protect the natural and beneficial functions of its floodplain. The plan identifies the major watersheds and watercourses within the unincorporated area of Sacramento County, the flooding problems associated with these watercourses, and the measures being taken to minimize the flood risk for each watercourse. The goals of the Local Floodplain Management Plan are:

- protect new development from the potential of flooding from a 100-year flood event, and
- identify possible activities to reduce the potential of flood damage to existing structures.

All proposed development activity in floodplains -- those areas designated by FEMA on the FIRMs for Sacramento County (Community Number 060262) and other areas subject to flooding -- must be reviewed and permitted by the County's Floodplain Administrator (County DWR) before construction.

SACRAMENTO COUNTY STORMWATER ORDINANCE

The County has established a Stormwater Ordinance (Sacramento County Code Chapter 15.12). The Stormwater Ordinance prohibits the discharge of unauthorized non-stormwater to the County's stormwater conveyance system and local creeks. It applies to all private and public projects in the county, regardless of size or land use type.

SACRAMENTO COUNTY GRADING ORDINANCE

Sacramento County Code Chapter 16.44 (Land Grading and Erosion Control) requires private construction sites disturbing 1 or more acres or moving 350 cubic yards or more of earthen material to obtain a grading permit. To obtain a grading permit, project proponents must prepare and submit for approval an Erosion and Sediment Control Plan describing erosion and sediment control BMPs that will be implemented during

construction to prevent sediment from leaving the site and entering the County's storm drain system or local receiving waters. Construction projects not subject to Sacramento County Code Chapter 16.44 are subject to the Stormwater Ordinance (Sacramento County Code Chapter 15.12), described above.

Projects applying for a County grading permit must show proof that an NOI has been filed with the SWRCB and must submit a copy of the SWPPP. Although the County has no enforcement authority related to the Construction General Permit, the County is required by its Municipal Stormwater Permit (Order Number R5-2008-0142) to verify that the SWPPP program includes six minimum components (public education and outreach on storm water impacts, public involvement participation, illicit discharge detection and elimination, construction site storm water runoff control, post-construction storm water management in new development and redevelopment, and pollution prevention/good housekeeping for municipal operations).

Stormwater Quality Design Manual for the Sacramento Region

The Sacramento Stormwater Quality Partnership, which includes Sacramento County and the Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, and Sacramento, has prepared a Stormwater Quality Design Manual for the Sacramento Region (Sacramento Stormwater Quality Design Partnership 2018). This manual is intended to satisfy the regulatory requirements of each jurisdiction's respective municipal stormwater permits. The manual outlines planning tools and requirements to reduce urban runoff pollution to the maximum extent practicable from new development and redevelopment projects.

New development is required to include treatment of urban runoff using the BMPs defined in the Stormwater Quality Design Manual for the Sacramento Region. The BMPs include a number of options for treatment, from simple grassy swales and rain gardens to more complex systems that use cisterns, pumps, and sand filters.

Sacramento Hydromodification Management Plan

The revised draft Sacramento County Stormwater Quality Partnerships Hydromodification Management Plan (HMP) was released in 2013 and finalized in 2017. Through the HMP, projects would be required to incorporate LID measures from a menu of improvements based on a credit system.

Central Sacramento County Groundwater Management Plan

The Central Sacramento County Groundwater Basin stakeholders, in coordination with the Sacramento County Water Agency and the Water Forum Successor Effort have developed the CSCGMP. The CSCGMP represents a critical step in establishing a framework for maintaining a sustainable groundwater resource for the various users overlying the basin in Sacramento County between the American and Cosumnes Rivers. The CSCGMP was prepared in accordance with AB 3030 and SB 1938, the SGMA, as amended.

South American Subbasin Groundwater Sustainability Plan

The SGMA, passed by the California legislature in 2014, requires local entities to jointly assess groundwater conditions in their local areas and to develop a GSP by a specified deadline to ensure that sustainable conditions are achieved within 20 years of GSP adoption. An effective and efficient groundwater management plan is critical to the health and welfare of the people, the environment, and all other uses and users of groundwater in a local area. Six local entities responded to the mandate of SGMA and formed GSAs within the South American Subbasin. SCGA, OHWD, SRCD, NDGSA, Reclamation District 551 (RD 551), and Sacramento County, henceforth "the GSAs," have agreed to work together to develop and implement a GSP for the South American Subbasin.

Significance Criteria and Methodology

Significance Criteria

An impact on hydrology, drainage, or water quality would be significant if implementation of the project would:

- violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality;
- substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would:
    - result in substantial erosion or siltation on- or off-site,
    - result in flooding on-site or off-site,
    - create or contribute runoff water that would exceed the capacity of existing or planned stormwater-drainage systems or provide substantial additional sources of polluted runoff, or
    - impede or redirect flood flows;
- in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
- conflict with or obstruct implementation of a water quality control plan (i.e., Basin Plan) or sustainable groundwater management plan.

Issues Not Discussed Further

Risk Release of Pollutants due to Inundation in Tsunami or Seiche Zones

Because of the distance from the nearest open water body, the Pacific Ocean (more than 100 miles to the west), and the nearest lake, Folsom Lake (more than 13 miles to the northeast), the project would not be affected by inundation as a result of seiche or tsunami. Therefore, this issue is not considered further in this analysis.

Methodology

Evaluation of potential hydrologic and water quality impacts is based on a review of existing documents and studies that address water resources in the vicinity of the plan area, including the *West Jackson Highway Master Plan Master Drainage and Flood Control Study* (Wood Rodgers 2022), which is attached to this document as Appendix H. Information obtained from these sources was reviewed and summarized to describe existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that the project would comply with relevant federal, state, and local laws, ordinances, and regulations.

West Jackson Highway Master Plan Policies

The proposed WJHMP includes the following policy related to hydrology.

- **Policy 7.4.** Construct the storm water conveyance system, detention/ water quality basins as multi-purpose facilities to provide recreation opportunities in conjunction with drainage functions.

Impacts and Analysis

Impact HYD-1: Violate Water Quality Standards

Construction Impacts

Construction activities may include various land-disturbing activities (e.g., grading, excavation, and trenching) over approximately 5,913 acres, which would expose soils and increase the potential for soil erosion and sedimentation in runoff. Construction and development of the plan area is anticipated to occur over multiple phases and over several decades. Water quality impacts could occur during construction from increased soil erosion and sedimentation because of clearing vegetation, alteration of drainages, and grading. Construction also involves solvents, paints, concrete, and other materials that have the potential to contact and reduce water quality of stormwater runoff from construction sites.

The Sacramento County Stormwater Ordinance (Sacramento County Code Chapter 15.12) prohibits the discharge of unauthorized non-stormwater to the County's

stormwater conveyance system and local creeks. Non-stormwater refers to the prohibition on disposing of extra paint, oils, or other such materials into the stormwater system, as well as wash-water. The Stormwater Ordinance applies to all private and public projects in the county, regardless of size or land use type. In addition, the Land Grading and Erosion Control Ordinance (Sacramento County Code Chapter 16.44) requires private construction sites disturbing 1 or more acres or moving 350 cubic yards or more of earthen material to obtain a grading permit. To obtain a grading permit, project proponents must prepare, and submit for approval, an Erosion and Sediment Control Plan describing erosion and sediment control BMPs that will be implemented during construction to prevent sediment from leaving the site and entering the County's storm drain system or local receiving waters.

In addition to complying with the County's ordinances and requirements, construction sites disturbing 1 or more acres are required to comply with the state's General Stormwater Permit for Construction Activities. The Construction General Permit is issued by SWRCB and enforced by the Central Valley RWQCB. Coverage is obtained by submitting an NOI to SWRCB before construction. The General Permit requires preparation and implementation of a site-specific SWPPP that must be kept on site at all times for review by the state inspector. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project. In addition to erosion and sediment controls, the project must have BMPs in place to keep other construction-related wastes and pollutants out of the storm drains. Such practices include filtering water from dewatering operations, providing proper washout areas for concrete trucks and stucco/paint contractors, containing wastes, managing portable toilets properly, and dry sweeping instead of washing down dirty pavement. Applicable projects applying for a County grading permit must show proof that an NOI has been filed and must submit a copy of the SWPPP.

Depending on scheduling, construction could occur during multiple rainy seasons (October 1 through April 30). Because of the increase in exposed surfaces and the earth-moving activities, the potential for erosion and sedimentation is higher during the rainy season. Therefore, any project developed within the plan area must include an effective combination of erosion, sediment, and other pollution control BMPs in compliance with the County ordinances and the state's Construction General Permit. Examples of erosion control techniques include stabilized construction entrances, tackified mulch, 3-step hydroseeding, spray-on soil stabilizers, and anchored blankets. Sediment controls help to filter sediment out of runoff before it reaches the storm drains and local waterways. Examples include rock bags to protect storm drain inlets, staked or weighted straw wattles/fiber rolls, and silt fences.

With adherence to County ordinances, 2030 General Plan Policy CO-28, and the state's Construction General Permit and implementation of the required BMPs, construction activities would result in **less-than-significant** water quality impacts.

Operation Impacts

Development associated with implementation of the WJHMP has the potential to increase the pollutant load of stormwater discharges. Vehicles deposit heavy metals, oils, and other substances onto roadways, parking lots, and driveways; residents wash their cars in streets and driveways and the water picks up soaps, waxes, and the dirt, oils, and heavy metals from the cars; and people maintaining landscaping areas use pesticides and fertilizers. Industrial land uses may generate discharges of wash water and process water with trace levels of contamination. Water carries these and other pollutants into storm drains, where the water flows without treatment directly into the streams that provide drinking water, recreation, and wildlife habitat. This runoff could increase pollutant loads to such an extent that the waterway becomes impaired. Water temperatures can be increased, which affects the health of many organisms that live in the creeks. Nutrients in fertilizers can cause water quality problems because they can promote blooms of algae. Increases in stormwater discharge amounts or velocity have the potential to greatly accelerate downstream erosion and impair stream habitat in natural drainage systems.

There is potential for development of the plan area to cause or contribute to a long-term increase in discharges of urban contaminants into the stormwater drainage system compared to existing conditions. In accordance with the federal CWA, California Porter-Cologne Act and California Water Code, Industrial General Permit, County stormwater management regulations such as 2030 General Plan Policies CO-24, CO-30, and SA-14 (discussed above), new construction must maintain pre-project hydrology and incorporate proper pollutant source controls, minimize pollutant exposure outdoors, and treat stormwater runoff through proper BMPs when source control or exposure protection are insufficient for reducing runoff pollutant loads.

LID measures, such as disconnected roof drains, amended soils, tree planting, and separated pavement areas, would also be required by the County under 2030 General Plan Policy CI-65 and Sacramento HMP to reduce the amount of stormwater that would runoff from the developed areas by reducing effective imperviousness in the plan area, and by promoting infiltration and pre-treatment. At the time of grading applications, individual projects would be required to develop a hydrograph management plan that indicates the LID measures. As discussed further in Impact HYD-3, runoff would be attenuated through a system of detention basins that would be designed to either gravity drain or pump collected drainage, into the Morrison Creek and Elder Creek watersheds.

A review of the 303(d) list of impaired waterways indicates that Morrison Creek is impaired with diazinon (an insecticide) from urban runoff/storm sewers and pentachlorophenol (a pesticide and disinfectant) and pyrethroids (an insecticide) from unknown sources and Elder Creek is impaired with chlorpyrifos (a pesticide) and diazinon from urban runoff/storm sewers and pyrethroids from unknown sources (SWRCB 2023). These contaminants are generally associated with agricultural practices. The project would result in the conversion of agricultural land in the plan area to urban uses. This would limit the potential for the plan area to contribute the

insecticides and pesticides for which these waterways are listed to Morrison Creek and Elder Creek. Development consistent with the WJHMP would introduce the potential for urban contaminants such as fertilizers, soaps, and oils to be introduced into the stormwater system. However, the drainage system in the plan area has been developed using stormwater water quality design features to reduce the contaminant load in area stormwater prior to release into surface waterways and all future development would comply with regulations established to minimize the potential for release of pollutants. Therefore, implementation of the WJHMP would be consistent with NPDES regulations and would not cause a net increase of the pollutants for which the waterways are listed.

Compliance with the 2030 General Plan, County Stormwater Ordinance, the requirements of the NPDES MS4 permit, NPDES Industrial General Permit, and implementation of LID Standards would minimize the potential that implementation of the WJHMP would cause a violation of a water quality standard or waste discharge requirement. Therefore, implementation of the WJHMP would not result in substantial increases of polluted runoff and impacts to water quality would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT HYD-2: SUBSTANTIALLY DECREASE GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE

The quantity of groundwater in the eastern portion of the South American Subbasin, where the plan area is located, has been steadily declining due to unconfirmed causes. Per the CalAm and SCWA Domestic Water Studies, implementation of the WJHMP and future development would result in estimated total average annual water demand of 9,060 acre-feet per year, a total average day demand of 5,617 gallons per minute (GPM), a total maximum day demand of 11,233 GPM, and a total peak hour demand of 22,466 GPM. The WJHMP does not propose development of new wells within the plan area. The southern portion of the plan area is located within Zone 40 of the SCWA, which has a groundwater supply capacity of 68.17 million gallons per day (MGD), with an anticipated expansion of 63.83 MGD. Zone 40 also consists of 41 wells with a reasonable design capacity of 62.6 MGD. The northern portion of the plan area is located within the CalAm service area, which has a has a firm capacity of existing well supply sources of 24.6 MGD. Approximately 93 percent of the CalAm water supply is from groundwater sources, with the remainder of surface water coming through purchases with adjacent City of Sacramento and SCWA water purveyors. Impacts related to supplying potable water to development in the WJHMP Area are further discussed in Chapter 20, “Water Supply.”

Future development projects under the proposed plan would result in new impervious surfaces throughout the 5,913 acres of the plan area and its proposed residential, commercial, employment, mixed use, industrial, institutional, school, park, and open space land uses and could reduce rainwater infiltration and groundwater recharge in those areas. However, as noted in Impact HYD-1, on-site LID and BMPs would be incorporated into each project’s design, consistent with the 2030 General Plan policies,

such that the stormwater runoff would be redirected to local detention basins prior to being discharged back to the Morrison and Elder Creek systems. Additionally, the 1,882 acres designated for open space and open space/urban agriculture would allow minimal development that would not increase impervious surfaces in a manner that would substantially impede groundwater recharge. Because the detention basins would temporarily retain stormwater within the designated open space in the plan area, the detention basins would facilitate groundwater recharge within the plan area. Compliance with County General Plan Policies CI-65, CO-24, CO-28, CO-30, and CO-31, the County's Municipal Storm Water Permit, the Stormwater Quality Design Manual for the Sacramento Region, the South American Subbasin Groundwater Sustainability Plan, Central Sacramento County Groundwater Management Plan's would result in implementation of BMPs to improve and provide groundwater recharge and to prevent depletion of groundwater supplies. Therefore, the WJHMP would result in a **less-than-significant** impact related to groundwater supply, recharge, and quality.

MITIGATION MEASURES

No mitigation is required.

IMPACT HYD-3: SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERN OF THE PLAN AREA SUCH THAT SUBSTANTIAL EROSION, FLOODING, OR POLLUTED RUNOFF COULD OCCUR

Development within the plan area would alter the existing drainage pattern of the site. The *West Jackson Highway Master Plan Master Drainage and Flood Control Study* (Appendix H) analyzes the drainage requirements for buildout at plan level and identifies the drainage facilities required to maintain downstream drainage impacts at or below existing conditions. The study establishes a conceptual backbone drainage system, tributary watersheds, the location of drainage facilities, pre-development and post-development flows, required flood detention and post-project water quality conditions. As summary of the proposed drainage for the plan area is provided as Figure 2-12 in Chapter 2, "Project Description."

Within the 18 watersheds described in the Master Drainage & Flood Control Study, the plan includes 26 proposed detention basins and seven pump stations. Pump stations are proposed where the elevation of the detention basin is below the elevation of the discharge creek and gravity flow into the creek is not possible. The pumped detention basins would use a single duty pump to evacuate a 2-year storm event in 48 hours to reduce the amount of flow and to provide a 200-year level of flood protection. The final assumed pumping capacities and rates for each pumped basin are summarized in Table 14-1. Gravity basins were designed with a stepped outlet to accommodate peak flows associated with the 2-year, 10-year, and 100-year storm events.

Table 14-1 Pump Station Summary

Basin	Pump Number[1]	Pump Start Water Surface Elevation (feet)	Design Flow (cubic feet per second [cfs])	Pump Shutoff at Morrison Creek Flow (cfs)
Watershed WJP1 [2]	1 [3]	27.5	65	300
	2	32.2	65	500
	3	35	65	565
Watershed WJP2	1	31	4	—
	2	34	4	—
Watershed WJP3 [4]	1 [5]	5.5	15	345
	2	8.5	15	635
	3	15	15	650
Watershed WJP [4]	1	2	7.5	350
	2	10	7.5	550
Watershed WJP [5]	1	11	10	—
Watershed WJP [6]	1	51	4	—
	2	54	4	—
Watershed WJG106 [6]	1	60	1	—

Notes:

[1] Table shows duty pumps required for design flows. All pumped basins to have redundancy for the largest required pump.

[2] Full pumping capacity is used when the basin water surface elevation is above 50 feet.

[3] Pump turns back on if basin water surface elevation hits 35 feet and Morrison Creek Flow is below 565 cfs in order to accommodate large storm events.

[4] Full pumping capacity is used when the basin water surface elevation is above 20 feet.

[5] Pump turns back on if basin water surface elevation hits 15 feet and Morrison Creek Flow is below 620 cfs in order to accommodate large storm events.

[6] While a pump station will be required for part of the drainage shed, the pump is intended to discharge into a gravity conveyance system and gravity basin prior to discharging to Morrison Creek. Therefore, it is annotated with a gravity designation.

Source: Wood Rodgers 2022.

Detention facilities would be constructed to attenuate storm water runoff to predevelopment levels. Mined areas that historically gravity drained to Morrison Creek would utilize detention basins and pump stations to pump back into Morrison Creek at reduced flows compared to their historical predevelopment drainage flows (Figure 2-11). The piped drainage systems would discharge to either a constructed channel along the future Rock Creek Parkway or detention basins prior to being discharged to Morrison or Elder Creeks. The open channel and detention basins would provide additional water quality benefits, runoff reduction, stormwater infiltration, groundwater recharge, and evapotranspiration. The open channel along Rock Creek Parkway would have varying widths of 50 to 300 feet, incorporating a low-flow channel and gradual side slopes, and would provide additional stormwater detention volume for 100-year through 500-year

events prior to discharge or pumping to Morrison Creek. The areas within the plan area that have not undergone mining activities and currently drain to Morrison Creek or Elder Creek would continue to drain into the two creeks.

The existing weir and detention basin along Morrison Creek located in the northeastern portion of the plan area would also continue to attenuate flows. Peak flows would enter the detention basin through the weir and would be gradually pumped back into the Morrison Creek system. The attenuation of peak flows within the project area would reduce flows downstream, while providing opportunities to pump storm drain discharges from within the plan area back into the system.

These detention basins would address hydromodification and stormwater quality; slowing stormwater flows reduces the potential for erosion, controlling the outfall between the detention basins and the natural waterways reduces the potential for flooding, and storing water in basins can improve stormwater quality when entrained sediments and other potential pollutants settle to the bottom of the basin. A creek flow monitoring station would be set at the discharge points of the pumps, and pumps would be turned off when the creek is at the flow threshold. Additional pumps in the detention basin would turn on as the stage of the basin increases so that the maximum pumping capacity would only be fully used during less frequent storm events.

Conceptual modeling was used to demonstrate that the detention basin footprints presented in the Master Drainage & Flood Control Study are adequate. The drainage study analyzes three independent phases for development of drainage infrastructure: Phase A, the northern half of the plan area; Phase B, the western portion of the plan area; and Phase C, the southern half of the plan area. The report indicates that development of each interior basin can occur independently, subject to any flood control improvements required to facilitate development described in Impact HYD-4. Within Watershed WJP3, which spans Phase B and Phase C, any development was determined to require construction of the detention basin and associated pump stations identified in Table 14-1.

With the implementation of the drainage plans developed in the Master Drainage & Flood Control Study, overall offsite flows for both Elder Creek and Morrison Creek would not exceed existing discharge rates and the project would provide onsite stormwater management. However, specific details related to hydromodification and stormwater quality are provided in this Master Drainage & Flood Control Study at the plan level and are anticipated to be accommodated within individual watersheds as onsite facilities during future entitlement stages as required for tentative mapping. County requirements are stipulated in the Sacramento Region's Stormwater Quality Design Manual for both hydromodification and storm water quality and additional flow attenuation features may be required to comply with the County's HMP.

In addition, although the drainage systems in the post-development condition is anticipated to incorporate LID and hydromodification principles to reduce urban runoff, improve water quality, and implement the County's Municipal Storm Water Permit (MS4 Permit), specific LID facilities would to be planned during subsequent entitlement applications. The Master Drainage & Flood Control Study does not detail which LID

facilities would be utilized or where they will be located, but assumes that these measures can and would be implemented as development occurs. Implementation would utilize the tool known as the Sacramento Area Hydrology Model (which was developed by Clear Creek Solutions, Inc., dated March 2013). Due to the uncertainty inherent in this level of design, this impact is potentially significant.

At implementation, the Project Applicants or subsequent developers would identify specific LID techniques that achieve the results assumed in the study. Mitigation Measure HYD-3a would require evidence that the suite of LID techniques implemented at the project-level would meet the HMP criteria and achieve the credits assumed in the modeling. Mitigation Measure HYD-3b would require County approval of all project-level detention basin and channel designs prior to implementation. Implementation of Mitigation Measures HYD-3a and HYD-3b would ensure that the project would be required to demonstrate that the design features described above would mitigate the development's potential to generate substantial erosion, siltation, or other environmental harm through the proposed drainage modifications. Impacts related to hydromodification would be **less than significant with mitigation**

MITIGATION MEASURES

MITIGATION MEASURE HYD-3A: PROJECT-LEVEL DRAINAGE STUDIES

Before approval of future tentative maps, the Project Applicant(s) or future developer(s) shall submit a drainage study in accordance with the requirements outlined in the Sacramento Stormwater Quality Partnership's 2018 Stormwater Quality Design Manual (or subsequent updates) and Sacramento County's Hydromodification Management Plan. Project-level studies must identify the applicable watersheds and associated basins and pumping features described in the Master Drainage & Flood Control Study. The study shall describe permanent stormwater quality treatment facilities and low-impact design techniques that will be incorporated and provide evidence that the techniques satisfy the assumptions in the Master Drainage & Flood Control Study prepared for the project and ensure no exceedance of existing discharge rates.

MITIGATION MEASURE HYD-3B: DETAILED DRAINAGE DESIGNS

Prior to construction of all drainage improvements, detailed plans for the design of the improvements that demonstrate the proposed improvements will achieve the primary functions of flood conveyance and stormwater quality treatment while minimizing maintenance requirements shall be submitted to the County DWR for review and approval.

IMPACT HYD-4: RISK RELEASE OF POLLUTANTS DUE TO INUNDATION IN FLOOD HAZARD ZONES

As discussed in the "Environmental Setting" section, the plan area is located within the 100-year flood hazard areas (Zone A, AE, and AO), and designated as Special Flood Hazard Areas (SFHAs). Smaller portions of the plan area are located within the 100 to 500 year flood area (shaded Zone X). The NFIP's floodplain management regulations must be enforced in SFHAs like the 100-year flood zone, requiring the purchase of flood

insurance (FEMA 2023). As discussed in Impact HYD-3, a drainage master plan was completed (Appendix H) pursuant to General Plan Policy SA-5 to analyze the planned drainage and flood control facilities for the WJHMP to ensure that the project maintains downstream drainage impacts at or below existing conditions. The drainage master plan also demonstrates that all areas planned for development can be removed from the flood hazard area, consistent with the assumptions of the County's General Plan EIR (Sacramento County 2010: 7-26) and would provide flood control that meets or exceed 200-year standards for the plan area.

The proposed new flood control facilities are shown in Figure 14-5. Other improvements include raising areas above the floodplain, constructing levees for protection, and construction of spur levees to tie into existing high ground; closure of the tunnels at Fruitridge Road, Jackson Highway, and Bradshaw Road; and new levees to achieve required flood protection. Implementation of these flood control improvements would protect the plan area from the 100-year and 200-year flood events.

Due to the size of the plan area, development would not occur at once, and would instead be phased over several decades. The two land use districts established in the plan area for development purposes, have been further divided into Flood Improvement Areas, shown in Figure 14-4. These Flood Improvement Areas establish the required flood control improvements for sub-areas of the plan area and assist in future phasing considerations, as well as supporting the development of project's Public Facilities Financing Plan:

- Flood Improvement Area 1 in District 1 would include planned high ground areas to connect into existing high grounds, tunnel closure structure at Fruitridge Road, new levees to achieve required flood protection, and spur levees to tie into existing high grounds.
- Flood Improvement Area 2 in District 1 would require a levee along Mayhew Road if the southern levee of Morrison Creek cannot, or is not, certified. Where high ground is constructed along the east side of Mayhew Road, the levee road can be omitted. If District 2- Flood Improvement Area 1 is constructed, then Mayhew Road would need to be raised. Anticipated improvements would include raising existing ground to above the 200-year water surface elevation of Morrison Creek and the adjacent detention basin, tunnel closure structures at Jackson Highway and Bradshaw Road, and raising existing roads or building levees on the land side of existing roads.
- Flood Improvement Area 3 in District 1 would require a levee geotechnical analysis which would determine whether the portion of Jackson Highway between Morrison Creek and the setback levee should be evaluated as a levee. Ultimately, it is anticipated that FEMA will determine whether these potential levees are classified as levees. New levees would be constructed to achieve required flood protection and tunnel closure structures would be located at Jackson Highway.

- Flood Improvement Area 1 in District 2 would raise areas above floodplains or would construct levees/flood walls for protection.
- Flood Improvement Area 2 in District 2 would raise areas above floodplains or would construct levees/flood walls for protection and a tunnel closure structure would be located at Bradshaw Road.

As discussed in Appendix H, all planned levee and flood control facilities (detention and pumping) behind levees would be required to be submitted to FEMA to ensure that structures are designed, constructed, certified, and accredited in accordance with 44 CFR 65.10, before FEMA modifies their FIRMs. The proposed levee along the south side of Morrison Creek downstream of Excelsior Road provides protection in the event that the Mather Dam fails. The design of the proposed levee is considered adequate since there is freeboard under a dam break scenario. Elsewhere in the plan area, the effects of the Mather Dam failure breach flows are negligible due to the weir on Morrison Creek and capacity of the associated basin to accommodate inflow from a catastrophic Mather Dam failure. While portions of the plan area are within the inundation zone of the Folsom Dam, specifically the northwestern portions of the plan area, the probability of dam failure is low. For the areas within the inundation zone, evacuation maps and rescue plans will be prepared by the California Division of Safety of Dams (DSOD) in coordination with County staff prior to development within such inundation areas.

All drainage and flood control facilities would be designed to meet stringent ULDC requirements for the construction of levees to protect populations at risk. The ULDC standard is achieved with limited/controlled flows entering Morrison Creek, and top-of-levee design elevations set a minimum of 3 feet above the maximum 200-year storm with climate change. Although a portion of the plan area is within the 100-year flood zone, existing regulations, such as the State Plan of Flood Control, Sacramento County Floodplain Management Ordinance, General Plan policies, and the policies related to floodplain management in the Cordova Community Plan and Vineyard Community Plan, would reduce the risks associated with development in these areas. Improvements to the plan area would include raising areas above the floodplain, constructing levees or floodwalls for protection, and construction of spur levees to tie into existing high ground, closure of tunnels at Fruitridge Road, Jackson Highway, and Bradshaw Road, and new levees to achieve required flood protection. As stated in Appendix H, all planned levee and flood control facilities (detention and pumping) behind levees would need to be submitted to FEMA to ensure the structures are being designed, constructed, certified, and accredited in accordance to 44 CFR 65.10 and meet ULDC 200-year requirements and all state and federal flood protection requirements for the plan area. Additionally, the WJHMP proposes primarily open space and park land uses within the vicinity of the floodplain, consistent with General Plan Policies CO-93 and CO-94. The WJHMP would be required to comply with all policies and regulations associated with flood hazards.

Implementation of the WJHMP would require compliance with the *Master Drainage and Flood Control Study* (Appendix H), State Plan of Flood Control, Sacramento County Floodplain Management Ordinance, Cordova Community Plan and Vineyard Community Plan policies, and applicable General Plan policies, mitigating potential

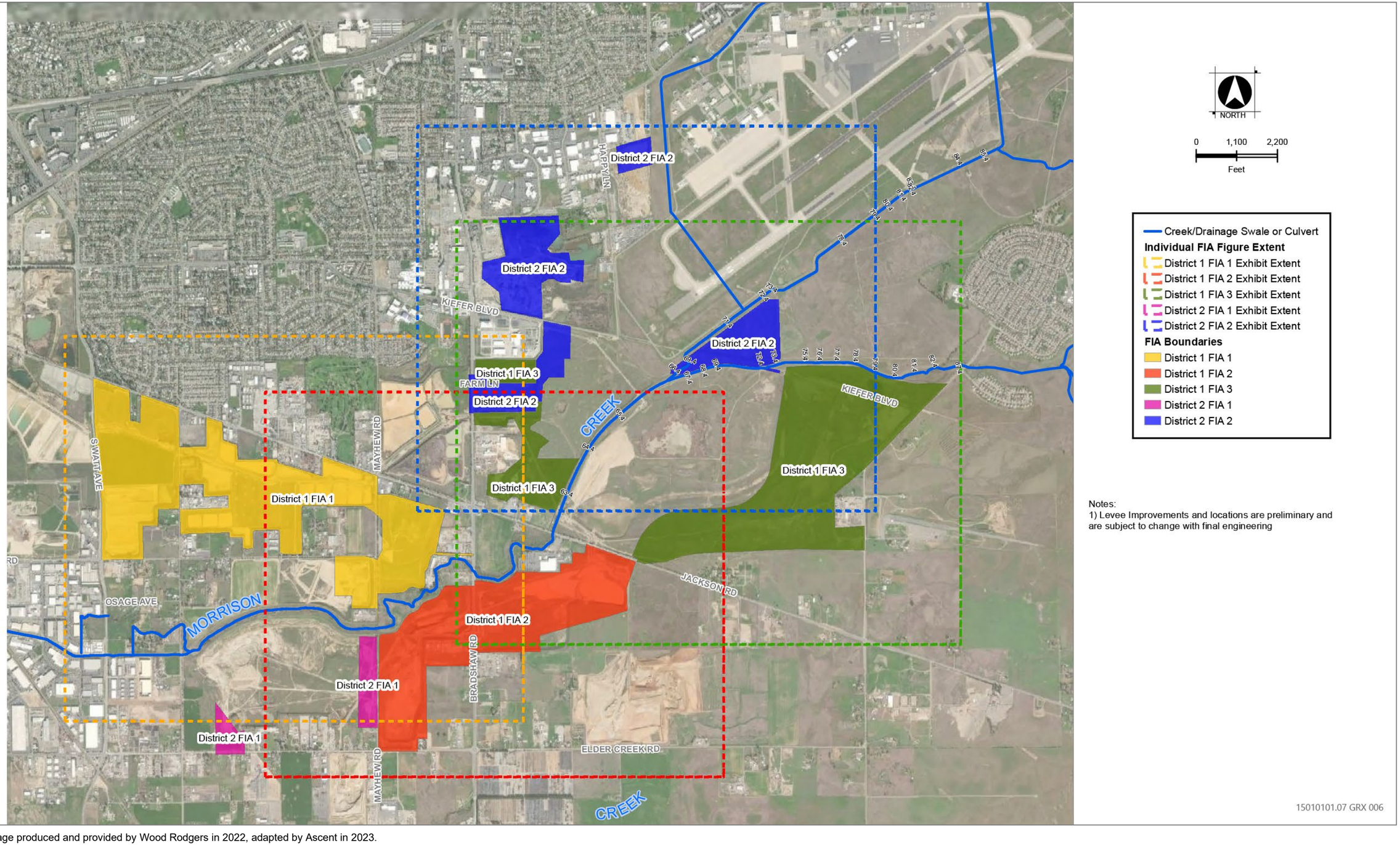
impact of flood hazards. Compliance with the Sacramento County Floodplain Management Ordinance would ensure that no residence is placed within a flood hazard area, and that people or structures will not be exposed to a significant risk involving flooding (Sacramento County 2010: 7-44). The *Master Drainage and Flood Control Study* (Appendix H) concluded that the flood protection improvements planned are anticipated to improve the level of flood safety for the plan area and downstream properties by providing a reliable levee and weir system to reduce peak flows in Morrison and Elder Creeks. The study demonstrates that the plan area could be safely developed with urban land uses without adversely affecting predevelopment conditions in the Morrison and Elder Creeks systems and that the project would meet all flood safety requirements. However, it remains uncertain at this time whether the drainage infrastructure improvements would be constructed in phases, and whether non-participating property owners would grant permission for improvements on their property. Due to the uncertainty inherent in this level of design, this impact is potentially significant.

Prior to any modifications to the existing floodplain, approval of a CLOMR from FEMA would be required. In-kind replacement for any loss in flood storage capacity due to floodplain modifications must be provided to prevent downstream flooding impacts consistent with the applicable 2030 General Plan and Community Plan policies listed above. Mitigation Measure HYD-4 would ensure that the project is implemented according to FEMA requirements and would not result in flooding during phased development or with buildout. Impacts would be **less than significant with mitigation**.

MITIGATION MEASURES

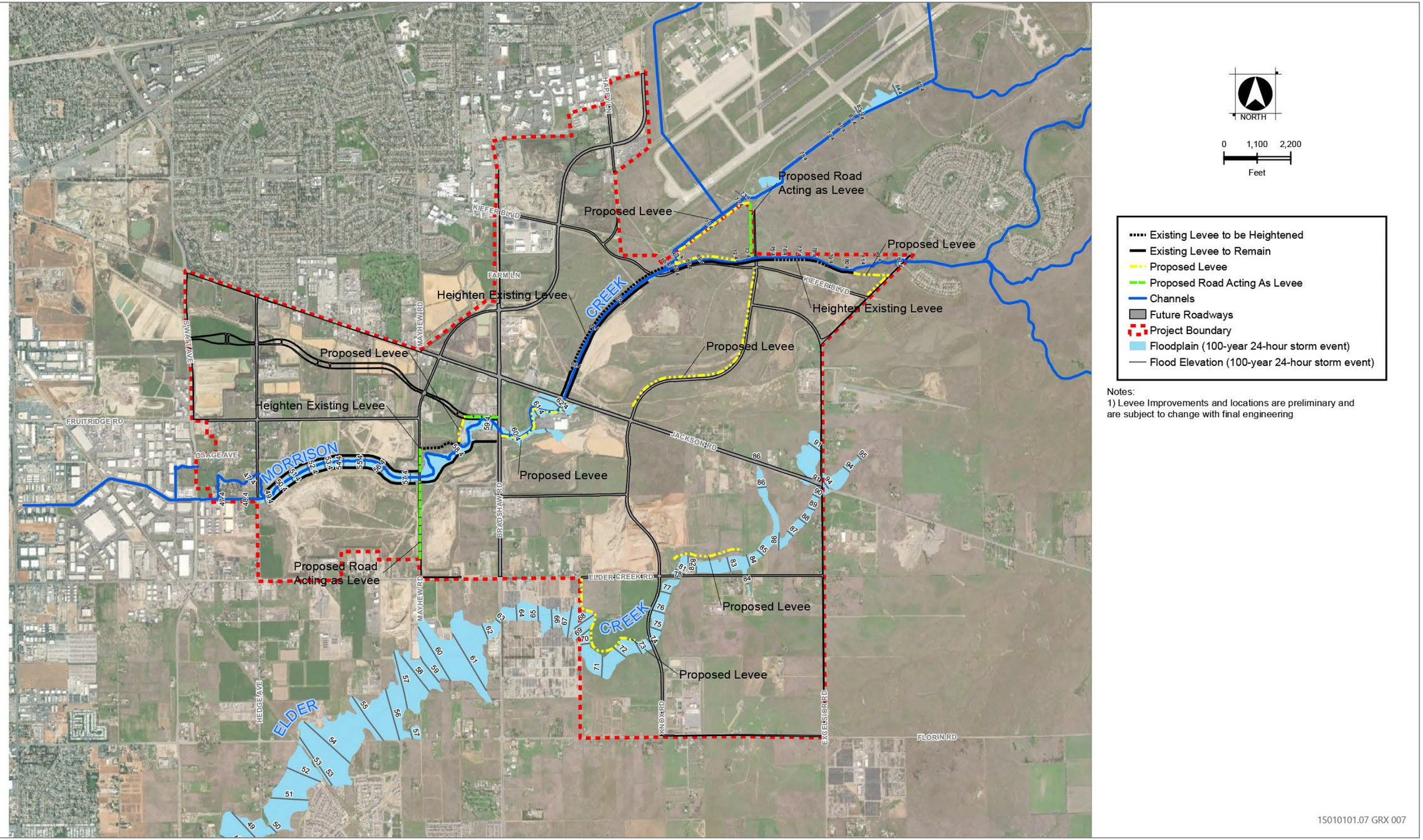
MITIGATION MEASURE HYD-4: CONDITIONAL LETTER OF MAP REVISION

Prior to any modification of the existing FEMA mapped floodplain in the Morrison Creek and Elder Creek watersheds in the plan area, the Project Applicant(s) or subsequent developer(s) shall obtain approval of a Conditional Letter of Map Revision (CLOMR) from FEMA. In addition, the Project Applicant(s) or subsequent developer(s) shall provide in-kind replacement for any loss in flood storage capacity resulting from floodplain modifications.



Source: Image produced and provided by Wood Rodgers in 2022, adapted by Ascent in 2023.

Figure 14-4 Flood Improvement Area



Source: Image produced and provided by Wood Rodgers in 2022, adapted by Ascent in 2023.

Figure 14-5 Preliminary Levee Locations

IMPACT HYD-5: CONFLICT WITH A WATER QUALITY CONTROL PLAN OR SUSTAINABLE GROUNDWATER MANAGEMENT PLAN

The Basin Plan for the Sacramento and San Joaquin River Basin, and the Central Sacramento County Groundwater Management Plan and the Groundwater Sustainability Plan for the South American Subbasin are the guiding documents for water quality and sustainable groundwater management in the plan area. The Basin Plan for the Sacramento and San Joaquin River Basin includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. Water quality standards are established for all the ground and surface waters of the region within the Basin Plan for the Sacramento and San Joaquin River Basin. As discussed in Impact HYD-1, impacts related to water quality during construction and operation of future projects in the plan area would be less than significant. As discussed in the "Regulatory Setting" section, the CSCGMP was prepared in conformance with AB 3030 and SB 1938. The CSCGMP has been developed to establish a framework for maintaining a sustainable groundwater resource for the various users overlying the Central Sacramento County Groundwater Basin. The plan area falls within the South American Subbasin that is under the jurisdiction of six local entities that have formed GSAs. The entities prepared and adopted an approved GSP, which the basin is managed under as part of compliance with the SGMA and CSCGMP. Development under the proposed WJHMP would be consistent with the GSP and would not decrease groundwater supplies or interfere substantially with groundwater recharge such that the WJHMP may impede sustainable groundwater management of the basin, as growth and associated water demand within the South American Subbasin (including development under the WJHMP) was considered in the GSP when determining the basin's groundwater supplies. The required stormwater BMPs and retention basins would be designed to reduce runoff below that occurs currently during storm events and ensure groundwater recharge from the plan area to the extent possible. Additionally, the WJHMP's water demand is not expected to exceed the County's groundwater supplies in any Normal, Single Dry, or Multiple Dry Year through the year 2045, as further discussed in Chapter 20, "Water Supply," and the WJHMP would not conflict with a sustainable groundwater management plan. Through compliance with the Stormwater Quality Design Manual for the Sacramento Region, SWPPPs, SGMA, CSCGMP, and General Plan policies, the WJHMP would have a **less-than-significant** impact related to conflicting or obstructing implementation of a basin plan or sustainable groundwater management plan.

MITIGATION MEASURES

No mitigation is required.

IMPACT HYD-6: RESULT IN POTENTIAL CLIMATE CHANGE EFFECTS ON THE PROJECT

As analyzed in Appendix H, low and high scaling factors, representing a change in the runoff expected with climate change, were used to determine if project design changes would be required under a range of potential climate change conditions. The study

outlines climate scaling factors that could be applied to various nearby watersheds. The scaling factors were used to adjust the precipitation-depth factors of the modeling, resulting in scaled hydrographs for these hypothetical scenarios. Of the watersheds for which climate change predictions are available, Arcade Creek and Pleasant Grove Creek were determined most like Morrison Creek and Elder Creek within the plan area. Scaling factors were derived from the analysis for three design events (200-year, 200-year 24-hour storm, and 200-year 20-day storm events) and five different durations (1, 3, 7, 10, 15, and 30 days).

Under the scenario that uses the flow rate predictions for Arcade Creek, modeling demonstrates that the climate change flow would not exceed 1.0 cubic feet per second in the channels or detention basins within the plan area. The study determined that climate change would increase the elevation and flow within Morrison Creek; however, the analysis showed minimal change in elevation and flow between existing and ultimate climate change conditions downstream of the weir and detention basin within the plan area. Planned interior detention basins were also analyzed for climate change impacts. Planned detention basins that drain by gravity would meet the freeboard requirements for the 100-year storm event are met when applying the scaling factor for climate change. Pumped detention basins WJP2, WJP3, WJP5, and WJP6 would require additional storage capacity to accommodate climate change flows and volumes. As described above, high water flows in Morrison Creek would spill via weir onto a detention basin the adjacent, previously mined area in the northeast portion of the plan area (WJP1 in Figure 2-12). Additional pumps may be effective in directing excess stormwater from the area east of the proposed setback levee to the basin. In addition, areas adjacent to the WJP4 and WJP5 detention basins where mining has occurred would be reclaimed as open space areas, which could be flooded to provide climate change resilience. Ultimately, development within the plan area is designed for climate resiliency through its proposed flood protection improvements, including the reliable levee and weir systems.

The County has not adopted guidance for evaluation of project effects on flood potential in light of climate change or established a regional solution to addressing flooding because of climate change. Therefore, there is not a clear threshold upon which to measure project effects. It would be speculative to reach a conclusion regarding the actual degree to which the project would be able to adequately accommodate the increased flows from a climate change scenario. Nonetheless, it is acknowledged that some level of planning may be required by the County to address a regional solution to the potential hydrologic impacts that could occur with climate change. Therefore, the County is requiring the implementation of Mitigation Measure HYD-6.

MITIGATION MEASURES

MITIGATION MEASURE HYD-6: HYDROLOGIC ANALYSIS FOR A CLIMATE CHANGE SCENARIO

At the time of submittal of backbone infrastructure plans, the Project Applicant or subsequent developers of the master plan shall submit a hydrologic analysis that is based upon adopted County guidance regarding a reasonably foreseeable climate change scenario. Based on the results of the hydrologic analysis and if impacts are

identified, the Project Applicant shall implement all feasible design measures within the Project's drainage system to adequately maintain pre-project flows with consideration of climate change effects. Potential improvements could include larger and additional culverts at roadway crossings and deepening the existing basin(s) within the Plan Area that would be subject to over-topping. Basin deepening would require minimal construction-related impacts including excavation and hauling of an additional increment of soil from the site. These construction-related impacts have been evaluated throughout this EIR.

Alternatively, if the County has adopted a regional solution for flooding related to climate-change, the Project Applicant or subsequent developers of the master plan shall contribute its fair share towards funding the construction of the regional solution.

If the County has not developed a regional solution or has not adopted guidance for evaluating hydrologic climate-related impacts, the Project Applicant or subsequent developers of the master plan shall prepare and submit a hydrologic analysis that is based on the best available technical information at that time, in consultation with the County's Department of Water Resources and the Office of Planning and Environmental Review.

IMPACT HYD-7: CONTRIBUTE TO FLOODING OF BEACH STONE LAKES

PROPOSED PROJECT

The plan area is located approximately 15 miles upstream of the BSL area, within the Morrison Creek Stream Group that contributes runoff to the BSL area. As described above, the BSL area is subject to flooding during large rain events and no plans for structural improvement are currently in process to address this deficiency. The project could exacerbate the existing offsite flooding conditions in the BSL area if it would result in flows that contribute to an increase in floodplain depth.

With the implementation of the drainage plans developed in the Master Drainage & Flood Control Study, overall offsite flows for both Elder Creek and Morrison Creek would not exceed existing discharge. As described above in Impact HYD-3, the weir on Morrison Creek and proposed network of detention basins are anticipated to attenuate flows from the plan area. Peak flows would enter the detention basin through the weir and would be gradually pumped back into the Morrison Creek system. However, project-level drainage studies and detailed drainage designs would be necessary to validate the design assumptions in the Master Drainage & Flood Control Study. These studies are required by Mitigation Measures HYD-3a and HYD-3b, respectively.

In addition, the County has adopted and levied the Beach Stone Lake Flood Volume Mitigation Fee to address the contribution of upstream projects to flooding impacts in the BSL area. Development projects in the Morrison Creek Stream Group that increase the potential for flooding in the BSL area are required to pay fees that fund the County's efforts to address flooding. Mitigation Measure HYD-7 requires either assurance that no net project-related increase in flood volume in Beach Stone Lakes would occur or payment into the County's BSL mitigation fund, which provides financial assistance to

the programs the County has in place to reduce the cumulative flooding impact. Based on the plan-level flood control study, which indicates that stormwater outflows from the plan area would be metered to address the potential for the plan area to contribute to offsite flooding, this impact would be **less than significant with mitigation**.

MITIGATION MEASURES

MITIGATION MEASURE HYD-7: BEACH STONE LAKE MITIGATION

The Project Applicant(s) and subsequent developer(s) shall mitigate downstream impacts by either of the following options:

a. Payment of the Beach Stone Lakes Mitigation Fee (Sacramento County Water Agency Zone 11A).

b. Ensuring no net project-related increase in volume in Beach Stone Lakes by metering outflow from the plan area, increasing storage capacity of onsite facilities, directing drainage into downstream facilities offsite, or other regional drainage solutions as determined by the County Department of Water Resources.

15 LAND USE, POPULATION, AND HOUSING

INTRODUCTION

This chapter describes land use conditions on and in the vicinity of the plan area and identifies land use–related laws, regulations, and plans relevant to the project. It also evaluates potential land use–related impacts that could occur with implementation of the project. Specifically, it evaluates whether implementing the project would physically divide an established community; conflict with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect; or displace substantial numbers of people or housing. The physical environmental effects associated with construction and operation of the project, many of which pertain to issues of land use compatibility (e.g., noise, aesthetics, air quality), are evaluated in other chapters of this Draft EIR. Consistency with airport planning documents and the potential for the project to create an airport-related safety hazard for people residing or working in the area are addressed in Chapter 7, “Airport Compatibility.” Consistency with the South Sacramento Habitat Conservation Plan is addressed in Chapter 8, “Biological Resources.”

Comments on land use submitted in response to the notice of preparation (NOP) expressed concerns related to the creation of adjacent incompatible land uses. These concerns are addressed below and in other resource chapters, as appropriate. The NOP and comments received in response to it are presented in Appendix A.

ENVIRONMENTAL SETTING

SACRAMENTO COUNTY DEMOGRAPHICS

Sacramento County is 994 square miles and includes seven incorporated cities. The population of unincorporated Sacramento County was 597,614 in January 2024, a 0.4 percent decrease in population from the same time a year earlier. With the population of the incorporated cities included, the population of the county was 1,578,938 in January 2024. Population grew for the county in total by 0.1 percent from 2023 to 2024, which is slightly less than the statewide growth of 0.2 percent (DOF 2024).

There were 228,692 households in the unincorporated county In January of 2024, a 0.2 percent increase from the same time a year earlier. The county in total had 606,021 housing units and an overall rate of growth of 0.8 percent between 2023 and 2024, indicating that housing growth is currently stronger in the incorporated cities and is in alignment with the 0.8 percent rate of housing growth reported statewide (DOF 2024).

REGIONAL SETTING

The plan area is located on the eastern edge of the Sacramento metropolitan area (see Figure 2-1). Surrounding land uses include a mix of industrial, residential, employment,

mining, and agricultural uses. West of the plan area, in the city of Sacramento, are industrial facilities (warehouses, storage yards, manufacturing), employment centers, and mining sites. Approximately 230 acres of land at the southwestern corner of Jackson Highway and South Watt Avenue, in the city of Sacramento, are owned by Teichert. The site, formerly used for mining, is currently used for wash ponds, drying facilities, and a conveyor belt system that transports raw aggregate from nearby mining sites to the Teichert Perkins facility. The company's Aspen 1-New Brighton development, a mixed-use project that will include residential, commercial, and other uses, is planned for this site.

Land uses north of the western portion of the plan area (west of Bradshaw Road) include the unincorporated community of Rosemont, which has predominantly lower- density single-family neighborhoods and small neighborhood commercial centers. Other uses in this area include the Cordova Golf Course and industrial uses, such as warehouses and landscape supply yards. Land uses north of the eastern portion of the plan area (east of Bradshaw Road) include Mather Airport (the former Mather Air Force Base), which is now used primarily as an air cargo facility and business park that provides predominately aviation services. The runways of Mather Airport are located approximately one-quarter mile northeast of the northern portion of the plan area. Rosemont High School, operated by Sacramento City Unified School District, is located adjacent to the plan area, at the southwestern corner of Kiefer Boulevard and Bradshaw Road.

East of the plan area are agricultural and agricultural-residential properties and the Sacramento Raceway, which are located in the Jackson Township Specific Plan area. The master-planned community is expected to include up to 6,143 housing units; 2 million square feet of commercial, office, and mixed-use development; schools; a fire station and community center; parks; and a large wetland preserve.

South of the plan area are rural residential properties, agricultural land, mining land, and a commercial nursery. This land is part of the Florin-Vineyard Community Plan area and the North Vineyard Station Specific Plan area. These communities are planned to support residential, commercial, and industrial land uses and are in the process of building out.

Plan Area Setting

The plan area occupies approximately 5,913 acres east of South Watt Avenue in the Vineyard and Cordova communities, in an unincorporated area of Sacramento County. The plan area boundaries are generally the city of Sacramento to the west; Jackson Highway (State Route 16), Kiefer Boulevard, and Goethe Road to the north; Excelsior Road to the east; and Elder Creek Road and Florin Road to the south (see Figure 2-2).

Land Use Designations

The predominant Sacramento County General Plan land use designations in the plan area are Extensive Industrial (2,385 acres), Agricultural-Urban Reserve (1,722 acres), and General Agriculture (1,713 acres) (see Figure 2-6). Relatively small areas are designated Intensive Industrial (72 acres), Commercial and Offices (17 acres), and

Public and Quasi-Public (4 acres). In addition, portions of the plan area contain an aggregate resource area overlay. Pursuant to General Plan Policy CO-37, the County applies the aggregate resources combining land use category to areas determined to contain mineral resources that are appropriate for mining.

Lands in the plan area south of Jackson Highway and a portion north of Jackson Highway are in the Vineyard Community Plan area (see Figure 2-5). The remainder of the plan area north of Jackson Highway is in the Cordova Community Plan area (see Figure 2-5). The following community plan land use designations are in the plan area (see Figure 2-7):

- Permanent Agriculture (AG-20)
- Permanent Agriculture (AG-40)
- Permanent Agriculture (AG-80)
- Permanent Agriculture (AG-160)
- Agricultural-Residential 1
- Agricultural-Residential 2
- Shopping Center
- Limited Commercial
- Light Industrial
- Heavy Industrial
- Industrial Reserve
- Major Roads

ZONING

Most of the plan area is zoned either industrial (M-1, M-2, IR) or agricultural (AG-20 to AG-160) (see Figure 2-8**Error! Reference source not found.Error! Reference source not found.**). Small areas are zoned agricultural-residential (AR-1, AR-2) and commercial (LC). Approximately two-thirds of the plan area has a surface mining (SM) overlay.

The full list of zoning designations in the plan area is as follows:

- AG-20: Agriculture 20 acres
- AG-20(SM): Agriculture 20 acres (Surface Mining)
- AG-40: Agriculture 40 acres
- AG-80: Agriculture 80 acres
- AG-80(SM): Agriculture 80 acres (Surface Mining)
- AG-160: Agriculture 160 acres

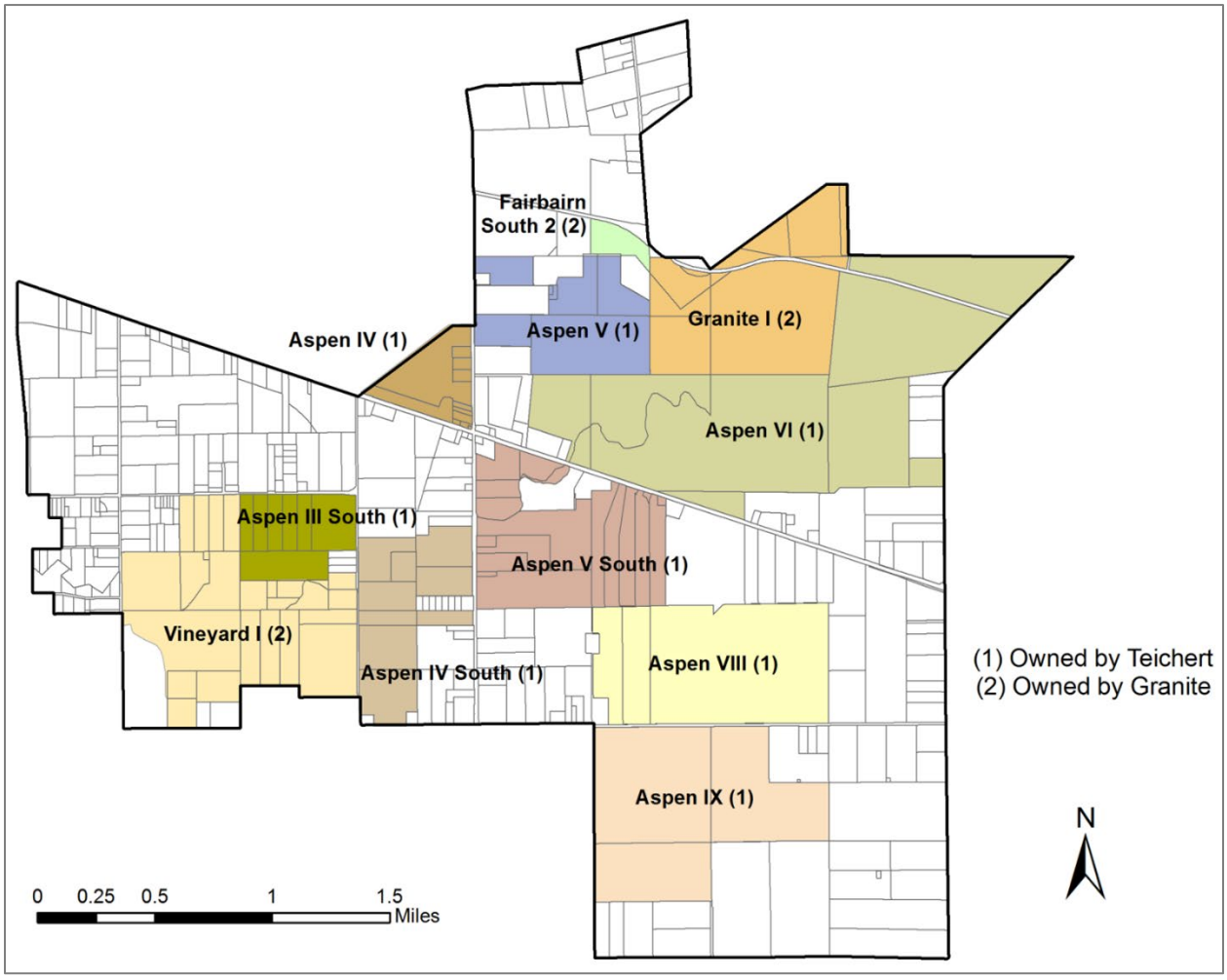
- AG-160(SM): Agriculture 160 acres (Surface Mining)
- AR-1: Agricultural-Residential 1 acre
- AR-2: Agricultural-Residential 2 acres
- IR: Interim Agricultural Reserve
- IR(SM): Interim Agricultural Reserve (Surface Mining)
- LC(SM): Light Commercial (Surface Mining)
- GC: General Commercial
- M-1: Light Industrial
- M-1(SM): Light Industrial (Surface Mining)
- M-2: Heavy Industrial
- M-2(SM): Heavy Industrial (Surface Mining)

The intended uses in these land use zones are as follows:

- M-1 (Light Industrial): This zone allows development of industrial uses that include fabrication, manufacturing, assembly, or processing of materials that for the most part are already in processed form and that do not in their maintenance, assembly, manufacture, or plant operation create smoke, gas, odor, dust, sound, or other objectionable influences that might be obnoxious to persons conducting business or residing in this or any other zone.
- M-2 (Heavy Industrial): This zone allows uses allowed in the M-1 zone and allows industrial uses not allowed in the M-1 zone.
- IR (Interim Agricultural Reserve): This zone allows residential and open space uses and a limited number of additional uses.
- AG-20 to AG-160 (Agriculture): These zones allow agricultural uses on parcels that are a minimum 20 acres in size.
- AR-1 and AR-2 (Agricultural-Residential): These zones allow residential uses and a limited number of agricultural uses on 1- and 2-acre parcels.
- GC (General Commercial): This zone allows a wide choice of commercial uses, including warehousing operations, auto repair shops, and service stations. This zone is intended to be used in those locations along major streets and in commercial subdivisions where uses would not adversely affect the surrounding development.
- LC (Light Commercial): This zone allows a wide choice of retail goods and services in locations where individual small lots are desired. It is intended to be used in those locations along major streets and in commercial subdivisions where unlimited commercial uses are not appropriate or would not be compatible with the surrounding development.

Land Uses

The plan area mostly comprises existing and former aggregate mining areas and agricultural properties. Aggregate mining has been the dominant land use in the area since the 1930s. The project applicants—Teichert, and Granite—separately own a total of approximately 4,079 acres of the plan area. Teichert owns approximately 3,016 acres, and Granite owns approximately 1,063 acres. In total, the properties owned by the project applicants represent 69 percent of the plan area. These properties primarily include aggregate mining sites used for sand and gravel extraction, many of which have already been reclaimed. Although most of the mining in the plan area is complete, considerable portions of the project applicants' properties still support various construction- and mining-related activities. The project applicants have 11 aggregate mining sites in the plan area (Figure 15-1), of which Granite 1, Aspen III South, Aspen VIII, and Aspen IX are still in operation. The Granite 1 mine is currently idle. The Vineyard 1 and Aspen VI mines are in the process of reclamation. Electric conveyor systems cross many of these mining properties and transport mined materials to the existing construction materials processing plants operated by Teichert and Granite.



Source: Provided by Sacramento County in 2023.

Figure 15-1 Active Mining Sites in Plan Area

Other industrial uses in the area include truck storage yards, warehouses, and building and landscaping supply yards. Many of the building and landscaping supply businesses are located adjacent to Jackson Highway.

The approximately 1,834-acre portion of the plan area not owned by the project applicants (referred to as the nonparticipating properties) is made up primarily of agricultural properties and generally is located in the eastern and southeastern portions of the plan area. Properties with agricultural zoning are largely devoted to rural residential, grazing, and passive open space uses. A limited amount of agricultural activities occur on these properties. Small commercial and agricultural-residential areas are also present in the plan area. Three rural residential neighborhoods in the area have clusters of homes on 1- to 5-acre lots. Elk Grove Unified School District operates an elementary school (Sierra Enterprise) in the plan area, at the intersection of Hedge Avenue and Fruitridge Road. Figure 2-3 identifies the parcels owned by Teichert and Granite, as well as the nonparticipating properties in the plan area.

South Watt Avenue and Excelsior Road are along the western and eastern boundaries of the plan area, and Kiefer Road and Florin Road are along the north and south boundaries, respectively. Internal roadways include Jackson Highway and Elder Creek Road, which cross the plan area in an east-west direction, and Hedge Avenue, Mayhew Road, and Bradshaw Road, which cross the area in a north-south direction. All these roads are two-lane roadways except for Bradshaw Road, which is a four-lane roadway.

Regulatory Setting

Federal

No federal plans, policies, regulations, or laws related to land use are applicable to the project.

State

California Government Code Section 65300

California Government Code Section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. The general plan is a comprehensive, long-term, and general document that describes plans for the physical development of a city or county and of any land outside its boundaries that, in the city's or county's judgment, bears relation to its planning. The general plan addresses a broad range of topics, including at a minimum land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city's or county's vision for the area. The general plan typically addresses the physical character of an area over a 20-year period. Although the general plan serves as a blueprint for future development and identifies the overall vision for the planning area, it remains general enough to allow for flexibility in the approach taken to achieve the plan's goals.

California Government Code Section 65800

The State Zoning Law (California Government Code Section 65800 et seq.) establishes that zoning ordinances, which are laws that define allowable land uses in a specific zone district, are required to be consistent with the general plan and any applicable specific plans. When amendments to the general plan are made, corresponding changes in the zoning ordinance may be required within a reasonable time to ensure that the land uses designated in the general plan also would be allowable by the zoning ordinance (Section 65860[c]).

California Government Code

Preparation of, adoption of, and amendments to a city or county general plan is authorized by Section 65350 et seq. of the Government Code. Government Code Section 65350.5 mandates that before the adoption or substantial amendment of a city's or county's general plan, the planning agency shall review and consider all the following actions:

(a) An adoption of, or update to, a groundwater sustainability plan or groundwater management plan pursuant to Part 2.74 (commencing with Section 10720) or Part 2.75 (commencing with Section 10750) of Division 6 of the Water Code or groundwater management court order, judgment, or decree.

(b) An adjudication of water rights.

(c) An order or interim plan by the State Water Resources Control Board pursuant to Chapter 11 (commencing with Section 10735) of Part 2.74 of Division 6 of the Water Code.

Refer to Chapter 20, "Water Supply," for further discussion.

Regional

Sacramento Area Council of Governments' Blueprint

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento region that includes Sacramento County. SACOG's multifaceted support extends to local governments, addressing such diverse issues as transportation planning, funding assistance, airport planning, and housing affordability.

SACOG's Blueprint is a smart growth vision for the region that was adopted by the SACOG Board of Directors in 2004. It is SACOG members' plan to build a connected region that includes transportation options for residents, affordable housing for the region's growing population, and equitable investments that give all community members access to a safe and healthy region.

The Blueprint is intended to be advisory and to guide the region's transportation planning and funding decisions. It is based on the following seven principles (SACOG n.d.):

- **Transportation Choice**: Developments should encourage people to walk, bike, use public transit, or carpool to their destinations.
- **Compact Development**: Creating environments that are more compactly built and use space in an efficient but attractive manner helps to encourage more walking, biking, and transit use and shorter auto trips.
- **Mixed-Use Development**: Building homes, shops, entertainment, offices, and even light industrial uses near each other can create active, vital neighborhoods. The mix of uses can occur on many different scales and be either vertical (such as a single building with a ground floor business and residences on upper floors) or horizontal (with a combination of uses in close proximity). Mixed-use projects function as local activity centers, contributing to a sense of community, where people tend to walk or bike to destinations and interact more with each other.
- **Housing Choice and Diversity**: Providing a variety of places where people can live—apartments, townhomes, condominiums, and single-family detached homes of varying lot sizes—creates opportunities for the variety of people who need them: families, singles, seniors, and people with special needs.
- **Use of Existing Assets**: In urbanized areas, development on infill or vacant lands, intensification of the existing use (for example, adding additional buildings to a low-density shopping center), or redevelopment can make better use of existing public infrastructure, including roads.
- **Natural Resource Conservation**: Developments should incorporate public use open space (such as parks, town squares, trails, and greenbelts) to help create a sense of community and attractive neighborhoods. Additionally, conserving natural places and resources, including open space, agriculture, and wildlife and habitat areas, contributes to improving quality of life by providing cleaner air and outdoor experiences.
- **Quality Design**: The design details of any land development (such as relationship to the street, placement of garages, facades, sidewalks, street widths, landscaping) are all factors that influence the attractiveness of living in a compact development and facilitate the ease of walking within and in and out of a community.

Although the Blueprint is not a regulatory document, Sacramento County General Plan Policy LU-113 calls for the County to work with SACOG to support implementation of the Blueprint's policies and land use objectives and General Plan Policy LU-120 requires evaluation of consistency with regional planning efforts.

Sacramento Area Council of Governments' Metropolitan Transportation Plan/Sustainable Communities Strategy

SACOG, in coordination with each member city and county, is responsible for preparing and updating the MTP/SCS for the region every 4 years and for preparing and adopting the corresponding Metropolitan Transportation Improvement Program (MTIP) every 2 years. The MTP/SCS provides a 20-year transportation vision and corresponding list of projects, whereas the MTIP, which covers 4 years, is a comprehensive listing of transportation projects that receive federal funds, require a federal action, or are regionally significant. The current MTP/SCS was adopted by the SACOG Board of Directors on November 18, 2019 (SACOG 2019).

In each MTP update cycle, SACOG prepares a regional growth and land use forecast to identify the general location of different types of land uses, residential densities, employment intensities, and natural resource areas. Preparing the forecast is a critical step toward planning for future transportation needs, improving air quality, and meeting climate change goals.

As described in Appendix D, "2020 MTP/SCS Land Use Forecast Documentation," of the MTP/SCS, new development in the plan area and other areas along Jackson Highway is part of the County's long-term vision. Development in these areas is not identified within the current MTP/SCS planning period (i.e., through 2040).

SACOG has begun the process of updating the MTP/SCS, which is expected to be finalized in 2025.

Local

Sacramento County 2030 General Plan

The Sacramento County General Plan presents a set of goals, objectives, policies, implementation measures and maps that form a blueprint for physical development in the unincorporated county. On November 9, 2011, the Sacramento County Board of Supervisors adopted an updated General Plan. Since then, two elements—the Environmental Justice Element and the Housing Element—have been adopted. The other elements have been amended multiple times.

The General Plan provides an inventory of land supply in the county, and it projects the amount and location of land and development that will be required to accommodate future populations and economic growth through 2030. The Land Use and Environmental Justice Elements provide land development guidance through the implementation of Policies LU-1 through LU-128 and EJ-19 (Sacramento County 2022, 2019). The land use policies presented below are those that are both pertinent to the project and intended to avoid an environmental effect. Although the land use policies are drawn from the Land Use Element, many are intended to avoid impacts related to other impact areas, such as public services and air quality.

- **Policy LU-12.** The County will prohibit land use projects which are not contiguous to the existing UPA, city boundaries, or existing planned communities or master project areas (i.e. leapfrog development).
- **Policy LU-13.** A Public Facilities/Infrastructure Master Plan shall be prepared to identify the major facilities required to serve new development in urban growth areas. A Public Facilities Financing Plan shall be prepared and approved by the Board of Supervisors prior to or concurrent with the approval of any zoning for any urban uses in urban growth areas. The Financing Plan shall include a Public Facilities/Infrastructure Master Plan describing required major infrastructure improvements necessary to support proposed developments, and present a detailed plan for the phasing of capital improvements and identifies the extent, timing and estimated costs of all necessary infrastructure.
- **Policy LU-19.** Incompatible urban land uses should be buffered from one another by methods that retain community character, and do not consume large land areas or create pedestrian barriers.
- **Policy LU-21.** Promote a better balance of employment, neighborhood services, and different housing types by reviewing development projects and the surrounding community and designing new projects wherever feasible so that they maintain or improve the mix of uses in the community.
- **Policy LU-22.** Specific Plans and Community Plans should provide a balance of employment, neighborhood services, and different housing types wherever feasible.
- **Policy LU-23.** Providing compact, mixed use developments shall be an integral part of all master planning efforts for new growth areas and commercial corridors.
- **Policy LU-25.** Depending on its emphasis, a mixed use development may include the following proportions of different uses, shown as percentages of the site area [see Table 15-1]:

Table 15-1 Emphasis of Development

Use	Commercial	Office	Residential
Retail	50–70%	10–30%	10–30%
Office	0–20%	50–70%	0–30%
Residential	20–40%	0–30%	50–80%
Public	10–30%	10–30%	10–30%

NOTE: Commercial uses refer to the LC and SC zones. Office uses refer to the BP and MP zones. Residential uses refer to the RD-5 through RD-50 zones.

- **Policy LU-34.** Developments in the areas designated on the Land Use Diagram as Transit Oriented Development shall be designed in a manner that conforms to the concepts of transit-oriented development, including:
    - High intensity, mixed-use development concentrated in a Core Area within an easy walk (one quarter mile) of a transit stop on the Trunk or Feeder Line Network.

- An emphasis on neighborhood support commercial services at street level in the Core Area that can serve the residents of the Core and surrounding Secondary Areas, with other employment encouraged in the TODs created along the Trunk Line Network.
- A pleasant walking environment created through good land use design, short distances, amenities, and streetscape features.
- Direct, multiple linkages, especially for bicycles and pedestrians, between the Core Area and the surrounding Secondary Area.

- **Policy LU-35.** The primary concepts in LU-34 should be employed wherever feasible in new urban development.
- **Policy LU-36.** Community Plans and Specific Plans shall employ the primary concepts in LU-34 in designating locations for higher intensity mixed use development and designing circulation and pedestrian networks.
- **Policy LU-38.** Community Plans, Specific Plans, and development projects shall be designed to promote pedestrian movement through direct, safe, and pleasant routes that connect destinations inside and outside the plan or project area.
- **Policy LU-46.** Assure that regionally-oriented commercial and office uses and employment concentrations have adequate road access, high frequency transit service and an adequate but efficient supply of parking.
- **Policy LU-71.** Reduce the energy impacts from new residential and commercial projects through investigation and implementation of energy efficiency measures during all phases of design and development.
- **Policy LU-89.** Support planning for and development of mixed use centers and urban villages along commercial corridors to improve quality of life by creating diverse neighborhood gathering places, supporting enhanced transit service and non-automative travel, stimulating local economic development, eliminating blight and balancing land uses.
- **Policy LU-94.** Use design review to ensure that new commercial and residential development projects are designed to be compatible with existing neighborhoods and improve quality of life.
- **Policy LU-110.** County departments shall coordinate with public service providers independent from County government, including schools, parks and recreation, reclamation, water, transit, electric and other service districts, in developing financial and service planning strategies consistent with the General Plan policies.
- **Policy LU-113.** The County shall work with SACOG to support implementation of Blueprint's policies and land use objectives.
- **Policy LU-119.** The County shall only accept applications to expand the UPA or initiate an expansion of the UPA or any Master Plan processes outside of the existing UPA if the Board finds that the proposal meets the following:

- *Parallel processes to expand UPA and prepare Master Plans*: Proposed additions to the UPA will only be considered when accompanied by a request to initiate a Master Plan process for all land encompassed by the proposed UPA expansion boundary. Likewise, requests to initiate a Master Plan process outside the UPA will only be considered when accompanied by a request to expand the UPA to include all land encompassed by the proposed Master Plan.[1]
- *Project Justification Statement and Outreach Plan*: Proposed UPA expansions/Master Plan processes must be accompanied by both a "Justification Statement" and an "Outreach Plan." The Justification Statement shall be a comprehensive explanation of the proposed request and the development it would allow. It must include background information, reasoning, and the goal(s) and benefits of the proposed project. The Outreach Plan shall describe how the project proponent plans to inform and engage neighbors and members of the general public about the proposed UPA expansion and project.
- *Proximity to existing urbanized areas*: Proposed UPA expansions/Master Plan processes must have significant borders that are adjacent to the existing UPA or a city boundary. As a guideline, "significant borders" generally means that the length of the boundary between the existing UPA or city boundary and the proposed UPA expansion/Master Plan should be 25 percent of the length of the boundary of the UPA expansion area.
- *Logical, comprehensive, and cohesive planning boundaries*: Proposed UPA expansions/Master Plan processes must consist of a contiguous set of parcels that have a regular outside boundary consistent with the logical planning boundary illustrations below. All parcels within this boundary must be included in both the proposed UPA expansion and proposed Master Plan area.



Example of logical planning boundary | Example of logical planning boundary | Example of illogical planning boundary | Example of illogical planning boundary

[1] A "Master Plan" is defined as a plan that meets the requirements and intent of the Specific Plan statutes contained in Government Code §65450–65457, which requires a land use plan, a circulation plan, an infrastructure plan, and implementation measures. The requirement for a "Master Plan" might be fulfilled by a variety of planning tools, including a Specific Plan, a Community Plan, a Special Planning Area, a development agreement, or any combination thereof.

- **Policy LU-120.** The County shall only consider approval of a proposed UPA expansion and/or Master Plan outside of the existing UPA if the Board finds that the proposed project is planned and will be built in a manner that[2]:
  - meets all of the requirements per PC-1 through PC-10, and;
  - meets ONE of two alternative performance metrics:
    - Alternative #1 - Criteria-Based
    - Alternative #2 - VMT/Greenhouse Gas Emissions Reduction Metric

  PC-1. Vision for connection to other adjacent existing and potential future development areas.

  Required: Include a vision of how the development will connect to other adjacent existing and potential future development areas within the USB, including how roadways, transit, sewer, and water could occur within all adjacent areas.

  PC-2. Housing choice.

  Required: A variety of housing types and densities, including single-family homes, duplexes, triplexes, accessory dwelling units, townhomes, condominiums, apartments and similar multi-family units, in a variety of settings including both residential neighborhoods and mixed use nodes.

  PC-3. Quality.

  Required: Design guidelines, development standards and/or similar assurances that will require high-quality development consistent with the vision set forth in the Master Plan.

  Discussion: The County's General Plan contains numerous policies that address quality of new development, but does not provide specific details regarding how a particular Master Plan will be planned and built to ensure that quality is achieved. Conversely, many of the County's tools used to implement the General Plan (such as zoning) provide specific details about how land can be used and developed, but do not necessarily address quality. The Master Plan is the bridge between the broad-based General Plan and fine-grained implementation tools like zoning, making it the ideal context to address the quality of development expected within its boundaries.

  Master Plans should provide specific details regarding the quality envisioned for the project and appropriate standards to ensure that it will be built out over time in a manner that achieves the stated vision.

[2] Some areas within a Master Plan may have existing uses that are not likely to change and are appropriate to remain. If the Master Plan designates such areas with a land use category that reflects that existing use, the Board may exclude these areas for purposes of determining consistency with these criteria.

Detailed design guidelines and firm development standards can be excellent tools for creating certainty that quality will be achieved. Elements of quality to be addressed may include:

Building form, including architectural styling, materials, articulation, orientation, size, massing, etc.

"Theming" at the neighborhood or community level, including consistent signage, materials, landscaping, and other elements

Amenities provided beyond those required by law

The public realm

- Relationship between uses

PC-4. Accommodate the percentage of low and very low income residential units required by state law per the County's current Housing Element based on the Regional Housing Needs Allocation (RHNA).

Required: Accommodate ≥90 percent of the obligation per RHNA (currently ~33% of units accommodated in RD-20 or higher).

Discussion: State law (California Government Code Section 65583) requires cities and counties to provide "adequate" sites with appropriate zoning, development standards, infrastructure, and public services to facilitate and encourage the development of a variety of types of housing for all income levels.

State law requires SACOG to periodically adopt a Regional Housing Needs Plan (RHNA) for the six-County region. The RHNA determines each jurisdiction's "fair share" of the region's housing needs per a methodology established by state law and approved by the California Department of Housing and Community Development (HCD). The purpose of this is to avoid over-concentration of low-income households in any one community.

As part of periodic Housing Element updates required by state law, the County must create a land inventory that identifies vacant and underutilized land available for residential development within the unincorporated area. This land inventory is used to demonstrate how the County can accommodate its "fair share" of the region's housing needs as determined by the RHNA, including how it will provide adequate sites for low and very low households. Currently, 37 percent of the units allocated to the County per the RHNA are for low and very low households and must be accommodated on land zoned for 20 dwelling units per net acre (RD-20) or greater.

Requiring Master Plans to be consistent with this criterion ensures that they are contributing their "fair share" of adequate sites toward the County's overall obligation per state law. It represents the "break even" point where the County's ability to meet state law neither helped nor

hurt by adoption of the Master Plan. If numerous Master Plans were adopted with a considerably lower percentage of its units accommodated on land zoned RD-20 or greater, the County could fall short of adequate sites over time and be forced again to rezone properties in existing communities or planned growth areas, or face other negative consequences such as a moratorium on issuing building permits.

PC-5. Pedestrian- and transit-oriented design.

Required: Pedestrian- and transit-oriented design, including:

- Sidewalks and bike routes along interconnected streets with short block lengths and a high intersection density.
- Prominent pedestrian and bicycle network.
- Few if any cul-de-sacs.
- Pedestrian and bike connections at the ends of all cul-de-sacs unless infeasible due to topography or similar impediments inherent in the project site.

PC-6. Infrastructure Master Plan and Financing Plan.

Required: Inclusion of an Infrastructure Master Plan and Financing Plan that include the following:

- The Infrastructure Master Plan shall identify required public facilities and infrastructure (including roads, transit, water, sewer, storm drainage, schools, fire, park, library, and other needed community facilities) and associated costs for the development of the proposed UPA expansion/Master Plan;

The Financing Plan shall:

  - Include an infrastructure phasing analysis that examines development through buildout taking into consideration potential development activities, facilities requirements and constraints;
  - Identify the phase or timing for when the facilities are needed;
  - Identify the funding mechanisms proposed to pay for the identified infrastructure and facilities;
  - Demonstrate that infrastructure requirements and the associated costs are reasonably balanced throughout each development phase and outline solutions for any potential constraints and/or shortfalls for any given phase.

PC-7. Services Plan.

Required: Inclusion of a Services Plan to demonstrate:

that provision of services to the proposed UPA expansion/Master Plan are cost-neutral to the County's General Fund and existing ratepayers;

that the operations and maintenance costs stemmed from the required public facilities and infrastructure for the development of the proposed UPA expansion/Master Plan are cost-neutral to the County's General Fund and existing ratepayers; and

that existing levels of municipal services will not be negatively impacted by approval and buildout of the proposed UPA expansion/Master Plan.

PC-8. Consistency with County-adopted plans.

Required: Consistency with all applicable County adopted plans not sought to be amended by the proposed project.

PC-9. Consideration of regional planning efforts.

Required: Inclusion of a discussion/analysis of how the proposed UPA expansion/Master Plan relates to broad-based and regional planning efforts, such as SACOG's adopted Blueprint Vision and Metropolitan Transportation Plan, Sacramento County's Visioning documents created for the Jackson Highway and Grant Line East Areas, any applicable Habitat Conservation Plan(s), the Sacramento Metropolitan Air Quality Management District's State Implementation Plan, and Regional Transit's Master Plan.

PC-10. Consideration of jobs-housing balance.

Required: Inclusion of a discussion/analysis of the proposed UPA expansion/Master Plan's jobs-housing balance. Master Plans should provide an internal jobs-housing balance and/or improve the jobs housing balance within the project's vicinity.

Alternative #1 – Criteria-Based

To satisfy this alternative, the Board must find that the proposed project is planned and will be built in a manner that:

- meets all of the requirements per the criteria below, and
- qualifies for a minimum of 18 points (out of a possible 24) per the criteria below

CB-1. Minimum net density.

Required: Minimum density of at least 7 dwelling units per net acre if using "double net" methodology or 9.3 dwelling units per acre if using "triple net" methodology.

Points:

1. ≥8 dwelling units per acre if using "double net" methodology, or ≥10.6 dwelling units per acre if using "triple net" methodology.	3 points
2. ≥9 dwelling units per net acre if using "double net" methodology, or ≥12 dwelling units per acre if using "triple net" methodology.	4 points
3. ≥10 dwelling units per net acre if using "double net" methodology, or ≥13.3 dwelling units per acre if using "triple net" methodology.	5 points

Discussion and definitions:
Double net density methodology: Double net density shall be calculated by considering land area dedicated exclusively to residential and mixed-use residential areas, **including** land for streets and alleys internal to the residential and mixed use residential areas. All other lands are excluded from this calculation, including streets not internal to the residential or mixed use areas, parks, schools, detention basins, other infrastructure, and services needed to support the development, and non-residential uses such as commercial areas, offices, and open space. This methodology shall be used if the Master Plan does not contain details regarding the location, size and extent of streets internal to residential and mixed use areas. A graphic representation of this methodology is provided below, with blue shading representing the residential and mixed use areas included in the calculation.



Triple net density methodology: Triple net density shall be calculated by considering land area dedicated exclusively to residential and

mixed-use residential areas, **excluding** land for streets and alleys internal to the residential and mixed use residential areas. All other lands are excluded from this calculation, including streets not internal to the residential or mixed use areas, parks, schools, detention basins, other infrastructure, and services needed to support the development, and non-residential uses such as commercial areas, offices, and open space. This methodology may only be used if the Master Plan contains sufficient details regarding the location, size and extent of streets internal to residential and mixed use areas. A graphic representation of this methodology is provided below, with blue shading representing the residential and mixed use areas included in the calculation.



Allowable deviations from density calculations: Certain lands may be excluded from the density calculation to allow for larger lot residential development and/or a transitional zone between urban uses within the USB and rural uses beyond, including:

- Land within ¼ mile of the USB, OR
- Up to 10% of the net residential acreage.

Definition of "dwelling units": Dwelling units shall include single family homes, duplex and triplex units, condominium units, townhomes, apartment and multiple-family units, and residential units in mixed use buildings. Residential units in congregate care facilities and in the residential portion of a university may be counted when calculating a master plan's overall density if the County finds that the Master Plan includes assurances that these units will be built. Each planned accessory unit that is allowed "by right" per the Master Plan's design

guidelines, development standards and zoning will be counted as ½ a dwelling unit. If the County finds that the Master Plan includes assurances that planned accessory dwelling units will be built to habitable standards and rented or sold to people outside the family resident in the primary unit, they will be counted as one dwelling unit. Hotel rooms and other similar transient housing will not be considered as dwelling units.

CB-2. Proximity of residential units to amenities.

Required: ≥80 percent of all residential units located within one mile of at least three of the following existing or planned amenity categories:

- Public elementary, middle, or high school
- Park or recreational facility
- Grocery store, drug store or commercial center
- Office or industrial employment center
- Civic use (e.g. library, post office, community garden, urban farm)
- Preschool, childcare or senior care facility
- Medical offices or facilities

Points:

1. ≥**85** percent of all units located within one mile of at least three of the amenity categories	2 points
2. ≥**90** percent of all units located within one mile of at least three of the amenity categories	3 points
3. ≥**90** percent of all units located within one mile of at least **four** of the amenity categories	4 points

CB-3. Mixed use.

Required: Include a mixed use designation, overlay, and/or zoning category that allows vertical mixed use by right, provides uninterrupted pedestrian connections, and prohibits barriers between different uses.

Points:

1. At least 5 percent of a Master Plan's developable land zoned for mixed use (horizontal or vertical).	2 points
2. At least 10 percent of a Master Plan's developable land zoned for mixed use (horizontal or vertical).	3 points
3. At least 15 percent of a Master Plan's developable land zoned for mixed use (horizontal or vertical) or assurances that at least 5 percent of the residential units will be located and built within vertically integrated mixed-use buildings.	4 points

Discussion: Mixed use shall be defined as "residential uses and at least one or more different use integrated vertically and/or horizontally in conformance with a coherent plan with significant functional, aesthetic, and physical integration of project components including, but not limited to, pedestrian and vehicle circulation, jointly accessible common areas and shared parking, and shared architectural, landscaping, lighting and signage themes." Mixed use zoning shall allow vertical mixed use by right, provide uninterrupted pedestrian connections, and prohibit barriers between different uses.

CB-4. Transit.

Required: ≥65 percent of all residential units located within ½ mile of existing or planned transit service, which consists of light rail, streetcars, buses, vanpools and/or shuttles, that connects with regional public transit service.

Points:

Proximity

1. ≥70 percent of residential units located within ½ mile of existing or planned transit service	2 points
2. ≥75 percent of residential units located within ½ mile of existing or planned transit service	3 points
3. ≥80 percent of residential units located within ½ mile of existing or planned transit service	4 points

Headways

1. Transit service with headways of 60 minutes or less during peak hours (Monday through Friday from 7-9 a.m. and 4-6 p.m.)	1 point
2. Transit service with headways of 30 minutes or less during peak hours (Monday through Friday from 7-9 a.m. and 4-6 p.m.)	2 points
3. Transit service with headways of 15 minutes or less during peak hours (Monday through Friday from 7-9 a.m. and 4-6 p.m.)	3 points

Discussion: "Planned transit service" shall be defined as service identified in SACOG's Metropolitan Transportation Plan (MTP), Regional Transit's (RT) Short Range Transit Plan (SRTP), and/or service to be provided as part of the Master Plan and funded via a secure financial mechanism (example: CSA 10; North Natomas TMA/developer fees). The MTP has a 20+ year planning horizon and is updated every four years; the SRTP has a 10-year planning horizon and is updated every year. Both the MTP and SRTP must be "financially constrained" in that only those transportation projects and programs for which funding is reasonably expected to be available may

be included in the plan. Therefore, there is a high likelihood that transit service identified in these plans will ultimately be provided. Service to be provided as part of a Master Plan and funded via a secure financial mechanism would provide similar assurances that identified service will ultimately be provided.

In contrast, transit service envisioned in RT's long-range TransitAction Plan cannot be implemented until a significant new revenue source is secured, making such service far more speculative. For example, a new ½ cent sales tax increase would only partially fund transit service envisioned in the TransitAction Plan. Therefore, service(s) identified in the TransitAction Plan and similar visioning documents will not be considered "planned transit service" for purposes of determining consistency with this criterion.

CB-5. Proximity to employment.

Required: Analysis of existing employment/jobs within a five mile radius of the proposed UPA expansion/Master Plan boundary.

Points:

1. <50,000 existing employees/jobs within a 5 mile radius of the proposed project	2 points
2. Between 50,000-100,000 existing employees/jobs within a 5 mile radius of the proposed project	3 points
3. >100,000 existing employees/jobs within a 5 mile radius of the proposed project	4 points

Alternative #2 – Vehicle Miles Travelled (VMT)/Greenhouse Gas (GHG) Emission Metrics

To satisfy this alternative, the Board must find that the proposed project is planned and will be built in a manner that results in:

- ≤14 vehicle miles travelled (VMT) per resident per day (or the equivalent VMT per *household* per day)

OR

- ≤Equivalent GHG per capita per day from cars, light trucks, and medium trucks (less than 8,500 Gross Vehicle Weight).

Discussion: While consistency with the criteria in Alternative #1 provides a level of certainty that a proposed project will achieve particular outcomes, *measuring* the actual projected outcome(s) of the project is a viable alternative. These projected outcomes can be compared against pre-defined metrics to determine the project's "performance." VMT and greenhouse gas (GHG) emissions are logical metrics because a project's performance in these areas is directly correlated to the project's ability to achieve the same goals and mandates (relative to air quality, transportation, land use, infrastructure, and GHG emissions) as the criteria

in Alternative #1. Additionally, VMT and GHG are very closely related; the mix of vehicles that residents use for their daily travel has a relatively narrow range of GHG emissions per mile traveled. Given the direct correlation between improved VMT and associated reductions in GHG emissions, this alternative directly addresses goals and mandates relative to recent state laws aimed at reducing GHG emissions, including AB 32, SB 375 and SB 97.

VMT is easily measured using standard travel demand analysis methods. Multiple traffic models exist for conducting such analysis. Given the long-range nature of the General Plan and the ever-evolving nature of traffic models, it does not make sense to require use of a specific model to determine compliance with this alternative. However, to ensure that a credible model is employed, the project proponent and County staff (including SACDOT, Planning and Environmental Review, etc.) will discuss the merits of available models and determine which will be used to determine compliance with this alternative prior to starting the analysis.

The 14 VMT per capita can be translated into a 13 lbs. of GHG per capita by using the same assumptions that SACOG is required to use for calculating SB375 GHG targets. These assumptions are that this travel will use cars, light trucks, and medium trucks (less than 8,500 Gross Vehicle Weight), and that vehicle and fuel improvements are not included. If the technology improvements are included (fuel economy increases and a 10% reduction in the carbon content of gasoline), then the GHG metric would be 8 lbs. of GHG per capita.

- **Policy LU-123.** Before granting approval of an amendment to the Land Use Diagram, the Board of Supervisors shall find that:
  - the request is consistent with the objectives and policies of the General Plan;
  - the request is consistent with the goals and objectives of a Sacramento County-adopted Habitat Conservation Plan;
  - approval of the proposal will not adversely affect the fiscal resources of the County;
  - the project will be consistent with the performance standards in this Plan and, for urban uses in urban growth areas, the project complies with the requirements of LU-13.
- **Policy EJ-19.** When planning for new development in new communities, the features below shall be incorporated for their public health benefits and ability to encourage more active lifestyles, unless environmental constraints make this infeasible. In existing communities, the features below shall be considered, as appropriate and feasible:

  a) Where appropriate, compact, mixed use development and a balance of land uses including schools, parks, jobs, retail and grocery stores, so that everyday needs are within walking distance of homes.

b) Grid or modified-grid pattern streets, integrated pathways and public transportation that connect multiple destinations and provide for alternatives to the automobile.

c) Wide sidewalks, shorter blocks, well-marked crosswalks, on-street parking, shaded streets and traffic-calming measures to encourage pedestrian activity.

d) Walkable commercial areas with features that may include doors and windows fronting on the street, street furniture, pedestrian-scale lighting, and served by transit when feasible.

e) Open space, including important habitat, wildlife corridors, and agricultural areas incorporated as community separators and appropriately accessible via non-vehicular pathways.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan, first adopted by the Sacramento County Board of Supervisors in 1978 and most recently updated in 2003, governs properties in the Cordova Community Planning Area but outside the boundaries of the city of Rancho Cordova (Sacramento County 2003). The 59-square-mile planning area is generally bordered by the American River and the city of Folsom on the north; Prairie City Road, Grant Line Road, and White Rock Road on the east; Douglas Road, Kiefer Boulevard, and Jackson Highway on the south; and the city of Sacramento and Watt Avenue/South Watt Avenue on the west. A portion of the WJHMP area north of Jackson Highway is in the Cordova Community Plan area. The plan provides a foundation for Sacramento County and the City of Rancho Cordova to coordinate on land use strategies, particularly for development along Folsom Boulevard and near light-rail stations. The following land use–related policies identified in the plan are applicable to the project:

- **Policy LU-2.** Emphasize high technology industry, business park uses, and industries such as manufacturing and distribution that provide support for Mather air-cargo operations.
- **Policy LU-3.** Promote a balance between the growth of the air-cargo industry at Mather with the need for housing and residential lifestyles in adjacent neighborhoods.
- **Policy LU-5.** Promote mixed-use concepts that capitalize on synergies between and among different types of land use (e.g., residential and office).
- **Policy LU-6.** Promote high quality, efficient and cohesive land utilization that minimizes negative impacts on adjacent neighborhoods and infrastructure (e.g., traffic congestion and visual blight).

- **Policy LU-8.** Continue the tradition of joint development of parks and schools.
- **Policy LU-10.** Recognize the diversity of the population (based on age, culture and economic status) within the community planning boundaries, and plan land uses according to the needs of this population.

The Cordova Community Plan also includes the following urban design and neighborhood character policies and housing policies that may apply to the project:

- **Policy UDNC-1.** Provide for commercial districts in new neighborhoods that are integrated into and physically connect with those adjacent neighborhoods.
- **Policy UDNC-2.** Encourage architecture and building design that promotes pedestrian and other multi-model forms of access.
- **Policy UDNC-4.** Promote neighborhoods that are reflective of a diverse population, and are competitive with other communities in the region in terms of their value and desirability.
- **Policy UDNC-5.** Ensure that new development reflects local history and architecture, neighborhood concerns, and incorporates features that will help integrate the development into the fabric of the community.
- **Policy UDNC-7.** Encourage the formation of distinct but integrated commercial districts with appropriate focal points, core activity areas, and supporting amenities.
- **Policy UDNC-8.** Promote high quality architecture, landscape, and streetscape features that enhance the character and identity of activity areas.
- **Policy UDNC-9.** Promote pedestrian-friendly, human-scale urban environments that provide safe and pleasant places for people to live and work.
- **Policy UDNC-11.** Ensure that potentially incompatible and unsafe land uses are separated from residential uses by appropriate transition areas.
- **Policy UDNC-13.** Promote the undergrounding of all electrical utilities.
- **Policy H-1.** Promote a balance for the jobs to housing ratio that will support the community position as a regional employment center.
- **Policy H-2.** Promote the development of strong and safe residential neighborhoods with convenient access to community and urban amenities including parks, public transit, schools, shopping, and other services.
- **Policy H-9.** Ensure an adequate mix of housing affordability dispersed throughout the community.
- **Policy H-10.** Encourage a variety of lot sizes and housing types to promote social and economic diversity, and to provide greater variation visibly for neighborhoods.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan, adopted by the Sacramento County Board of Supervisors in 1985, governs properties in the 37-square-mile Vineyard community (Sacramento County 1985). The community is generally bounded by Kiefer Boulevard and Jackson Highway on the north, Grant Line Road and Sunrise Boulevard on the east, Calvine Road on the south, and South Watt Avenue/Elk Grove-Florin Road on the west. A portion of the community area extends north of Jackson Highway to Kiefer Boulevard and along Kiefer Boulevard from approximately one-quarter mile east of Bradshaw Road on the west to Sunrise Boulevard on the east. Lands in the WJHMP area south of Jackson Highway and a portion north of Jackson Highway are in the Vineyard Community Plan Area.

The Vineyard Community Plan was intended to be a guide for future growth and development in the Vineyard area. However, many of the community plan's land use assumptions are now obsolete because of substantial land use changes that have occurred since its adoption. For example, the plan assumed that the Vineyard community would retain its rural character. Instead, large areas of Vineyard developed after the County's 1993 General Plan opened the area to urban development.

The following natural environmental resources, agricultural-residential, commercial/industrial, and future urbanization policies from the Vineyard Community Plan apply to the project:

- **Policy NER 6.** Require buffering and appropriate screening between commercial/industrial development and residential land use and between commercial/industrial development and agricultural uses.
- **Policy AR 1.** Buffer, through incremental zoning, agricultural-residential development from industrial and agricultural land uses.
- **Policy CI 3.** Industrial proposals should be accompanied by a public services plan, the scope of which will depend on the extent and complexity of the proposal.
- **Policy CI 4.** Commercial/industrial development must be adequately buffered from adjacent residential or agricultural uses with screening, open space or less dense development, or other means.
- **Policy FU 1.** Buffer, through incremental zoning, residential development from industrial and agricultural land use areas.
- **Policy FU 2.** Urban residential development will only be considered in those areas contiguous to approved urban uses and designated for future urban growth, and only when negative impacts upon the Vineyard community are mitigated to the greatest extent possible.
- **Policy FU 7.** Urban land use proposals should minimize encroachment upon open space areas and maximize infrastructure effectiveness through measures such as clustered design and contiguous development.

Sacramento County Zoning Code

The Sacramento County Zoning Code was adopted to implement the policies of the Sacramento County General Plan in order to preserve resources and protect the public health, safety, and general welfare of the residents of Sacramento County (Sacramento County 2023). It applies to all land, buildings, structures, and uses thereof located in Sacramento County outside of incorporated municipalities. The code regulates the use, placement, spacing, size, and nature of buildings and parcels of land to promote orderly development. It also establishes land use zones and describes the purposes, permitted uses, special conditions, and prohibitions for the different zones.

The current zoning in the plan area is described above, in the "Zoning" section of the "Plan Area Setting" section, and shown in Figure 2-8. Requests for zoning changes are reviewed for consistency by the Sacramento County Planning and Environmental Review Division.

Urban Services Boundary and Urban Policy Area

One of the strategies of the General Plan Land Use Element is the logical progression of urban development. Two mechanisms to implement this strategy are the Urban Services Boundary (USB) and Urban Policy Area (UPA). The USB indicates the ultimate boundary of the urban area in the unincorporated county. It is intended to be a permanent growth boundary not subject to modification except under extraordinary circumstances. The UPA defines the area in the USB expected to receive urban levels of public infrastructure and services during the planning period of the General Plan (Figure 2-2). The UPA should be adjusted only when found to be consistent with policies pertaining to expanding or amending the UPA. Defining the UPA is of key importance in the provision of urban services and infrastructure to the unincorporated county because it provides the geographic basis for infrastructure master plans, particularly for water and sewerage, which require large capital investment and a relatively long lead time for the installation of capital improvements.

The UPA and the USB are designed to promote maximum efficiency of land uses and protection of the county's natural resources. The USB allows for the permanent preservation of agriculture and rangelands, critical habitat, and natural resources, whereas the UPA concentrates and directs growth in previously urbanized areas, limiting arbitrary and sprawling development patterns. These two growth boundaries work in tandem to manage and direct future development, as well as provide infrastructure and service providers with intermediate and ultimate growth boundaries to use to plan for future expansion.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

A land use impact would be significant if implementation of the project would:

- physically divide an established community;
- cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect;
- induce substantial unplanned population growth in the area, either directly or indirectly; or
- displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

ISSUES NOT DISCUSSED FURTHER

All the issues identified in the significance criteria are addressed in the following analysis.

As stated previously, consistency with airport planning documents is addressed in Chapter 7, “Airport Compatibility,” and consistency with the South Sacramento Habitat Conservation Plan is addressed in Chapter 8, “Biological Resources.”

METHODOLOGY

An evaluation of the potential land use impacts associated with implementation of the project was based on a review of planning documents, including the various components and policies of the Sacramento County General Plan, the Cordova Community Plan, and the Vineyard Community Plan, as well as other County regulations affecting planning and implementation of the proposed General Plan.

WEST JACKSON HIGHWAY MASTER PLAN POLICIES

The WJHMP includes the following policy related to land use:

Policy 4.5.1: Continuation of Operations

1. All existing buildings, structures, equipment, and uses within the Plan Area shall be allowed to continue to operate so long as they are consistent with prior project approvals. Existing uses may also expand, provided doing so is consistent with this Master Plan’s adopted design guidelines. It is the intent of this Master Plan to allow and to promote the continuation of construction materials production operations until such time as they are complete and able to transition to the land uses identified in this Master Plan or established by future development approvals. Existing land uses include but are not limited to the following:

a) Surface mining and reclamation.
b) Aggregate pre-wash facility.
c) Crushing and screening.
d) Conveyor line and related facilities.
e) Soil drying beds and silt ponds.
f) Water ponds and related facilities.
g) Ready-mix concrete batch plants.
h) Asphaltic-concrete batch plants.
i) Construction materials recycling.
j) Such other uses that are allowed or may be allowed under already-approved or future mining and/or reclamation entitlements.

Impacts and Analysis

Impact LU-1: Physically Divide an Established Community

The plan area is south of the unincorporated community of Rosemont and east of the industrial business park community located on the edge of the city of Sacramento. Uses present in the plan area are active and reclaimed surface mining sites; industrial properties, such as storage, trucking, and rock processing and sales; and limited rural residential, commercial, institutional, and agricultural uses. An established community is not located in the plan area. Implementing the project would remove physical barriers by connecting formerly mined areas through development of residential, mixed use, commercial, industrial, and other uses, as well as development of an extensive network of streets and off-street trails that would connect uses in and between the districts proposed under the project. Therefore, implementing the project would not physically divide an established community. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact LU-2: Cause a Significant Environmental Impact Due to a Conflict with Any Land Use Plan, Policy, or Regulation Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect

Consistency with Urban Policy Area/General Plan Growth Management Policy

The plan area is located within the USB, which serves as the ultimate boundary of the urban area in the unincorporated county. This boundary is based on jurisdictional, natural, and environmental constraints to urban growth. It is intended to be a permanent

growth boundary not subject to modification except under extraordinary circumstances. The UPA is the area within the USB expected to receive urban levels of public infrastructure and services during the planning period of the General Plan. Approximately 69 acres of the plan area is in the UPA; the remainder of the plan area is south and east of the UPA. The UPA boundary would need to be extended to encompass the plan area (see Figure 2-14). This change to the UPA boundary, which would expand the extent of the area in which growth can occur beyond the area anticipated in the General Plan, would require an amendment to the General Plan. For the County Board of Supervisors to approve this amendment, the requirements of General Plan Policies LU-119 and LU-120 must be met.

According to Policy LU-119, proposed UPA expansions must have "significant borders" that are adjacent to the existing UPA or a city boundary, and the boundary of the expansion must be logical. (In general, a border is "significant" if the length of the boundary between the existing UPA or city boundary and the proposed UPA expansion is at least 25 percent of the length of the boundary of the UPA expansion area.) Currently, the UPA boundary surrounds the plan area on three sides. In addition, expanding the UPA boundary to encompass the plan area would result in a more cohesive UPA in the vicinity of the plan area. The portion of the plan area boundary that would be part of the new UPA boundary would not be irregular and would form a logical edge (see Figure 2-14). The proposed expansion of the UPA is consistent with this policy.

General Plan Policy LU-120 is intended to reduce impacts of many different types—such as growth inducement, unacceptable operating conditions on roadways, poor air quality, and lack of appropriate infrastructure—by establishing design criteria for all amendments to the UPA. A project must be consistent with the policy before it may be considered for approval. The County has determined, based on review of the project characteristics described in the WJHMP, that the project would meet the requirements of Policy LU-120. As described above, projects must meet one of two alternative performance metrics to satisfy the requirements of this policy: Alternative #1 - Criteria-Based or Alternative #2 - VMT/GHG Reduction Metric. With participation in the Transportation Management Association (TMA) program included in the project and described in Chapter 19, "Transportation," of this EIR, VMT per resident would be reduced from 14.29 to 13.99 and would satisfy the "Alternative #2" requirement (Kimley-Horn 2023: Table 4).

The project has been deemed generally consistent with performance criteria PC-1 through PC-10; however, the project has achieved a total of 15 points in the criteria-based standards (CB-1 through CB-5) that are established as the "Alternative #1" performance metric option. Twenty-four points are possible for the criteria-based standards, and a total of 18 points is required. Table 15-2 summarizes how the project complies with performance criteria PC-1 through PC-10, and Table 15-3 summarizes how it complies with performance metrics CB-1 through CB-5, as outlined in Policy LU-120. The criteria-based standards are applied in this analysis for informational purposes.

Table 15-2 WJHMP Consistency Determination

Performance Criteria	Consistency Discussion
PC-1: Vision for connection to other adjacent existing and potential future development areas **Required:** Include a vision of how the development will connect to other adjacent existing and potential future development areas within the USB, including how roadways, transit, sewer, and water could occur within all adjacent areas. **Determination:** Consistent	The project would provide linkages between existing and planned development through a connected roadway network, trail network, public transit, and infrastructure. The proposed Street Master Plan identifies thoroughfares and arterials that would connect the residential neighborhoods and employment centers in the plan area with adjacent areas. Roadways in the plan area would connect with the established roadway system, which provides several access points to the plan area. The project would include a combination of bike and pedestrian trails, transit shuttles, local bus service, and bus rapid transit. The plan area is located along major planned transit corridors on Jackson Highway, South Watt Avenue, Bradshaw Road, and Excelsior Road, and the plan area is close to the Watt/Manlove Transit Priority Area and its light rail station. The project's wastewater system would connect with the sewer trunk system in the plan area owned and operated by the Sacramento Area Sewer System and the interceptor system in the area owned and operated by the Sacramento Regional County Sanitation District. The project's water supply system would connect with existing Sacramento County Water Agency and California American Water infrastructure in the area.
PC-2: Housing choice **Required**: A variety of housing types and densities, including single-family homes, duplexes, triplexes, accessory dwelling units, townhomes, condominiums, apartments and similar multi-family units, in a variety of settings including both residential neighborhoods and mixed-use nodes. **Determination:** Consistent	The project includes a maximum of 16,484 residential units in four density ranges. The variety of housing choices includes apartments, condominiums, townhouses, and single-family detached homes. In addition, the project encourages the provision of residential accessory dwellings, such as "granny flats" above garages, detached in-law structures, and multigenerational architecture in all residential neighborhoods. The plan area would include neighborhood centers in two districts and three future planning areas, and more than 2,000 dwelling units would be located in mixed-use areas in the plan area.
PC-3: Quality **Required**: Design guidelines, development standards and/or similar assurances that will require high-quality development consistent with the vision set forth in the Master Plan. **Determination:** Consistent	The project design guidelines would incorporate the Countywide Design Guidelines with some modifications to amplify the Countywide guidelines and promote high quality development. The modifications would result in standards that tailored to the plan, which would ensure consistent high-quality design in the community. The design guidelines describe principles and attributes for consistent streetscapes, entry features, walls and fencing, identification signage, landscape

Performance Criteria	Consistency Discussion
	elements, residential design, and other site-design specific considerations.
PC-4: Accommodate the percentage of low and very low income residential units required by state law per the County's current Housing Element based on the Regional Housing Needs Allocation (RHNA) **Required**: Accommodate ≥90 percent of the obligation per RHNA. **Determination:** Consistent	The project is required to accommodate greater than 90% of its share of the unincorporated county's proportional obligation of the RHNA. Current RHNA obligation is 33.6% of the housing stock. In accordance with the current RHNA for Sacramento County, the project is required to provide 30.2% of the proposed housing stock in land designated as being developed at 30 units/acre or greater. The project includes 5,660 residential units designated High Density Residential or Mixed Use. These designations have a density range of 25 to 40 and 25 to 35 units per acre, respectively, and account for 34.3% of the proposed dwelling units. Therefore, even with the allowed variation in density, the plan is anticipated to satisfy the project's share of the County's overall RHNA obligation.
PC-5: Pedestrian- and transit-oriented design **Required**: Pedestrian- and transit-oriented design, including: • Sidewalks and bike routes along interconnected streets with short block lengths and a high intersection density. • Prominent pedestrian and bicycle network. • Few if any cul-de-sacs. • Pedestrian and bike connections at the ends of all cul-de-sacs unless infeasible due to topography or similar impediments inherent in the project site. **Determination:** Consistent	The project would use bicycle and pedestrian trails strategically to connect neighborhoods and different land uses and to allow connectivity to key intersections, schools, and commercial centers to promote connectivity with adjacent areas. The bikeway system would consist of Class I, II, and III facilities and make use of the existing Morrison Creek and Elder Creek parkway trail systems and the proposed Rock Creek parkway trail system. Parkways and trails in the plan area would provide pedestrian connections among land uses and open spaces.
PC-6: Infrastructure Master Plan and Financing Plan **Required**: Inclusion of an Infrastructure Master Plan and Financing Plan that include the following: • The Infrastructure Master Plan shall identify required public facilities and infrastructure (including roads, transit, water, sewer, storm drainage, schools, fire, park, library, and other needed community facilities) and associated costs for the development of the proposed UPA expansion/Master Plan; • The Financing Plan shall: o Include an infrastructure phasing analysis that examines development through buildout taking into consideration potential development activities, facilities requirements and constraints; o Identify the phase or timing for when the facilities are needed;	The WJHMP presents the framework for proposed infrastructure improvements necessary to support development of the plan area. It describes the infrastructure needed for the project (sanitary sewer, water, storm drainage and flood control, electricity, natural gas, communications, and solid waste), as well as the sizing and timing of facilities. Interim facilities are identified as needed. Infrastructure would be constructed, dedicated, and easements provided consistent with the WJHMP and applicable standards and requirements of Sacramento County. A Public Facilities Financing Plan, which would be adopted as part of the WJHMP, provides a strategy for financing backbone infrastructure and other public facilities required to serve the proposed land uses in the plan area. It includes: • a summary of major backbone infrastructure and public facilities required and the associated costs, • an allocation of costs to various land uses,

Performance Criteria	Consistency Discussion
o Identify the funding mechanisms proposed to pay for the identified infrastructure and facilities; o Demonstrate that infrastructure requirements and the associated costs are reasonably balanced throughout each development phase and outline solutions for any potential constraints and/or shortfalls for any given phase. **Determination:** Consistent	• analysis of phasing requirements and existing funding sources, and • recommendations for potential mechanisms to fund the unfunded major required public improvements.
PC-7: Services Plan **Required**: Inclusion of a Services Plan to demonstrate: • that provision of services to the proposed UPA expansion/Master Plan are cost-neutral to the County's General Fund and existing ratepayers; • that the operations and maintenance costs stemmed from the required public facilities and infrastructure for the development of the proposed UPA expansion/Master Plan are cost-neutral to the County's General Fund and existing ratepayers, and; • that existing levels of municipal services will not be negatively impacted by approval and buildout of the proposed UPA expansion/Master Plan. **Determination:** Consistent	The Urban Services Plan prepared for the project demonstrates that: • the provision of services would be cost-neutral to the County's General Fund and existing ratepayers, • the operations and maintenance costs for the required public facilities and infrastructure would be cost-neutral to the County's General Fund and existing ratepayers, and • the existing levels of municipal services would not be negatively affected by approval and buildout of the WJHMP.
PC-8: Consistency with County adopted plans **Required**: Consistency with all applicable County adopted plans not sought to be amended by the proposed project. **Determination:** Consistent	The project includes proposed amendments to make the project consistent with County-adopted plans that affect the plan area, including the 2030 General Plan, Cordova Community Plan, Vineyard Community Plan, and Active Transportation Plan.
PC-9: Consideration of regional planned efforts **Required**: Inclusion of a discussion/analysis of how the proposed UPA expansion/Master Plan relates to broad-based and regional planning efforts, such as SACOG's adopted Blueprint Vision and Metropolitan Transportation Plan, Sacramento County's Visioning documents created for the Jackson Highway and Grant Line East Areas, any applicable Habitat Conservation Plan(s), the Sacramento Metropolitan Air Quality Management District's State Implementation Plan, and Regional Transit's Master Plan. **Determination:** Consistent	SACOG Blueprint and 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). The plan area was not identified for growth in the 2020 MTP/SCS by 2040. However, the MTP/SCS does assume 154,500 new residential units in unincorporated Sacramento County between 2016 and 2040. The project is consistent with regional planning efforts and the SACOG Preferred Blueprint Scenario and Blueprint planning principles and has considered regional planned efforts in the development of the land use plan. Policies for Jackson & Grant Line East Visioning Areas. The land use pattern envisioned for the Jackson Visioning Area includes low-, medium-, and high-density residential uses; mixed uses; community commercial; neighborhood center; employment district; and open space uses. The land use pattern of the project is generally consistent with

Performance Criteria	Consistency Discussion
	the land use pattern envisioned for the Jackson Visioning Area. South Sacramento Habitat Conservation Plan. The project is a covered activity under the SSHCP and would be consistent with the SSHCP. (See Chapter 8, "Biological Resources.") Sacramento Metropolitan Air Quality Management District's State Implementation Plan. The WJHMP is anticipated to exceed the dwelling units assumed in the State Improvement Plan for 2040. Therefore, buildout of the WJHMP may be inconsistent with the growth projections in the State Improvement Plan. However, the plan is generally consistent with Sacramento Metropolitan Air Quality Management District's regional planning efforts, which anticipate growth in this area. (See Chapter 6, "Air Quality.") Sacramento Regional Transit District Strategic Plan. The project includes transit facilities and service complementary to the bus rapid transit routes planned on Jackson Highway and Sunrise Boulevard, including transit routes and stops in the plan area. (See Chapter 19, "Transportation.")
PC-10: Consideration of jobs-housing balance Required: Inclusion of a discussion/analysis of the proposed UPA expansion/Master Plan's jobs-housing balance. Master Plans should provide an internal jobs-housing balance and/or improve the jobs housing balance within the project's vicinity. **Determination:** Consistent	The WJHMP includes employment-generating land uses (commercial, mixed use, office, industrial, school). It is anticipated to generate approximately 29,233 jobs, or approximately 1.7 jobs per housing unit. These job opportunities are anticipated to contribute to a reduction in overall vehicle miles traveled in the region by helping to correct the existing jobs imbalance in the vicinity of the plan area.

Table 15-3 WJHMP Criteria-Based Standards Determination

Criteria	Requirement	Point Allocation	Evaluation	Points Achieved
CB-1: Minimum net density	Minimum density of at least 7 dwelling units per net acre if using "double net" methodology or 9.3 dwelling units per acre if using "triple net" methodology.	≥8 dwelling units per acre if using "double net" methodology, or ≥10.6 dwelling units per acre if using "triple net" methodology = **3 points** ≥9 dwelling units per acre if using "double net" methodology, or ≥12 dwelling units per acre if using "triple net" methodology = **4 points** ≥10 dwelling units per acre if using "double net" methodology, or ≥13.3 dwelling units per acre if using "triple net" methodology = **5 points**	Triple net density calculation: 16,484 du/2,363 acres = 6.9 du/ac.	0
CB-2: Proximity of residential units to amenities	≥80 percent of all residential units located within one mile of at least three of the following existing or planned amenity categories: • Public elementary, middle, or high school • Park or recreational facility • Grocery store, drug store or commercial center • Office or industrial employment center • Civic use (e.g. library, post office, community garden, urban farm) • Preschool, childcare or senior care facility • Medical offices or facilities	≥85 percent of all units located within one mile of at least three of the amenity categories = **2 points** ≥90 percent of all units located within one mile of at least three of the amenity categories = **3 points** ≥90 percent of all units located within one mile of at least four of the amenity categories = **4 points**	Under the WJHMP, 98 percent of the residential units would be located within 1 mile of at least four planned or existing amenities.	4
CB-3: Mixed use	Include a mixed use designation, overlay, and/or zoning category that allows vertical mixed use by right, provides uninterrupted pedestrian connections, and prohibit barriers between different uses.	At least 5 percent of a Master Plan's developable land zoned for mixed use (horizontal or vertical) = **2 points** At least 10 percent of a Master Plan's developable land zoned for mixed use (horizontal or vertical) = **3 points**	There is no assurance of mixed use provided.	0

Criteria	Requirement	Point Allocation	Evaluation	Points Achieved
		At least 15 percent of a Master Plan's developable land zoned for mixed use (horizontal or vertical) or assurances that at least 5 percent of the residential units will be located and built within vertically integrated mixed-use buildings = **4 points**		
CB-4: Transit	≥65 percent of all residential units located within ½ mile of existing or planned transit service, which consists of light rail, streetcars, buses, vanpools and/or shuttles, that connects with regional public transit service.	≥70 percent of residential units located within ½ mile of existing or planned transit service = **2 points** ≥75 percent of residential units located within ½ mile of existing or planned transit service = **3 points** ≥80 percent of residential units located within ½ mile of existing or planned transit service = **4 points**	Approximately 83 percent of residences would be within 0.5 mile of the proposed transit service route.	4
CB-4: Headways		Transit service with headways of 60 minutes or less during peak hours (Monday through Friday from 7–9 a.m. and 4–6 p.m.) = **1 point** Transit service with headways of 30 minutes or less during peak hours (Monday through Friday from 7–9 a.m. and 4–6 p.m.) = **2 points** Transit service with headways of 15 minutes or less during peak hours (Monday through Friday from 7–9 a.m. and 4–6 p.m.) = **3 points**	At full buildout, transit service would have headways of 15 minutes or less during peak hours.	3
CB-5: Proximity to employment	Analysis of existing employment/jobs within a 5-mile radius of the proposed UPA expansion/Master Plan boundary.	<50,000 existing employees/jobs within a 5 mile radius of the proposed project = **2 points** Between 50,000–100,000 existing employees/jobs within a 5 mile radius of the proposed project = **3 points** >100,000 existing employees/jobs within a 5 mile radius of the proposed project = **4 points**	According to Sacramento Area Council of Governments 2020 data, approximately 243,234 jobs are located within 5 miles of the plan area.	4
		TOTAL POINTS		**15**

Notes: ac = acre; du = dwelling units.

Source: Calculations provided by Sacramento County in 2024.

Consistency with General Plan Policies Related to Public Services and Utilities

Compliance with General Plan Policies LU-13, LU-66, LU-110, and LU-123 is intended to ensure that minimum service standards for public services and utilities are met. The policies address a variety of issues, including the need to ensure that adequate facilities would be constructed and that funding is secured for construction and that service providers are contacted to ensure that service planning is adequate. These issues are discussed in detail in Chapter 11, "Energy;" Chapter 17, "Public Services;" Chapter 18, "Public Utilities;" and Chapter 20, "Water Supply," of this EIR, but a brief summary is provided here. The project includes a Public Facilities Financing Plan, which was submitted to all the applicable service entities for review and approval. Long-term funding sources have been identified for the maintenance of public services and utilities. Implementing the project would not result in any substantial environmental impacts related to conflicts with General Plan policies that pertain to public services or utilities.

Consistency with General Plan Policies Related To Transportation and Air Quality

Compliance with General Plan Policies LU-21, LU-22, LU-23, LU-25, LU-34, LU-35, LU-36, LU-38, LU-46, and LU-71 can reduce the impacts of a project related to transportation and air quality. (Although the proposed master plan is not identified on the Land Use Diagram, Policies LU-35 and LU-36 do apply and are linked to Policy LU-34.) These policies address provision of a mix of uses, adequate pedestrian circulation, access to nonvehicular transportation, and reduction in energy demand. Providing a mix of uses and access to nonvehicular travel modes can reduce traffic congestion and reduce total trip lengths, which in turn reduce pollutant emissions. Reducing energy demand reduces pollutant emissions generated by the provision of energy. These issues are discussed in more detail in Chapter 6, "Air Quality," and Chapter 19, "Transportation," of this EIR, but a summary is provided here.

The project includes a mix of uses; different housing types; and a multimodal transportation system that includes pedestrian paths, bicycle paths, and a transit system. The project includes two large commercial areas, both of which would be a combination of commercial uses and mixed use. One is envisioned near the Bradshaw Road/Jackson Highway intersection. The other would be located at the Excelsior Road/Jackson Highway intersection.

General Plan Policy LU-25 establishes various relative proportions of land use types (i.e., commercial, office, and residential) that are appropriate depending on the emphasis of the proposed development. The master plan assumes 60 percent of the mixed-use area would be used for residential. This is consistent with mixed use development that has a residential emphasis, as identified in Policy LU-25. Eight mixed-use areas encompassing a total of 112.5 acres have been identified for Districts 1 and 2. An estimated 2,024 dwelling units, along with an estimated 1,225,125 square feet of commercial and office uses, would be located in these areas.

General Plan policies in the Air Quality Element that are applicable to the proposed project include Policy AQ-1, requiring that new development shall be designed to promote pedestrian/bicycle access and circulation to encourage community residents to use alternative modes of transportation to conserve air quality and minimize direct and indirect emission of air contaminants and Policy AQ-20 to promote Cool Community strategies to cool the urban heat island, reduce energy use and ozone formation, and maximize air quality benefits. In addition, the County supports SMAQMD's particulate matter control measures for residential wood burning and fugitive dust (Policy AQ-21). As described above, the WJHMP is consistent with these design principles. Finally, through Policy AQ-19, the County requires all feasible reductions in emissions for the operation of construction vehicles and equipment on major land development and roadway construction projects. Mitigation to address construction emissions is included in Chapter 6 of this EIR.

The Circulation Element of the General Plan provides the framework for County decisions concerning the countywide transportation system and includes several policies with which the WJHMP would be consistent. For example, Policy CI-34 calls for the construction and maintenance of bikeways and multi-use trails to minimize conflicts between bicyclists, pedestrians, and motorists and Policy CI-35 requires new development to install bicycle and pedestrian facilities in accordance with the Sacramento County Improvement Standards and/or pay their fair share portion to implement the multi-use trail system identified in the Sacramento County Active Transportation Plan. The WJHMP is consistent with General Plan policies which detail how the circulation system would be improved to meet the needs of all users. Several objectives established in the WJHMP support bicycle and pedestrian travel within the WJHMP area (see Objectives 2, 3, 4, 6, and 9).

Although implementing the project would result in significant impacts related to air quality and transportation, those impacts would not be the result of conflicts with General Plan policies.

Consistency with General Plan Policies Related to Land Use Compatibility

Policy LU-19 states that appropriate buffers should be placed between incompatible uses, and Policy LU-94 states that new development should be compatible with existing development. There are numerous industrial and residential uses in the plan area and agricultural uses in and adjacent to the plan area. In addition, there are limited mining operations that would continue production during early buildout of the plan. The WJHMP has been comprehensively planned to create a cohesive community that is integrated with the existing and planned land uses of several surrounding jurisdictions.

The effects of these existing land uses on proposed residential uses is largely outside the scope of this EIR, which is intended to evaluate the effects of implementing the WJHMP on the physical environment. However, future development of the plan area would require subsequent action by the Board at the time that specific developments are proposed. As required through General Plan Policy LU-94, the County would use the design review process for these proposals to ensure that new commercial and

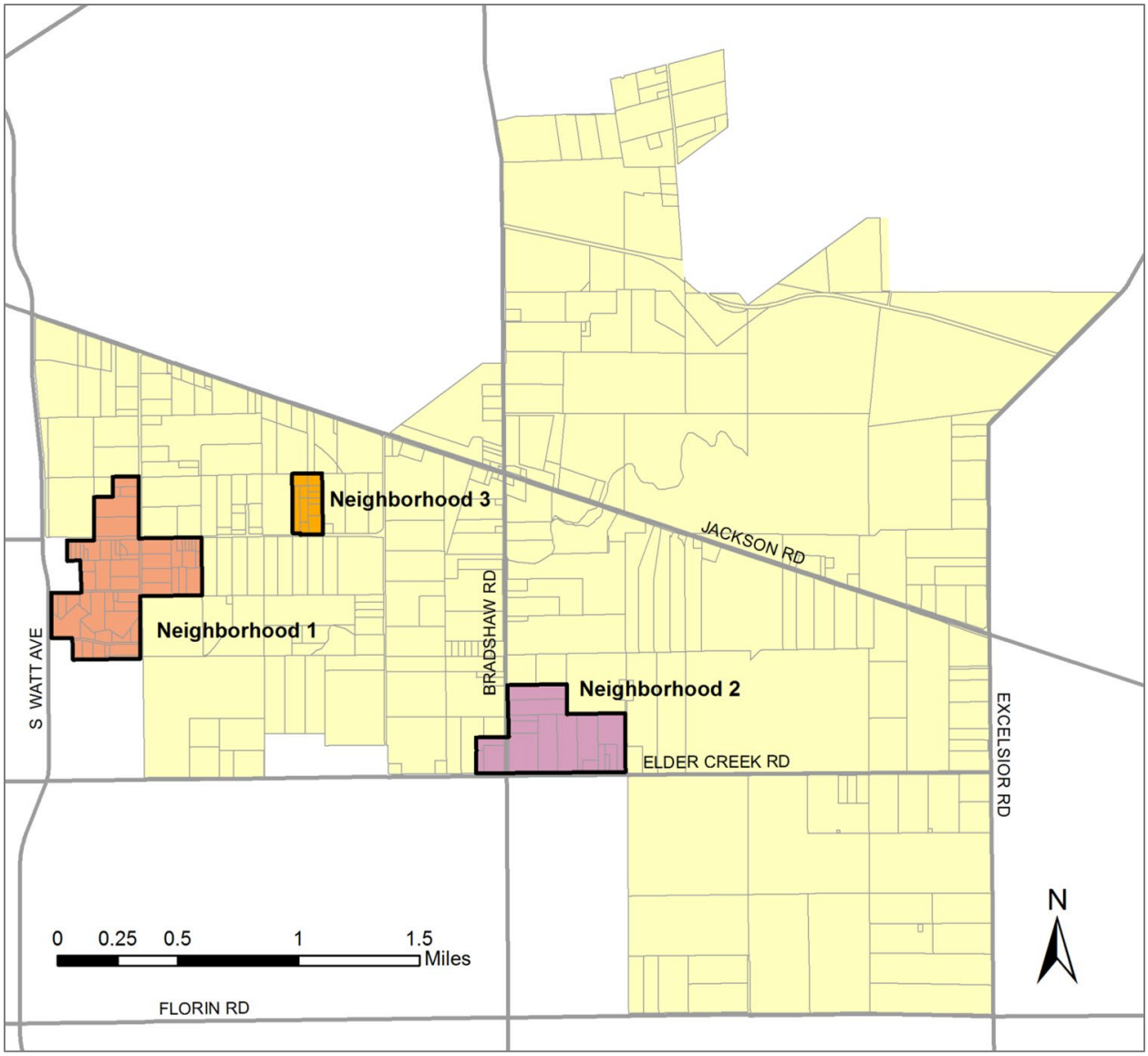
residential development projects are designed to be compatible with existing neighborhoods.

Existing Residential Areas

The following three clusters of residential dwellings (neighborhoods) are located in the plan area:

- The first neighborhood is along the western border of the project between South Watt Avenue and Hedge Avenue (Neighborhood 1 in Figure 15-2). This neighborhood occupies approximately 163 acres and is composed of 43 residences on 1- to 10-acre lots with most of the residences on lots of less than 5 acres. Industrial and vacant lots are also in the area. Existing industrial parks in the city of Sacramento are west of the neighborhood.
- The second neighborhood, located at the intersection of Bradshaw Road and Elder Creek Road (Neighborhood 2 in Figure 15-2), includes houses on 1- to 12-acre-plus lots. The neighborhood occupies approximately 107 acres and has 11 residences. Some vacant lots are also in this area.
- The third neighborhood, which is the smallest of the three neighborhoods (Neighborhood 3 in Figure 15-2), is located north of Fruitridge Road, between Hedge Avenue and Bradshaw Road. This neighborhood occupies approximately 20 acres and has 14 residences on 1- to 4-acre lots. Mining sites are adjacent to the north and west of this neighborhood.

The project designates the first and second neighborhoods as FPAs. There is no land use plan for FPAs, and urban development would not be allowed until a master plan is adopted for these areas. Therefore, the existing character of these neighborhoods would not change unless property owners want urban levels of development for their area and complete a master planning process. The third neighborhood is designated by the project as Very Low Density Residential. The project would allow current uses to continue. Planned land uses around the established neighborhoods include Low Density Residential, Open Space, and school uses that would be compatible with existing development and would provide supportive infrastructure to the area. Neighborhood 2 is within FPA B and east of, but not immediately adjacent to, an area designated as Open Space/Urban Farm. Although this designation allows for intensive agricultural uses, such as processing facilities, low density residential uses are generally consistent with agricultural operations and no land use conflicts are anticipated due to the distance to any potential processing facilities (all agricultural processing facilities would be setback a minimum of 200 feet from any residential uses).



Source: Provided by Sacramento County in 2023.

Figure 15-2 Residential Neighborhoods in Plan Area

EXISTING AGRICULTURAL AREAS

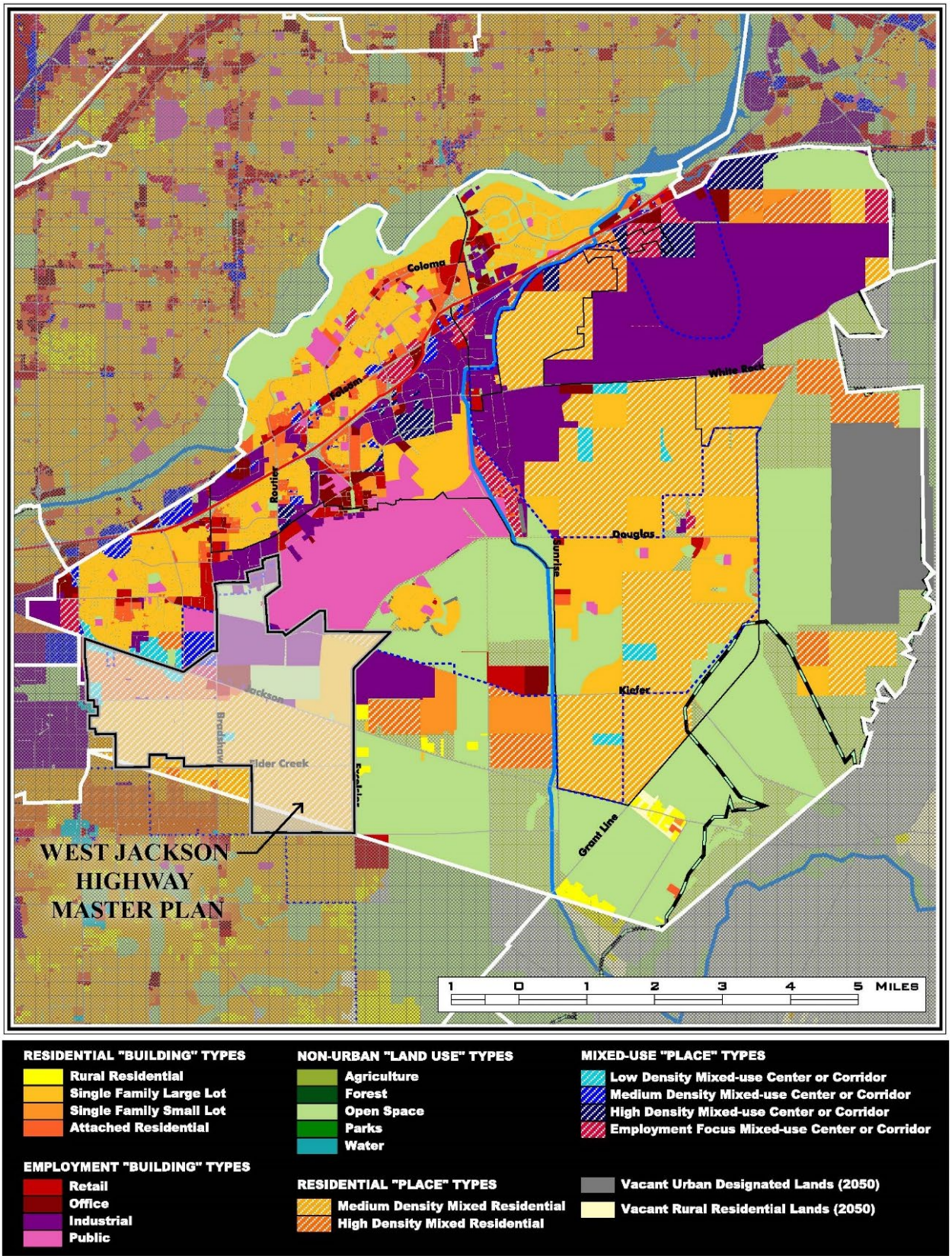
Agricultural areas are located in the plan area and adjacent to the area to the east. In addition, two nurseries are adjacent to the plan area. Possible land use conflicts include noise, odors, pesticide spray, and dust from agricultural areas, as well as noise, visual, and crime impacts from urban areas. Two mitigation measures identified in Chapter 5, "Agricultural Resources," would be available to mitigate these potential impacts. Mitigation Measure AR-2a, "Establish Agricultural Buffers," requires a minimum buffer of 200 feet between the property lines of residential areas and areas of agricultural activity in the plan area. This buffer could be reduced to a minimum of 100 feet if a vegetation screen of evergreen trees is planted and at least 50 feet of this buffer is vegetated with trees. Mitigation Measure AR-2b, "Provide Right-to-Farm Notification," requires new homeowners within 500 feet of existing pasture, cropland, orchards, or nurseries to

receive a recorded notice that would appear in the title report that they could be subject to inconvenience or discomfort resulting from accepted farming activities as per provisions of the County Right-to-Farm Ordinance. In addition, Mitigation Measure AR-1 would require the preservation of farmland consistent with General Plan Policy AG-5.

Consistency with the SACOG Blueprint and Policies LU-23, LU-113, and EJ-19

The Blueprint concept plan for the plan area is presented in Figure 15-3. The figure depicts conceptual buildout in 2050. The plan is not intended for parcel-level interpretation and should not be construed as depicting specific, preferred development locations. Rather, the plan should be interpreted as displaying preferred overall patterns. In this context, the Blueprint indicates that development should be city-centric, focusing growth within the confines of incorporated city boundaries as a logical buildout from existing urban areas. As shown in Figure 15-3, the plan area is identified by the Blueprint as having a mixture of urban land uses and therefore is in the area assumed to be developed by 2050. The sections below discuss the project's conformity with the seven Blueprint principles (transportation choice, compact development, mixed-use development, housing choice and diversity, use of existing assets, natural resource conservation, and quality design), which are also captured by General Plan Policies LU-23, LU-113, and EJ-19.

Policy LU-23 states that compact, mixed-use developments shall be an integral part of all master planning efforts for new growth areas and commercial corridors. Policy LU-113 states that the County shall work with SACOG to support implementation of the Blueprint's policies and land use objectives. To improve public health and encourage more active lifestyles, Policy EJ-19 states that the following features shall be incorporated into new development and considered, as appropriate and feasible, in existing communities: compact, mixed-use development and a balance of land uses within walking distance of homes; grid or modified-grid pattern streets, integrated pathways, and public transportation that connect multiple destinations and provide for alternatives to the automobile; wide sidewalks, shorter blocks, and other features to encourage pedestrian activity; walkable commercial areas that have features such as doors and windows fronting on the street, street furniture, and pedestrian-scale lighting and that are served by transit when feasible; open space incorporated as community separators and accessible using nonvehicular pathways.



Source: Provided by Teichert in 2024.

Figure 15-3 Preferred Blueprint Scenario in Plan Area

TRANSPORTATION CHOICE

The project includes a wide range of transportation choices, including six-lane thoroughfares, four-lane arterials, two-lane community boulevards, two-lane neighborhood collectors, and residential streets for vehicles. The mass transit system, which would be operated by Sacramento Regional Transit, would connect with the light rail system. It would initially use a combination of transit shuttles, local bus service, and bus rapid transit but is expected to evolve in response to technology and ridership patterns changes. The plan area also would include approximately both on-street bicycle lanes and off-street multiuse trails, including regional trails that would generally follow Rock Creek Parkway, Morrison Creek, Elder Creek, and Vineyard Road.

In addition, the project includes a mandatory communitywide Transportation Management Association that would have programs that provide employees with a guaranteed ride home if, for example, an employee is required to work later than when the last available carpool leaves or transit options are available; require each employer to participate in an individual monitoring program or a vanpool program; and provide a ridesharing program throughout the project employment community. The project would conform with this Blueprint principle. Refer to Chapter 19, “Transportation,” for further discussion of the transportation infrastructure included in the proposed project.

COMPACT DEVELOPMENT

Compact building and community design is reflected in higher-density development, cluster development, and the use of smaller buildings. Compact development encourages more walking, biking, and transit use and shorter auto trips. Land designated for Medium Density Residential (target density of 14 dwelling units per acre), High Density Residential (target density of 30 dwelling units per acre), and Mixed Use (target density of 30 dwelling units per acre) would provide nodes of compact development along major transportation corridors, including Rock Creek Parkway and SR 16.

MIXED-USE DEVELOPMENT

Areas zoned for mixed-use development—typically, a combination of residences, shops, entertainment, and offices—function as local activity centers, and the variety of uses in a single location often allows residents to walk or bike to destinations. The WJHMP includes a total of 112.5 acres of mixed-use development in eight locations in the plan area. The proposed mixed uses in the plan area would include an estimated 2,024 dwelling units (at a residential density range of 25–35 dwelling units per acre) and an estimated 1,225,125 square feet of nonresidential uses. All the mixed-use development is proposed along major roadways, and more than 40 acres of the development are proposed at the intersection of Jackson Highway and Bradshaw Road. The project would conform with this Blueprint principle.

HOUSING CHOICE AND DIVERSITY

The WJHMP has been designed to provide a wide variety of housing options, including apartments, condominiums, townhouses, and single-family detached homes. In addition, the WJHMP encourages development of residential accessory dwellings, such

as “granny flats” above garages, detached in-law structures, and multigenerational architecture, in all residential neighborhoods.

Of the estimated 16,484 residential units proposed under the project, 230 units would be developed in areas zoned Very Low Density Residential, 9,774 units would be developed in areas zoned Low Density Residential, 820 units would be developed in areas zoned Medium Density Residential, 3,636 units would be developed in areas zoned High Density Residential, and 2,024 units would be developed in areas zoned Mixed Use.

USE OF EXISTING ASSETS

This principle typically relates to development on infill or vacant lands in urbanized areas, intensification of existing development, and redevelopment—all means of avoiding development on greenfields. Although minimal existing urban development is located in the plan area, two-thirds of the area consists of previously mined lands (reclaimed mining sites). In addition, the project encourages the logical and phased progression of development from the existing urban lands adjacent to the plan area (the Rosemont community to the north and industrial business parks in the city of Sacramento to the west). The project would conform with the intent of this Blueprint principle.

NATURAL RESOURCE CONSERVATION

The Blueprint recognizes that loss of open space resources is an inherent part of development in greenfield areas and does not suggest that greenfield development should be prohibited or avoided altogether. The natural resource conservation principle emphasizes the importance of both incorporating public use open space and conserving natural places and resources, including open space, agriculture, and wildlife and habitat areas.

The WJHMP proposes a mix of open space, parks, and recreation amenities, including a community park, neighborhood parks, pocket parks, linear parks, detention basin parks, open space, utility easements, drainage corridors, wetland avoidance areas, and a large trail network. The WJHMP also includes a network of approximately 1,489 acres of open space. Open space corridors in the plan area have been designed to protect streams and wetlands and accommodate planned stormwater detention and drainage features, utility easements, and transit and trail corridors.

As discussed in Chapter 8, “Biological Resources,” the project is a covered activity under the SSHCP. Development of the plan area is anticipated in the SSHCP. Coverage under the SSHCP will be required and the project would contribute to regional habitat conservation through participation in the SSHCP.

QUALITY DESIGN

The WJHMP Design Guidelines, which are based on the County Design Guidelines, ensure land use compatibility and high-quality design in neighborhoods in Districts 1 and 2. They address such considerations as grading and elevations, landscape buffers, setbacks, roadway layout, and the siting of facilities and future parcels. They promote

compatibility between existing and new land uses and set forth an architectural palette for designing public and private spaces accordingly. The guidelines would be used to create a variety of building facades and treatments that retain a unified theme. The WJHMP Design Guidelines would be implemented through subsequent tentative maps and zoning. Because the design guidelines delineate criteria that would foster a sense of place, the project would conform with this Blueprint principle.

SUMMARY OF SACOG BLUEPRINT ANALYSIS

The WJHMP presents a wide variety of transportation choices, includes compact community development in strategic areas, includes mixed-use development along major roadways, presents an array of housing choices, is located primarily on reclaimed mining sites and encourages the logical and phased progression of development from the urban lands adjacent to the plan area, includes nearly 1,500 acres of open space and more than 200 acres of parklands and protects the most sensitive natural resources in the plan area, and includes design guidelines that would ensure land use compatibility and high-quality design and foster a sense of place. Overall, the WJHMP conforms with the seven Blueprint principles.

CONSISTENCY WITH CORDOVA COMMUNITY PLAN

The Cordova Community Plan is an extension of the General Plan and provides specific guidance for the development of the area addressed by the community plan, including a portion of the WJHMP area north of Jackson Highway. The project implements the vision of the Cordova Community Plan expressed in the policies presented in the "Regulatory Setting" section. Consistency with the applicable community plan policies is evaluated in Chapters 4 through 20 of this EIR.

Specific to land use, the project would be consistent with Policies LU-5, LU-6, LU-8, and LU-10. The project promotes mixed-use development, development that is orderly and well designed, joint development of parks and schools, and a range of housing types to address a population diverse in age and economic status. The WJHMP Design Guidelines, which are based on the County Design Guidelines, would ensure a unified landscaping, signage, and neighborhood-themed aesthetic. The project is intended to be pedestrian and bicycle friendly and would incorporate trails, sidewalks, bicycle lanes, and civic open space throughout the WJHMP area as a means of integrating the different land uses and neighborhoods included in the project. The job opportunities anticipated under the project are expected to contribute to a reduction in overall vehicle miles traveled in the region by helping to correct the existing jobs imbalance in the vicinity of the plan area. For these reasons, the project would be consistent with the Cordova Community Plan policies applicable to the WJHMP area.

CONSISTENCY WITH VINEYARD COMMUNITY PLAN

The Vineyard Community Plan includes goals and objectives that serve as guidelines for the future development of the community plan area. Lands in the WJHMP area south of Jackson Highway and a portion north of Jackson Highway are in the Vineyard Community Plan Area.

Specific to land use, the project is largely consistent with community plan policies emphasizing the need to use buffers, screening, or incremental zoning between potentially conflicting land uses (Policies NER 6, AR 1, CI 4, and FU 1). Specifically, the community plan requires a buffer or screening between commercial/industrial development and residential or agricultural uses. Similarly, it requires that incremental zoning be used between agricultural-residential or residential development and industrial or agricultural land uses. Under the project, such conflicts would generally be avoided through development consistent with the proposed WJHMP land use plan, which has been developed to minimize conflicts between future land uses.

Regarding the need for a public services plan identified in the Vineyard Community Plan (Policy CI 3), an Urban Services Plan has been prepared for the project. The plan demonstrates that the provision of services would be cost-neutral to the County's General Fund and existing ratepayers, the operations and maintenance costs for the required public facilities and infrastructure would be cost-neutral to the County's General Fund and existing ratepayers, and the existing levels of municipal services would not be negatively affected by approval of the WJHMP and buildout of the plan area.

Summary

The project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect in a manner that would cause a significant environmental impact. With implementation of resource-specific mitigation measures identified throughout this EIR, the project would be consistent with the County's General Plan growth management policies, as well as policies related to public services, utilities, transportation, and air quality. In addition, the project is consistent with the SACOG Blueprint and applicable community plans. For these reasons, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact LU-3: Induce Substantial Unplanned Population Growth

The project would result in substantial population growth, both directly through changes in land use designations that allow residential development and indirectly through the extension and expansion of roads and other infrastructure. As described above in Impact LU-2, although this growth is currently outside the UPA and inconsistent with the County's adopted General Plan land use diagram, the project is consistent with applicable growth management policies in the General Plan. In addition, because the plan has been in development for nearly two decades, the growth forecast in this plan has been considered in the infrastructure planning efforts of the County and private service providers. Further, as explained in Chapter 2, "Project Description," the County has processed this application concurrent with several other adjacent plans that could affect the regional pattern of land use in a manner that effects natural resources such as air quality and biological resources and changes in transportation and infrastructure

needs. The cumulative impacts of these developments are disclosed in Chapter 21 of this EIR. Therefore, the County has planned for population growth in the Jackson Highway corridor and the direct and indirect effects of the WJHMP are disclosed in this EIR. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact LU-4: Displace Substantial Numbers of Existing People or Housing, Necessitating the Construction of Replacement Housing Elsewhere

Existing housing in the approximately 5,913-acre plan area is limited. Mining has been a prevalent land use in the plan area for decades, so much of the area is occupied by active and reclaimed surface mining sites. Other uses on-site include industrial properties, such as storage, trucking, and rock processing and sales, as well as limited commercial, institutional, and agricultural uses. Pockets of rural residential housing are located in several locations in the plan area. Implementation of the project involves development of an estimated 16,484 new housing units. No housing is present in applicant-controlled portions of the plan area, and existing land uses in the remainder of the plan area, where the rural residential housing is located, would be allowed to continue following project adoption. If plan implementation results in the future redevelopment of land, particularly in the FPAs, any associated loss of housing would be sufficiently replaced with the 16,484 housing units anticipated within the plan area at buildout. Therefore, implementation of the project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

16 NOISE

INTRODUCTION

This chapter includes a summary of applicable regulations related to noise and vibration, a description of ambient noise conditions, and an analysis of potential short-term construction and long-term operational-source noise impacts associated with the plan area. Mitigation measures are recommended as necessary to reduce significant noise impacts. The analysis within this chapter is based on the Noise and Vibration Analysis prepared for the WJHMP (Bollard Acoustical Consultants 2023). The analysis is included as Appendix I of this EIR and incorporated herein. Additional data is provided in Appendix J, "Noise Modeling Calculations." Potential exposure to excessive noise levels associated with airport operations is discussed in Chapter 7, "Airport Compatibility," and is not discussed further in this chapter.

No comments were received regarding noise and vibration in response to the notice of preparation (NOP). The NOP and comments received in response to it are presented in Appendix A.

ENVIRONMENTAL SETTING

ACOUSTIC FUNDAMENTALS

Before discussing the noise setting for the project, background information about sound, noise, vibration, and common noise descriptors is needed to provide context and a better understanding of the technical terms referenced throughout this chapter.

SOUND, NOISE, AND ACOUSTICS

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a human ear. Noise is defined as loud, unexpected, annoying, or unwanted sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

FREQUENCY

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in

kilohertz or thousands of hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this large range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB).

Addition of Decibels

Because decibels are logarithmic units, SPLs cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness at the same time, the resulting sound level at a given distance would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. For example, if one idling truck generates an SPL of 70 dB, two trucks idling simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level of approximately 5 dB louder than one source.

A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies, as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–5,000 Hz and perceive sounds within this range better than sounds of the same amplitude with frequencies outside of this range. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an “A-weighted” sound level (expressed in units of A-weighted decibels) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgment correlates well with the A-scale sound levels of those sounds. Thus, noise levels are typically reported in terms of A-weighted decibels. Table 16-1 describes typical A-weighted noise levels for various noise sources.

Table 16-1 Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 feet	— 100 —	
Gas lawn mower at 3 feet	— 90 —	
Diesel truck at 50 feet at 50 miles per hour	— 80 —	Food blender at 3 feet, Garbage disposal at 3 feet
Noisy urban area, daytime, Gas lawn mower at 100 feet	— 70 —	Vacuum cleaner at 10 feet, Normal speech at 3 feet
Commercial area, Heavy traffic at 300 feet	— 60 —	
Quiet urban daytime	— 50 —	Large business office, Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime	— 30 —	Library, Bedroom at night
Quiet rural nighttime	— 20 —	
	— 10 —	Broadcast/recording studio
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans 2013: Table 2-5.

HUMAN RESPONSE TO CHANGES IN NOISE LEVELS

The doubling of sound energy results in a 3-dB increase in the sound level. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 Hz and perceives both higher and lower frequency sounds of the same magnitude with less intensity (Caltrans 2013: 2-18). In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013: 2-10). Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

VIBRATION

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions). Vibration levels can be depicted in terms of amplitude and frequency relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in inches per second (in/sec) or in millimeters per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2018: 110; Caltrans 2020: 6).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2018: 110; Caltrans 2020: 7). This is based on a reference value of 1 micro inch per second.

The typical background vibration-velocity level in residential areas is approximately 50 VdB. Ground vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2018: 120; Caltrans 2020: 27).

Table 16-2 summarizes the general human response to different ground vibration-velocity levels.

Table 16-2 Human Response to Different Levels of Ground Noise and Vibration

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 µ inch/second and based on the root mean square (RMS) velocity amplitude.

Source: FTA 2018: 120.

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur to fragile buildings. Construction activities can generate sufficient ground vibrations to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2018: 113).

Ground vibration levels generated by construction activity can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations are generated by vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment.

Common Noise Descriptors

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors used throughout this chapter.

Equivalent Continuous Sound Level (L_{eq}): L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013:2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly L_{eq}, is the energy average of sound levels occurring during a 1-hour period and is the basis for noise abatement criteria used by the California Department of Transportation (Caltrans) and Federal Transit Administration (FTA) (Caltrans 2013: 2-47; FTA 2018: Table 3-1).

Percentile-Exceeded Sound Level (L_x): L_x represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time) (Caltrans 2013: 2-48).

Maximum Sound Level (L_{max}): L_{max} is the highest instantaneous sound level measured during a specified period (Caltrans 2013: 2-48; FTA 2018: Table 3-1).

Day-Night Level (L_{dn}): L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB “penalty” applied to sound levels occurring during nighttime hours between 10 p.m. and 7 a.m. (Caltrans 2013: 2-48; FTA 2018: Table 3-1).

Community Noise Equivalent Level (CNEL): CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. and a 5-dB penalty applied to the sound levels occurring during evening hours between 7 p.m. and 10 p.m. (Caltrans 2013: 2-48).

Vibration Decibels (VdB): VdB is the vibration velocity level in decibel scale (FTA 2018: Table 5-1).

Peak Particle Velocity (PPV): PPV is the peak signal value of an oscillating vibration waveform. Usually expressed in inches/second (in/sec) (FTA 2018: Table 5-1).

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which a noise level decreases with distance depends on depends on geometric spreading, ground absorption, atmospheric effects, and shielding by natural or human-made features, described in detail below.

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Roads and highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources, thus propagating at a slower rate in comparison to a point source. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a source to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling provides additional attenuation associated with geometric spreading. Traditionally, this additional attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), additional ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the attenuate rate associated with cylindrical spreading, the additional ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance. This would hold true for point sources, resulting in an overall drop-off rate of up to 7.5 dB per doubling of distance.

Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels, as wind can carry sound. Sound levels can be increased over large distances (e.g., more than 500 feet) from the source because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also affect sound attenuation.

SHIELDING BY NATURAL OR HUMAN-MADE FEATURES

A large object or barrier in the path between a noise source and a receiver attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction (Caltrans 2013:2-41; FTA 2018:16). Barriers higher than the line of sight provide increased noise reduction (FTA 2018: 16). Vegetation between the source and receiver is rarely effective in reducing noise because it does not create a solid barrier unless there are multiple rows of vegetation (FTA 2018: 15, 104, 106).

EXISTING CONDITIONS

EXISTING NOISE- AND VIBRATION-SENSITIVE LAND USES

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. The General Plan defines a noise sensitive outdoor area as the primary outdoor activity area associated with any given land use at which noise sensitivity exists and the location at which the County's exterior noise level standards are applied (Sacramento County 2022a: 3).

Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels, and because of the potential for nighttime noise to result in sleep disruption if a project consists of nighttime construction. Additional land uses such as schools, transient lodging, historic sites, cemeteries, parks, and places of worship are also generally considered sensitive to increases in noise levels. Buildings and structures within these land use types are considered vibration-sensitive in addition to commercial and industrial buildings. The nearest noise-sensitive receptors include single-family homes adjacent to the northeastern perimeter of the WJHMP area on the north side of State Route (SR) 16 (Jackson Highway); an elementary school within the southwestern portion of the WJHMP area; and residences and churches within the WJHMP area.

EXISTING NOISE SOURCES AND AMBIENT LEVELS

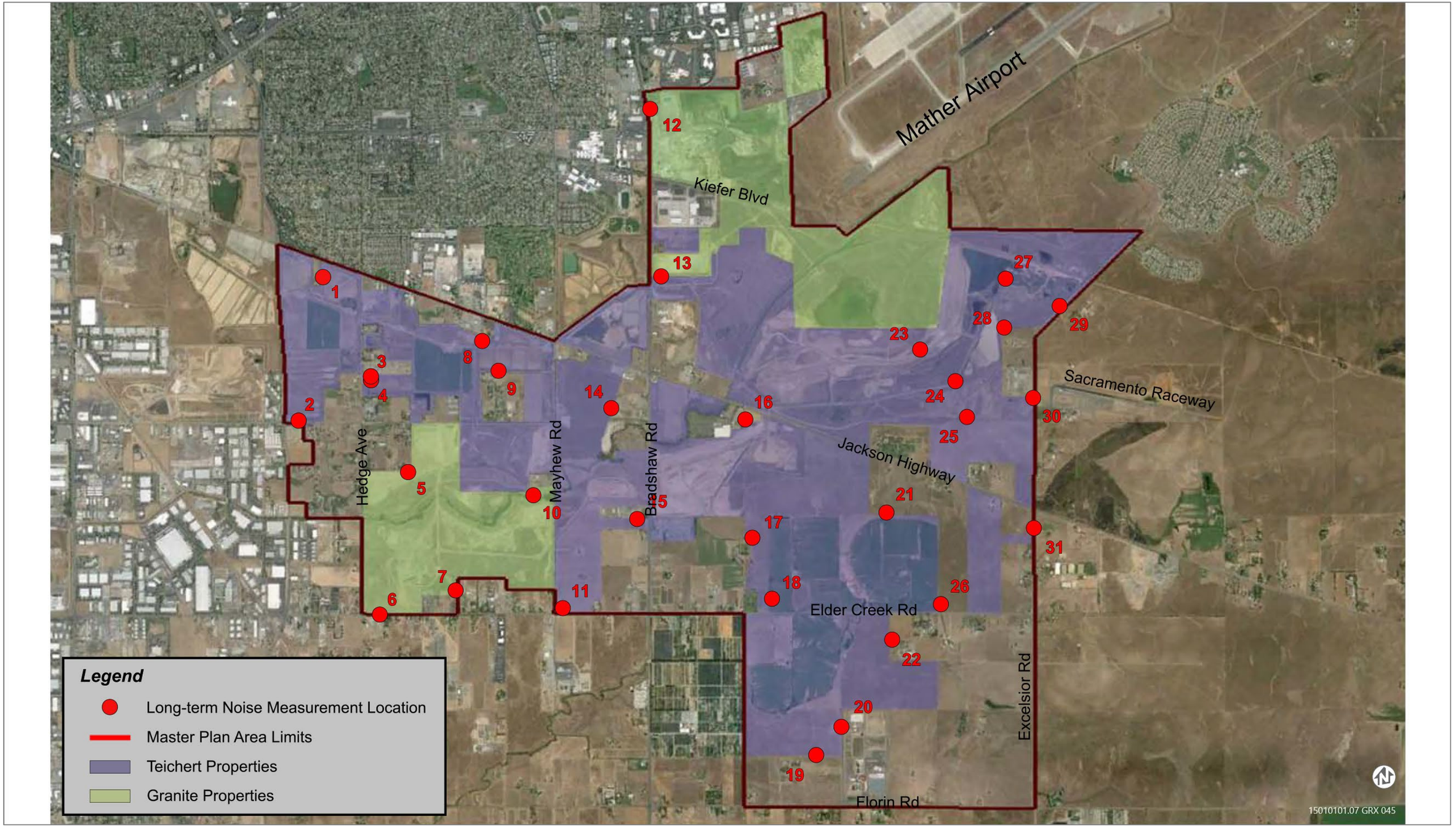
The noise environment in Sacramento County is defined primarily by transportation, which includes car, aircraft, and train traffic. Specifically, the most pervasive noise source affecting the WJHMP area is the traffic on Jackson Highway and other major arterial roadways. Mather Airport is located immediately adjacent to the northeastern boundary of the plan area, and the airport noise contours extend into the WJHMP area (refer to Chapter 7, "Airport Compatibility," in this EIR for further discussion). In addition to transportation noise sources, there are also stationary noise sources within the county, including manufacturing, commercial, and industrial uses. Existing noise sources within the WJHMP area include transportation noise, industrial activities such as storage, trucking, and aggregate mining and processing, and noise sources associated with residential, institutional, and agricultural uses. Although the Sacramento

Raceway is located within the Jackson Township Specific Plan area, adjacent to the WJHMP area, the raceway closed in November 2023.

To characterize the existing ambient noise environment within the WJHMP area, long-term (24-hour continuous) noise monitoring was conducted at 31 locations within the plan area in 2013 as shown in Figure 16-1. Supplemental ambient noise monitoring was conducted at six of the long-term noise monitoring locations in 2017, and again in 2022 to verify that the 2013 data remains representative of current ambient noise conditions within the plan area.

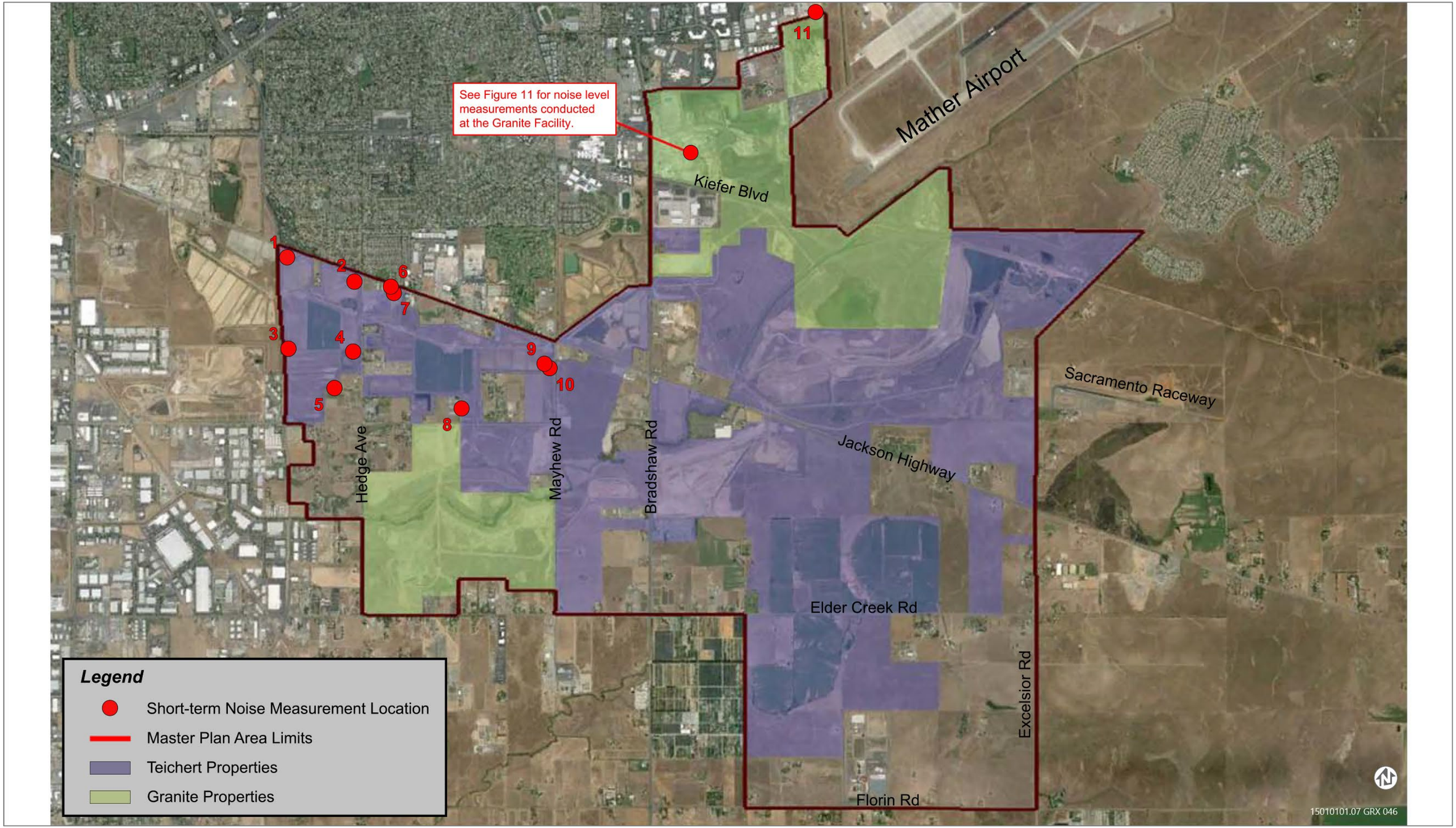
Short-term ambient noise levels measurements were also conducted at 11 locations shown in Figure 16-2. The locations of the noise monitoring conducted at the Granite Facility are shown in Figure 16-3.

Larson Davis Laboratories Model 820, LXT, and 831 precision integrating sound level meters were used for the ambient noise level measurement surveys. The meters were calibrated before use with Larson Davis Laboratories Model CAL200 acoustical calibrators to ensure measurement accuracy. The measurement equipment meets all pertinent specifications of the American National Standards Institute. The results of the ambient noise measurement survey are summarized below in Tables 16-3 and 16-4. It is important to note that several of the parcels within the WJHMP area are former aggregate excavation sites and are therefore lower (i.e., depressed) relative to the surrounding ground elevation. Additionally, because multiple noise measurements were taken at the same noise monitoring location (e.g., LT-1), several of the noise monitoring locations listed in Table 16-3 include a range of noise levels.



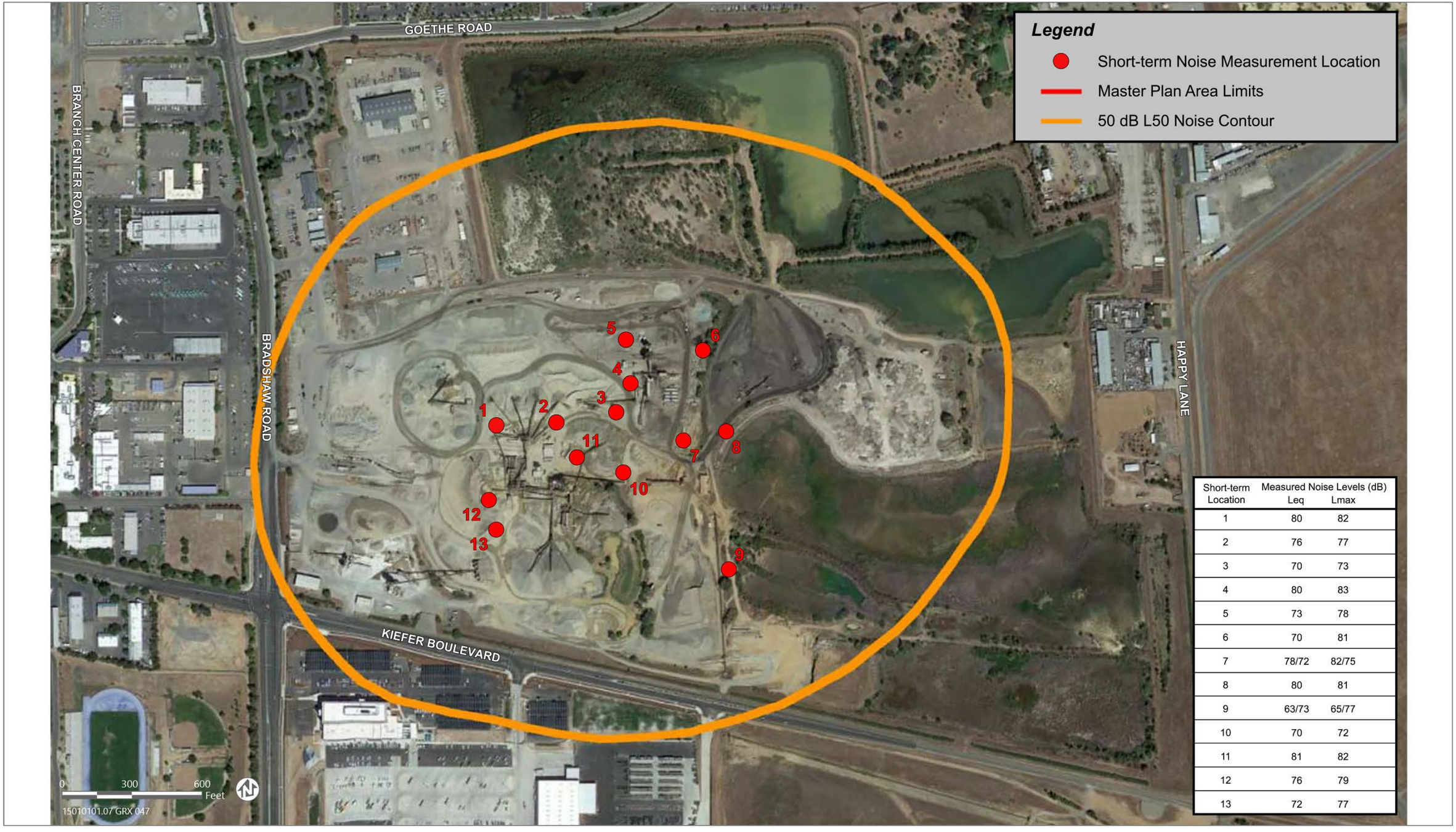
Source: Bollard Acoustical Consultants 2023.

Figure 16-1 Long-Term Noise Monitoring Locations



Source: Bollard Acoustical Consultants 2023.

Figure 16-2 Short-Term Noise Monitoring Locations



Short-term Location	Measured Noise Levels (dB) Leq	Lmax
1	80	82
2	76	77
3	70	73
4	80	83
5	73	78
6	70	81
7	78/72	82/75
8	80	81
9	63/73	65/77
10	70	72
11	81	82
12	76	79
13	72	77

Source: Bollard Acoustical Consultants 2023.

Figure 16-3 Granite Noise Monitoring Locations

Table 16-3 Summary of Long-Term Noise Measurements

Location	L_{dn}	Monitoring Site Depressed?
LT-1	56-59	Yes
LT-2	49-53	Yes
LT-3	63-65	No
LT-4	46-50	Yes
LT-5	47-52	No
LT-6	61-67	No
LT-7	51-58	No
LT-8	48-51	Yes
LT-9	53-56	No
LT-10	48-54	No
LT-11	60-64	No
LT-12	60-68	No
LT-13	58-66	No
LT-14	50-59	Yes
LT-15	55-61	No
LT-16	65	No
LT-17	56-58	No
LT-18	59	No
LT-19	54	No
LT-20	48-59	No
LT-21	60	No
LT-22	57	No
LT-23	58	No
LT-24	57	Yes
LT-25	70	Yes
LT-26	53-59	No
LT-27	55-53	Yes
LT-28	55-59	No
LT-29	63	No
LT-30	64-68	No
LT-31	59-63	No

Notes: L_{dn} = Day-Night Level; depressed = lower relative to the surrounding ground elevation.

Source: Bollard Acoustical Consultants 2023.

Table 16-4 Summary of Short-Term Noise Measurements

Short-Term Site	Time of Day	L_{50}	L_{max}	Monitoring Site Depressed?
1	2:39 p.m.	46	61	Yes
2	3:06 p.m.	47	56	Yes
3	1:43 p.m.	61	68	No
4	1:23 p.m.	48	57	Yes
5	2:05 p.m.	47	65	Yes
6	12:17 p.m.	63	74	No
7	12:17 p.m.	45	61	Yes
8	2:22 p.m.	39	67	Yes
9	3:01 p.m.	43	79	Yes
10	3:01 p.m.	51	80	Yes
11	10:45 a.m.	42	57	No

Notes: L_{dn} = Day-Night Level; depressed = lower relative to the surrounding ground elevation.

Source: Bollard Acoustical Consultants 2023.

As shown in Tables 16-3 and 16-4, existing noise levels within the WJHMP area vary depending on the location of the site relative to major noise sources and the topographic shielding to the site.

TRANSPORTATION NOISE

Several major roadways are located within and near the WJHMP area and contribute a notable amount of noise to the ambient environment. These roadways include SR 16 (Jackson Highway), Excelsior Road, and Bradshaw Road. Noise levels along roadways are affected by various traffic characteristics, including average daily traffic (ADT) volumes, vehicle mix, roadway conditions, vehicle speed, and the gradient of the roadway. Additionally, the extent to which nearby land uses are affected by existing traffic noise depends on multiple factors, including their respective proximity to the roadways, shielding provided by intervening terrain and structures, and their individual sensitivity to noise. Transportation noise data for all modeled roadways, including distances to the 70 dB, 65 dB, and 60 dB L_{dn} contours, are presented in Table 16-5.

Table 16-5 Modeled Existing Traffic Noise Levels

Roadway	From	To	Ldn at 100 feet from centerline dB	Distance (ft) to Contour 70 dB Ldn	Distance (ft) to Contour 65 dB Ldn	Distance (ft) to Contour 60 dB Ldn
Bradshaw	Folsom	US 50	68	69	149	321
Bradshaw	US 50	Lincoln Village	71	111	239	515
Bradshaw	Lincoln Village	Old Placerville	70	97	208	449
Bradshaw	Old Placerville	Goethe	69	91	196	422
Bradshaw	Goethe	Collector WJ-8	68	74	160	344
Bradshaw	Collector WJ-8	Kiefer	68	74	160	344
Bradshaw	Kiefer	Collector WJ-9	68	78	167	360
Bradshaw	Collector WJ-9	Mayhew	68	78	167	360
Bradshaw	Mayhew	Jackson	68	78	167	360
Bradshaw	Jackson	Rock Creek	68	75	162	349
Bradshaw	Rock Creek	Collector WJ-10	68	75	162	349
Bradshaw	Collector WJ-10	Collector WJ-11	68	75	162	349
Bradshaw	Collector WJ-11	Elder Creek	68	75	162	349
Bradshaw	Elder Creek	Florin	68	74	159	343
Bradshaw	Florin	Gerber	68	75	162	349
Bradshaw	Gerber	Calvine	68	70	151	326
Calvine	Waterman	Bradshaw	67	59	126	272
Calvine	Bradshaw	Vineyard	66	57	123	264
Calvine	Vineyard	Excelsior	63	35	76	163
Chrysanthy	Sunrise	Rancho Cordova	59	18	39	83
Douglas	Mather	Zinfandel	62	28	60	130
Douglas	Zinfandel	Sunrise	63	33	70	152
Douglas	Sunrise	Rancho Cordova	63	32	70	150
Douglas	Rancho Cordova	Americanos	63	32	70	150
Douglas	Americanos	Grant Line	63	32	70	150
Eagles Nest	Kiefer	N Bridgewater	55	10	21	46
Eagles Nest	N Bridgewater	S Bridgewater	55	10	21	46
Eagles Nest	S Bridgewater	Jackson	55	10	21	46
Eagles Nest	Jackson	Florin	54	9	19	41
Eagles Nest	Florin	Grant Line	50	4	10	21
Elder Creek	65th Street	Power Inn	66	54	117	252

Roadway	From	To	Ldn at 100 feet from centerline dB	Distance (ft) to Contour 70 dB Ldn	Distance (ft) to Contour 65 dB Ldn	Distance (ft) to Contour 60 dB Ldn
Elder Creek	Power Inn	Florin-Perkins	65	50	107	231
Elder Creek	Florin Perkins	South Watt	64	39	85	183
Elder Creek	South Watt	Hedge	62	29	63	136
Elder Creek	Hedge	Mayhew	62	30	65	140
Elder Creek	Mayhew	Bradshaw	62	29	61	132
Elder Creek	Bradshaw	Vineyard	58	16	34	72
Elder Creek	Vineyard	Excelsior	58	16	34	72
Elk Grove-Florin	Florin	Gerber	67	64	138	298
Excelsior	Kiefer	Douglas	58	15	33	70
Excelsior	Douglas	Collector WJ-1/ Collector JT-1	59	19	41	88
Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59	19	41	88
Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59	19	41	88
Excelsior	Jackson	Collector WJ-6	61	23	50	109
Excelsior	Collector WJ-6	Elder Creek	61	23	50	109
Excelsior	Elder Creek	Florin	60	21	45	96
Excelsior	Florin	Gerber	61	24	53	114
Excelsior	Gerber	Jackson	60	21	45	96
Florin	Power Inn	Florin-Perkins	67	61	132	285
Florin	Florin-Perkins	So Watt/ Elk Grove Florin	66	54	116	250
Florin	South Watt	Hedge	64	41	89	193
Florin	Hedge	Mayhew	63	36	78	168
Florin	Mayhew	Bradshaw	63	36	78	169
Florin	Bradshaw	Vineyard	62	29	62	133
Florin	Vineyard	Excelsior	62	29	62	133
Florin	Excelsior	Sunrise	64	37	80	173
Folsom	Howe	Jackson	69	89	191	411
Fruitridge	65th Street	Power Inn	66	52	111	240
Fruitridge	Power Inn	Florin Perkins	66	57	123	266
Fruitridge	Florin Perkins	South Watt	65	44	95	205

Roadway	From	To	Ldn at 100 feet from centerline dB	Distance (ft) to Contour 70 dB Ldn	Distance (ft) to Contour 65 dB Ldn	Distance (ft) to Contour 60 dB Ldn
Fruitridge	South Watt	Hedge	57	14	29	63
Fruitridge	Hedge	Collector WJ-12	55	10	21	46
Fruitridge	Collector WJ-12	Mayhew	55	10	21	46
Grant Line	White Rock	Douglas	64	42	90	194
Grant Line	Douglas	Chrysanthy	66	53	113	244
Grant Line	Chrysanthy	Kiefer	66	53	113	244
Grant Line	Kiefer	Rancho Cordova	65	46	100	215
Grant Line	Rancho Cordova	Jackson	65	46	100	215
Grant Line	Jackson	Sunrise	69	87	187	403
Grant Line	Sunrise	Calvine	70	95	204	439
Grant Line	Calvine	Elk Grove City Limit	67	61	132	284
Grant Line	Elk Grove City Limit	Sheldon	67	61	132	284
Grant Line	Sheldon	Wilton	68	74	159	343
Grant Line	Wilton	Bond	68	70	150	324
Happy Lane	Old Placerville	Routier Ext	57	15	31	67
Happy Lane	Routier Ext	Kiefer	57	15	31	67
Hedge	Jackson	Rock Creek	57	14	30	65
Hedge	Rock Creek	Fruitridge	57	14	30	65
Hedge	Fruitridge	Elder Creek	58	16	35	75
Hedge	Elder Creek	Florin	57	13	28	60
Howe	US 50	Folsom	71	113	243	524
International	Mather Field	Zinfandel	66	53	115	248
International	Zinfandel	Sunrise	63	34	73	157
Jackson	Folsom	Florin Perkins	67	59	126	272
Jackson	Florin Perkins	14th	66	52	113	243
Jackson	14th	Rock Creek	65	46	99	212
Jackson	Rock Creek	Aspen 1 Dwy	65	46	99	212
Jackson	Aspen 1 Dwy	South Watt	65	46	99	212
Jackson	South Watt	Hedge	68	73	157	337
Jackson	Hedge	Collector WJ-3	67	59	128	276
Jackson	Collector WJ-3	Mayhew	67	59	128	276
Jackson	Mayhew	Bradshaw	67	67	144	310

Roadway	From	To	Ldn at 100 feet from centerline dB	Distance (ft) to Contour 70 dB Ldn	Distance (ft) to Contour 65 dB Ldn	Distance (ft) to Contour 60 dB Ldn
Jackson	Bradshaw	Collector WJ-4	68	69	148	320
Jackson	Collector WJ-4	Happy Ln	68	69	148	320
Jackson	Happy Ln	Rock Creek	68	69	148	320
Jackson	Rock Creek	Collector WJ-5	68	69	148	320
Jackson	Collector WJ-5	Collector WJ-6	68	69	148	320
Jackson	Collector WJ-6	Excelsior	68	69	148	320
Jackson	Excelsior	Collector JT-3	67	60	128	276
Jackson	Collector JT-3	Tree View Ln	67	60	128	276
Jackson	Tree View Ln	Collector JT-4	67	60	128	276
Jackson	Collector JT-4	Eagles Nest	67	60	128	276
Jackson	Eagles Nest	Rockbridge	66	58	124	268
Jackson	Rockbridge	Sunrise	66	58	124	268
Jackson	Sunrise	Grant Line	69	88	190	409
Kiefer	Florin Perkins	South Watt	60	22	47	101
Kiefer	South Watt	Mayhew	66	56	120	259
Kiefer	Mayhew	Bradshaw	63	35	75	163
Kiefer	Bradshaw	Collector WJ-14	61	26	56	120
Kiefer	Collector WJ-14	Routier Ext	61	26	56	120
Kiefer	Routier Ext	Happy Lane	61	26	56	120
Kiefer	Eagles Nest	W Collector MS-1	55	10	22	48
Kiefer	W Collector MS-1	Northbridge	55	10	22	48
Kiefer	Northbridge	E Collector MS-1	55	10	22	48
Kiefer	E Collect MS-1	Sunrise	55	10	22	48
Kiefer	Sunrise	Rancho Cordova	57	13	28	61
Mather/Norden	Von Karman St	Bleckely St	59	18	38	83
Mather	Bleckely St	Femoyer St	59	18	38	83
Mather	Femoyer St	Douglas	59	18	38	83
Mather-Excelsior	Douglas	Kiefer	60	23	48	104
Mather Field	US 50	Rockingham	71	120	258	555
Mather Field	Rockingham	International	71	119	257	553
Mather Field	International	Peter A McCuen	66	56	120	258

Roadway	From	To	Ldn at 100 feet from centerline dB	Distance (ft) to Contour 70 dB Ldn	Distance (ft) to Contour 65 dB Ldn	Distance (ft) to Contour 60 dB Ldn
Mayhew	Folsom	Goethe	62	29	62	135
Mayhew	Goethe	Kiefer	62	28	60	130
Mayhew	Jackson	Rock Creek	56	11	24	51
Old Placerville	Bradshaw	Granby	63	33	71	153
Old Placerville	Granby	Happy Ln	62	30	64	138
Old Placerville	Happy Ln	Routier	62	31	66	142
Old Placerville	Routier	Rockingham	63	32	70	151
Power Inn	Folsom	14th	69	87	186	402
Rockingham	Old Placerville	Mather Field	66	58	125	269
South Watt	Folsom	Kiefer	71	109	236	508
South Watt	Kiefer	Jackson	70	94	202	435
South Watt	Jackson	Rock Creek	69	80	173	374
South Watt	Rock Creek	Fruitridge	69	80	173	374
South Watt	Fruitridge	Elder Creek	68	71	154	331
South Watt	Elder Creek	Florin	68	76	163	352
Sunrise	US 50	Folsom	71	114	245	528
Sunrise	Folsom	Trade Center	70	107	230	495
Sunrise	Trade Center	White Rock	69	84	181	390
Sunrise	White Rock	International	68	69	149	321
Sunrise	International	Rio Del Oro	68	74	159	342
Sunrise	Rio Del Oro	Douglas	70	93	200	431
Sunrise	Douglas	Kiefer	68	72	155	334
Sunrise	Kiefer	Jackson	69	80	172	372
Sunrise	Jackson	Florin	67	61	131	282
Sunrise	Florin	Grant Line	65	48	103	221
Vineyard	Gerber	Calvine	59	20	42	91
Watt	US 50	Folsom	74	172	371	799
White Rock	International	Quality	58	17	36	78
White Rock	Quality	Zinfandel	63	33	72	155
White Rock	Zinfandel	Kilgore	64	40	87	186
White Rock	Kilgore	Sunrise	64	40	87	186
White Rock	Sunrise	Fitzgerald	66	57	123	265

Roadway	From	To	Ldn at 100 feet from centerline dB	Distance (ft) to Contour 70 dB Ldn	Distance (ft) to Contour 65 dB Ldn	Distance (ft) to Contour 60 dB Ldn
White Rock	Fitzgerald	Rancho Cordova	59	20	42	91
White Rock	Rancho Cordova	Americanos	59	20	42	91
White Rock	Americanos	Grant Line	58	17	36	79
White Rock	Grant Line	Prairie City	66	54	116	249
Zinfandel	US 50	White Rock	69	85	183	393
Zinfandel	White Rock	International	65	46	99	212
Zinfandel	International	Baroque	62	31	66	142
Zinfandel	Baroque	City Limit	62	31	66	142
Zinfandel	City Limit	Douglas	62	31	66	142
Zinfandel	Douglas	Collector MS-2	58	16	34	74
Zinfandel	Collector MS-2	Collector MS-3	58	16	34	74
Zinfandel	Collector MS-3	Collector MS-4	58	16	34	74
Zinfandel	Collector MS-4	Kiefer	58	16	34	74

Notes: L_{dn} = day-night average noise level.

Source: Bollard Acoustical Consultants 2023: Table 9.

RAILROAD NOISE

The heavy rail operators within Sacramento County are the Union Pacific Railroad, Burlington Northern Santa Fe, and Amtrak. The unincorporated county is also served by Regional Transit Light Rail. The Amtrak San Joaquins line operates between the San Francisco Bay Area and Bakersfield and is located approximately 1.90 miles west of the WJHMP area.

STATIONARY SOURCES

Existing and former aggregate mining areas and agricultural zone properties comprise the majority of the WJHMP area. For example, Granite operates an aggregate processing facility at the northeast corner of Bradshaw Road and Kiefer Boulevard. The noise study prepared for this analysis conducted short-term noise level measurements at 13 locations at this site on August 15, 2013. The noise level measurements are shown in Table 16-6. As shown in Table 16-6, noise levels at this site range from 67 dB L_{eq} to 81 dB L_{eq} which are similar to the typical noise levels for a commercial area (i.e., 60 dBA) and noisy urban area (i.e., 70 dBA) as shown in Table 16-1.

Table 16-6 Granite Facility Short-Term Noise Level Measurements

Short-Term Measurement Location	Measured Noise Level dB L_{eq}	Measured Noise Level dB L_{max}
1	80	82
2	76	77
3	70	73
4	80	83
5	73	78
6	70	81
7	78/72	82/75
8	80	81
9	67/73	65/77
10	70	72
11	81	82
12	76	79
13	72	77

Notes: L_{eq} = equivalent continuous sound level; L_{max} = Maximum sound level.

Source: Bollard Acoustical Consultants 2023: Figure 11A.

There are industrial uses including truck storage yards, warehouses, and building and landscaping supply yards throughout the WJHMP area, although most building and landscaping supply businesses are adjacent to Jackson Highway. Agricultural land uses also make up a large portion of the WJHMP area and are generally located within the eastern and southeastern portions of the WJHMP area. Daily activity of certain industrial and agricultural uses generate noise, especially those that use heavy equipment as part of normal operations such as shipping and loading, concrete crushing, and recycling.

EXISTING VIBRATION ENVIRONMENT

To quantify the baseline vibration levels within the WJHMP area, a series of baseline vibration measurements were conducted in 2013. Supplemental vibration surveys were conducted again in 2017 to verify that the 2013 vibration data remain representative of current baseline conditions within the WJHMP area.

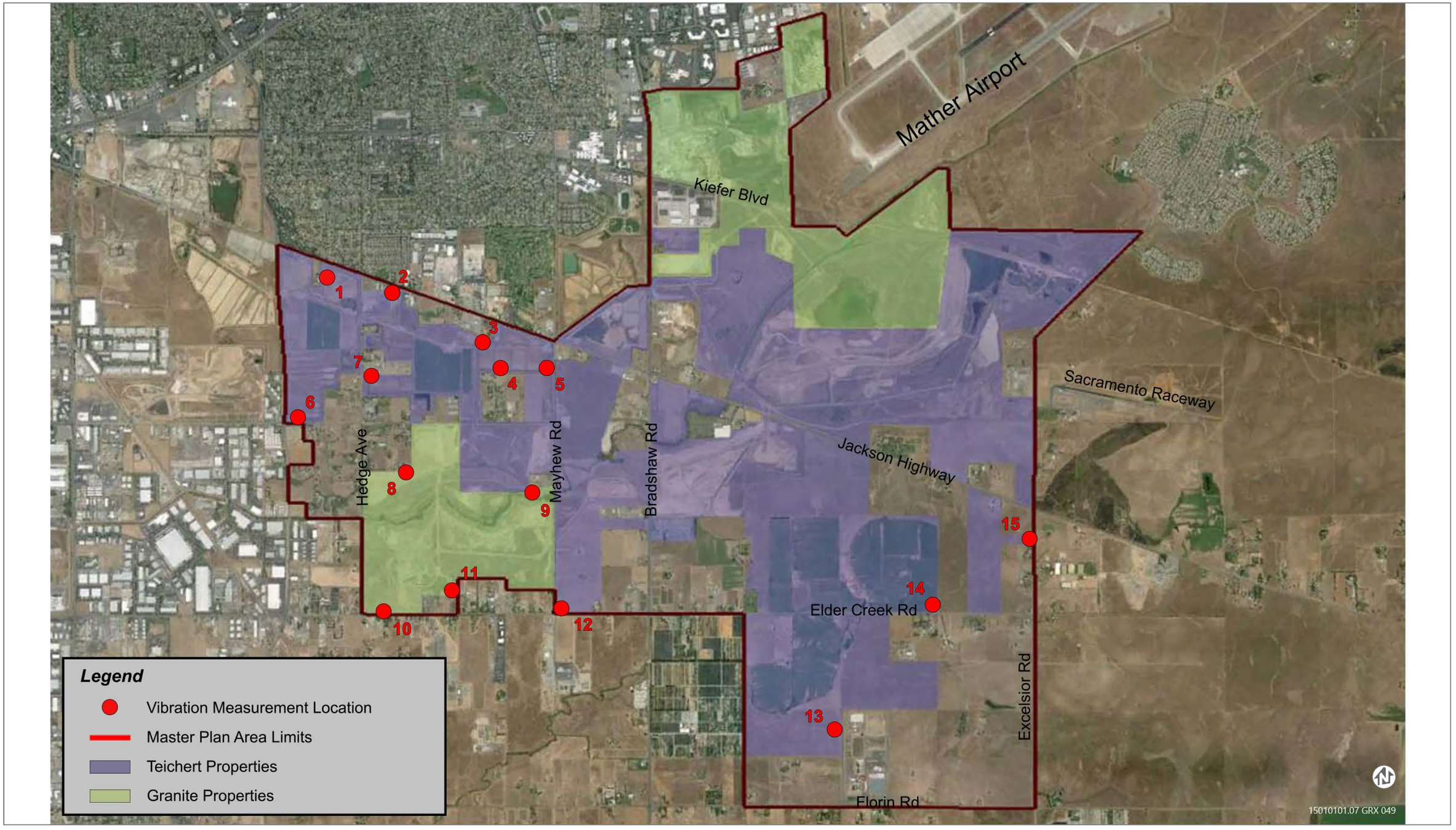
As shown in Figure 16-4, 15 monitoring locations were selected to be generally representative of a variety of locations within the WJHMP area, and due to the low measured vibration levels, it was determined that baseline vibration monitoring at additional sites was not warranted. The vibration measurements were conducted using a Larson-Davis Laboratories Model HVM-100 Vibration Analyzer with a PCB Electronics Model 353B51 ICP Vibration Transducer. Table 16-7 details measured existing vibration levels.

Table 16-7 Measured Baseline Vibration Levels (PPV in/sec)

Short-Term Site[1]	Date	Time	Vibration Level
1	8/13/13	11:05 a.m.	0.00331
2	8/13/13	12:17 p.m.	0.00404
3	8/13/13	11:53 a.m.	0.00257
4	8/13/13	2:32 p.m.	0.00220
5	8/13/13	3:01 p.m.	0.00551
6	8/13/13	11:34 a.m.	0.00183
7	8/13/13	1:44 p.m.	0.00441
8	8/15/13	11:23 a.m.	0.00147
9	8/13/13	3:50 p.m.	0.00294
10	8/15/13	11:06 a.m.	0.00918
11	8/15/13	10:42 a.m.	0.01280
12	8/29/13	10:50 a.m.	0.00367
13	8/29/13	11:35 a.m.	0.00624
14	8/29/13	11:59 a.m.	0.00367
15	8/29/13	12:19 p.m.	0.00257

Notes: PPV = peak particle velocity; in/sec = inches per second.
[1] The general range at which vibration becomes distinctly to strongly perceptible is approximately 0.10 in/sec PPV.
Source: Bollard Acoustical Consultants 2023: Table 12.

As shown in Table 16-7, all measured existing vibration levels within the WJHMP area were below the threshold of perception (i.e., 0.10 in/sec PPV). See Appendix I for details.



Source: Image produced and provided by Bollard Acoustical Consultants, adapted by Ascent in 2024.

Figure 16-4 Vibration Monitoring Locations

REGULATORY SETTING

FEDERAL

FEDERAL NOISE CONTROL ACT OF 1972

The Federal Noise Control Act of 1972 established a requirement that all federal agencies must comply with applicable federal, state, interstate, and local noise control regulations. Federal agencies also are directed to administer their programs in a manner that promotes an environment free from noise that jeopardizes public health or welfare.

FEDERAL TRANSIT ADMINISTRATION

To address the human response to ground vibration, the FTA has set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines are presented in Table 16-8. FTA has also established construction vibration damage criteria, shown in Table 16-9.

Table 16-8 Ground-Borne Vibration Impact Criteria for General Assessment

Land Use Category	GVB Impact Levels (VdB re 1 micro-inch/second) Frequent Events[1]	GVB Impact Levels (VdB re 1 micro-inch/second) Occasional Events[2]	GVB Impact Levels (VdB re 1 micro-inch/second) Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65[4]	65[4]	65[4]
Category 2: Residences and buildings where people normally sleep.	72	75	80
Category 3: Institutional land uses with primarily daytime uses.	75	78	83

Notes: GVB = Ground-Borne Vibration; VdB = vibration decibels referenced to 1 µ inch/second and based on the root mean square (RMS) velocity amplitude.

[1] "Frequent Events" is defined as more than 70 vibration events of the same source per day.

[2] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

[3] "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.

[4] This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define acceptable vibration levels.

Source: FTA 2018: 123–126.

Table 16-9 FTA Construction Damage Vibration Criteria

Land Use Category	PPV in/sec
Reinforced-concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Notes: PPV = peak particle velocity, in/sec = inches per second.

Source: FTA 2018.

Federal Interagency Committee on Noise

The Federal Interagency Committee on Noise (FICON) provides guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these criteria have been applied to other sources of noise similarly described in terms of cumulative noise exposure metrics such as the L_{dn}. Table 16-10 details criteria established by FICON to evaluate increases in ambient noise levels.

Table 16-10 Federal Interagency Committee on Noise Recommended Criteria for Evaluation of Increases in Ambient Noise Levels

Ambient Noise Level without the Project (L_{dn})	Increase Required for Significant Impact
<60 dB	5.0 dB, or greater
60-65 dB	3.0 dB, or greater
>65 dB	1.5 dB, or greater

Source: FICON 1992.

State

California Building Code Sound Transmission Standards

Noise within habitable units that is attributable to external sources is regulated by the California Building Standards codified in the California Code of Regulations, Title 24, Part 2, Section 1206. These standards are enforceable at the time of construction or during occupancy and apply to habitable units with common interior walls, partitions, and ceilings or those adjacent to public areas, such as halls, corridors, stairways, and service areas. Under these standards, the interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metrics used to measure these levels can be L_{dn} or CNEL, consistent with the local general plan. An acoustical analysis documenting compliance with the interior sound level standards shall be prepared for structures containing habitable rooms. Under Public Resources Code Section 25402.1(g), all cities and counties in the state are required to enforce the adopted California Building Code, including these standards for noise in interior environments.

California Department of Transportation

In 2020, Caltrans published the Transportation and Construction Vibration Guidance Manual (Caltrans 2020). The manual provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage. Table 16-11 presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

Table 16-11 Caltrans Recommendations Regarding Levels of Vibration Exposure

PPV (in/sec)	Effect on Buildings
0.4-0.6	Architectural damage and possible minor structural damage
0.2	Risk of architectural damage to normal dwelling houses
0.1	Virtually no risk of architectural damage to normal buildings
0.08	Recommended upper limit of vibration to which ruins and ancient monuments should be subjected
0.006-0.019	Vibration unlikely to cause damage of any type

Notes: PPV = peak particle velocity; in/sec = inches per second.

Source: Caltrans 2020: 38.

LOCAL

SACRAMENTO COUNTY 2030 GENERAL PLAN

The Sacramento County 2030 General Plan Noise Element was adopted in December 1993 and most recently amended in December 2022. The following General Plan policies related to noise and vibration are applicable to the project.

- **Policy NO-1.** The noise level standards for noise-sensitive areas of *new* uses affected by traffic or railroad noise sources in Sacramento County are shown by Table 1 [presented as Table 16-12 of this EIR]. Where the noise level standards of Table 1 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 16-12 standards.

Table 16-12 Noise Standards for New Uses Affected by Traffic and Railroad Noise

New Land Use	Sensitive Outdoor Area – L_{dn}	Sensitive Interior Area – L_{dn}
All Residential[5]	65	45
Transient lodging[3,5]	65	45
Hospitals and nursing homes[3,4,5]	65	45
Theaters and auditoriums[3]	None	35
Churches, meeting halls, schools, libraries, etc.[3]	65	40
Office buildings[3]	65	45
Commercial buildings[3]	None	50
Playgrounds, parks, etc.	70	None
Industry[3]	65	50

[1] Sensitive areas are defined in acoustical terminology section.

[2] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

[3] Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.

[4] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation either by hospital staff or patients.

[5] If this use is affected by railroad noise, a maximum (L_{max}) noise level standard of 70 dB shall be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

- **Policy NO-5.** The interior and exterior noise level standards for noise-sensitive areas of new uses affected by existing non-transportation noise sources in Sacramento County are shown by Table 2 [presented as Table 16-13 in this EIR]. Where the noise level standards of Table 16-13 are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 2 [presented as Table 16-13 in this EIR] standards within sensitive areas.

Table 16-13 Non-Transportation Noise Standards Median (L_{50})/Maximum (L_{max})

New Land Use	Outdoor Area	Outdoor Area	Interior
	Daytime	Nighttime	Day and Night
All Residential	55 / 75	50 / 70	35 / 55
Transient lodging[4]	55 / 75	---	35 / 55
Hospitals and nursing homes[5,6]	55 / 75	---	35 / 55
Theaters and auditoriums[6]	---	---	30 / 50
Churches, meeting halls, schools, libraries, etc.[6]	55 / 75	---	35 / 60
Office buildings[6]	60 / 75	---	45 / 65
Commercial buildings[6]	---	---	45 / 65
Playgrounds, parks, etc[6]	65 / 75	---	---
Industry[6]	60 / 80	---	50 / 70

[1] The Table 2 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table 2, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

[2] Sensitive areas are defined in the acoustic terminology section.

[3] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

[4] Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

[5] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

[6] The outdoor activity areas of these uses (if any) are not typically utilized during nighttime hours.

[7] Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.

- **Policy NO-6.** Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not exceed the interior and exterior noise level standards of Table 2 [presented as Table 16-13 in this EIR] at existing noise-sensitive areas in the project vicinity.
- **Policy NO-7.** The “last use there” shall be responsible for noise mitigation. However, if a noise-generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the

Table 2 [presented as Table 16-13 in this EIR] standards at the property line of the generating use in anticipation of the future neighboring development.

- **Policy NO-8.** Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.
- **Policy NO-9.** For capacity enhancing roadway or rail projects, or the construction of new roadways or railways, a noise analysis shall be prepared in accordance with Table 3 [presented as Table 16-14 in this EIR] requirements. If projected post-project traffic noise levels at existing uses exceed the noise standards of Table 1 [presented as Table 16-12 in this EIR], then feasible methods of reducing noise to levels consistent with the Table 16-12 standards shall be analyzed as part of the noise analysis. In the case of existing residential uses, sensitive outdoor areas shall be mitigated to 60 dB, when possible, through the application of feasible methods to reduce noise. If 60 dB cannot be achieved after the application of all feasible methods of reducing noise, then noise levels up to 65 dB are allowed.

Table 16-14 Requirements for Acoustical Analyses Prepared in Sacramento County

An acoustical analysis prepared pursuant to the Noise Element shall:
Be the responsibility of the applicant.
Be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.
Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.
Estimate projected future (20 years) noise levels in terms of the Standards of Tables 1 and 2 [presented as Tables 16-6 and 16-8 in this EIR] and compare those levels to the adopted policies of the Noise Element.
Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.
Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

If pre-project traffic noise levels for existing uses already exceed the noise standards of Table 16-12 and the increase is significant as defined below [shown as Table 16-15 in this EIR], feasible methods of reducing noise to levels consistent with the Table 16-12 standards should be applied. In no case shall the long-term noise exposure for non-industrial uses be greater than 75 dB; long-term noise exposure above this level has the potential to result in hearing loss.

A significant increase is defined as follows:

Table 16-15 Sacramento County Noise Significance Thresholds

Pre-Project Noise Environment (L_{dn})	Significant Increase
Less than 60 dB	5+ dB
60–65 dB	3+ dB
Greater than 65 dB	1.5+ dB

- **Policy NO-12.** All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with Table 3 [presented as Table 16-14 in this EIR].
- **Policy NO-13.** Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.
- **Policy NO-14.** Noise analyses prepared for multi-family residential projects, town homes, mixed-use, condominiums, or other residential projects where floor ceiling assemblies or party-walls shall be common to different owners/occupants, shall be consistent with the State of California Noise Insulation standards.
- **Policy NO-15.** The County shall have the flexibility to consider the application of 5 dB less restrictive exterior noise standards than those prescribed in Tables 1 and 2 [presented as Tables 16-12 and 16-13 in this EIR, respectively] in cases where it is impractical or infeasible to reduce exterior noise levels within infill projects to a state of compliance with the Tables 16-12 or 16-13 standards. In such cases, the rationale for such consideration shall be clearly presented and disclosure statements and noise easements should be included as conditions of project approval. The interior noise level standards of Tables 16-12 or 16-13 would still apply. The maximum allowable long-term noise exposure permissible for non-industrial uses is 75 dB.
- **Policy NO-16.** The following sources of noise shall be exempt from the provisions of this Noise Element:

  a. Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during daytime hours.

  b. Activities associated with events for which a permit has been obtained from the County.

Sacramento County Code

Chapter 6.68 of the Sacramento County Code addresses noise control in the county. The County Code sets limits for exterior noise levels on some designated agricultural-

residential and all residential properties. The standards found in the County Noise Control Ordinance are based on the duration of noise on private property over 1-hour periods. The ordinance is primarily concerned with regulating noise other than noise generated by transportation noise sources (e.g., passing cars or aircraft flyovers). The ordinance limits the duration of noise based on many factors, including the type of source, tonal characteristics of the source, ambient noise levels, and time of day, by utilizing a system of noise criteria not to be exceeded based on the duration of noise over any given hour.

Section 6.68.070 of the Sacramento County Code contains exterior noise standards for residential zoning districts. In recognition of ambient noise, the ordinance allows the standards set forth in Table 16-16 to be adjusted in 5 dB increments to encompass the ambient noise level. For example, if the ambient noise level for a given hour was 57 dB, the daytime L_{50} noise standard would be increased to 60 dB. The Noise Control Ordinance also states that each of the standards identified in Table 16-16 should be reduced by 5 dB for impulsive or simple tone noises, or for noises consisting of speech or music.

Table 16-16 Sacramento County Noise Ordinance

Cumulative Duration of the Intrusive Sound	Descriptor	Exterior Noise Standard, dB	Exterior Noise Standard, dB
		Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)
30 – 60 minutes per hour	L_{50}	55	50
15 – 30 minutes per hour	L_{25}	60	55
5 – 15 minutes per hour	L_{08}	65	60
1 – 5 minutes per hour	L_{02}	70	65
Level not to be exceeded at any time	L_{max}	75	70

Source: Sacramento County, Noise Control Ordinance, Chapter 6.68.070.

Section 6.68.090 of the County Code provides exemptions to all noise regulations specified within Chapter 6.68 of the Code. Exemptions applicable to the project include:

- Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 6:00 a.m. on weekdays and Friday commencing at 8:00 p.m. through and including 7:00 a.m. on Saturday; Saturdays commencing at 8:00 p.m. through and including 7:00 a.m. on the next following Sunday and on each Sunday after the hour of 8:00 p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after 8:00 p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be

brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner; and

- Noise sources associated with maintenance of residential area property, provided said activities take place between the hours of 6:00 a.m. and 8:00 p.m. on any day except Saturday or Sunday, or between the hours of 7:00 a.m. and 8:00 p.m. on Saturday or Sunday.

The County Code also includes specific regulations about the use of noise-generating mechanical equipment. Section 6.68.120 Machinery, Equipment, Fans, and Air Conditioning establishes the following:

a. It is unlawful for any person to operate any mechanical equipment, pump, fan, air conditioning apparatus, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical devices, or any combination thereof installed after July 1, 1976, in any manner so as to create any noise which would cause the maximum noise level to exceed:

    1. 60 dB at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level;

    2. 55 dB in the center of a neighboring patio three to five feet above ground level;

    3. 55 dB outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

SACRAMENTO COUNTY DESIGN GUIDELINES

The Sacramento County Countywide Design Guidelines provide a set of cohesive design principles and criteria that supports and implements the goals of the General Plan. There are separate sections for single- and multi-family dwellings; office, business park, and industrial development; and new communities. The purpose of design guidelines is to create design recommendations and standards for review of projects that are easy to understand and will result in well-designed and sustainable projects that raise the overall design quality of development occurring within the county. The Countywide Design Guidelines serve as the basis for the WJHMP Design Guidelines (Appendix B of the WJHMP) which would provide further specificity for design in District 1 and District 2 of the WJHMP area. The remainder of the WJHMP area would be subject to Countywide Design Guidelines, including the following design policies, which pertain specifically to noise impacts for development projects (Sacramento County 2022b).

SINGLE-FAMILY DESIGN STANDARDS

2.2.2 LOT SIZE AND CONFIGURATIONS

Each project that proposes to divide land should result in lots that are consistent with and well suited to the land use designations and policies set forth in the General Plan

and in any adopted community plans, including both maps and texts. Potential population densities of residential lots should not exceed the densities set forth in the General Plan or community plans, or unless otherwise specified in the Zoning Code.

- Lots that back onto an arterial roadway or are adjacent to a land use with a higher intensity nonresidential zoning classification should incorporate landscaped buffer areas and deeper rear yards to mitigate potential noise, air quality, aesthetics, and land use compatibility impacts.

MULTI-FAMILY DESIGN STANDARDS

3.11.1 FENCING/WALLS

Fencing shall be consistent with the overall architectural style or motif of the development and not obstruct physical or visual access.

- Sound walls, masonry walls, and fences shall be designed with changes in plane, height, material, and material texture. Masonry walls shall change material, plane, or height every 50 feet. Fences shall have a masonry column every 40 feet. Tubular steel or iron architectural fencing may be continuous in height and material and are not required to provide masonry columns.

COMMERCIAL DESIGN GUIDELINES

4.2.5 PARKING LOTS AND DRIVEWAYS

Parking areas should incorporate best practices that include: trees, lighting, landscaped storm water features, cool and pervious pavement and pavers. Plant trees and shrubs to soften the overall impact of parking areas and to provide shade and noise reduction, heat island cooling and improved air quality.

4.2.6 DRIVE-THROUGH BUSINESSES AND AUTOMOBILE SERVICE STATIONS

SITE AND DISTRICT DESIGN

Locate noise-generating uses, including drive through speakers and music, repair shop operations and machinery, car wash openings, vacuum stations, loading and refuse areas and stacking lanes away from sensitive uses (e.g., housing, schools, and day care centers). Where this cannot be avoided, buffer noise impacts with landscaping or landscaped berms and attenuating fencing in accordance with the landscape and screening requirements of the County Zoning Code.

LANDSCAPING

Landscaping and other screening should be installed to control the effects of facility operations, such as light, noise, and vehicular movement adjacent to an existing residential or agricultural-residential use or zoning district and other sensitive uses. Refer to the County Zoning Code for landscape buffer and screening requirements adjacent to residential and agricultural-residential zoning districts.

4.2.8 Transition to Residential Areas

Renovated and new projects should be designed to enhance adjacent residential neighborhoods and promote active transportation from these neighborhoods, rather than automobiles for short trips. Projects should be designed to reduce the visual, noise, and use impacts on adjacent residential areas.

- Placing loading and service areas adjacent to residential areas is discouraged. Site circulation and placement of loading areas should be incorporated into the project so that it is screened and held back from residential areas. Where screening walls are required, they shall be designed as a natural extension of the architectural and landscaping concepts for the project. Evergreen trees should be used for screening and to help with noise reduction.

4.6 Operational Elements

- Business hours should generally be confined to between 6:00 a.m. and 11:00 p.m. and may be further reduced depending on proximity to nearby residential uses.
- Noise generating activities, such as loading and unloading, should be confined to normal business hours, and should be minimized during the early and late hours, especially when located near residential uses. Compliance with the County Noise Ordinance is required.

Office, Business Park, Institutional and Industrial Development Design Guidelines

5.2.1 Project Design Objectives

Office, business park, institutional, and industrial developments should be planned to accomplish both functional and business district or neighborhood design objectives.

- The interface of office, business park, institutional, and industrial developments with other types of uses, particularly residential, should be planned carefully. The transition in scale, use, visual privacy, noise, odors, operational hours and traffic flow should respect the needs and livability of adjacent neighborhoods.
- Industrial parks or projects should be clearly separated from residential areas with adequate buffers to them for noise, vehicular, and development scale impacts.
- Landscaping and screening should be used to control the effects of facility operations, such as light, noise, and parking.

Village Centers/Mixed-Use Design Guidelines

6.2.2 Connections to the Community

- Unnecessary tall concrete block sound walls should not separate commercial uses from residential uses. Where sounds walls exist or are necessary, provide breaks in the sound walls for access from adjacent neighborhoods and designed as “live-ends.”

- When designing sound walls, pedestrian and bicycle connections to adjacent neighborhood can include “live-end” features. Also in cul-de-sacs, “live-ends” provide for pedestrian access at the ends of adjoining streets, open spaces, parking lots while permitting the access point to be used as a common outdoor space. “Live-ends” should be landscaped and can include benches, providing nice areas for sitting and socializing.

6.2.4 Block Sizes, Lot Patterns and Building Orientation

- Special siting and building design strategies that protect residential livability near service areas should be incorporated into project design. Avoid trash enclosures, loading docks or other noise-generating areas in close proximity to residential uses. If proximity is unavoidable, establish operational requirements for noise and odors to residents.

6.2.5 Parking

- Parking areas should incorporate designs that include trees, lighting, landscaped storm water features, cool and pervious pavement, and pavers. Plant trees and shrubs to soften the overall impact of parking areas and to provide shade and noise reduction, heat island cooling and improved air quality.
- Parking for commercial or mixed-use buildings should be designed and located to mitigate noise and visual impact on adjoining residential neighborhoods.

6.3.6 Service Areas

- Provide sound-attenuation features around noise-generating areas such as trash enclosures and loading docks. Such features may include fully enclosed loading docks and higher dock walls.
- Locate noise-generating services so that vehicular service drives have a minimized noise impact on any adjacent residential uses.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities within the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

Cordova Community Plan

The Cordova Community Plan was adopted by the County Board of Supervisors in May 2003. The northern portion of the WJHMP area falls within the Cordova Community Plan. There are no policies included in the Cordova Community Plan that pertain to noise and vibration.

Vineyard Community Plan

The Vineyard Community Plan was developed in 1985 and was intended to provide guidance for future development in the planning area. However, because of land use changes since its adoption, many of the Vineyard Community Plan’s land use

assumptions are obsolete. The plan assumed that the Mather Air Force base would continue as a military facility and that its associated noise impacts would have a major influence on land uses within the Vineyard community. However, subsequent to the Vineyard Community Plan adoption, the military base closed and was converted to a civilian airfield and air cargo facility. Consequently, the potential for substantial noise impacts has been reduced. The following policies that pertain to noise and vibration are included in the Vineyard Community Plan (Sacramento County 1985).

- **Policy NER 6.** Require buffering and appropriate screening between commercial/industrial development and residential land use and between commercial/industrial development and agricultural uses.
- **Policy CI 4.** Commercial/industrial development must be adequately buffered from adjacent residential or agricultural uses with screening, open space or less dense development, or other means.
- **Policy FU 1.** Buffer, through incremental zoning, residential development from industrial and agricultural land use areas.

Significance Criteria and Methodology

Significance Criteria

Based on Appendix G of the State CEQA Guidelines, noise policies and standards in the County Municipal Code, the General Plan Noise Element, and FTA and Caltrans vibration and noise standards, an impact related to noise or vibration would be significant if implementation of the project would:

- Generate a substantial temporary increase in noise levels at noise-sensitive land uses that exceed the following standards:
  - Construction noise would result in a significant impact if activities were to take place between the hours of 8:00 p.m. and 6:00 a.m. on weekdays and between the hours of 8:00 p.m. and 7:00 a.m. on Saturday and Sunday,
  - and exceed nighttime exterior noise standards (i.e., 50 dB L_{eq}) described in the County Code Section 6.68.07.
- Generate short-term construction vibration or expose sensitive land uses to long-term operational vibration sources that exceed the following Caltrans and FTA guidance for vibration impacts related to structural damage and human response, respectively:
  - Structural damage for normal dwelling houses 0.20 PPV in/sec (Table 16-9)
  - Human Response (Table 16-8)
    - For frequent events (i.e., more than 70 events per day): 65 VdB
    - For occasional events (i.e., 30-70 events per day): 75 VdB, or

    - For infrequent events (i.e., fewer than 30 events per day): 80 VdB.
- Generate a substantial permanent increase in traffic noise levels at noise-sensitive land uses that exceed the following standards established by the County General Plan:
    - Exceed the noise standard of 65 dB L_{dn} for residential uses per General Plan Policy NO-1 (Table 16-12) as a result of buildout of the project; or
    - Where Table 16-12 standards are currently exceeded for applicable land uses, result in a substantial increase in noise per General Plan Policy NO-9 (Table 16-14) as follows:
        - +5 dB increase where baseline levels are below 60 dB L_{dn}
        - +3 dB increase where baseline levels are between 60 and 65 dB L_{dn}
        - +1.5 dB increase where baseline levels exceed 65 dB L_{dn}
- Generate a substantial permanent increase in stationary noise at noise sensitive land uses that exceed the following standards established by the County General Plan:
    - General Plan Policy NO-6, Sacramento County Non-Transportation Noise Standards (Table 16-13)
    - County Code Section 6.68.120 Machinery, Equipment, Fans, and Air Conditioning
        - 60 dB at any point at least one foot inside the property line of the affected residential property and three to five feet about ground level;
        - 55 dB in the center of a neighboring patio three to five feet above ground level;
        - 55 dB outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than 3 feet from the window opening but at least 3 feet from any other surface.

Issues Not Discussed Further

Operational Vibration

Implementation of the WJHMP would not result in any new or additional major sources of ground vibration, such as commercial railways, passenger rail transit lines, or major transit stations. Long-term operational activities associated with implementation of the WJHMP are not anticipated to result in permanent or substantial levels of ground vibration and are not discussed further.

METHODOLOGY

CONSTRUCTION NOISE

To assess potential short-term (construction-related) noise impacts, sensitive receptors and their relative exposure were identified. Project-generated construction source noise levels were determined based on methodologies, reference emission levels, and usage factors from FTA's *Guide on Transit Noise and Vibration Impact* Assessment methodology (FTA 2018) and FHWA's *Roadway Construction Noise Model User Guide* (FHWA 2006). Reference levels for noise emissions for specific equipment or activity types are well documented and the usage thereof common practice in the field of acoustics.

Predicted noise levels at nearby noise-sensitive land uses were modeled using typical reference noise levels and load factors associated with construction equipment, derived from the FHWA's Roadway Construction Noise Model (FHWA 2006). As detailed in Chapter 2, "Project Description," for the purpose of this analysis, construction is assumed to begin in 2025 and end in 2055, with construction activities allocated evenly through the 30-year duration of the construction period. Each year would be roughly assumed to entail 1 month of site preparation, 4 months of grading, 5 months of building construction, 1 month of paving, and 1 month of architectural coating application.

To remain conservative, construction noise was modeled for construction phases that typically use the loudest equipment (e.g., site preparation). The site preparation phase typically generates the most substantial noise levels because on-site equipment associated with grading, compacting, and excavation are the noisiest. Site preparation equipment and activities include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Building construction similarly uses louder pieces of equipment. For example, building of large structural elements and mechanical systems could require the use of a crane for placement and assembly tasks, which may also generate louder noise levels. Although a detailed construction equipment list is not currently available, based on the types of construction activities associated with the WJHMP (e.g., site grading, building construction) it is expected that the primary sources of noise would include backhoes, dozers, and graders. Noise levels for common construction equipment and activities at 50 feet are shown in Table 16-17. The construction noise modeling assumes that, because development associated with the WJHMP would occur over many decades, noise sensitive land uses built during initial development phases could be occupied during subsequent phases of construction. Therefore, modeling assumes that construction could occur within 50 feet from noise-sensitive land uses.

Seven construction noise modeling scenarios were run to capture each phase of construction. Modeling assumed that construction equipment would be operating simultaneously. The first scenario represents the site preparation phase and assumes that up to four pieces of equipment (compactor, dozer, backhoe, roller) could be operating simultaneously at any one location in the plan area. The second noise modeling scenario represents grading and assumes that four pieces of construction

equipment (dozer, two graders, loader) could be operating at the same time at any one location. The third noise modeling scenario represents building construction and assumes that five pieces of construction equipment (impact pile driver, grader, crane, loader, and truck) would be operating simultaneously at any one location. However, because not all projects under the WJHMP would include pile driving, the fourth modeling scenario represents building construction without pile driving. The fifth noise modeling scenario represents nighttime construction activity and assumes that three pieces of construction equipment for concrete pouring (two concrete mixer trucks, one concrete pump truck) would be operating simultaneously at any one location. The sixth modeling scenario represents paving and assumes that five pieces of equipment for paving (drum mixer, paver, roller, tractor, loader) would be operating simultaneously at any one location within the WJHMP area. The seventh modeling scenario represents architectural coating and assumes that two air compressors would be operating simultaneously at any one location.

Construction Vibration

To assess potential short-term construction-related vibration impacts, project-generated construction vibration levels were determined based on methodologies, reference emission levels, and usage factors from FTA's *Guide on Transit Noise and Vibration Impact Assessment* methodology (FTA 2018). Reference levels for vibration emissions for specific equipment types are well documented and commonly used in the field of acoustics. Sacramento County has no adopted vibration standards. As a result, Caltrans-recommended criteria are used in this analysis (Caltrans 2020).

Operational Noise

Non-Transportation Noise

With respect to non-transportation noise sources (e.g., stationary noise sources) associated with implementation of the WJHMP, the assessment of long-term (operational-related) impacts was based on measured noise levels, reference noise emission levels for activities and equipment typically associated with residential, industrial, and commercial operation (e.g., heating, ventilation, and air conditioning [HVAC] units), and standard attenuation rates and modeling techniques.

Transportation Noise

Assessment of potential long-term (operational) noise impacts resulting from increases in traffic volumes on the surrounding roadway network due to development under the WJHMP was conducted using calculations consistent with the FHWA Traffic Noise Model and project-specific traffic data. To assess noise impacts, traffic noise levels under existing and existing plus project conditions for affected roadway segments were modeled. The analysis is based on the reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and ground attenuation factors. The modeling conducted does not account for the acoustic dampening effects of any natural or human-made shielding (e.g., vegetation, the presence of walls or buildings) or reflection

off building surfaces; and thus, modeled noise levels may be overestimated where such shielding exists.

West Jackson Highway Master Plan Policies

The proposed WJHMP does not include policies related to noise or vibration.

Impacts and Analysis

Impact NO-1: Exceed County Standards during Construction

Implementation of the WJHMP would involve the construction of various land use developments, including residential, commercial, and industrial projects. Implementation of the WJHMP would also result in the development of new roadways and infrastructure, which would occur simultaneously with the development of the land uses. Construction is assumed to begin in 2025 and end in 2055, with construction activities allocated evenly throughout the 30-year duration of the construction period in response to market demand.

Development projects under the WJHMP would generate temporary noise level increases on, and adjacent to, individual construction sites. However, specific details regarding the timing, duration, and magnitude of construction activities for individual development are currently unknown. In some cases, construction activities would occur near existing residences and other noise-sensitive receptors and extend over the course of several weeks to months, or even longer depending on the individual development type and other project- and location-specific circumstances.

Construction noise can be characterized based on the type of construction activity and associated equipment needed. In this analysis, it is evaluated by considering the noise levels associated with site preparation and grading; vertical construction (e.g., residential, commercial, or other structures) with and without pile driving; nighttime construction; paving; and architectural coating as these are the construction activities anticipated to result from the buildout of the WJHMP. Reference noise levels for typical construction equipment required for these activities are shown below in Table 16-17.

The operation of each piece of off-road equipment within the WJHMP area would not be constant throughout the day, as equipment would be turned off when not in use. Noise levels associated with construction activity are of increased concern during nighttime hours (i.e., 8:00 p.m. to 6:00 a.m.) when community activities typically decrease. Construction noise levels occurring during noise sensitive hours are more pronounced and could cause increased annoyance, as well as potential sleep loss for noise-sensitive land uses (e.g., residential) near the construction activity.

Table 16-17 Reference Noise Levels from Typical Construction Equipment

Equipment	Typical Noise Level 50 Feet from the Source, dB
Air Compressor	80
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Loader	80
Paver	85
Pile-driver (Impact)	101
Pile-driver (Sonic)	95
Pneumatic Tool	85
Pump	77
Roller	85
Truck	84

Source: FTA 2018: Table 7-1.

Because there are no detailed construction plans for individual development that would occur within the WJHMP, it is not possible to determine the exact noise levels that would result from project construction. Seven construction noise scenarios were conducted for this analysis using equipment typical of each phase of construction. Based on reference noise levels for typical construction equipment, site preparation could result in noise levels of approximately 81.7 dB L_{eq} and 87.2 dB L_{max} at 50 feet from the source. Site grading could result in noise levels of approximately 85.4 dB L_{eq} and 89.4 dB L_{max} at 50 feet from the source. Building construction activities with and without pile driving could result in noise levels of approximately 94.3 dB L_{eq} and 101 dB L_{max} and 82.8 dB L_{eq} and 87.4 dB L_{max} at 50 feet from the source, respectively. Paving could result in noise levels of approximately 83.6 dB L_{eq} and 89.0 dB L_{max} and architectural coating could result in noise levels of approximately 77.0 dB L_{eq} and 81.0 dB L_{max}. See Appendix J for modeling inputs and results. The County has established standards for acceptable exterior noise levels (i.e., 55 dB L_{eq}) in Section 6.68.070 of the County Code. Section 8.68.090 of the County Code states that noise sources associated with construction between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday and between the hours of 7:00 a.m. and 8:00 p.m. on Saturday and Sunday, are exempt from County noise standards.

The loudest “worst case” construction activity (i.e., building construction with the use of a pile driver) would result in noise levels of 94.3 dB L_{eq} and 101 dB L_{max} at 50 feet. This activity would result in a 50+ dB increase in ambient noise levels compared to an existing ambient noise level of 39 dB, the lowest existing noise level in the plan area (see Table 16-4). A 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013: 2-10). The increase in noise levels would be perceived as more than a doubling of existing noise levels and would result in a substantial increase in temporary noise at offsite sensitive receptors. However, this noise modeling represents the worst-case scenario for building construction noise due to the inclusion of the impact pile driver equipment. Generally, an impact pile driver would not be used during typical construction activities. Additionally, an exterior-to-interior noise reduction from standard buildings would be expected to achieve at least a 15 dB reduction (Caltrans 2013) and, thus, interior noise levels at nearby structures would be substantially lower than exterior noise levels. Furthermore, a substantial increase in noise itself does not necessarily constitute a significant noise impact, as long as overall noise exposure is below an acceptable level (FTA 2018). Given the size of the WJHMP area, there could be temporary, substantial increases in noise levels but construction activities would not affect any one area for extended periods of time and individual receptors’ exposure to increased noise would be limited. As detailed above, most construction would occur during daytime hours when construction noise is exempt from County noise standards pursuant to County Code Section 6.68.090 and when people are less likely to be disturbed or awakened.

Although construction activities are anticipated to occur primarily during the daytime hours when sensitive receptors are less sensitive to increased noise levels, nighttime construction could be required for some construction if there are tasks that must be done continuously until completed (e.g., concrete pouring) or that require road closures. Section 6.68.09(e) of the County Code currently allows nighttime construction under specific circumstances. Construction activities would only be permitted during nighttime hours in the event of an unforeseen or unavoidable condition and when the nature of the project necessitates that work in process be continued until the phase is completed, such as pouring of concrete for some foundation designs. In the absence of County noise standards specific for nighttime construction, nighttime construction noise scenarios are compared to the County nighttime exterior noise standard included in Section 6.68.07 of the County Code. These noise levels have been adjusted according to the cumulative duration of the intrusive sound. For example, if the cumulative period is 5 to 15 minutes per hour, then the standard is adjusted by 10 dB to 60 dB during nighttime hours. If the cumulative period is 30 minutes per hour, no adjustments are made and the standard remains at 50 dB during the nighttime, functionally similar to the average hourly noise level of L_{eq}. Therefore, this analysis evaluates whether potential nighttime construction activity could exceed a nighttime exterior noise standard of 50 dB L_{eq} between the hours of 10:00 p.m. and 7:00 a.m. The most likely noise intensive nighttime construction activity that could occur under the WJHMP would be a nighttime concrete pour. If a nighttime concrete pour were required, it could generate noise levels of up to 79.5 dB L_{eq} at 50 feet from the source and exceed applicable noise standards of 50 dB L_{eq} within 1,489 feet of the source (See Appendix J for detailed modeling inputs).

Due to the programmatic nature of this analysis, it cannot be determined if nighttime construction noise would be needed at sites within 1,489 feet of noise sensitive land uses. Because these details are unknown, it is not possible to conclude that future development associated with implementation of the WJHMP would avoid generation of substantial temporary construction noise levels that exceed County standards during nonexempt hours. Therefore, this impact would be potentially significant.

Implementation of Mitigation Measure NO-1 would reduce nighttime construction noise at nearby noise-sensitive receptors by ensuring proper equipment use; locating noise-generating equipment away from sensitive land uses; and requiring the use of enclosures, shields, and noise curtains (noise curtains can reduce noise by up to 10 dB [EPA 1971]). However, because it cannot be assured that nighttime construction would not be needed and that, if needed, the applicable noise standards could be met, this impact would remain **significant and unavoidable**.

MITIGATION MEASURES

MITIGATION MEASURE NO-1: NIGHTTIME CONSTRUCTION NOISE CONTROL PLAN

This mitigation measure shall apply to sites where construction would take place outside of the timeframes exempt from County Code noise standards as defined in Section 8.68.090 of the County Code (i.e., between 8:00 p.m. and 6:00 a.m. Monday through Friday and between the hours of 8:00 p.m. and 7:00 a.m. Saturday and Sunday), and within 1,500 feet of a sensitive receptor. Prior to commencement of any nighttime construction activity, the future project applicants, in coordination with selected construction contractors, and a qualified acoustical professional, shall prepare a nighttime construction noise control plan based on finalized project-specific information (e.g., specific equipment, construction location). This plan shall be submitted to the County for review prior to project construction. The plan shall include:

- a detailed description of the proposed nighttime construction activities.
- a list of equipment used during all nighttime construction activities.
- projected noise levels generated during the nighttime construction activities at surrounding noise-sensitive land uses.
- location(s) of sensitive receptors in relation to the proposed nighttime construction activities, and
- designation of a disturbance coordinator.

The following noise control measures (or other equally effective measures approved by the County) shall be included in the plan as necessary to reduce noise levels to the appropriate threshold (i.e., 50 dB L_{eq}), to the extent feasible, at the nearest sensitive receptor.

- For construction activity that would occur within a clear line-of-sight of offsite sensitive receptors, temporary noise curtains shall be installed as close as possible to the noise-generating activity such that the curtains obstruct the direct

line of sight between the noise-generating construction activity and the nearby sensitive receptors. Temporary noise curtains shall consist of durable, flexible composite material featuring a noise barrier layer bound to sound-absorptive material on one side. The noise barrier layer shall consist of rugged, impervious, material with a surface weight of at least one pound per square foot and be designed to result in a 10-dB reduction at the sensitive receptor location.

- Noise-reducing enclosures and techniques shall be used around stationary noise-generating equipment (e.g., concrete mixers, generators, compressors) to break the line of sight between the noise source and receiver. Techniques used could greatly vary depending on equipment type and project-specific information.
- Heavy-duty equipment shall be operated at the lowest operating power possible and shall be restricted in close proximity to sensitive receptors.
- All heavy construction equipment and all stationary noise sources shall have manufacturer-installed mufflers. Mufflers and noise suppressors shall be properly maintained and tuned to ensure proper fit, function, and minimization of noise.
- Where available and feasible, equipment with back-up alarms shall be equipped with either audible self-adjusting backup alarms or alarms that only sound when an object is detected. Self-adjusting backup alarms shall automatically adjust to 5 dB over the surrounding background levels. All non-self-adjusting backup alarms shall be set to the lowest setting required to be audible above the surrounding noise levels.
- Construction scheduling and phasing shall be designed so that impact equipment (e.g., pile drivers) is not used between 8:00 p.m. and 6:00 a.m. on Monday through Friday or between 8:00 p.m. and 7:00 a.m. on Saturday and Sunday.

IMPACT NO-2: GENERATE EXCESSIVE CONSTRUCTION VIBRATION

Construction activities generate varying degrees of temporary ground vibration, depending on the specific construction equipment used and activities involved. Construction-related vibration has the potential to damage structures, cause cosmetic damage (e.g., crack plaster), or disrupt the operation of vibration-sensitive equipment. Vibration can also be a source of annoyance to individuals who live or work close to vibration generating activities.

Typical construction activities, such as site preparation and grading, may generate substantial vibration near the source. When evaluating construction-related vibration impacts, the activities with the greatest potential to cause impacts (i.e., structural damage or disturbance to sensitive land uses) are the primary focus. Table 16-18 provides reference vibration levels associated with various pieces of construction equipment that generate the highest levels of vibration.

Table 16-18 Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet, in/sec	Root Mean Square at 25 Feet (VdB)
Pile Driver (impact)	0.644 - 1.518	104-112
Pile Driver (sonic)	0.17 - 0.734	93 - 105
Clam shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall)	0.008- 0.017	66-75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Notes: PPV = peak particle velocity.

Source: FTA 2018: Table 7-4.

As discussed under Impact NO-1, specific construction activities, proximity of equipment to structures and sensitive land uses, and specific duration of individual construction projects are not known at this time. Therefore, this analysis evaluates the potential for impacts to occur at a programmatic level based on typical construction equipment that could be used for building construction.

Based on reference levels included in Table 16-18, pile driving generates the highest vibration levels (i.e., 1.518 in/sec PPV at 25 feet). Pile driving could potentially be used during construction of new residential, commercial, or other land uses, as well as other infrastructure associated with development. Therefore, pile driving is of greatest concern when evaluating construction-related vibration impacts. Based on the reference vibration levels for typical construction equipment shown in Table 16-18, the piece of equipment that could generate the second greatest level of ground vibration would be a vibratory roller (i.e., 0.210 in/sec PPV at 25 feet). In addition to building construction, road improvement projects (e.g., constructing roadways) often require the use of vibratory rollers which, when operated close to existing structures, can result in increased levels of annoyance.

Vibration Annoyance

FTA vibration annoyance potential criteria depend on the frequency of vibration events. As shown in Table 16-8, when vibration events occur from the same source more than 70 times per day, as would likely be the case with pile driving, they are considered “frequent events.” Frequent events in excess of 72 VdB are considered to result in a significant vibration annoyance impact (FTA 2018). For construction activities involving pile driving, based on the recommended procedure for applying propagation adjustments to reference levels for a typical pile driver, vibration levels could exceed the threshold of significance for disturbance to a sensitive land use within 537 feet of construction activities. Because the use of a vibratory roller would likely not require

frequent use, this analysis applies the FTA criterion of 75 VdB threshold for occasional events. For construction activities that would include the use of a vibratory roller, vibration levels from construction could exceed the threshold of significance for disturbance to a sensitive land use within 108 feet of construction activities (see Appendix J for modeling details). It is unknown at this time where construction activities involving the use of a pile driver or vibratory roller would be required and to what extent they would occur. Therefore, it is possible that construction activities using an impact pile driver or vibratory roller could occur within 537 feet or 108 feet of a sensitive receptor.

Vibration Damage

According to the FTA, impact pile driving generates ground vibration levels of 1.518 in/sec at 25 feet. Based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, vibration levels from impact pile driving could exceed the FTA threshold of significance of 0.2 in/sec PPV for structural damage to non-engineered timber and masonry buildings within 97 feet of pile-driving activities. It is unknown at this time where pile driving activities would be required and to what extent they would occur. Therefore, it is possible that construction activities using a pile driver could occur within 97 feet of an occupied structure.

Based on the reference vibration levels for typical construction equipment included in Table 16-18, the piece of equipment that could generate the second greatest level of ground vibration would be a vibratory roller. According to the FTA, vibratory rollers generate ground vibration levels of 0.210 in/sec PPV at 25 feet. Based on the recommended procedure for applying a propagation adjustment, vibration levels from the use of a vibratory roller could exceed the threshold of significance of 0.20 in/sec PPV for structural damage within 26 feet of vibratory roller activities (see Appendix J for modeling details). Because the location of vibratory roller activities is currently unknown, it is possible that construction activities using a vibratory roller could occur within 26 feet of a structure. Vibration levels from impact pile driving and vibratory rollers would exceed the threshold of significance of 0.2 in/sec for structural damage within 96 feet and 26 feet of construction vibratory equipment, respectively (see Appendix J for details).

Summary

Because the location of construction activities is currently unknown, the possibility remains for construction activities that generate vibration to occur within the distances identified above, resulting in potential disturbances to sensitive land uses and/or structural damage. Therefore, this impact would be potentially significant.

Implementation of Mitigation Measure NO-2 would serve to reduce potential vibration impacts from construction activities by requiring minimum setbacks to sensitive land uses, monitoring vibration levels during construction, requiring use of alternative equipment when appropriate, and establishing restrictions on hours of use to avoid impacts during more sensitive times of day. These measures would ensure that construction activities within the WJHMP area would reduce the potential exposure to

excessive groundborne vibration levels and ensure that construction vibration levels would not impact persons or buildings. Therefore, this impact would be **less than significant with mitigation**.

MITIGATION MEASURES

MITIGATION MEASURE NO-2: VIBRATION CONTROL PLAN

This mitigation measure would apply to construction activity involving pile driving located within 97 feet of any building, to reduce the potential for structural damage, and within 537 feet of an occupied residence or building, to minimize the disturbance from pile-driving activities; or vibratory roller activities located within 26 feet of any building in order to reduce the potential for structural damage, and within 96 feet of an occupied residence or building to minimize the disturbance from vibratory roller activities.

A vibration control plan shall be developed by the construction contractor(s) to be submitted to and approved by Sacramento County before issuance of any improvement plans or grading permits for the project. The plan shall consider all potential vibration-inducing activities that would occur within the distance parameters described above and include various measures, setback distances, precautions, monitoring programs, and alternative methods to traditional pile driving or other vibration intensive activities with the potential to result in structural damage or adverse impacts to sensitive receptors. The following vibration control measures (or other equally effective measures approved by the County) shall be included in the plan:

- To prevent structural damage minimum setback requirements for different types of ground vibration-producing activities (e.g., pile driving, vibratory roller) for the purpose of preventing damage to nearby structures shall be established based on the proposed pile-driving activities and locations, once determined. Factors to be considered include the specific nature of the vibration producing activity (e.g., type and duration of pile driving), local soil conditions, and the fragility/resiliency of the nearby structures as determined by a site-specific building survey, documentation related to building integrity, or other appropriate methods determined by a qualified engineer. Established setback requirements (e.g., 97 feet) can be breached if a project-specific, site-specific analysis is conducted by a qualified geotechnical engineer or ground vibration specialist that indicates that no structural damage would occur at nearby buildings or structures.
- To prevent disturbance for sensitive land uses, minimum setback requirements for different types of ground vibration producing activities (e.g., pile driving, vibratory roller) shall be established based on the proposed activities and locations, once determined. Established setback requirements (e.g., 537 feet) can be breached only if a project-specific, site-specific, technical adequate ground vibration study indicates that the buildings would not be exposed to ground vibration levels in excess of 72 VdB, and ground vibration measurements performed during the construction activity confirm that the buildings are not being exposed to levels in excess of 72 VdB.

- All vibration-inducing activity within the distance parameters described above shall be monitored and documented for ground vibration noise and vibration noise levels at the nearest sensitive land use and associated recorded data submitted to Sacramento County so as not to exceed the recommended vibration damage and annoyance standards, respectively.
- Alternatives to traditional pile driving (e.g., sonic pile driving, jetting, cast-in-place or auger cast piles, non-displacement piles, pile cushioning, torque or hydraulic piles) shall be considered and implemented where feasible to reduce vibration levels.
- Limit vibration-inducing vibratory and impact activities (e.g., pile driving, vibratory rollers, jackhammers) to the daytime hours between 6:00 a.m. and 8:00 p.m. Monday through Friday and between 8:00 a.m. and 8:00 p.m. on Saturday and Sunday.
- Operate all vibration inducing impact equipment as far away from vibration-sensitive sites as reasonably possible.
- Phase pile-driving and high-impact activities so as not to occur simultaneously with other construction activities, to the extent feasible. The total vibration level produced could be significantly less when each vibration source is operated at separate times.

IMPACT NO-3: GENERATE A SUBSTANTIAL PERMANENT INCREASE IN TRAFFIC NOISE LEVELS

Implementation of the WJHMP would result in the generation of new vehicle trips from the development of new land uses (e.g., residential, commercial, office land uses) in the WJHMP area. Land use development that results in traffic changes can result in long-term traffic noise increases (or decreases) on roadways in and surrounding the WJHMP area and, thus, could result in exposure of existing receptors to substantial permanent noise increases. Traffic noise modeling was conducted for existing and existing plus project conditions using ADT volumes for affected roadway segments. Table 16-19 compares modeled noise levels along roadways in the WJHMP area under existing conditions to those with the project. To provide a point of comparison for existing and future noise conditions, noise levels were calculated at a distance of 100 feet from the roadway centerline. Noise levels at receptors farther away from roadway noise sources, or in locations with intervening topography, vegetation, or structures, would be lower than shown in Table 16-19. See Appendix I for more detailed information regarding traffic noise calculations.

In accordance with General Plan Policy NO-1, an increase in traffic noise would result in significant impacts if traffic noise levels would exceed the maximum allowable exterior noise level of 65 dB L_{dn} for residential land uses. A substantial increase in traffic noise levels would occur if noise levels exceeded those outlined in General Plan Policy NO-9 (i.e., would result in a 5+ dB increase where existing noise levels are less than 60 dB L_{dn}; a 3+ dB increase where existing noise levels are between 60 and 65 dB L_{dn}; or an

increase of 1.5+ dB or greater at locations where existing exterior noise levels exceed 65 dB L_{dn}).

Table 16-19 Predicted Existing Plus Project Traffic Noise Levels

Roadway	Segment From	To	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Conditions	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Plus Project Conditions	Change (dB)	Substantial Increase?
Bradshaw	Folsom	US 50	67.6	67.3	-0.3	No
Bradshaw	US 50	Lincoln Village	70.7	71.9	1.2	No
Bradshaw	Lincoln Village	Old Placerville	69.8	71.4	1.6	Yes
Bradshaw	Old Placerville	Goethe	69.4	70.4	1.0	No
Bradshaw	Goethe	Collector WJ-8	68.0	70.2	2.2	Yes
Bradshaw	Collector WJ-8	Kiefer	68.0	69.7	1.7	Yes
Bradshaw	Kiefer	Collector WJ-9	68.3	69.9	1.6	Yes
Bradshaw	Collector WJ-9	Mayhew	68.3	69.9	1.6	Yes
Bradshaw	Mayhew	Jackson	68.3	70.1	1.8	Yes
Bradshaw	Jackson	Rock Creek	68.1	68.0	-0.1	No
Bradshaw	Rock Creek	Collector WJ-10	68.1	68.2	0.1	No
Bradshaw	Collector WJ-10	Collector WJ-11	68.1	68.3	0.2	No
Bradshaw	Collector WJ-11	Elder Creek	68.1	67.4	-0.7	No
Bradshaw	Elder Creek	Florin	68.0	69.4	1.4	No
Bradshaw	Florin	Gerber	68.1	69.6	1.5	No
Bradshaw	Gerber	Calvine	67.7	69.2	1.5	Yes
Calvine	Waterman	Bradshaw	66.5	67.5	1.0	No
Calvine	Bradshaw	Vineyard	66.3	66.3	0.0	No
Calvine	Vineyard	Excelsior	63.2	63.3	0.1	No
Chrysanthy	Sunrise	Rancho Cordova	58.8	59.0	0.2	No
Douglas	Mather	Zinfandel	61.7	61.1	-0.6	No
Douglas	Zinfandel	Sunrise	62.7	62.9	0.2	No
Douglas	Sunrise	Rancho Cordova	62.6	63.2	0.6	No
Douglas	Rancho Cordova	Americanos	62.6	63.2	0.6	No
Douglas	Americanos	Grant Line	62.6	63.2	0.6	No
Eagles Nest	Kiefer	N Bridgewater	54.9	57.6	2.7	No
Eagles Nest	N Bridgewater	S Bridgewater	54.9	57.6	2.7	No
Eagles Nest	S Bridgewater	Jackson	54.9	57.6	2.7	No
Eagles Nest	Jackson	Florin	54.1	54.2	0.1	No
Eagles Nest	Florin	Grant Line	49.8	51.0	1.2	No
Elder Creek	65th Street	Power Inn	66.0	67.0	1.0	No
Elder Creek	Power Inn	Florin-Perkins	65.5	66.8	1.3	No
Elder Creek	Florin Perkins	South Watt	63.9	65.7	1.8	Yes

Roadway	Segment From	To	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Conditions	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Plus Project Conditions	Change (dB)	Substantial Increase?
Elder Creek	South Watt	Hedge	62.0	67.8	5.8	Yes
Elder Creek	Hedge	Mayhew	62.2	67.7	5.5	Yes
Elder Creek	Mayhew	Bradshaw	61.8	64.8	3.0	Yes
Elder Creek	Bradshaw	Vineyard	57.9	66.1	8.2	Yes
Elder Creek	Vineyard	Excelsior	57.9	64.5	6.6	Yes
Elk Grove-Florin	Florin	Gerber	67.1	67.4	0.3	No
Excelsior	Kiefer	Douglas	57.7	54.2	-3.5	No
Excelsior	Douglas	Collector WJ-1/Collector JT-1	59.2	64.9	5.7	Yes
Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59.2	64.4	5.2	Yes
Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59.2	64.2	5.0	Yes
Excelsior	Jackson	Collector WJ-6	60.5	65.6	5.1	Yes
Excelsior	Collector WJ-6	Elder Creek	60.5	65.6	5.1	Yes
Excelsior	Elder Creek	Florin	59.7	63.5	3.8	No
Excelsior	Florin	Gerber	60.8	63.7	2.9	No
Excelsior	Gerber	Jackson	59.8	62.9	3.1	No
Florin	Power Inn	Florin-Perkins	66.8	68.1	1.3	No
Florin	Florin-Perkins	So Watt/Elk Grove Florin	66.0	67.8	1.8	Yes
Florin	South Watt	Hedge	64.3	66.9	2.6	No
Florin	Hedge	Mayhew	63.4	65.8	2.4	No
Florin	Mayhew	Bradshaw	63.4	65.9	2.5	No
Florin	Bradshaw	Vineyard	61.8	66.8	5.0	Yes
Florin	Vineyard	Excelsior	61.8	65.9	4.1	Yes
Florin	Excelsior	Sunrise	63.6	64.7	1.1	No
Folsom	Howe	Jackson	69.2	70.7	1.5	No
Fruitridge	65th Street	Power Inn	65.7	66.9	1.2	No
Fruitridge	Power Inn	Florin Perkins	66.4	68.6	2.2	Yes
Fruitridge	Florin Perkins	South Watt	64.7	67.7	3.0	Yes
Fruitridge	South Watt	Hedge	57.0	63.5	6.5	Yes
Fruitridge	Hedge	Collector WJ-12	54.9	64.4	9.5	Yes
Fruitridge	Collector WJ-12	Mayhew	54.9	63.9	9.0	Yes
Grant Line	White Rock	Douglas	64.3	64.5	0.2	No
Grant Line	Douglas	Chrysanthy	65.8	66.3	0.5	No
Grant Line	Chrysanthy	Kiefer	65.8	66.3	0.5	No

Roadway	Segment From	To	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Conditions	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Plus Project Conditions	Change (dB)	Substantial Increase?
Grant Line	Kiefer	Rancho Cordova	65.0	65.4	0.4	No
Grant Line	Rancho Cordova	Jackson	65.0	65.4	0.4	No
Grant Line	Jackson	Sunrise	69.1	69.0	-0.1	No
Grant Line	Sunrise	Calvine	69.6	69.8	0.2	No
Grant Line	Calvine	Elk Grove City Limit	66.8	67.7	0.9	No
Grant Line	Elk Grove City Limit	Sheldon	66.8	66.9	0.1	No
Grant Line	Sheldon	Wilton	68.0	68.5	0.5	No
Grant Line	Wilton	Bond	67.7	68.0	0.3	No
Happy Lane	Old Placerville	Routier Ext	57.4	59.2	1.8	No
Happy Lane	Routier Ext	Kiefer	57.4	62.0	4.6	No
Hedge	Jackson	Rock Creek	57.2	61.3	4.1	No
Hedge	Rock Creek	Fruitridge	57.2	57.2	0.0	No
Hedge	Fruitridge	Elder Creek	58.1	58.4	0.3	No
Hedge	Elder Creek	Florin	56.7	58.2	1.5	No
Howe	US 50	Folsom	70.8	71.3	0.5	No
International	Mather Field	Zinfandel	65.9	66.8	0.9	No
International	Zinfandel	Sunrise	62.9	63.8	0.9	No
Jackson	Folsom	Florin Perkins	66.5	69.8	3.3	Yes
Jackson	Florin Perkins	14th	65.8	70.2	4.4	Yes
Jackson	14th	Rock Creek	64.9	69.2	4.3	Yes
Jackson	Rock Creek	Aspen 1 Dwy	64.9	69.2	4.3	Yes
Jackson	Aspen 1 Dwy	South Watt	64.9	69.2	4.3	Yes
Jackson	South Watt	Hedge	67.9	72.1	4.2	Yes
Jackson	Hedge	Collector WJ-3	66.6	71.3	4.7	Yes
Jackson	Collector WJ-3	Mayhew	66.6	71.5	4.9	Yes
Jackson	Mayhew	Bradshaw	67.4	70.1	2.7	Yes
Jackson	Bradshaw	Collector WJ-4	67.6	70.3	2.7	Yes
Jackson	Collector WJ-4	Happy Ln	67.6	70.2	2.6	Yes
Jackson	Happy Ln	Rock Creek	67.6	67.2	-0.4	No
Jackson	Rock Creek	Collector WJ-5	67.6	67.2	-0.4	No
Jackson	Collector WJ-5	Collector WJ-6	67.6	68.2	0.6	No
Jackson	Collector WJ-6	Excelsior	67.6	67.9	0.3	No
Jackson	Excelsior	Collector JT-3	66.6	67.6	1.0	No
Jackson	Collector JT-3	Tree View Ln	66.6	67.6	1.0	No
Jackson	Tree View Ln	Collector JT-4	66.6	67.6	1.0	No

Roadway	Segment From	To	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Conditions	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Plus Project Conditions	Change (dB)	Substantial Increase?
Jackson	Collector JT-4	Eagles Nest	66.6	67.6	1.0	No
Jackson	Eagles Nest	Rockbridge	66.4	67.2	0.8	No
Jackson	Rockbridge	Sunrise	66.4	67.2	0.8	No
Jackson	Sunrise	Grant Line	69.2	69.7	0.5	No
Kiefer	Florin Perkins	South Watt	60.1	60.3	0.2	No
Kiefer	South Watt	Mayhew	66.2	67.0	0.8	No
Kiefer	Mayhew	Bradshaw	63.2	68.3	5.1	Yes
Kiefer	Bradshaw	Collector WJ-14	61.2	68.1	6.9	Yes
Kiefer	Collector WJ-14	Routier Ext	61.2	67.2	6.0	Yes
Kiefer	Routier Ext	Happy Lane	61.2	66.5	5.3	Yes
Kiefer	Eagles Nest	W Collector MS-1	55.2	58.2	3.1	Yes
Kiefer	W Collector MS-1	Northbridge	55.2	58.2	3.0	Yes
Kiefer	Northbridge	E Collector MS-1	55.2	58.2	3.0	Yes
Kiefer	E Collect MS-1	Sunrise	55.2	58.2	3.0	Yes
Kiefer	Sunrise	Rancho Cordova	56.8	56.9	0.1	No
Mather/ Norden	Von Karman St	Bleckely St	58.8	58.8	0.0	No
Mather	Bleckely St	Femoyer St	58.8	58.8	0.0	No
Mather	Femoyer St	Douglas	58.8	58.7	-0.1	No
Mather-Excelsior	Douglas	Kiefer	60.3	59.1	-1.2	No
Mather Field	US 50	Rockingham	71.2	71.2	0.0	No
Mather Field	Rockingham	International	71.1	71.7	0.6	No
Mather Field	International	Peter A McCuen	66.2	66.3	0.1	No
Mayhew	Folsom	Goethe	61.9	64.1	2.2	No
Mayhew	Folsom	Goethe	61.7	63.1	1.4	No
Mayhew	Goethe	Kiefer	55.6	68.7	13.1	Yes
Mayhew	Jackson	Rock Creek	55.6	68.2	12.6	Yes
Old Placerville	Bradshaw	Granby	62.8	62.0	-0.8	No
Old Placerville	Granby	Happy Ln	62.1	60.5	-1.6	No
Old Placerville	Happy Ln	Routier	62.3	60.3	-2.0	No
Old Placerville	Routier	Rockingham	62.7	66.6	4.0	Yes
Power Inn	Folsom	14th	69.1	68.9	-0.2	No
Rockingham	Old Placerville	Mather Field	66.5	68.4	1.9	Yes
South Watt	Folsom	Kiefer	70.6	72.3	1.7	Yes
South Watt	Kiefer	Jackson	69.6	71.3	1.7	Yes
South Watt	Jackson	Rock Creek	68.6	69.4	0.8	No

Roadway	Segment From	To	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Conditions	Noise Level (L_{dn} dB) at 100 feet from roadway centerline Existing Plus Project Conditions	Change (dB)	Substantial Increase?
South Watt	Rock Creek	Fruitridge	68.6	69.3	0.7	No
South Watt	Fruitridge	Elder Creek	67.8	68.1	0.3	No
South Watt	Elder Creek	Florin	68.2	69.2	1.0	No
Sunrise	US 50	Folsom	70.8	70.8	0.0	No
Sunrise	Folsom	Trade Center	70.4	70.4	0.0	No
Sunrise	Trade Center	White Rock	68.9	68.9	0.0	No
Sunrise	White Rock	International	67.6	67.8	0.2	No
Sunrise	International	Rio Del Oro	68.0	68.1	0.1	No
Sunrise	Rio Del Oro	Douglas	69.5	69.6	0.1	No
Sunrise	Douglas	Kiefer	67.9	68.0	0.1	No
Sunrise	Kiefer	Jackson	68.5	68.8	0.3	No
Sunrise	Jackson	Florin	66.8	67.3	0.5	No
Sunrise	Florin	Grant Line	65.2	65.6	0.4	No
Vineyard	Gerber	Calvine	59.4	59.0	-0.4	No
Watt	US 50	Folsom	73.5	74.2	0.7	No
White Rock	International	Quality	58.3	58.2	-0.1	No
White Rock	Quality	Zinfandel	62.9	62.5	-0.4	No
White Rock	Zinfandel	Kilgore	64.1	64.1	0.0	No
White Rock	Kilgore	Sunrise	64.1	64.1	0.0	No
White Rock	Sunrise	Fitzgerald	66.3	66.5	0.0	No
White Rock	Fitzgerald	Rancho Cordova	59.4	59.3	-0.1	No
White Rock	Rancho Cordova	Americanos	59.4	59.3	-0.1	No
White Rock	Americanos	Grant Line	58.4	58.4	0.0	No
White Rock	Grant Line	Prairie City	66.0	66.0	0.0	No
Zinfandel	US 50	White Rock	68.9	68.6	-0.3	No
Zinfandel	White Rock	International	64.9	64.7	-0.2	No
Zinfandel	International	Baroque	62.3	61.5	-0.8	No
Zinfandel	Baroque	City Limit	62.3	61.5	-0.8	No
Zinfandel	City Limit	Douglas	62.3	61.5	-0.8	No
Zinfandel	Douglas	Collector MS-2	58.0	57.1	-0.9	No
Zinfandel	Collector MS-2	Collector MS-3	58.0	57.1	-0.9	No
Zinfandel	Collector MS-3	Collector MS-4	58.0	57.1	-0.9	No
Zinfandel	Collector MS-4	Kiefer	58.0	57.1	-0.9	No

Notes: Bold = Noise level exceeding the County threshold for transportation noise levels at residential receptors (Table 16-12), or exceeding the significant increase thresholds (Table 16-14).

Source: Bollard 2023 Acoustical Consultants: Table 13.

As shown in Table 16-19, implementation of the WJHMP would result in an increase in traffic noise ranging from 0.1 to 13.1 dB L_{dn} along a majority of studied roadway segments; a decrease in noise along 29 studied roadway segments; and no change to noise levels along 11 roadway segments. Fifty-one of the modeled roadway segments would result in a substantial increase in noise as defined by General Plan Policy NO-9 with implementation of the WJHMP. The roadway segments that would experience a substantial increase in traffic noise were further analyzed to identify the presence of noise-sensitive receptors (e.g., residences) and any existing sound barriers. There are existing sensitive receptors present within 100 feet of roadway segments within the WJHMP area (Bollard Acoustical Consultants 2023: 71). Thus, traffic noise increases associated with development under the WJHMP would result in substantial increases in traffic noise that would be perceptible to existing sensitive receptors.

Additionally, with implementation of the WJHMP, new sensitive receptors (e.g., residences, schools) would be located throughout the plan area. As detailed under General Plan Policy NO-1, traffic noise levels that exceed 65 dB L_{dn} at all new land uses, except for “theaters and auditoriums, commercial buildings, and playgrounds, parks, etc.”; and traffic noise levels that exceed 70 dB L_{dn} at “playgrounds, parks, etc.” would result in a significant impact. As described above, portions of the WJHMP area that are former aggregate mining sites are substantially depressed relative to the local roadway network. As a result, noise-sensitive land uses developed within substantially depressed portions of the WJHMP area would experience a substantial decrease in traffic noise exposure; specifically, noise levels approximately 10 dB to 15 dB lower than those shown in Table 16-19.

Development under the WJHMP would comply with applicable General Plan policies that pertain to noise. As required by General Plan Policy NO-9, a noise analysis would be prepared for the construction of new roadways or capacity enhancing roadway projects, and feasible methods of reducing noise to levels consistent with the standards contained in Table 16-12 would be implemented. Additionally, General Plan Policy NO-1 requires that, where noise standards for new uses affected by traffic noise are predicted to be exceeded, appropriate noise mitigation be included in the individual project design to reduce projected noise levels to a state of compliance with applicable standards (i.e., exterior noise level of 65 dB L_{dn} and interior noise level of 45 dB L_{dn} for residential uses). Project design would emphasize the use of setbacks and site design to shield noise-sensitive uses to the extent feasible prior to the consideration of noise barriers in accordance with General Plan Policy NO-13. Compliance with these policies would ensure that future development with the potential to exceed acceptable noise compatibility standards would be thoroughly evaluated and that appropriate sound attenuation techniques would be implemented. Although compliance with these General Plan policies would reduce the potential for noise levels to exceed County standards, future project-specific components and the details of all development under the WJHMP, including the feasibility and effectiveness of noise attenuation measures (e.g., setbacks, building insulation, sound barriers), are currently unknown. Therefore, it is not possible to conclude that existing and new development related to the buildout of the WJHMP would meet noise standards in relation to traffic noise and, thus, this impact would be potentially significant.

Mitigation Measure NO-3a requires the use of alternative pavement materials which would reduce vehicular noise generation, Mitigation Measure NO-3b requires roadway design features to be considered and implemented along roadways that would experience a substantial increase in noise with implementation of the WJHMP; and Mitigation Measure NO-3c requires new development to attenuate interior noise levels to appropriate levels. However, although the implementation of these mitigation measures would reduce traffic noise impacts on sensitive receptors to the extent feasible, it is not possible to guarantee that long-term traffic noise associated with development under the WJHMP would be reduced to below the applicable thresholds. Therefore, this impact would be **significant and unavoidable**.

MITIGATION MEASURES

MITIGATION MEASURE NO-3A: RUBBERIZED ASPHALT

The County shall require the use of rubberized asphalt rubberized hot-mix asphalt (RHMA) or another equally effective type of noise-reducing pavement along (a) future roadway construction within the WJHMP and (b) at the time of the next repaving of the roadway segment. The RHMA overlay shall be designed with appropriate thickness and rubber component quantity (typically 15 percent by weight of the total blend), such that traffic noise levels are reduced by an average of 4 to 6 dB (noise levels vary depending on travel speeds, meteorological conditions, and pavement quality) as compared to noise levels generated by vehicle traffic traveling on standard asphalt.

MITIGATION MEASURE NO-3B: S NEW, EXPANDED, OR EXTENDED ROADWAY NOISE REDUCTION

Before finalizing roadway design for roadway expansion or new roadway construction associated with the WJHMP, a design-level acoustical analysis shall be prepared to identify specific roadway design considerations, which shall be incorporated into final road design and approved by Sacramento County for roadways identified in Table 16-19 that result in a substantial increase in noise. The following design features shall be considered:

- Roadway design shall provide sufficient setback between any occupied structures or planned future structures that are defined as sensitive land uses by Sacramento County and the roadway to minimize noise exposure and meet County noise standards.
- In locations where setback is not feasible to reduce noise levels at existing sensitive receptors from new or expanded roadways, the County shall coordinate with property owners of the existing sensitive receptors regarding installation of sound barriers along property lines to minimize traffic noise to meet applicable County exterior noise standards and, if necessary, interior noise standards.

MITIGATION MEASURE NO-3C: ACOUSTICAL ASSESSMENTS FOR ALL NEW LAND DEVELOPMENTS

The County shall require a design-level acoustical assessment to be prepared and submitted alongside the project application for all new land use development projects associated with the WJHMP that would be located within the noise contours defined

under General Plan Policy NO-1 and identified in Table 16-12 of this EIR. Specifically, for all new land use developments, except for "playgrounds, parks, etc.," located within the 65 dB L_{dn} traffic noise contour; and for "playgrounds, parks, etc.," located within the 70 dB L_{dn} traffic noise contour the County shall require an acoustical assessment to be prepared. The acoustical assessment shall evaluate the compatibility of the proposed development in comparison to applicable County noise standards and provide recommendations to achieve acceptable interior noise levels appropriate to the land use. Noise control measures may include building façade improvements; mechanical ventilation for all schools and residences; increased vegetation; roadway pavement improvements and maintenance; and site design features. If such measures are not sufficient to reduce noise levels and there are no other feasible alternatives that could be implemented, a sound barrier may be constructed.

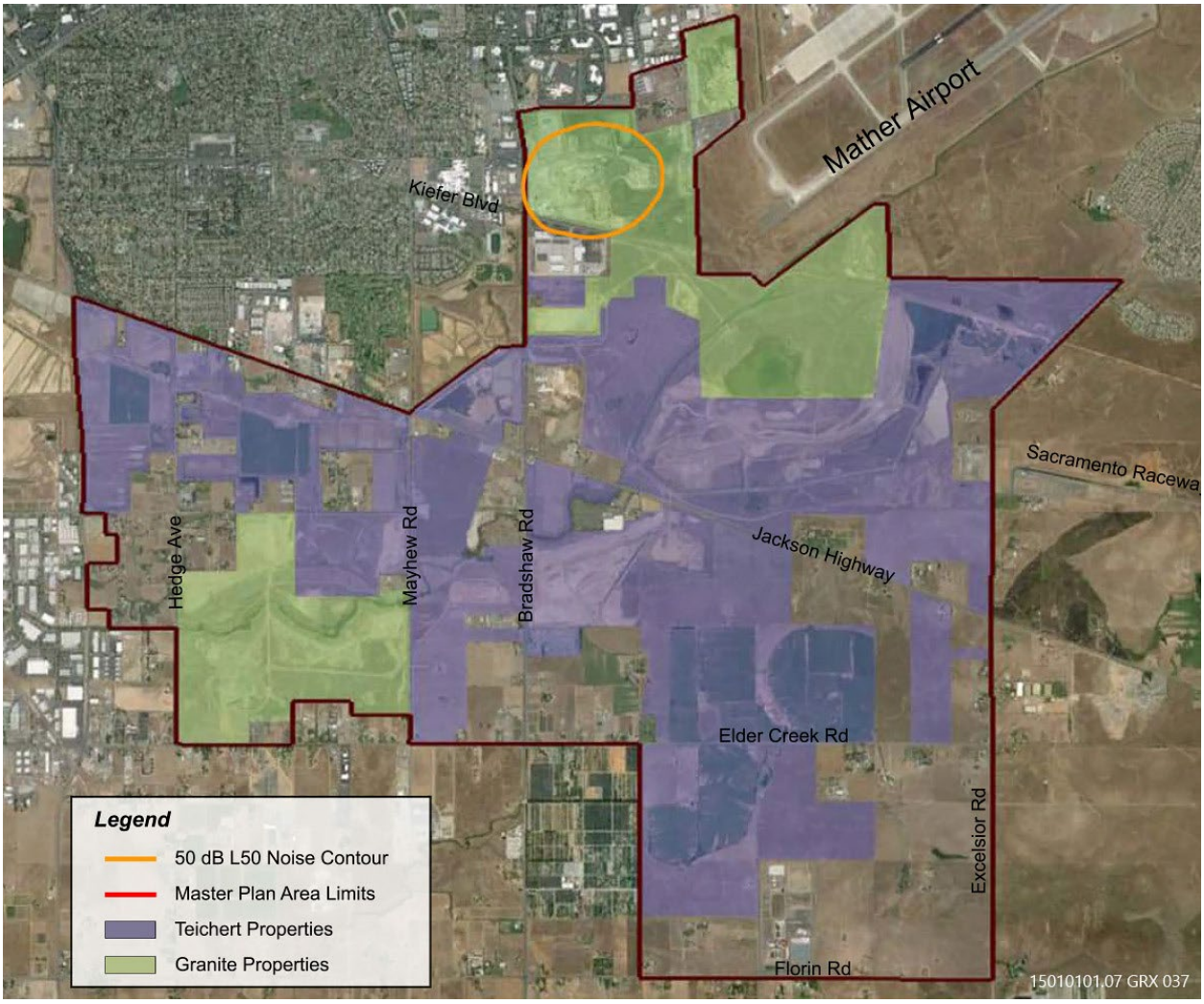
IMPACT NO-4: EXPOSE NEW OR EXISTING SENSITIVE RECEPTORS TO NEW STATIONARY NOISE SOURCES

This impact assesses the long-term exposure of existing and new sensitive receptors to increased long-term (operational) noise levels from proposed development of the WJHMP, which would result in industrial, residential, commercial, and office land uses. Noise sources associated with these land uses include mechanical equipment such as HVAC equipment; loading dock operations; residential maintenance; outdoor activities (e.g., residential landscaping); and vehicular and human activity in parking lots. Other stationary noise sources of concern typically include generators, pumps, air compressors, back-up alarms, and similar machinery that can be associated with office/business, residential, commercial, and industrial uses. Industrial land use would be limited to the northern portion of the WJHMP area to prevent disruption to other land uses. Vehicular and human activity in parking lots, outdoor activities, and voices would be intermittent in nature and would vary considerably depending on the specific characteristics of the site. These activities also tend not to be of a level of frequency that would disturb existing sensitive receptors (e.g., residences, schools, or libraries) and would mostly occur during the daytime, when receptors are least sensitive. Activities associated with industrial and commercial land uses (e.g., loading dock activity) and the use of mechanical equipment could result in sustained levels of permanent noise that affect sensitive receptors. Therefore, this analysis focuses on noise from mechanical equipment; loading dock activity; and industrial facility operations.

EXISTING INDUSTRIAL MINING FACILITIES

Mining operations in the plan area generate noise associated with mining, transport of materials via conveyor, and processing of aggregate materials. Granite operates an aggregate processing facility at the northeast corner of Kiefer Boulevard and Bradshaw Road (i.e., the proposed location for industrial uses under the WJHMP). Noise measurements were conducted to determine the distance from the Granite operations to the 55 dB and 50 dB L_{50} noise contours, because within these distances the County daytime and nighttime noise standards would be exceeded, respectively (per General Plan Policy NO-5). Until the Granite facility ceases operations, the noise generated from this facility is expected to remain at the identified levels. The facility's 50 dB L_{50} noise

contour extends into areas planned for future commercial and high-density residential land uses as shown in Figure 16-5. (Bollard Acoustical Consultants 2023: Figure 11B). Thus, if the Granite aggregate facility were to remain in operation after construction of the residential development proposed under the WJHMP, the County residential nighttime noise standard (i.e., 50 dB L_{50}) would be exceeded.



Source: Image produced and provided by Bollard Acoustical Consultants.

Figure 16-5 Granite Industrial 50 dB Noise Contour

Additionally, ongoing aggregate excavation and conveyance of materials to the processing plants could continue alongside residential development within the WJHMP area. Noise measurements from conveyor belt operations indicate that the 55 dB L_{50} noise contour is located approximately 350 feet from the operating conveyor and the 50 dB L_{50} noise contour is located approximately 700 feet from the conveyor (Bollard Acoustical Consultants 2023: 55). The location of conveyors changes depending on the location of excavation and reclamation activities. If sensitive receptors were constructed within 700 feet of conveyor operations, applicable County noise levels would be exceeded. Per WJHMP Goal 5, buffers and/or transitional land uses would be

developed between residential and industrial land uses to avoid future land use conflicts. Specifically, with implementation of the WJHMP, the industrial site would be surrounded by employment and commercial land uses. Noise associated with these land uses would be lower or similar to that of existing hourly noise levels (e.g., 70 dB L_{eq}) at existing industrial land uses (see Table 16-6). The doubling of sound energy would result in a 3 dB increase in sound. However, a 3 dB increase in sound is generally perceived as barely detectable, and thus would not be considered a substantial increase in noise. Additionally, in compliance with General Plan Policy NO-5, appropriate noise mitigation measures would be included in individual project design to reduce projected noise levels to a state of compliance with established standards for residential uses. However, because it is not possible to guarantee that conveyors would be located far enough from sensitive receptors to avoid substantial noise exposure, noise levels from industrial uses could exceed County daytime and nighttime noise standards.

Loading Dock and Delivery Activity

The WJHMP proposes a variety of commercial and employment land uses throughout the plan area including national chain stores, office complexes, and light industrial uses (e.g., manufacturing, research, warehousing). Commercial and light industrial land uses could include loading dock areas that generate noise levels that exceed County non-transportation noise standards. Noise sources associated with general activity in a loading dock area are usually short term and can include activities such as onsite truck circulation, truck idling, movement of material goods, and the operation of forklifts. Based on a noise measurement conducted by Ascent on April 20, 2023, at the loading and unloading dock at an Anheuser Bush facility, noise from delivery truck activity can be as loud as 59 dBA L_{eq} at 100 feet (Ascent 2023). Based on this information, loading dock activities within 160 feet of a sensitive receptor would exceed the County exterior residential daytime noise standard of 55 dB L_{eq}. Loading dock activities within 325 feet of a sensitive receptor would exceed the County exterior residential nighttime noise standard of 50 dB L_{eq}. Per Section 4.5.6 of the WJHMP, Countywide Design Guidelines would be implemented through subsequent tentative maps and zoning. Section 5.2.1 of the County Design Guidelines specifies that industrial parks or projects should be clearly separated from residential areas and incorporate adequate buffers for noise impacts, and landscaping and screening should be used to control the effects of facility operations. Additionally, General Plan Policy NO-7 states that if a noise-generating use (i.e., commercial land use) is proposed adjacent to lands zoned for noise sensitive uses (e.g., residential), then the noise-generating use shall be responsible for mitigating its noise generation to a state of compliance with County standards included in Table 16-13 of this EIR. Further, per Section 4.4.2 of the WJHMP, commercial and employment land uses proposed under the WJHMP that would allow for idling trucks (e.g., national chain stores, repair facilities, storage yards, or truck terminals) would not be used to buffer residential uses unless adequate screening, setbacks, and landscaping are established. However, because it is not possible to guarantee that commercial and employment land uses would be located far enough from sensitive receptors to avoid substantial noise exposure, noise levels from loading docks and delivery activity could exceed County daytime and nighttime noise standards.

Mitigation Measure NO-4b would require that future project applicants reduce noise to established standards through measures known to limit noise exposure to sensitive receptors. Therefore, noise associated with loading dock and delivery activity would not result in substantial noise increases at sensitive receptors during the sensitive times of day.. Through adherence to these policies and Mitigation Measure NO-4b, loading dock and delivery activity would not exceed County noise standards.

Mechanical Equipment

Mechanical noise equipment (e.g., HVAC systems) would be the primary noise source associated with residential developments and commercial uses. HVAC equipment is a common noise source associated with land use development and currently exists in the WJHMP area; thus, the additional equipment associated with proposed facilities would not represent a new noise source in the area. Section 6.68.120 of the Sacramento County Code includes specific regulations regarding noise levels generated by mechanical equipment. Specifically, the regulation states that any new development that includes any mechanical equipment, pump, fan, air conditioning apparatus, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical devices, or any combination thereof, shall not allow noise levels from this equipment to exceed 60 dB at 1 foot inside the property line of the affected residential property or exceed 55 dB outside the neighboring living area window nearest the equipment location. Noise levels from HVAC equipment vary depending on the unit efficiency, size, and location, but generally range from 45 to 70 dB L_{eq} at a distance of 3 feet (Carrier 2022). For a more conservative analysis, HVAC units were assumed to operate at a noise level of 70 dB L_{eq} at 3 feet. At this noise level, HVAC units would exceed the County's noise standard for mechanical equipment of 60 dB and 55 dB within 10 feet and 17 feet, respectively, of HVAC equipment. Because it is not known at this time where individual developments associated with the project would be specifically located, details regarding the location of HVAC units are not known. However, subsequent development associated with the WJHMP would be required to comply with applicable County guidelines, standards, and specifications related to operational noise. Specifically, pursuant to General Plan Policy NO-6 projects proposed within the plan area that would include non-transportation noise sources would be required to identify mitigation and demonstrate that the project would not result in exceedance of the interior and exterior noise level standards presented as Table 16-13 in this EIR at existing noise-sensitive areas in the project vicinity. Adherence to this policy would ensure that noise generated by future land uses, including employment, commercial and industrial developments and associated mechanical equipment would not exceed County noise standards or result in substantial noise increases during sensitive times of day.

Summary

As detailed above, implementation of the WJHMP would result in the development of various land uses, which would include new noise generating stationary equipment, as well as land uses with new noise-generating activity areas (e.g., loading docks). Although the land use plan provides the location of each of the new land uses, the specific location of new stationary equipment and noise-generating activity areas within these land uses is unknown. As a result, development that would include stationary

equipment or noise generating activity areas (e.g., industrial conveyors) could fall within distances that would result in noise levels that exceed County standards. Subsequent development would be required to comply with applicable General Plan policies, County guidelines, standards, and specifications related to operational noise. As discussed, the County Design Guidelines include design policies that encourage buffers, setbacks, and architectural and landscaping strategies to reduce noise impacts. In addition, General Plan Policy NO-7 requires a noise-generating use proposed adjacent to lands zoned for uses which may have sensitivity to noise to mitigate noise generation to a state of compliance with the standards presented in Table 16-13 in this EIR. However, because the location of stationary equipment or noise generating activity is not fully known, these sources could still exceed County standards and sensitive receptors. Therefore, this impact would be potentially significant.

Mitigation Measure NO-4a requires new noise sensitive land uses within the 50 dB L_{50} noise contour of existing industrial land uses north of Kiefer Boulevard to use site design to reduce noise exposure and to conduct a site-specific noise study prepared by a qualified acoustical engineer addressing interior and exterior noise levels before the issuance of building permits. This measure would ensure that noise sensitive land uses maintain exterior noise levels of 55 dB L_{50} and 75 dB L_{max} during the daytime and 50 dB L_{50} and 70 dB L_{max} during the nighttime, consistent with County standards. In addition, Mitigation Measure NO-4b would establish setback requirements specific to the plan area that would augment the County's existing standards in General Plan Policy NO-7. Therefore, this impact would be **less than significant with mitigation incorporated**.

MITIGATION MEASURES

MITIGATION MEASURE NO-4A: DESIGN STRATEGIES FOR PROPOSED SENSITIVE LAND USES

This mitigation measure would apply to noise sensitive land uses developed as part of the WJHMP that would be located within 1,000 feet of existing or proposed industrial land uses.

To prevent future noise sensitive receptors from disturbance associated with existing and proposed industrial land uses within the WJHMP, design principles and strategies shall be used to reduce noise exposure to sensitive land uses in compliance with the WJHMP Design Guidelines, County Design Guidelines, and County noise standards. Common design principles to reduce noise exposure to sensitive land uses that shall be considered during the site design process include:

- increasing the distance between the noise source and the receiver,
- locating barrier-type buildings parallel to the noise source,
- orienting the residences and outdoor activity areas for those residences away from the noise source, and
- arranging the site plan to use buildings as noise barriers.

Upon application for entitlements, all future project applicants proposing a noise-sensitive land use within 1,000 feet of an existing or proposed industrial land use shall provide to the County a site-specific noise study prepared by a qualified acoustical professional/engineer addressing exterior noise levels for applicable noise sensitive land uses and interior noise levels in residential units. The noise study shall confirm, using approved calculation methodologies, that building design (e.g., building orientation) and building materials as well as exterior design features (e.g., fences, walls, and landscaping features) are sufficient to maintain, consistent with Sacramento County non-transportation noise standards, exterior noise levels of 55 L_{50} and 75 L_{max} during the daytime and 50 L_{50} and 70 L_{max} during the nighttime. If the study shows such standards would not be met with the site design as proposed, the future project applicants or subsequent developers shall implement recommendations of the study that are shown to achieve the standards.

MITIGATION MEASURE NO-4B: NOISE ATTENUATION FEATURES FOR PROPOSED COMMERCIAL, EMPLOYMENT, AND INDUSTRIAL LAND USES

Land use developments proposed under the WJHMP that include substantial truck activity (e.g., warehouses, grocery stores, repair facilities, storage yards, and truck terminals) and are proposed within 325 feet of existing or proposed residential developments shall be required to provide noise attenuation features to reduce noise generated by on-site truck and delivery activity to levels that are below County daytime residential noise standards (i.e., 55 dB L_{50}).

These features may include:

- site design features, including buildings and soundwalls, sited between the noise-generating activity and the residential land; and
- vegetative screening that fully restricts the line of sight between the noise-generating activity and the residences; or
- setbacks between the noise-generating activity and the residences.

The proposed noise attenuation features shall be demonstrated to reduce noise exposure such that the median daytime noise level on the nearest point of the residential parcel does not exceed the median daytime noise level (L_{50}) of 55 dB. Future project applicants shall be required to demonstrate compliance with these requirements at the time of application for subsequent tentative maps or development applications.

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17 PUBLIC SERVICES

INTRODUCTION

This chapter describes the existing public services and facilities, including fire protection, law enforcement, public schools, parks, and libraries, and potential effects on service attributable to the project. Impacts are evaluated in relation to the actions needed to provide the services that could potentially lead to adverse physical environmental effects. Wastewater and solid waste are addressed in Chapter 18, "Public Utilities," water supply and associated water infrastructure needs are addressed in Chapter 20, "Water Supply", electrical infrastructure is addressed in Chapter 11, "Energy", and transit services are addressed in Chapter 19, "Transportation."

The Southgate Recreation and Park District, Walk Sacramento, and the Cordova Recreation and Park District submitted comments on the notice of preparation indicating discrepancies in the master plan's parkland dedication and recommending relocation of a proposed elementary school and middle/high school campus site closer to residential densities and away from higher volume and speed roadways. These issues are discussed below.

ENVIRONMENTAL SETTING

The project is located within the Urban Services Boundary (USB) but is mostly outside of the Urban Policy Area (UPA). The UPA defines the area expected to receive urban levels of public infrastructure and services within a 20-year planning period. To receive urban public services, land must be within both the UPA and USB. For more information on the USB and UPA, please refer to Chapter 15, "Land Use."

The County requires the preparation of Urban Services Plans for all master plan projects. Through this plan the project applicant must demonstrate that the proposed development is cost-neutral to the County's general fund and existing taxpayers/ratepayers, as required by the land use policies in the General Plan. The Urban Services Plan is prepared separate from the evaluation of the project in this EIR.

FIRE PROTECTION AND EMERGENCY RESPONSE

The plan area is within the service area of the Sacramento Metropolitan Fire District (Metro Fire). Metro Fire is a special district that serves a population of over 720,000 in a 359 square mile service area in Sacramento County (Metro Fire 2023a). In 2013, Metro Fire issued the Fire Department Growth Analysis, which reviewed the number and location of new fire stations that would be required to meet 1st Due and 1st Alarm response requirements (areas that have over 1,000 people per square mile, the standard travel time is 4 minutes with an overall reflex time of 7 minutes), taking into consideration the various planning areas where development is proposed. This analysis

was used to perform a capital facilities impact fee study and analysis which determined the portion of the project facilities' cost attributable to new development over the ensuing 20-year planning horizon (Metro Fire 2023b). As a special district, Metro Fire is governed by a Board of Directors; each member is elected by the voters within a geographical area, or division, of Metro Fire's operational area. Operations include Fire and Rescue, Emergency Medical, Training and Safety, Special Operations, Homeland Security, Fire Investigation, and Health and Wellness Divisions.

Metro Fire uses a response standard of 4 minutes for First Due travel time with an overall reflex time of 7 minutes. The performance standard for an "Effective Response Force" to a building fire incident is to have three engines, one ladder truck, and one battalion chief to the incident within 8 minutes (Metro Fire 2018). The nearest fire station is Station 62 located on Bradshaw Road, approximately 0.8 miles north of the plan area. Another fire station is Station 54 located off of Fredric Avenue east of South Watt Avenue, approximately 1.5 miles northwest of the plan area. Metro Fire is currently in the process of planning two more stations surrounding the plan area due to planned and approved development in the city of Rancho Cordova, the Vineyard Community, and the proposed master plan areas surrounding the plan area, including two new fire stations located in the plan area.

Law Enforcement

The plan area is within the service area of the Sacramento County Sheriff's Department (SSD), which provides law enforcement services in the unincorporated county. Local law enforcement services include response to calls for service and trouble spots, investigations, surveillance, and routine patrolling. Demand for law enforcement services grows with population. The County maintains a goal of having one sheriff's deputy per 1,000 residents (Sacramento County 2010). The nearest SSD substation is the Kilgore Station East Division, which is located approximately 4 miles northeast of the plan area in Rancho Cordova. SSD staff assigned to the substation provide general law enforcement services to Rancho Cordova, Rosemont, Lincoln Village, Gold River, Mather, and Butterfield-Riviera East. The East Division provides patrol, investigative, Problem Oriented Policing, report writing, crime prevention, and crime analysis functions (SSD 2023).

Schools

The plan area is within the service area of the Elk Grove Unified School District (Elk Grove USD) and of the Sacramento City Unified School District (City USD). The Elk Grove USD covers 320 square miles and includes the communities of Florin, Franklin, Laguna Creek, Laguna West, Rancho Murieta, Sheldon, Sloughhouse, Valley Hi, Vineyard, Wilton, the city of Elk Grove, and parts of the cities of Sacramento and Rancho Cordova. Elk Grove USD operates 43 elementary schools, nine middle schools, nine comprehensive high schools, five alternative education schools, one charter school, one virtual online K-8 program, one special education school and one adult education school (Elk Grove USD 2023a). During the 2022-2023 school year, the Elk

Grove USD had a total enrollment of 62,957 students, and City USD had a total enrollment of 43,066 (CDE 2023a; 2023b).

The plan area is currently located within the attendance area of Sierra Enterprise Elementary School for grades K-6, Katherine L. Albiani Middle School for grades 7-8, and Pleasant Grove High School for grades 9-12. According to Elk Grove USD's online school locator, Katherine Albiani Middle School is currently overcrowded. Students moving to the attendance area are being redirected to Smedberg Middle School. Pleasant Grove High School is also currently overcrowded and students are being redirected to Sheldon High School (Elk Grove USD 2023b). Elk Grove USD may adjust attendance boundaries as needed in the future to accommodate changes in population and as new school facilities are built.

The northernmost portion of the plan area is located within the City USD attendance area. The closest school to the plan area is Golden Empire Elementary School, which is located less than 1 mile north within the Carmichael community and is part of the City USD. Other nearby schools include Rosemont High School and Albert Einstein Middle School part of the City USD, which are located approximately 1.1 miles and 1.7 miles north of the plan area, respectively.

Parks and Recreation Services

The plan area is located within the Cordova Recreation and Park District (CRPD) and the Southgate Recreation and Park District (SRPD). The CRDP serves approximately 120,000 residents within the city of Rancho Cordova and the unincorporated communities of Rosemont, Gold River, Larchmont, Riviera East, and Mather. CRPD is an independent, special district within the county and is governed by an elected board. CRPD owns and operates over 600 acres of SPLS and parkland, including over 43 parks and facilities (CRPD 2023). The closest CRDP parks to the plan area are Primrose Park and Cordova Golf Course. Both parks are located along the northwestern boundary of the plan area. Primrose Park offers a playground, three picnic areas, and a full-size soccer field. Cordova Golf Park is a full-service facility with an 18-hole course, driving range, grass and mat hitting stations, practice putting green, and pro-shop.

The SRDP serves approximately 120,000 residents of the 52-square mile unincorporated South Sacramento community that lies east of Sacramento, south of Rancho Cordova and north of Elk Grove. SRPD is an independent, special district that is governed by an elected five-member board of directors. The SRPD currently maintains 47 parks, 6 community centers, 2 aquatic facilities, and numerous landscape corridors and nature preserves (SRPD 2023). The closest SRPD parks to the plan area are Dunmore Park Preserve Area and the Don & Brenda Nottoli Community Park, located approximately 1 mile south and southwest, respectively. The Don & Brenda Nottoli Community Park offers 14 acres of community parkland equipped with playground features, sports fields, picnic shelters, and a dog park. The Dunmore Park Preserve Area is an actively managed habitat preserve. Although public access to the preserve is limited, the open space provides some passive recreation opportunities.

Libraries

The Sacramento Public Library System (SPLS), operated by the Sacramento Public Library Authority, provides library services to the residents of Sacramento County as well as the incorporated cities of Sacramento, Elk Grove, Rancho Cordova, Citrus Heights, Galt, and Isleton. The library system is comprised of interdependent branches providing services to all residents. SPLS includes 28 locations and serves approximately 1.4 million residents. Branches are grouped by services, geography, and usage patterns to provide efficient and economical services to the residents of the county. The nearest library to the plan area is the Rancho Cordova Community Library, located approximately 3.5 miles north along Folsom Boulevard.

The Library Facility Master Plan (Sacramento Public Library Authority 2007) for SPLS sets forth general standards and criteria for the renovation and construction of all new libraries. Existing and future library needs are largely population driven (e.g., for every 30,000 residents in a community, at least one full-service library is required). Ideally, new libraries provide 0.4 to 0.6 square feet per capita. The Facility Master Plan indicates that the Vineyard area will require two to three new library facilities to serve anticipated growth. The Library Facility Master Plan identifies these new branches as planned for construction in 2015 and 2025. Although no Vineyard branch has yet been developed, the 2023 Facilities Vision Plan (Sacramento Public Library 2023) continues to identify a new library in the Vineyard area.

Regulatory Setting

Federal

There are no federal policies or regulations applicable to the analysis of public services.

State

Leroy F. Greene School Facilities Act

The Leroy F. Greene School Facilities Act of 1998 established a State program to provide per-pupil funding for new construction and modernization of existing school facilities. The act limits the power of cities and counties to require mitigation of school facilities as a condition of approving new development and authorizes school districts to assess fees (at various levels) to directly offset the costs associated with increased capacity as a result of new development.

California Education Code

The California Education Code authorizes the California Department of Education to develop site selection standards for school districts. The California Department of Education School Facilities Planning Division has prepared a School Site Selection and Approval Guide that provides criteria for location appropriate school sites in the State of California.

California Government Code Section 66477

California Government Code Section 66477 (Quimby Act) allows local governments to exact land dedications or in lieu fees for park purposes from new subdivisions. The law prescribes a standard consistent with the circumstances of each park district based on a minimum of 3 acres and a maximum of 5 acres per 1,000 residents. Sacramento County's Office of Planning and Environmental Review oversees these requirements in the unincorporated area.

Local

Sacramento County Code, Title 22

Title 22 of the Sacramento County Code provides directions for calculating park acreage requirements for residential developments. Depending on the park district, residential developments are required to provide dedicated land for park construction or pay in-lieu fees.

The plan area is located within the CRPD and SRPD. As shown in Table 17-1, Title 22 sets a standard of 4.87 acres per 1,000 persons for land dedication or in lieu fees for CRPD based on land use type. Furthermore, as shown in Table 17-2, Title 22 sets a standard of 5.00 acres per 1,000 persons for land dedication or in lieu fees for SRPD based on land use type. These per-person dedication requirements are further refined with dedication factors that reflect the type of dwelling unit.

Table 17-1 Title 22 Parkland Dedication Requirements for Cordova Park and Recreation District

Acreage Dedication Requirement	Single Family Residential Factor	Multiple Family Residential Factor
4.87 acres per 1,000 residents	0.0142	0.0119

Source: Sacramento County Code, Section 22.40.045.

Table 17-2 Title 22 Parkland Dedication Requirements for Southgate Park and Recreation District

Acreage Dedication Requirement	Single Family Residential Factor	Multiple Family Residential Factor
5.00 acres per 1,000 residents	0.0146	0.0100

Source: Sacramento County Code, Section 22.40.045.

Sacramento County 2030 General Plan

The following policies of the 2030 General Plan would apply to the project:

- **Policy LU-65.** Levels of service shall be consistent with policies in this Plan, or where none are applicable, shall use Federal and State environmental standards and commonly accepted industry norms and standards as guidelines.

- **Policy LU-66.** Assure service availability, adequacy, and funding at each stage of the development process for all public services for the life of the project consistent with the intent of the adopted Public Facilities Financing Plan and accompanying Phasing Plan.
- **Policy LU-67.** Funding to construct community and regional facilities located in new growth areas shall be based on broad based funding. Developments within new growth areas shall participate, when possible, in a program to fund the construction of community and regional facilities.
- **Policy LU-69.** Supplemental mitigation fees may be established by the Board of Supervisors provided they find that supplemental fees are critical and necessary to meet the facility funding needs of a service provider and that traditional methods are inadequate.
- **Policy PF-29.** Schools shall be planned as a focal point of neighborhood activity and interrelated with neighborhood retail uses, churches, neighborhood and community parks, greenways and off-street paths whenever possible.
- **Policy PF-30.** New elementary schools in the urban area should be planned whenever possible so that almost all residences will be within walking distance of the school (one mile or less) and all residences are within two miles of a school.
- **Policy PF-31.** Schools shall be planned adjacent to neighborhood parks whenever possible and designed to promote joint use of appropriate facilities. The interface between the school and park shall be planned with an open design and offer unobstructed views to promote safety.
- **Policy PF-32.** Elementary schools shall not be located along arterials and thoroughfares. Junior high and high schools should be located near roadways with adequate capacity and should provide adequate parking to facilitate the transport of students.
- **Policy PF-34.** All school site plans shall be designed to minimize traffic speed and maximize traffic flow around the school, allowing for several access points to and from the site.
- **Policy PF-35.** New schools should link with planned bikeways and pedestrian paths wherever possible.
- **Policy PF-38.** Land dedications or reservations for schools should meet state guidelines for school parcel size. Where more than one owner or development project is involved, there shall be appropriate assurances and conditions to assure that requisite acreage can and will be assembled to meet facility site requirements.
- **Policy PF-39.** Specific Plans shall show the location of future school sites based upon adopted school district master plans and criteria in the General Plan.
- **Policy PF-42.** Share capital costs of library construction and renovation for existing residents through bond financing or other appropriate measures and by new residents and workers through fees on new development.

- **Policy PF-43.** Include community library needs among facilities to be financed by financing districts created in new urban areas.
- **Policy PF-45.** New commercial development in financing districts shall contribute to library financing such that fees based on projected employment are approximately equivalent to the fees for an equivalent number of new residents.
- **Policy PF-46.** Incorporate planned libraries into community and specific plans for new development.
- **Policy PF-53.** Design neighborhoods and buildings in a manner that prevents crime and provides security and safety for people and property; when feasible.
- **Policy PF-54.** Require new development to install fire hydrants and associated water supply systems which meet the fire flow requirements of the appropriate fire district.
- **Policy PF-55.** New development shall provide access arrangements pursuant to the requirements of the California Fire Code.
- **Policy PF-57.** New development, redevelopment or traffic signal replacement shall require the installation of emergency signal activation systems in all street improvements requiring signalization when requested by a fire district.
- **Policy PF-58.** Traffic calming measures should be used wherever possible in a manner that does not delay emergency vehicle responses.
- **Policy PF-59.** Alternative methods of fire protection and access must be instituted if access is reduced to emergency vehicles.
- **Policy PF-60.** Require that structures of four stories or more in height provide on-site equipment and facilities to the satisfaction of the appropriate fire district, consistent with industry norms and standards.
- **Policy PF-61.** Mitigation fees may be established by the Board of Supervisors or Fire Districts for the purpose of funding adequate fire protection and emergency medical response facilities provided they find that such fees are critical and necessary to meet the facility funding needs of the fire district and that existing methods of financing are inadequate.
- **Policy PF-63.** Mitigation fees established by County ordinance or Fire District shall, together with other reasonably assured sources of funding identified in the fire district's financing plan, be sufficient to implement the adopted financing plan.
- **Policy PF-64.** No building permit for new residential or commercial construction shall be issued when there is a Board of Supervisors certified fire district financing plan for any applicable fire district, which provides for mitigation fees, until the applicant has contributed all required mitigation fees.
- **Policy PF-122.** To help assure that local recreation and park district Master Plan standards for levels of service may be achieved and maintained, the County may require new development to dedicate land, pay in-lieu fees, development impact fees, or otherwise contribute a fair share to the acquisition and development of

parks and recreation facilities. For development in infill areas where land dedication may not be practical, the County in cooperation with the affected park district may explore creative alternatives for providing park and recreation facilities.

- **Policy PF-123.** At a minimum, new residential developments approved by the County shall provide sites for local parks for their prospective residents consistent with the Quimby Act and the land dedication standards for each local recreation and park district adopted by Sacramento County in Chapter 22.40 of the Sacramento County Code. These requirements may be satisfied by land dedication, payment of fees in lieu of dedication, or on-site improvements per the provisions of Chapter 22.40, which will be regularly updated to reflect changing demography. These include the baseline standard of three acres of land for parks per 1,000 residents or in cases where existing parklands within a park district exceed three acres per 1,000 population, that higher ratio shall be the standard for new developments up to a maximum of five acres of land for parks per 1,000 residents based on calculations specified in SCC Chapter 22.40.
- **Policy PF-125.** The County shall promote the provision of on-site recreational amenities and gathering places that are available to the public by large scale development projects and may consider providing incentives such as density bonuses or increases in building coverage for that purpose.
- **Policy PF-127.** Require new residential developments to participate in park O & M financing mechanisms where established by local park districts or the County.
- **Policy PF-128.** Encourage park development adjacent to school sites and the formation of joint use agreements between school and park districts.
- **Policy OS-10.** Sacramento County shall seek to attain the County Regional Park System standard of 20 acres of regional parkland per 1,000 population.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community Plans relevant to the WJHMP are the Cordova Community Plan and the Vineyard Community Plan (Sacramento County 2003, 1985).

CORDOVA COMMUNITY PLAN

- **Policy LU-8.** Continue the tradition of joint development of parks and schools.
- **Policy ROS-1.** Promote a high quality network of parks and open space that provides a mix of passive and active recreational opportunities for community residents.
- **Policy ROS-2.** Ensure a balanced mix of passive and active recreation opportunities in open space areas, and promote the environmental sustainability of these resources.
- **Policy ROS-6.** Encourage developers to work closely with the Cordova Recreation and Park District in the identification and development of new park sites.

- **Policy PS-6.** Ensure the availability and accessibility of public services for all segments of the population.
- **Policy PS-7.** Promote the concept of coordinated development of a single site by multiple agencies (e.g., fire, libraries, schools and parks) to provide greater convenience for the public.
- **Policy PS-9.** Promote suitable fire protection/prevention measures for all developments.
- **Policy PS-10.** Ensure that all library sites are adequately served by public transit.
- **Policy PS-11.** Promote coordination between the Sheriff and RT in matters related to safety in public transit use.
- **Policy ED-4.** Promote neighborhood participation in school site planning of facilities, services and connectivity.
- **Policy ED-5.** Ensure adequate school facilities to serve newly developing areas.

VINEYARD COMMUNITY PLAN

- **Policy PF 4.** Require all residential development proposals submitted to the County for approval be coordinated with the school district.
- **Policy PF 5.** Require development and maintenance of an adequate fire suppression water supply for all new development.
- **Policy PF 6.** All types of urban development proposals must be accompanied by a detailed public services plan and specific timing and funding programs for the implementation and maintenance of services.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

A public services impact would be significant if implementation of the project would:

- Result in substantial adverse physical impacts associated with the provision of emergency services and fire protection services;
- Result in substantial adverse physical impacts associated with the provision of law enforcement services;
- Result in substantial adverse physical impacts associated with the provision of public school services;
- Result in substantial adverse physical impacts associated with the provision of park and recreation services, or result in substantial physical deterioration of an existing facility due to increased use; or

- Result in substantial adverse physical impacts associated with the provision of library services.

Issues not discussed Further

All the issues identified in the significance criteria are addressed in the following analysis.

Methodology

The following evaluation of potential impacts associated with public services was based on a review of existing services and demand projections from the development of the project. This analysis is based on the assumption that the plan area would be developed in a manner generally consistent with the land use diagram and proposed General Plan amendments described in Chapter 2, "Project Description." As such, it is assumed that the UPA would be expanded to include approximately 5,844 additional acres of the plan area (total of 5,913 acres) and would support an additional 45,661 residents and approximately 30,700 employees. The calculations of projected demand for public services are based on facility plans or comments received from the applicable public service purveyors.

West Jackson Highway Master Policies

The WJHMP includes the following policies related to public services.

- **Policy 6.1.** Locations of major parks and open space areas in the Plan Area are shown in Figure 6.2, "Parks and Open Space Plan." Final park locations and sizes shall be determined during the subdivision process in collaboration with the park district in which the subdivision map is located.
- **Policy 6.2.** Quimby requirements shall be based upon the respective park district in which subdivision maps are located. In the event that a subdivision encompasses both park districts, park requirements shall be negotiated with each respective district.
- **Policy 6.3.** Parkland dedication factors shall be based upon Sacramento County Code Section 22.40.045 and requires 4.87 acres per 1,000 residents for Cordova Recreation and Park District and 5.0 acres per 1,000 residents for Southgate Recreation Parks District.
- **Policy 6.4.** Community parks should generally be 15 acres or more in size with active programming and with access to major roadways.
- **Policy 6.5.** Final locations of neighborhood parks shall be determined during the tentative subdivision map process.
- **Policy 6.6.** Where determined to be appropriate by the applicable park district and school board, neighborhood parks of 5 acres or more should be co-located with public schools.

- **Policy 6.8.** Various complimentary park themes and layouts should be established within the Plan Area. Some parks may have more sports field uses while others may include more passive uses such as grassy areas for informal play or natural areas with pedestrian trails. A wide variety of recreational opportunities shall be provided throughout the Plan Area with the objective of meeting the programming requirements of the Cordova and Southgate Recreation and Park Districts as applicable.
- **Policy 6.10.** Encourage the location of Community Gardens within parks and open space areas.
- **Policy 6.11.** Encourage the location of Community Gardens within parks and open space areas.
- **Policy 6.12.** Neighborhood parks of less than 2 acres that are intended for recreational use shall include limited programming for passive and active uses.
- **Policy 6.13.** Parks that are less than 2 acres may be designed as image parks that may include neighborhood identity signage and native, ornamental and edible plantings to enhance the visual appearance of the neighborhood.
- **Policy 6.14.** All Parks within the Plan Area shall adhere to local water conservation strategies.
- **Policy 6.15.** Neighborhood parks should generally have street frontages on at least two sides except those abutting open spaces, trails, drainage channels, school sites, and public spaces.
- **Policy 6.18.** Where feasible, pedestrian and bicycle trail systems shall be provided in or along open space areas with an emphasis on trail connectivity to area-wide systems.
- **Policy 6.24.** Sloped areas may be utilized for agricultural production including urban farming and community gardens.
- **Policy 8.1.** Implement the siting of new school sites and facilities in coordination with the respective school districts. These locations shall be located within the Master Plan area as approximately shown in Figure 8.3.
- **Policy 8.2.** Implement the siting of Sheriff's Department stations or substations within the Master Plan area which shall be allowed in all commercial, industrial and residential areas in accordance to County zoning. Stations in residential areas must be located on an arterial road or on a lot at least twice the minimum lot size for the zone.
- **Policy 8.3.** Implement the siting of Fire Department stations within the Master Plan area which shall be allowed in all commercial, industrial and residential areas in accordance to County zoning. Stations in residential areas must be located on an arterial road or on a lot at least twice the minimum lot size for the zone.

Impacts and Analysis

Impact PS-1: Result in substantial Adverse Physical Impacts Associated with the Provision of Fire Protection and Emergency Services

The plan area is within the service area of Metro Fire. As discussed above, Metro Fire uses a response standard of 4 minutes for First Due travel time with an overall reflex time of 7 minutes. The project would increase the demand for Metro Fire's fire protection and emergency services. This increase in demand would require additional staff and fire facilities in order to maintain service levels and to ensure that adequate fire protection is provided.

Metro Fire recently completed updating its growth analysis to take into account existing and anticipated future development south of Highway 50 within the incorporated and unincorporated areas of the county. Metro Fire has indicated that development within the plan area would contribute to an increase in the need for fire protection, including additional staffing, vehicles, equipment and stations. According to the service delivery plan, there is a possible need for two additional stations. This EIR assumes two new fire stations, as provided by Objective 8.6 of the WJHMP, meeting the sizing and siting criteria required by Metro Fire. The Project Applicants have agreed to provide sites of Metro Fire's choosing within the plan area in accordance with the objectives and policies of the master plan document. The final locations would be determined in conjunction with Metro Fire representatives at the time of the first Tentative Map.

The General Plan contains policies that allow the Board of Supervisors to establish mitigation fees for the purpose of funding adequate fire protection and emergency medical response facilities, provided they find that such fees are critical and necessary to meet the facility funding needs of the fire district. The fire districts that receive such funds must maintain Insurance Service Office (ISO) ratings of 3 for hydrant areas and 8 for non-hydrant areas and a response time of 5 minutes for emergency calls, where staffing levels are adequate. According to Metro Fire, the two future stations in the plan area would enable first response fire protection services to be provided to the entire plan area, as well as areas beyond, within 4 minutes of travel time, consistent with their response standard (Metro Fire 2014). Additionally, the policies contained in the General Plan require that new buildings and neighborhoods meet the requirements of the California Fire Code, and that access and fire hydrants are adequate.

Land within the plan area would be dedicated to Metro Fire as a part of WJHMP implementation. Two new fire stations would serve the entirety of the plan area, and no other fire protection or emergency services facilities would be required to serve the project. Because these facilities are located within the plan area, the environmental impacts associated with the development of these facilities are evaluated throughout this EIR. No additional off-site facilities would be needed. Therefore, impacts associated with fire protection and emergency services would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT PS-2: RESULT IN SUBSTANTIAL ADVERSE PHYSICAL IMPACTS ASSOCIATED WITH THE PROVISION OF LAW ENFORCEMENT

The project includes a maximum of 16,484 residential units which, according to the WJHMP, would provide housing for an estimated 45,661 new residents within the plan area, as well as non-residential users. This would increase demand for law enforcement services within the plan area.

The County maintains a goal of having one sheriff's deputy per 1,000 residents (Sacramento County 2010). With the addition of 45,661 residents, an estimated 46 additional officers could be needed. To support these additional officers, SSD may need to hire administrative staff or construct new facilities. Although the proposed development along the Jackson Highway corridor would cause the need for additional SSD staff and equipment, as of the writing of this EIR, SSD has not indicated that they need space for a new facility within the plan area or offsite, although they could request space for such a facility at a later date. Should SSD request land for a new station or substation within the plan area, it would be accommodated within one of the areas proposed for commercial, industrial, or residential uses. In that case, the potential impacts to the environment associated with construction and operation of such a facility are addressed throughout this EIR.

The project would provide funding in the form of development impact fees and ongoing property taxes that would provide funding for additional staffing and equipment needed to maintain and improve service levels for law enforcement within the plan area and the surrounding areas. Additionally, to facilitate future infrastructure in the plan area, the WJHMP includes Policy 8.2, which allows Sheriff's Department stations and substations in all commercial, industrial, and residential areas. Further, construction of an SSD facility within the plan area would not result in any physical impacts that are not already an inherent part of overall project impacts. Therefore, this impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT PS-3: RESULT IN SUBSTANTIAL ADVERSE PHYSICAL IMPACTS ASSOCIATED WITH THE PROVISION OF SCHOOLS

Development of the project would increase the local student population. Based on student generation rates provided by Elk Grove USD and State of California criteria, the proposed WJHMP estimates that student enrollment resulting from the project would be approximately 10,375 additional students, with approximately 5,544 elementary school students, 1,758 middle school students, and 3,073 high school students. Full buildout of the plan area is anticipated to require six elementary schools, a middle school, and a

high school. The project designates four sites for elementary schools that are each approximately 10 acres in size and a 70-acre site is designated for a joint high school and middle school. Additionally, one existing elementary school site currently exists within the plan area. The location of an additional two elementary school sites would be determined when a future specific plan, master plan amendment, or subsequent entitlements are prepared for the FPAs. All the schools would be located within the Elk Grove USD. Due to the limited number of residential units proposed within City USD, students within its district boundaries would be served by existing schools outside of the plan area. Moreover, the project would not require the construction of additional schools outside of the plan area because the project proposes to provide adequate school facilities based on student yield generation provided in Table 17-3. Table 17-3 recreates Table 8.1 from the Master Plan.

Table 17-3 Student Yield Generation

School District	Single Family Units	Multi-Family Units	Student Yield K-6	Student Yield 7-8	Student Yield 9-12	Elementary Schools Needed 750 Students	Middle Schools Needed 1,200 Students	High Schools Needed 2,200 Students
Elk Grove Unified	10,824	5,660	5,444	1,723	3,014	6.40	1.44	1.37
Sacramento City Unified	0	210	100	35	59	0	0	0
Total	**10,824**	**5,870**	**5,544**	**1,758**	**3,073**	**6**	**1**	**1**

Source: West Jackson Highway Master Plan, Table 8.1.

Note: Due to the limited number of residential units within the City USD, generation rates for Elk Grove USD were used for the purposes of Table 17-3.

The four elementary school sites identified in the WJHMP would be co-located with public park sites to encourage joint use of the facilities. Each elementary school would be centrally located to serve as a focal point of the neighborhood and combined with other land uses to create activity centers for their respective neighborhoods. The high school/middle school site would also be located adjacent to open space at a location that provides accessibility to the residents within the plan area, including FPAs.

Elk Grove USD has been working with the Project Applicants to ensure adequate school facilities are provided within the plan area. The number and location of school sites shown on the current plan would accommodate additional students generated by the project. Proposed school construction would occur within the plan area boundaries in areas designated for developed uses, consistent with the master plan. Construction of these schools within the plan area and are part of the project, and the environmental impacts associated with the construction and operation of the schools are evaluated throughout this EIR.

Further, future project applicants would be required to pay all applicable State-mandated school impact fees to Elk Grove USD at the time of development (i.e., issuance of building permits). The County would determine the assessable square

footage that would be subject to the fee at that time. Elk Grove USD would determine the capacity of existing schools at the time of build-out of the plan area and the need for new school facilities and would oversee the environmental review and development of new facilities. In the event that school impact fees are not adequate to cover the need for new school facilities, Elk Grove USD has the ability to raise fees as necessary. The California Legislature has declared that payment of the applicable school impact fee is deemed to be full and adequate mitigation under CEQA for impacts on school facilities (California Government Code Section 65996). Furthermore, development of the school sites in the plan area are programmatically covered in this EIR.

The project includes five school sites, plus an additional two undetermined sites in FPAs, which would fulfill the demand generated by the project. Construction of these schools would not result in any substantial physical impacts specific to public services that are not already an inherent part of overall project impacts. Impacts specific to public facility construction related to school services are **less than significant**.

It is possible that future residential development within the plan area would generate demand for school facilities that are not met by the proposed school sites for some period of time as the plan area builds out. Depending upon the timing of construction of new school facilities relative to residential development within the plan area, future students could be bused or driven to off-site schools within the Elk Grove USD boundaries for a short period of time.

MITIGATION MEASURES

No mitigation is required.

IMPACT PS-4: RESULT IN SUBSTANTIAL ADVERSE PHYSICAL IMPACTS ASSOCIATED WITH THE PROVISION OF PARKS AND RECREATION SERVICES OR SUBSTANTIAL PHYSICAL DETERIORATION OF AN EXISTING FACILITY

The project includes 24 neighborhood parks (totaling 219.3 acres) that would be distributed throughout the plan area, four of which are adjacent to the proposed elementary school sites. The remaining neighborhood parks would be generally located adjacent to the regional and local trail system within the proposed greenbelt areas along Rock Creek Parkway, including LDR areas to provide for easy pedestrian and bicycle access throughout the plan area. The neighborhood parks range in size from 2.0 to 24.2 acres and would provide a variety of facilities that would accommodate local recreational needs. The park facilities are anticipated to include play areas for children, open turf areas, areas for organized sports, picnic areas, and spaces for small groups of people to gather and recreate.

The proposed Rock Creek Parkway is expected to vary in width up to 300 feet wide in some locations and would contain separate roadways along the outer edge of the parkway. Rock Creek Parkway is designed to accommodate future transit, and a large swath of land in the center (designated as Open Space) which is intended to accommodate drainage as well as pedestrian/bicycle trails. Rock Creek Parkway will

traverse the central portion of the plan area and the trails of Rock Creek Parkway will connect with the trails of the recreated portion of Morrison Creek; the intent is to provide alternative modes of transportation throughout the plan area. Finally, the Master Plan includes a land use designation of Open Space/Urban Farm for 392.5 acres, which in addition to open space uses, will allow community-based agriculture and education within the plan area.

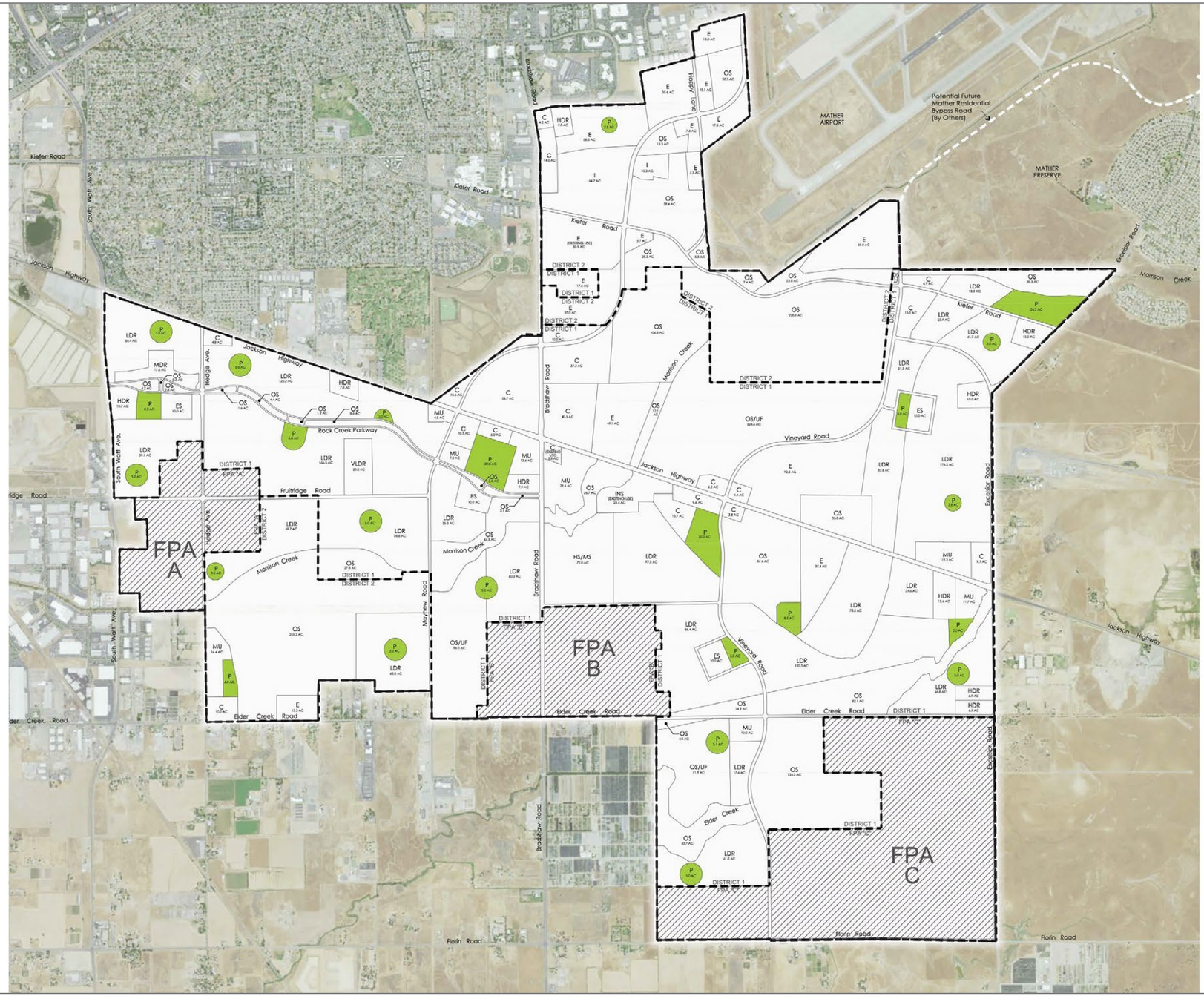
The project has been designed so that most homes would be located within close proximity of major gathering facilities, including the parks. See Figure 17-1 for a map depicting the distribution of park facilities the plan area. In total, the project would provide for a total of 219.3 acres of developed parkland.

The Quimby Act and the General Plan require a minimum of 3 and a maximum of 5 acres of parkland per 1,000 residents. As described in the Regulatory Setting, above, Title 22 provides parkland calculation factors to assist in determining the appropriate amount of parkland required for projects located within the CRPD based on housing type. Parkland dedication factors based upon Sacramento County Code Section 22.40.045 requires 4.87 acres per 1,000 residents for CRPD and 5.00 acres per 1,000 residents for Southgate Recreation and Parks District. However, park acreage for the plan area is based on the General Plan's requirement of 5.00 acres of improved parkland for every 1,000 residents, using the dwelling unit equivalent factors established in Section 22.40.045 of the Sacramento County Code. Tables 17-4 and 17-5, below, presents these factors and the project's parkland dedication requirement.

Table 17-4 Parkland Dedication Requirements - Southgate

	Dwelling Units	Factor	Acres Required	Acres to be Provided
VLDR & LDR	4,171	0.0146	60.9	
MDR	0	0.0122	0.0	
HDR	789	0.0100	7.9	
MU	882	0.0100	8.8	
Total	**5,842**		**77.6**	**124.6**

Source: West Jackson Highway Master Plan, Table 6.1; Section 22.40.045 of the Sacramento County Code.



Note: Park locations shown are for preliminary planning purposes only. Final locations will be determined during the subdivision map process

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Source: Sacramento County 2024.

Figure 17-1 Park Locations

Table 17-5 Parkland Dedication Requirements - Cordova

	Dwelling Units	Factor	Acres Required	Acres to be Provided
VLDR & LDR	3,806	0.0142	54.0	
MDR	246	0.0142	3.5	
HDR	1,602	0.0119	19.1	
MU	1,339	0.0119	15.9	
Total	**6,993**		**92.5**	**94.7**

Source: West Jackson Highway Master Plan, Table 6-1; Section 22.40.045 of the Sacramento County Code.

The project would provide 219.3 acres of developed parkland, as well as an additional 1,882 acres of open space. Based on the parkland calculation factors from Title 22 of the Sacramento County Code, the project would be required to provide 170.1 acres of developed parkland, leaving a surplus of 49.2 acres of additional parkland acreage above what is needed to fulfill the parkland requirement.

In addition, although funding is not an impact on the physical environment, a Public Facilities Financing Plan has been prepared for the project to ensure that adequate funding is available to CRPD and Southgate for development, maintenance, and programming of parks and recreational facilities within the plan area.

The project is consistent with the requirements of the Quimby Act and the General Plan. The WJHMP has been designed so that residents of the plan area would have convenient access to developed parklands. For this reason, it is assumed that future residents would primarily use the proposed parks within the plan area. The construction of parks within the plan area would not result in any substantial physical impacts specific to public services that are not already an inherent part of overall project impacts evaluated throughout this EIR. Therefore, the project would not increase the demand for existing park services such that a substantial physical deterioration of existing facilities would result. Impacts would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT PS-5: RESULT IN SUBSTANTIAL ADVERSE PHYSICAL IMPACTS ASSOCIATED WITH THE PROVISION OF LIBRARIES

Future residents of the plan area would increase the demand for library services provided by the SPLS. The Sacramento Public Library Authority has planned for growth along the Jackson Highway corridor and has planned new facilities in the Vineyard Community. The nearest full-service branch is the Rancho Cordova branch, which could also serve plan area residents. The project includes a funding mechanism through the public facilities fee program for library upgrades to accommodate the expected population of the project. This would allow the SPLS to implement the Library Master Plan, which accommodates planned growth in the surrounding area.

The SPLS is planning to develop two new libraries south of the plan area within the Vineyard community and another library north of the plan area within the Cordova community. Specific locations have not yet been identified. These general locations are outside the plan area; however, because these locations are in close proximity to the plan area, the facilities could serve plan area residents once they come online. In its 2023 Library Master Plan, the Sacramento Public Library Authority identifies a new library hub within the Vineyard Community. As a hub facility, this new library would provide a larger space to serve the surrounding community, including the plan area. This hub library would also host larger materials collections and provide regional library service support functions, including supporting high numbers of visits and checkouts, larger collections, and the full range of modern library spaces (Sacramento Public Library 2023).

The project would be accommodated by planned facilities. Final siting and evaluation of these facilities would be conducted by the Sacramento Public Library Authority and is outside the jurisdiction of the Project Applicants. Separate environmental review would be required for off-site library facilities, and implementation of mitigation measures to address substantial, adverse physical impacts would be the responsibility of the County.

As described above, at least one library is planned in the immediate vicinity of the plan area. Because the exact location is unknown at this time, the potential for the facility to result in substantial adverse physical effects cannot be determined without a great deal of speculation. However, the County anticipates that feasible mitigation would be available to substantially address these and other effects of constructing the new library facilities. Furthermore, the project includes a funding mechanism through the public facilities fee program for library upgrades to accommodate the expected population of the project. This would allow the SPLS to implement the Library Master Plan, which accommodates planned growth in the surrounding area. Construction of a new library would not result in any substantial physical impacts specific to public services that are not already an inherent part of overall project impacts. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of library services. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

18 PUBLIC UTILITIES

INTRODUCTION

This chapter addresses wastewater and solid waste. The analysis describes relevant master planning of the utility services and whether the infrastructure and demands of the project and within the initial phases of development in District 1 and District 2 are consistent with the utility master plans. The WJHMP is intended to build upon the existing assets and opportunities of the plan area and guide future development in a manner consistent with adjacent development and the General Plan's goals and policies, including those related to public utilities.

Comments related to wastewater and adequate municipal services for the plan area were submitted in response to the notice of preparation (NOP). One comment from Sacramento Regional County Sanitation District (Regional San, now part of Sacramento Area Sewer District [SacSewer]) expressed concern about on-site and off-site environmental impacts of utilities, which are addressed below. There were no comments related to solid waste, communication, stormwater management, or natural gas service availability. For a discussion of water supply and associated water infrastructure needs, refer to Chapter 20, "Water Supply." Electrical infrastructure is evaluated in Chapter 11, "Energy." The NOP and comments received in response to it are presented in Appendix A.

ENVIRONMENTAL SETTING

URBAN SERVICES BOUNDARY

With the exception of 69 acres, the plan area is located outside, but immediately adjacent to, the existing Urban Policy Area and is within the Urban Services Boundary (USB). The USB identifies the limits of the area where unincorporated urban growth is expected to occur beyond the 20-year General Plan planning period and indicates the ultimate boundary of the urban area in the unincorporated county. This boundary is based upon jurisdictional, natural, and environmental constraints to urban growth. Originally established with the 1993 County General Plan, it was refined as a part of the County's 2011 General Plan Update. The purpose of the USB is to allow for the planning of necessary infrastructure, such as sewer pipelines, which have service lives longer than 20 years (Sacramento County 2016; SacSewer 2020). Several service providers have developed long-range infrastructure master plans based on the USB boundaries.

SEWER SERVICE

SACRAMENTO AREA SEWER DISTRICT

SacSewer provides local wastewater collection and conveyance services and infrastructure throughout the Sacramento region. SacSewer maintains and provides wastewater collection and conveyance from the local residences and businesses in the urbanized, unincorporated areas of Sacramento County; the cities of Elk Grove, Rancho Cordova, and Citrus Heights; portions of the city of Sacramento; and a small area in the city of Folsom. The service area covers approximately 270 square miles and has a population of over 750,000. SacSewer funds and maintains sewer trunk (1 million gallons per day [mgd] and greater) conveyance facilities and maintains collector/local conveyance facilities. SacSewer operates both the smaller local pipelines and the larger regional interceptors. The *SacSewer Sewer System Capacity Plan: 2020 Update* contains planning information to address existing and buildout sewer capacity needs for its service area (SacSewer 2020).

The plan area is within SacSewer's existing service area and there is existing infrastructure in the plan area, including gravity mains, force mains, and interceptors. Sewer service to the plan area would be provided via the existing Central Interceptor located in South Watt Avenue at the western edge of the plan area, the existing Northeast Interceptor along Fruitridge Road (located in the northwest portion of the plan area), and the existing Bradshaw Interceptor along Bradshaw Road (located in the central portion of the plan area). Except for these interceptor sewers, sewer facilities are limited within the plan area (Wood Rodgers 2014). Existing sewer infrastructure is shown on Figure 2-11 in Chapter 2, "Project Description."

Further, the plan area is within the study area for SacSewer's Sewer System Capacity Plan. The Sewer System Capacity Plan identifies future trunk expansion sheds around the plan area and assumes flow from an average of six equivalent single-family dwellings (ESDs) per acre in the area (SacSewer 2020). Proposed facilities identified in the 2020 Sewer System Capacity Plan that would serve the plan area include the CE Gravel West Trunk, BR Gravel East Trunk, BR Florin Trunk and BR Elder Creek Trunk. Sewer conveyance in the region would be built into the roadways.

ECHOWATER RESOURCE RECOVERY FACILITY

As indicated above, wastewater flows collected from SacSewer's interceptors are ultimately transported into the EchoWater Resource Recovery Facility. The EchoWater Project is located northwest of Elk Grove and is owned and managed by SacSewer. Currently, the EchoWater Project has a National Pollutant Discharge Elimination System (NPDES) permit issued by the Central Valley Regional Water Quality Control Board (RWQCB) for discharge of up to 181 mgd average dry-weather flow of treated effluent into the Sacramento River. As of 2023, the EchoWater Project received and treated an average of 135 mgd each day, which was released for discharge and water recycling programs, namely the Harvest Water Project, one of the largest agricultural water recycling projects in the State of California (Regional San 2023).

Updates to the EchoWater Resource Recovery Facility were completed in 2023 to achieve permit and settlement requirements for ammonia and nitrate and compliance with pathogen requirements. The updates to the EchoWater Project are designed to remove 99 percent of ammonia and 89 percent of nitrogen from the wastewater through tertiary treatment. The result of this upgrade is cleaner treated water for discharge to the Sacramento River, which benefits the Sacramento-San Joaquin Delta downstream. The expansion also provides a drought-resistant source of recycled water for non-potable uses—like irrigating local agriculture and supporting habitat land for the Harvest Water program (Regional San 2023).

With conservation measures over the past three decades, per capita water use has decreased, which is a trend that is expected to continue (Regional San 2014: 6-2). In 2014, SacSewer (then Regional San) predicted that per capita consumption would fall 25 percent over the next 20 or more years through the ongoing installation and use of water meters, as well as compliance with recent conservation mandates. As such, substantial additional conservation is expected throughout the service area, which would allow the existing 181 mgd average dry-weather flow capacity to be adequate for at least 40 more years (Regional San 2014:6-2).

Stormwater Drainage

Stormwater is runoff from rain that drains off surfaces such as rooftops, paved streets, highways, or parking lots and can carry with it pollutants such as oil, pesticides, herbicides, sediment, trash, bacteria, and metals. The runoff can then drain directly into a local stream, lake, or bay. Often, the runoff drains into storm drains that eventually drain untreated runoff into a local water body.

Stormwater in the plan area historically flowed to Morrison Creek and Elder Creek. There is no formal stormwater infrastructure in the plan area; however, several previously mined areas now retain stormwater, connected by conveyor tunnels at South Watt Avenue, Hedge Avenue, Bradshaw Road, Jackson Road, and Fruitridge Road (Wood Rodgers 2022). Refer to Chapter 14, “Hydrology, Drainage, and Water Quality,” for further discussion of existing hydrology in the plan area.

Electricity and Natural Gas

In the WJHMP area, electricity is provided by Sacramento Municipal Utility District (SMUD), and natural gas service is provided by Pacific Gas and Electric Company. SMUD has existing 12-kilovolt and 69-kilovolt electric transmission and bulk substation infrastructure in the plan area. Chapter 9, “Climate Change,” and Chapter 11, “Energy,” include more information on climate change initiatives to reduce the demand for natural gas and electricity in the plan area.

Communications

Communication services in the plan area for mobile communication and wireless networks include the following providers: Frontier Communications, Consolidated Communications, and AT&T. These providers offer both voice and data communication services.

Solid Waste

Sacramento County Department of Waste Management and Recycling

Sacramento County Department of Waste Management and Recycling provides solid waste, recycling, and green waste services within the plan area. Services for residential homes include weekly garbage collection, bi-weekly collection of mixed recyclables, bi-weekly collection of green waste, monthly street sweeping and one annual appointment-based bulky waste collection. Solid waste and recycling services for multi-family apartments (five units or more), commercial and business solid waste services are performed on a contract basis with franchised haulers that are permitted to provide services in Sacramento County.

Kiefer Landfill

The Waste Management and Recycling Department operates the Kiefer Landfill at Keifer Boulevard and Grant Line Road. Kiefer Landfill is classified as a Class III municipal solid waste landfill and is permitted to accept general residential, commercial, and industrial refuse for disposal, including municipal solid waste, construction and demolition debris, green materials, agricultural debris, dead animals, and other designated debris. The landfill facility occupies 1,084 acres and is surrounded by a 3,000-acre open space buffer. The landfill itself occupies a 250-acre footprint and is permitted to grow to up to 660 acres in size. As of 2017, it had a remaining capacity of over 77 million cubic yards and has increased sustainable practice programs to continue to serve the region (Sacramento County 2017). Kiefer Landfill's anticipated "ceased operations date" (the estimated date when the facility will reach its permitted capacity), which anticipates future growth, is 2064 (CalRecycle 2023).

Regulatory Setting

Federal

Clean Water Act

The Clean Water Act (CWA) employs a variety of regulatory and nonregulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The US Environmental Protection Agency (EPA) established primary drinking water standards in Section 304 of the CWA. States are required to ensure that the public's potable water meets these standards.

Section 402 of the CWA creates the NPDES regulatory program. Point sources must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). NPDES permits cover various industrial and municipal discharges, including discharges from storm sewer systems in larger cities, stormwater associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre, and mining operations. All so-called "indirect" dischargers are not required to obtain NPDES permits. "Indirect" dischargers send wastewater into a public sewer

system, which carries it to the municipal sewage treatment plant, through which it passes before entering a surface water.

The Municipal Stormwater Permitting Program regulates stormwater discharges from municipal separate storm sewer systems (MS4s). Sacramento County is an MS4 co-permittee with the Cities of Citrus Heights, Folsom, Galt, Rancho Cordova, Sacramento, and Elk Grove. NPDES permits are issued for 5-year terms.

The quality of the effluent that can be discharged to waterways in the Sacramento area by the SRWTP is established by the Central Valley RWQCB through waste discharge requirements (WDRs) that implement the NPDES permit. WDRs are updated at least every 5 years. A new permit must be issued in the event of a major change or expansion of the facility. In April 2021, the Central Valley RWQCB issued Order No. R5-2021-0019-01, NPDES No. CA 0077682, to SacSewer (then Regional San) for the Echo Water facility, which treats wastewater from its service area before discharging the treated effluent into the Sacramento River. The Central Valley RWQCB amended the NPDES permit (R5-2021-0019-01) to include the production of recycled water by the EchoWater Project in accordance with the 2018 conditionally accepted Title 22 Engineering Report by the Division of Drinking Water. The water quality objectives established in the Central Valley RWQCB Basin Plan are protected, in part, by Order No. R5-2021-0019-01, NPDES No. CA 0077682. Currently, the SRWTP is permitted for a discharge of up to 181 mgd of treated effluent into the Sacramento River.

STATE

CALIFORNIA INTEGRATED WASTE MANAGEMENT ACT AND CALRECYCLE

The Integrated Waste Management Act of 1989 is the result of two pieces of legislation, Assembly Bill (AB) 939 and Senate Bill (SB) 1322, which created the California Integrated Waste Management Board (later renamed the California Department of Resources Recycling and Recovery [CalRecycle]). The Integrated Waste Management Act mandated a goal of 25 percent diversion of each city's and county's waste from disposal by 1995 and 50 percent diversion in 2000, with a process to ensure environmentally safe disposal of waste that could not be diverted.

CalRecycle is the state agency designated to oversee, manage, and track California's 92 million tons of waste generated each year. They provide grants and loans to help California cities, counties, businesses and organizations meet the state's waste reduction, reuse and recycling goals.

SB 1016, signed into law on September 26, 2008, represents a fundamental shift in the way local jurisdictions are measured for compliance with state diversion mandates. Jurisdictions are now evaluated based on the implementation of programs that measure per capita waste disposal, rather than diversion percentage.

SB 1383, signed into law in 2016, requires that organic materials are kept out of landfills and targets a 50 percent reduction of statewide organic waste disposal from the 2014 level by 2020, and a 75 percent reduction by 2025. The bill grants CalRecycle

regulatory authority to achieve the organic waste disposal reduction targets and establishes an additional target that no less than 20 percent of currently disposed edible food is recovered for human consumption by 2025.

LOCAL

SACRAMENTO COUNTY CODE

County Code 6.32.005, On-site Management of Wastewater provides a comprehensive on-site wastewater management program by adopting minimum standards for the siting, design, construction, installation, repair, modification, operation, replacement, maintenance, monitoring, and destruction of on-site wastewater treatment systems and for the storage, processing, treatment, handling and transportation of wastewater in Sacramento County.

SACRAMENTO AREA SEWER DISTRICT SYSTEM CAPACITY PLAN

SacSewer's System Capacity Plan comprehensively addresses existing and buildout sewer capacity needs. Existing capacity needs are based on SacSewer's current sewer system conditions. Buildout capacity needs are based on providing sewer service to the entire SacSewer service area in the future. The plan estimates ESDs and updates the conceptual plans for providing sewer service to future development.

SACRAMENTO REGIONAL SOLID WASTE AUTHORITY

The Sacramento Regional Solid Waste Authority (SWA) is a joint powers authority of Sacramento County and the City of Sacramento. SWA was formed in December 1992 to assume responsibility for solid waste, recycling, and disposal needs for businesses and apartment complexes in the Sacramento area. SWA regulates commercial solid waste collection by franchised haulers and offers recycling services to multi-family dwelling units.

SWA ORDINANCES

The SWA has adopted three recycling ordinances that target three distinct waste streams: (1) the Business Recycling Ordinance, adopted in 2007 for commercial generators who subscribe to 4 cubic yards or more of refuse service per week; (2) the Certification of Construction and Demolition (C&D) Debris Sorting Facilities Ordinance, adopted in 2008, which creates a program for mixed C&D facilities that dovetails with both city and county C&D ordinances for builders; and (3) the Multifamily Recycling Ordinance, adopted in 2009, which requires owners of multifamily properties with more than five units to subscribe to a recycling service for their tenants.

WEEKLY CURBSIDE ORGANICS COLLECTION

To comply with SB 1383 and CalRecycle's green waste targets, curbside green waste collection began in SWA territory in 2022. All residents must separate organics from their garbage and put organic material into the organics waste bin.

SACRAMENTO COUNTY 2030 GENERAL PLAN

The majority of the policies in the General Plan pertain to service providers and not to development projects. The policies in the Public Facilities Element that support the County's Solid Waste Services strategies and are relevant to the project relate to fees to support adequate waste facilities. The following policies of the 2030 General Plan would apply to the project:

- **Policy LU-62.** Community and Specific Plans for agricultural-residential areas shall provide for the extension of public sewer and water systems to one and two acre lots.
- **Policy LU-73.** Sewer and water treatment and delivery systems shall not provide for greater capacity than that authorized by the General Plan.
- **Policy LU-109.** County departments shall coordinate implementation of electric service delivery, air quality, water supply, transportation, drainage/flood control, solid waste disposal/recycling, and hazardous waste management plans in conjunction with vested public and quasi-public agencies.
- **Policy PF-6.** Interceptor, trunk lines, and flow attenuation facilities shall operate within their capacity limits without overflowing.
- **Policy PF-7.** Although sewer infrastructure will be planned for full urbanization consistent with the Land Use Element, an actual commitment of additional sewer system capacity will be made only when the land use jurisdiction approves development to connect and use the system.
- **Policy PF-8.** Do not permit development which would cause sewage flows into the trunk or interceptor system to exceed their capacity.
- **Policy PF-9.** Design trunk and interceptor systems to accommodate flows generated by full urban development at urban densities within the ultimate service area. System design may take into consideration land that cannot be developed for urban uses due to long-term circumstances including but not limited to conservation easements, floodplains, public recreation areas etc. This could include phased construction where deferred capital costs are appropriate.
- **Policy PF-10.** Development along corridors identified by the Sanitation Districts in their Master Plans as locations of future sewerage conveyance facilities shall incorporate appropriate easements as a condition of approval.
- **Policy PF-11.** The County shall not support extension of the regional interceptor system to provide service to areas within the unincorporated County which are beyond the Urban Service Boundary. This shall not prohibit the County from supporting the extension of the regional interceptor system to areas outside the USB which are being proposed for annexation to a city.
- **Policy PF-14.** Independent community sewer systems shall not be established for new development.

- **Policy PF-15.** Support CSD-1 and SRCSD policies to fund new trunk and interceptor capital costs through connection fees for new development.
- **Policy PF-16.** Support SRCSD policy to fully fund treatment plant operation through monthly service charges to system users. Fund treatment plant expansion and upgrades and existing trunk and interceptor replacements or improvements through connection fees or other revenue sources.
- **Policy PF-18.** New development projects which require extension or modification of the trunk or interceptor sewer systems shall be consistent with sewer facility plans and shall participate in established funding mechanisms. The County should discourage development projects that are not consistent with sewer master plans or that rely upon interim sewer facilities, particularly if the costs of those interim facilities may fall on ratepayers. Prior to approval of a specific Commercial Corridor redevelopment project which requires extension or modification of the trunk or interceptor sewer systems, a sewer study and financing mechanism shall be prepared and considered along with the proposed Corridor redevelopment project, in consultation with the Sacramento Area Sewer District.
- **Policy PF-19.** Extension or modification of trunk or interceptor sewer systems that are required for new developments shall be consistent with sewer facility plans and shall participate in an established funding mechanism. New development that will generate wastewater for treatment at the SRWTP shall not be approved if treatment capacity at the SRWTP is not sufficient to allow treatment and disposal of wastewater in compliance with the SRWTP's NPDES Permit.
- **Policy PF-20.** Support the implementation of recycling programs for the unincorporated area of Sacramento County through the Source Reduction and Recycling Element of the County Integrated Waste Management Plan in order to meet the requirements of AB 939.
- **Policy PF-23.** Solid waste collection, handling, recycling, composting, recovery, transfer and disposal fees shall recover all capital, operating, facility closure and maintenance costs.
- **Policy PF-24.** Solid waste disposal fees and rate structures shall reflect current market rates and provide incentives for recovery.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan, which was developed in 1985, provides guidance for growth and development in the community planning area. Policies identified in the plan that are applicable to the WJHMP include:

- **Policy PF 1.** To provide adequate and appropriate infrastructure and public service to all residents and businesses of the Vineyard community.
- **Policy PF 2.** Restrict the premature or unnecessary extension of public sewage systems into or through open, undeveloped areas which would promote non-contiguous development.
- **Policy FU 3.** All types of urban development proposals must be accompanied by a detailed public service plan and specific timing and funding programs for the implementation and maintenance of services.
- **Policy FU 4.** Urban developers shall provide public sewer and surface water facilities and shall bear the full cost of providing these facilities within the proposed development and a fair share of any associated costs outside the development.
- **Policy FU 6.** Water conservation, waste handling and energy-efficient designs at least to minimum County standards will be encouraged in all residential developments.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan, which was last updated in 2003, provides guidance for both new development and the redevelopment of existing land uses within the community planning area. Objectives identified in the plan that are applicable to the WJHMP include:

- **Objective PS-1.** Provide a well-planned sewer service with adequate capacity to serve the community and accommodate new growth areas during the identified planning period.
- **Objective PS-4.** Provide and maintain a solid waste collection and disposal service for all areas of the community, while reducing the amount of solid waste generated within the community area through reduction and recycling.
- **Objective PS-6.** Ensure the availability and accessibility of public services for all segments of the population.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

An impact related to wastewater or solid waste would be significant if implementation of the project would:

- require or result in the relocation or construction of new or the expanded wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction of which could cause environmental effects;

- result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or
- result in non-compliance with federal, state, and local management and reduction statutes and regulations related to solid waste.

Issues Not Discussed Further

Adverse Effects Associated with Construction of Natural Gas Infrastructure

The WJHMP would be an all-electric development; no natural gas infrastructure has been planned for future buildings. As a result, there would be no potential for adverse effects associated with construction of natural gas infrastructure to serve the project. This issue is not discussed further.

Compliance with Federal, State, and Local Management and Reduction Statutes and Regulations Related to Solid Waste

Future development of the plan area would generate solid waste associated with domestic use (e.g., food waste, paper, limited medical-related waste) and construction-related waste from grading, clearing, and erecting buildings. Construction and operation of the future development in the plan area would follow all relevant federal, state, and local statutes and regulations associated with collection and disposal of waste generated at the site. Thus, there would be no impact related to violation of solid waste laws and regulations. This topic is not discussed further.

Methodology

The following analysis is based on the estimated population, buildout assumptions from the WJHMP, and land use plans described in Chapter 2, "Project Description," as well as applicable utility master plans to assess existing public utilities capacity and future needs. The analysis of sewer capacity is based on the results of a study that was prepared for the WJHMP by design firm Wood Rodgers to estimate service standards and needs for the sewer service to the plan area. The generation rates published by the applicable oversight agencies have been applied to determine the potential volume of wastewater and solid waste produced under full buildout of the WJHMP. Disposal rates and landfill estimates are drawn from CalRecycle data. The data is compared to the available capacity of the infrastructure to determine if the WJHMP can be accommodated, or if additional capacity would be needed.

WEST JACKSON HIGHWAY MASTER POLICIES

The WJHMP includes the following policies related to public infrastructure:

- **Policy 7.1.** Future developments within the Plan Area shall coordinate with local service purveyors to ensure the provision of services in conjunction with project phasing.
- **Policy 7.3.** Adequate wastewater infrastructure shall be installed to meet the needs of the Plan Area.

IMPACTS AND ANALYSIS

IMPACT PU-1: RESULT IN ADVERSE EFFECTS ASSOCIATED WITH CONSTRUCTION OF EXPANDED WASTEWATER TREATMENT INFRASTRUCTURE

Development of the WJHMP would require increased municipal wastewater service. As indicated in Chapter 2, “Project Description,” the project would include annexation of the plan area into the Urban Planning Area. With annexation, SacSewer would be the local wastewater collector and continue to build infrastructure to accommodate development as it occurs. SacSewer already operates gravity mains, force mains, and interceptors in the plan area.

Through Policy 7.3, the WJHMP commits to the installation of wastewater infrastructure that adequately meets the needs of the plan area. Generally, future development would connect to the existing infrastructure within and immediately adjacent to the plan area. As described further below, the impacts associated with construction of infrastructure within the boundaries of the plan area would be within the scope of the analysis presented throughout this EIR. The Sanitary Sewer Study (Wood Rodger 2023), which has been reviewed by SacSewer, also identified limited offsite improvements that would be necessary to provide service to the plan area.

As illustrated in Figure 2-11 and described above, there are two existing interceptor lines within the plan area, the Bradshaw Interceptor and the Northeast Interceptor. In addition, the Central Interceptor is located within South Watt Avenue at the western boundary of the plan area. The interceptors connect to drain south and west to the EchoWater Resource Recovery Facility. A new interceptor is proposed along Florin Road. From Excelsior Road west to the edge of the plan area near Bradshaw Road, the construction of this trunk line would occur within the road right of way and the area of disturbance assumed throughout this EIR. From the edge of the plan area to the existing Bradshaw Interceptor along Morrison Creek (approximately 1.5 miles), the new interceptor would be constructed within the right of way of Florin Road outside of the plan area. Similarly, trunk line extensions would occur along Jackson Highway for approximately 0.5 mile east of the plan area and less than 0.5 mile along Elder Creek Road between Hedge Avenue and South Watt Avenue. Substantial adverse

environmental effects are not anticipated to result from construction of this infrastructure within the previously disturbed and actively managed roadways.

The Sanitary Sewer Study demonstrates that it is possible to provide sewer service for the project and technical compliance with the Sewer System Capacity Plan (SacSewer 2020). The study creates a schematic of backbone trunk system but does not include lateral mains because street patterns are not yet defined in the WJHMP area. The new infrastructure required for the project would be located within road rights-of-way. Major sheds in the plan area were divided into sub-sheds and combined, were possible, to limit infrastructure needs, and then assigned estimated ESDs, which are used to analyze contributions to nodes on the collection system. The areas that were mined would need to be serviced by lift stations due to the resultant topographic variations of the plan area. Areas that were not mined within the WJHMP would use a gravity main to sewer the sub-sheds. Necessary infrastructure size was calculated with an iterative process and phasing was created to serve initial construction within the WJHMP area.

The Sacramento County Code regulates public sewage systems within the county. The County Code Chapter 6.32 and NPDES General Construction Permit regulate on-site management of wastewater and land grading and erosion control requirements for construction related to connection, design, and operation of wastewater systems to ensure public safety and to lessen environmental impacts. Wastewater service for proposed development is subject to regulatory review and compliance with the System Capacity Plan (SacSewer 2020) to minimize environmental effects of wastewater system expansion.

For areas outside of the urbanized area, SacSewer's Sewer System Capacity Plan assumes that potential densities could be similar to those projected for near-term urban development. The Sanitary Sewer Study assumes that the project would generate 27,133 ESDs, with an average density of 4.6 ESDs per acre over the 5,913 acres of the plan area, and demonstrates the system capacity is adequate with build out of lift stations and associated trunk lines in the WJHMP area (Wood Rodgers 2023). The Sanitary Sewer Study demonstrates consistency with the assumptions in SacSewer's 2020 Sewer Capacity Plan, and compliance with Sacramento County 2023 General Plan Policies PF-9 and PF-18, which would require sewer systems to accommodate flows generated by urban development in the service area while being in compliance with sewer facility plans.

Construction of wastewater infrastructure would require ground disturbance and trenching within the plan area. These activities are within the scope of the development identified for the WJHMP and the effects are evaluated throughout this EIR. For example, Chapter 6, "Air Quality," Chapter 9, "Climate Change," and Chapter 16, "Noise," evaluate increases in air pollutant and greenhouse gas emissions, and noise levels associated with all construction activities, including any ground disturbance needed for connecting to existing water infrastructure, as well as increases in emissions associated with the project's water demands. Chapter 8, "Biological Resources," evaluates the effects of ground disturbance on habitats and special status species. Chapter 10, "Cultural Resources," evaluates the potential impacts that trenching and

excavation, including any ground disturbance needed for connecting to existing water infrastructure, may have on buried resources. Chapter 12, “Geology, Soils, and Mineral Resources,” Chapter 13, “Hazards and Hazardous Materials,” and Chapter 14, “Hydrology, Drainage, and Water Quality,” evaluate the potential impacts that trenching and excavation, including any ground disturbance needed for connecting to existing infrastructure, may have related to erosion and siltation, degradation of water quality, and the release of contamination into the environment.

The anticipated demand for sewer services and proposed on- and off-site wastewater infrastructure would be consistent with regional projections developed by SacSewer. Implementation of the mitigation measures identified throughout this EIR and compliance with the Sacramento County Code and General Construction Permit would address areas of potential effects associated with the construction of necessary infrastructure within the plan area. The limited off-site wastewater trunk line and interceptor connections would not be anticipated to result in substantial adverse environmental effects due to location within developed road rights of way with the implementation of standard best practices. There would be a **less-than-significant** impact associated with construction of expanded wastewater treatment infrastructure.

Mitigation Measures

No mitigation is required in addition to the measures proposed for other ground-disturbing activities associated with the project.

Impact PU-2: Result in Adverse Effects Associated with Construction of Stormwater Infrastructure

The WJHMP includes a stormwater delivery and storage network within the plan area and would not require off-site infrastructure improvements. The master drainage system features a trunk drainage conveyance system that includes culverts that are designed to distribute stormwater flows to a concentrated network of 26 detention basins. The detention basins would attenuate the stormwater flows, discharging through gravity or managed pumping to the planned Rock Creek Parkway open drainage channel, Morrison Creek, or Elder Creek. The WJHMP has incorporated low-impact design and runoff reduction features for stormwater improvement facilities within the planning document. Piped drainage systems are proposed to connect the development to the basin detention system. The pipes would discharge to either a constructed natural channel along the future Rock Creek Parkway or detention basins prior to being discharged to Morrison or Elder Creeks. The pipes to connect the drainage systems would be constructed along roadways and trails to the extent possible and would be between 8 and 36 inches in diameter throughout the system. As described above in Impact PU-1, the physical environmental effects of constructing this infrastructure are evaluated throughout this EIR.

The detention basins and piped stormwater drainage systems would be designed to reduce adverse effects of construction, operation, and maintenance of stormwater infrastructure through compliance with the Stormwater Quality Design Manual for the

Sacramento Region, NPDES General Construction Permit to regulate land grading and erosion control requirements for construction related to connection, design, and operation of drainage systems to ensure public safety and to lessen environmental impacts, storm water pollution prevention plans, required stormwater best management practices, General Plan policies, and low-impact design features.

Construction of stormwater infrastructure would require ground disturbance and trenching within the plan area. As discussed above in Impact PU-1, these activities are within the scope of the development identified for the WJHMP and the effects of these facilities are evaluated throughout this EIR. Stormwater infrastructure within the plan area would not generate separate or additional environmental effects. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required in addition to the measures proposed for other ground-disturbing activities associated with the project.

Impact PU-3: Result in Adverse Effects Associated with Construction of Electric Power and Telecommunications Facilities

The WJHMP would demand substantially more energy than is currently used in the plan area, particularly due to growth related to new residences, office space, and retail. Telecommunication facilities would be installed to provide internet services to residential and nonresidential buildings. The types of impacts anticipated to result from implementation of the WJHMP would include the construction of new electrical substations infrastructure, in addition to the existing bulk substation, and the construction or undergrounding of energy transmission and/or distribution lines. These infrastructure improvements would be within the plan area and are comprehensively analyzed in this EIR. For example, distribution lines to individual parcels would be extended from existing infrastructure adjacent to and within the WJHMP area as development occurs. The potential for cumulative development in the Jackson Highway area to result in additional infrastructure demands is discussed in Chapter 21, "Summary of Impacts and Their Disposition." Refer to the "Cumulative Impacts" subsection for a discussion of offsite electrical facilities that could result from cumulative energy demand in the area. The providers would review future tentative subdivision maps at the time of future entitlement requests and provide the requirements to extend service for telephone, cable TV, and high-speed data line services to each map area at the time of the processing of the map. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required in addition to the measures proposed for other ground-disturbing activities associated with the project.

IMPACT PU-4: EXCEED THE CAPACITY OF THE WASTEWATER TREATMENT PROVIDER

As discussed above, the EchoWater Project is permitted to treat and release 181 mgd of wastewater into the Sacramento River. With conservation measures over the past three decades, per capita water use has decreased, which is a trend that is expected to continue (Regional San 2014: 6-2). As of 2023, the EchoWater Project received and treated an average of 135 mgd each day (Regional San 2023). That leaves a capacity for 46 mgd of wastewater that could be treated at the facility. The 2023 Sewer Study Amendment for the WJHMP area notes that approximately 27,133 ESD's (or 8.4 mgd average dry weather flow) of wastewater would be generated from the project (Wood Rodgers 2023). This estimated wastewater use number is based on the 2013 SacSewer Standards and Specifications (Wood Rodgers 2023). The project is proposed to span 5,913 acres, which would mean the project would generate approximately 8.4 mgd of average dry weather flow of wastewater that would be treated at the EchoWater facility.

Implementing the project would increase the existing treatment plant flows but would be within EchoWater's 181 mgd daily capacity and SacSewer's System Capacity Plan. Therefore, it is anticipated that EchoWater would have adequate capacity to treat wastewater flows generated by future development. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT PU-5: GENERATE SOLID WASTE IN EXCESS OF STATE STANDARDS OR IN EXCESS OF THE CAPACITY OF LOCAL INFRASTRUCTURE

Buildout of the project would result in approximately 45,661 new residents. CalRecycle estimates a daily per resident disposal rate of 6.7 pounds (CalRecycle 2021). This results in an estimated generation rate of 139 tons per day upon buildout of the project that would be collected by the County and transferred to Kiefer Landfill. CalRecycle reports that in 2022 unincorporated Sacramento County disposed of 4.6 pounds per day per resident, which is below the area's target of 7.7 pounds per day per resident and is in compliance with AB 939's waste diversion requirements (CalRecycle 2022). This estimate is less than the statewide average, which Keifer Landfill would continue to be able to accommodate, see Table 18-1. Kiefer Landfill's permitted capacity is approximately 117 million cubic yards. As of 2005, the landfill had a remaining capacity of approximately 113 million cubic yards (i.e., 96 percent remaining) (CalRecycle 2023). The estimated closure date for Kiefer Landfill is 2064. The project would produce less than 1 percent of the 10,815-ton permitted daily throughput for the facility. This small increase in solid waste would not consume a substantial proportion of the available permitted capacity and would not result in the need to expand or construct new landfill facilities.

Table 18-1 Solid Waste Contributions to Keifer Landfill

California Average Solid Waste Disposal (lbs/person/day)	Estimated Waste Generation (tons/day)	Unincorporated Sacramento County Average Solid Waste Disposal (lbs/person/day)	Estimated Waste Generation (tons/day)	Keifer Landfill Daily Limit (tons)
6.7	138.8	4.6	95.27	10,815
Percentage of Keifer Landfill daily permitted capacity	**1.2%**		**0.8%**	

Notes: lbs = pounds; 1 ton is equal to 2,204.6 lbs.

Sources: CalRecycle 2021, 2022; Sacramento County 2016.

With the implementation of SB 1383 (2016) Sacramento County now offers weekly organic waste collection services to residents. As the program gains popularity and as residents become familiar with the program, more waste will be diverted from the landfill per capita. Due to increasing green waste diversions, the above estimations of the WJHMP contributing 1 percent of Keifer's Landfill's daily throughput is conservation. The use of organic waste collection will contribute less waste to the Kiefer Landfill and may, therefore, cause less impact than analyzed above on Keifer Landfill from the WJHMP development.

Based on the available capacity of Kiefer Landfill, the rise in green waste diversions from the landfill waste stream, the portion of the permitted capacity that the WJHMP is estimated to use, and the estimated closure date for the landfill, the WJHMP would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. Commercial and industrial waste generated by the project would be collected by franchise haulers and may be transported to landfills outside of the county. The impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

19 TRANSPORTATION

INTRODUCTION

This chapter evaluates the potential transportation impacts resulting from implementation of the WJHMP. It describes the applicable federal, state, and local transportation regulations and policies; discusses the existing roadway network and transportation facilities within the WJHMP area; and analyzes the potential impacts from implementation of the WJHMP on the transportation system. Mitigation measures that would reduce impacts, where applicable, are also discussed. The analysis in this chapter is based on analyses and findings of the Local Traffic Study and the Vehicle Miles Traveled (VMT) Analysis Memos prepared for the WJHMP (DKS Associates 2024; DKS Associates 2023; Kimley-Horn 2023), which evaluate the effects of the WJHMP based on County CEQA significance thresholds contained within the County General Plan and Transportation Analysis Guidelines (TAG). Pursuant to Senate Bill (SB) 743, Public Resources Code Section 21099, and California Code of Regulations Section 15064.3(a), generally, VMT is the most appropriate measure of transportation impacts and a project's effect on automobile delay shall no longer constitute a significant impact under CEQA. Please note that the Local Traffic Study used level of service (LOS) as the metric to determine impacts related to traffic operations which informed the safety hazards analysis herein (Impact TR-4 below). The Local Traffic Study and VMT Memos are included as Appendix K of this EIR.

Comments received regarding transportation in response to the notice of preparation (NOP) expressed concerns about bicycle and pedestrian facilities, transportation demand management, and access to public transit. As detailed above, the transportation analysis herein evaluates impacts using VMT and does not include LOS analysis as it relates to vehicle delay. Therefore, comments related to congestion are not addressed herein. The NOP and comments received in response to it are presented in Appendix A.

ENVIRONMENTAL SETTING

This section describes the existing environmental setting, which is the baseline scenario against which project-specific impacts are evaluated. The environmental setting for transportation includes descriptions of roadway, transit, bicycle, and pedestrian facilities.

ROADWAY SYSTEM

County roadways are classified as freeways, thoroughfares, arterials, collectors, and local streets. A description of each, as described in the County General Plan, is provided below:

- **Freeways** are multilane divided highways with a minimum of two lanes for the exclusive use of traffic in each direction and full control of access without traffic

interruption. Freeways provide for high-speed through-traffic movement on continuous routes. Freeways connect points within the county and link the county to other parts of the state. The following major freeways traverse the unincorporated county: Interstate (I)-5, I-80, State Route (SR) 99, SR 16, and United States (US) 50.

- **Thoroughfares** provide for mobility within the county, carrying through traffic on continuous routes and providing transportation links between major residential, employment, commercial, and retail areas.
- **Arterials** provide for a link between thoroughfares with their limited access and through movement capacity and collectors which have greater access and serve local streets. Arterials can also provide mobility and direct access within commercial and retail corridors through two-way left-turn lanes.
- **Collectors** provide for mobility within communities and connect local roads to thoroughfares and arterials.
- **Local streets** provide direct access to abutting property and connect with other local roads and collectors. Local streets are typically developed as two-lane undivided roadways (Sacramento County 2022a: 7-8).

Existing Roadways

The following key roadways provide regional and local access into the WJHMP area:

- **US 50** is an east-west freeway that extends from the I-80 junction in West Sacramento to Canal Street in the city of Placerville where it continues as a highway across the Sierra Nevada to South Lake Tahoe and Nevada.
- **SR 16**, also referred to as Jackson Highway, is a freeway that generally travels west-northwest to east-southeast from Folsom Boulevard to the west into Amador County to the east. It is generally a two-lane roadway with some wider width at intersections.
- **Bradshaw Road** is a north-south arterial roadway that crosses through the WJHMP area. To the north, Bradshaw Road provides access to US 50, Folsom Boulevard, and the city of Rancho Cordova. To the south, Bradshaw Road continues to Grant Line Road in the city of Elk Grove. Bradshaw Road has two to six through lanes.
- **Elder Creek Road** is an east-west collector roadway with two to four through lanes that crosses the WJHMP area. To the west, Elder Creek Road extends to Stockton Boulevard where it becomes 47th Avenue. To the east, Elder Creek Road extends to Excelsior Road.
- **Excelsior Road** is a two lane north-south minor collector roadway that forms the eastern boundary of the plan area. The roadway becomes Mather Boulevard north of the Independence at Mather community. To the south, Excelsior Road extends to Sheldon Road in the city of Elk Grove.

- **Florin Road** is an east-west arterial roadway that forms the southern boundary of a portion of the WJHMP area. To the west, Florin Road terminates at Riverside Boulevard in the Pocket area of the city of Sacramento. It provides access to SR 99 and I-5. To the east, Florin Road extends to Sunrise Boulevard. Florin Road has two to six through lanes.
- **Fruitridge Road** is an east-west arterial roadway that crosses and becomes a collector roadway within the WJHMP area. To the west, the roadway provides access to SR 99 and extends to South Land Park Drive in the city of Sacramento. To the east, Fruitridge Road extends to Mayhew Road. Fruitridge Road has two to four through lanes.
- **Kiefer Boulevard** is an east-west local roadway that crosses the WJHMP area. The roadway consists of two segments, divided by Mather Airport. The western segment extends from Florin-Perkins Road in the city of Sacramento through the Rosemont community to Happy Lane. This segment has two to four through lanes. East of Mather Airport, the roadway begins at Eagles Nest Road and continues easterly to Jackson Highway as a two-lane roadway.
- **Mayhew Road** is a north-south roadway that crosses the WJHMP area. The roadway consists of three segments. The northern segment, which is a two-lane major collector roadway with extra turning lanes, begins at Folsom Boulevard to the north and extends south to a dead-end in a residential area of the Rosemont community south of Oxwood Drive/Calibra Lane. The central segment, which is a two-lane local roadway, begins at a dead-end in a commercial area north of Jackson Highway and extends south to a dead-end south of Fruitridge Road. The southern segment, also a two-lane local road, extends northerly from Elder Creek Road to a dead-end. South of Fruitridge Road, the roadway continues as Mattos Lane.
- **South Watt Avenue** forms the western boundary of a portion of the WJHMP area. The north-south principal arterial roadway extends north to Folsom Boulevard where it becomes Watt Avenue. Watt Avenue provides access to US 50 and extends northerly across the American River. To the north, it provides access through northern Sacramento County to I-80 and into Placer County. To the south, South Watt Avenue extends to Florin Road, where it becomes Elk Grove Florin Road. Elk Grove Florin Road extends to Stockton Boulevard in the city of Elk Grove. South Watt Avenue has two to six through lanes.

Transit System

The Sacramento Regional Transit District (SacRT) operates over 82 bus routes (fixed-route, microtransit, and dial-a-ride), 44 miles of light rail, and Americans with Disabilities Act (ADA) paratransit services within a 440-square-mile service throughout Sacramento County. Buses operate daily from 5:00 a.m. to 11:00 p.m. every 15 to 60 minutes, depending on the route. Light rail transit (LRT) trains begin operation at 4:00 a.m. with service every 15 minutes during the day and every 30 minutes in the evening. Blue Line and Gold Line trains operate daily until approximately 12:30 a.m., and Green Line trains only operate Monday through Friday (SacRT 2023a). Passenger amenities include 53

LRT stations, 30 bus and light rail transfer centers, and 22 free park-and-ride lots. SacRT also serves over 3,200 bus stops throughout Sacramento County (SacRT 2023a).

SacRT Gold Line LRT service is located parallel to Folsom Boulevard north of the WJHMP area. Nearby stations include College Greens, Watt/Manlove, Starfire, Tiber, and Butterfield from west to east. The closest Gold Line LRT station is the Watt/Manlove station which is approximately 1 mile north of the WJHMP area. SacRT also contracts with the City of Rancho Cordova to operate the Rancho CordoVan shuttle services. There are three routes that serve the local communities in Rancho Cordova: Route 175, Route 176, and Route 177. The Rancho CordoVan stop that is nearest to the WJHMP area is located on Justinian Drive, approximately 2.8 miles east of the WJHMP area.

SacRT bus Route 72 runs along Keifer Avenue, north of the WJHMP area. The Route 72 bus stops nearest to the WJHMP area are located along Branch Center Road, approximately 0.18 miles west of the WJHMP perimeter. Elk Grove Commuter Route E19 runs northeast from Laguna and Harbor Point to Butterfield LRT on Bradshaw Road, which passes directly through the WJHMP area. There is a Route 19 bus stop located at Bradshaw Road and Kiefer Boulevard adjacent to the eastern perimeter of the WJHMP area. Table 19-1 includes additional information about the route, frequency, and span of Routes 72 and E19.

Table 19-1 SacRT Bus Route Schedule Summary

Route	Weekday		Saturday		Sunday and Holidays	
	Frequency (min)	Span	Frequency (min)	Span	Frequency (min)	Span
72 – Mather Field/Mills to Watt/Manlove	30	5:45 a.m. – 9:30 p.m.	60	7:30 a.m. – 9:00 p.m.	60	7:30 a.m. – 8:00 p.m.
E19 – Laguna & Harbor Point to Butterfield LRT	Laguna & Harbor Point to Butterfield LRT: • 3 morning buses approx. every 60 minutes starting at 4:45 a.m. • 1 afternoon bus at 3:30 p.m. Butterfield LRT to Laguna & Harbor Point: • 1 morning bus at 5:45 a.m. • 3 afternoon buses approx. every 60 minutes starting at 2:45 p.m.		No service	-	No service	-

Note: Schedule time span noted to the nearest 15 minutes.

Source: SacRT 2023a.

Bicycle System

The bicycle system in the county is composed of bikeways and shared use paths along with amenities that improve safety, comfort, and convenience for people biking. The County Active Transportation Plan classifies bicycle facilities into the following types (Sacramento County 2022a: 50):

- **Shared-Use Paths (Class I)**: Dedicated paths for walking and bicycling completely separate from the roadway.
- **Bicycle Lanes (Class II)**: Striped lanes for bicyclists. Bicycle lanes can also include striped "buffer" areas between the bicycle and travel lane or between the bicycle lane and parked cars (sometimes both).
- **Buffered Bicycle Lane (Class IIB):** Bicycle lanes that include a striped "buffer" area either between the bicycle lane and the travel lane or between the bicycle lane and parked cars (sometimes in both locations).
- **Bicycle Routes (Class III)**: Signed routes for bicyclists on low-speed, low-volume streets where roadway space is shared with motorists.
- **Bicycle Boulevard (Class IIIB)**: Routes on low-speed, low-volume streets where roadway space is shared with people driving, enhanced with traffic calming features or other treatments to prioritize the comfort of people biking.
- **Separated Bikeway (Class IV)**: On-street bicycle facilities with a physical barrier between the bicycle lane and motor vehicle lane(s). Barriers can include bollards, curbs, elevation, or parking. These facilities may be bidirectional or unidirectional.

As of 2022, the unincorporated county's bicycle system was comprised of approximately 304 miles of bicycle facilities including approximately 64 miles of shared-use paths, 224 miles of bicycle lanes, 2 miles of buffered bicycle lanes, and 14 miles of bicycle routes. There are Class II bicycle lanes present along South Watt Avenue and Bradshaw Road within the WJHMP area. The County's Active Transportation Plan recommends 108 miles of upgraded bicycle facilities and 1,110 miles of new dedicated bicycle corridors totaling 1,522 miles of recommendations across unincorporated Sacramento County (Sacramento County 2022a: 104).

Pedestrian System

The pedestrian system in the county is composed of sidewalks and shared use paths. The County Active Transportation Plan classifies pedestrian facilities into the following four types:

- **Vertical Curbs**: Curbs rise straight up to the sidewalk level and are the current standard within Sacramento County.
- **Rolled Curbs**: Curbs are sloped and can allow vehicles to encroach onto the sidewalk, providing more roadway width at the expense of pedestrian pathway conflicts.
- **Attached Sidewalks**: Connect directly to the curb and provide minimal lateral separation from the roadway.
- **Detached Sidewalks**: Separated from the curb with a buffer area, typically a planting strip or special paving material to provide greater separation from the roadway (Sacramento County 2022a: 39).

As of 2022, there were approximately 1,100 miles of roads throughout the unincorporated county. Approximately 13 percent of these roads had sidewalks on both sides of the street, 21 percent had sidewalks on one side of the street, and 66 percent of streets had no sidewalks (Sacramento County 2022a: 40). There are sidewalks along the eastern side of Bradshaw Road between Kiefer Boulevard and the southern edge of the Sacramento Municipal Utility District (SMUD) East Campus Operation Center; along the southern portion of Kiefer Boulevard between Bradshaw Road and the eastern frontage of the SMUD East Campus Operations Center; and along the Elder Creek Road/Bradshaw Road within the WJHMP area.

Regulatory Setting

Federal

No federal plans, policies, regulations, or laws related to transportation are applicable to the WJHMP. However, federal regulations related to the ADA, Title VI, and environmental justice relate to transit service.

State

California Department of Transportation

The California Department of Transportation (Caltrans) is the state agency responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as the segments of the Interstate Highway System that lie within California. Caltrans District 3 is responsible for the operation and maintenance of SR 16 that runs through the WJHMP area. Caltrans requires a transportation permit for any transport of heavy construction equipment or materials that necessitates the use of oversized vehicles on state highways.

Transportation Impact Study Guide

The Caltrans Transportation Impact Study Guide (TISG) was prepared to provide guidance to Caltrans Districts, lead agencies, tribal governments, developers, and consultants regarding Caltrans' review of a land use project or plan's transportation analysis using a VMT metric. This guidance is not binding on public agencies, and it is intended to be a reference and informational document. The TISG replaces the Guide for the Preparation of Traffic Impact Studies and is for use with local land use projects, not for transportation projects on the State Highway System (Caltrans 2020).

Senate Bill 743

SB 743, passed in 2013, required the Governor's Office of Planning and Research (OPR) to develop new State CEQA Guidelines that address traffic metrics under CEQA. As stated in the legislation, upon adoption of the new guidelines, "automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any."

OPR published its proposal for the comprehensive updates to the State CEQA Guidelines in November 2017, which included proposed updates related to analyzing transportation impacts pursuant to SB 743. These updates indicated that VMT would be the primary metric used to identify transportation impacts. In December of 2018, OPR published the most recent version of the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018), which provides guidance for VMT analysis. The Office of Administrative Law approved the updated State CEQA Guidelines and, as of July 1, 2020, implementation of California Code of Regulations Section 15064.3 of the updated CEQA Guidelines applies statewide.

Regional

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is an association that includes the Counties of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba. SACOG is required to prepare a long-range transportation plan and assists in planning for transit, bicycle networks, clean air, and airport land uses.

Metropolitan Transportation Plan/Sustainable Communities Strategy

As a metropolitan transportation organization, SACOG is responsible for preparing and updating the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) and the corresponding Metropolitan Transportation Improvement Program (MTIP) for the six-county Sacramento region. The MTP addresses all modes of transportation, including public transit, automobile, bicycle, and pedestrians, and is updated every 4 years. The purpose of the MTP/SCS is to establish regional access and mobility goals; identify present and future transportation needs, deficiencies, and constraints within the transportation system; analyze potential solutions; estimate available funding; and propose investments. On November 18, 2019, the SACOG Board of Directors adopted the 2020 update to the MTP/SCS (SACOG 2019). The next update to the MTP/SCS is scheduled for 2025.

Metropolitan Transportation Improvement Program

SACOG prepares and adopts the MTIP approximately every 2 years. The MTIP is a short-term listing of surface transportation projects that receive federal funds, are subject to federally required action, or are regionally significant. SACOG adopted the 2023-2026 MTIP in September 2022. The 2023-2026 MTIP covers 4 years of programming: federal fiscal years 2023-2026. The project listing in the MTIP provides a detailed description for each individual project in the 2023-2026 MTIP, including those in Sacramento County.

SACOG approved the *Regional Bicycle, Pedestrian, and Trails Master Plan* in April 2015. The plan envisions a complete transportation system that supports healthy living and active communities where bicycling and walking are viable and popular travel choices in a comprehensive, safe, and convenient network (SACOG 2015). The goals of the *Regional Bicycle, Pedestrian, and Trails Master Plan* inform the goals set forth in the County Active Transportation Plan. The *Regional Bicycle, Pedestrian, and Trails*

Master Plan is intended to guide the long-term decisions for the Bicycle and Pedestrian Funding Program. The projects included in the plan are regionally significant projects that require at least partial regional funding. This plan is not fiscally constrained, so it contains at least 20 years' worth of projects.

Sacramento Region Trail Network Action Plan

The Sacramento Region Trail Network Action Plan was adopted by SACOG in July 2022 (SACOG 2022). It establishes a vision for walking, biking, and rolling throughout the region by planning for a network of trails that reaches key destinations and closes existing gaps. The Sacramento Region Trail Network Action Plan establishes the baseline environment, identifies a proposed network of facilities, and sets forth goals for the regional trail network. The Regional Trail Network Action Plan prioritizes trails that would help meet regional goals, many of which are in Sacramento County and included in the County Active Transportation Plan.

Sacramento Regional Transit District Strategic Plan

SacRT's Strategic Plan outlines the highest priority projects that the agency will work on over the 2021-2025 fiscal years. The plan includes SacRT's mission, vision, and values; annual goals; specific work plan tactics; and introduces a comprehensive performance scorecard system that will be used to monitor organizational and division performance on a quarterly basis (SacRT 2020).

Sacramento Regional Transit District Design Guidelines for Bus and Light Rail Facilities

The SacRT Design Guidelines for Bus and Light Rail Facilities assist SacRT in providing consistent, high-quality facilities that encourage public transit operation. The guidelines provide a general framework for project development and design to promote convenient, comfortable, and safe bus and light rail facilities for transit users (SacRT 2023b).

Local

Sacramento County 2030 General Plan

The Circulation Element of the General Plan provides the framework for County decisions concerning the countywide transportation system, which includes various transportation modes and related facilities (Sacramento County 2022b). The Circulation Element also identifies measures to establish and support an integrated and balanced multi-modal transportation system. The following General Plan policies are applicable to the project:

- **Policy CI-1.** Provide complete streets to provide safe and efficient access to a diversity of travel modes for all urban, suburban and rural land uses within Sacramento County except within certain established neighborhoods where particular amenities (such as sidewalks) are not desired. Within rural areas of the County, a complete street may be accommodated through roadway shoulders of sufficient width or other means to accommodate all modes of travel.

- **Policy CI-2.** Promote continued mobility for individuals whose access to automobile transportation is limited by age, illness, income, desire, or disability.
- **Policy CI-3.** Travel modes shall be interconnected to form an integrated, coordinated and balanced multi-modal transportation system, planned and developed consistent with the land uses to be served.
- **Policy CI-4.** Provide multiple transportation choices to link housing, recreational, employment, commercial, educational, and social services.
- **Policy CI-5**. Land use and transportation and development should be cohesive, mutually supportive, and complement the objective of reducing per capita VMT. The standards shown in Table CI-1 [presented as Table 19-2 in this EIR] shall be used as thresholds of significance for all projects subject to CEQA. Where the VMT level standards of Table CI-1 [presented as Table 19-2 in this EIR] are predicted to be exceeded, all feasible mitigation measures shall be included to reduce projected VMT levels.

Table 19-2 Significance Thresholds for CEQA Transportation Analysis for Development Projects

Project Type[1]	VMT Significance Criteria
Residential	Project VMT per capita exceeds 85 percent of the regional average VMT per capita
Office/Business Professional	Project VMT per employee exceeds 85 percent of the regional average VMT per employee
Industrial	Project VMT per employee exceeds the regional average VMT per employee
Regional Retail	Net increase in regional VMT
Regional Public Facilities/Services	Net increase in regional VMT
Redevelopment	Projects that result in a decrease to existing regional total VMT are presumed to have a less-than-significant VMT impact; otherwise, apply the relevant threshold based on the proposed land use (treating existing use as vacant)
Mixed Use	Apply the relevant threshold to each land use component individually
Phase	Apply the relevant threshold to each phase independently
Land Development with Roadway Component	For locally-serving roadways, the significance determination is based on the land use component. For regional roadways, apply thresholds of significance for transportation projects

[1] As defined in the Sacramento County Transportation Analysis Guidelines, Appendix A.

Source: Sacramento County 2020: Table 3-3.

- **Policy CI-6.** Provide support for community based corridor planning processes on existing roadways with excess vehicle capacity within built communities to optimize the public right-of-way by utilizing the excess width for other modes of

travel or public amenities such as bike lanes, landscaping, walkways, parking, or medians.

- **Policy CI-7.** Plan and construct transportation facilities as delineated on the Transportation Plan of the Sacramento County General Plan. Transportation facilities shall be consistent with the Sacramento County Improvement Standards and Construction Specifications, the Connector Project Design Guidelines, and supplemented by the California Department of Transportation (Caltrans) design standards. The County may deviate from the adopted County Improvement Standards and Construction Specifications in circumstances where conditions warrant special treatment. The Capital SouthEast Connector, as designated in the Transportation Plan map, shall be consistent with the most current JPA-approved "Capital SouthEast Connector JPA Project Design Guidelines," provided that the Project Design Guidelines will not be applied to diminish or alter the rights of County-approved projects and provided that the design exception process within the Project Design Guidelines is not amended to diminish the County's land use authority to approve future projects proximate to or its authority to determine access to the Capital SouthEast Connector.

  The Capital SouthEast Connector is intended to serve the transportation demand for both existing land uses and future growth within the Urban Services Boundary (USB). The County reserves all of its rights and powers to assure that sufficient access to and from the Connector roadway is available to accommodate the existing land uses as well as the future growth within the USB. For areas of the unincorporated County outside of the USB, the County will limit access to and from the Connector roadway to only accommodate the existing and future land uses permitted outside of the USB.

- **Policy CI-8.** Maintain and rehabilitate the roadway system to maximize safety, mobility, and cost efficiency.
- **Policy CI-10.** Land development projects shall be responsible to provide improvements which address the project's adverse effects on local and regional roadways.
- **Policy CI-12.** To preserve public safety and local quality of life on collector and local roadways, land development projects shall incorporate appropriate treatments of the Neighborhood Traffic Management Program.
- **Policy CI-13.** Collaborate with regional transportation planning agencies and neighboring jurisdictions to provide cross jurisdictional mobility.
- **Policy CI-16.** The County supports creating communities that promote access and mobility for all modes of travel through the development of roadway networks based on a grid or modified grid layout.
- **Policy CI-19.** Collaborate with transit service providers to provide transit services within the County that are responsive to existing and future transit demand.

- **Policy CI-20.** Promote transit services in appropriate commercial corridors and where population and employment densities are sufficient or could be increased to support those transit services.
- **Policy CI-21.** Collaborate with neighboring jurisdictions and other agencies to achieve land use patterns and densities in areas planned for development that support transit services, preserve adequate rights-of-way, and enhance transit services in the designated transit corridors.
- **Policy CI-23.** Consider the transit needs of senior, disabled, low-income, and transit-dependent persons in making recommendations regarding transit services.
- **Policy CI-26.** Consider the expansion of Neighborhood Shuttle Services in unincorporated area communities.
- **Policy CI-29.** The County shall work with transit service providers to establish and implement development guidelines to maximize the ability of new development and redevelopment to support planned transit services. New development and redevelopment shall have an orientation to travel patterns that are conducive to transit service. This will include concentration of development in centers and along linear corridors such that trip origins and destinations are concentrated near transit services.
- **Policy CI-30.** The County shall collaborate with transit service providers to promote the phased implementation of transit services to all growth areas as development occurs.
- **Policy CI-32.** Develop a comprehensive, safe, convenient and accessible bicycle and pedestrian system that serves and connects the County's employment, commercial, recreational, educational, social services, housing and other transportation modes.
- **Policy CI-34.** Construct and maintain bikeways and multi-use trails to minimize conflicts between bicyclists, pedestrians, and motorists.
- **Policy CI-35.** The applicant/developer of land development projects shall be responsible to install bicycle and pedestrian facilities in accordance with Sacramento County Improvement Standards and may be responsible to participate in the fair share funding of regional multi-use trails identified in the Sacramento County Active Transportation Plan.
- **Policy CI-36.** Collaborate with neighboring jurisdictions and regional agencies to coordinate planning and development of the County's bikeways, pedestrian facilities and multi-use trails with those of neighboring jurisdictions, and to support a regional bicycle and pedestrian network.
- **Policy CI-38.** Design and construct pedestrian facilities to ensure that such facilities are accessible to all users.
- **Policy CI-40.** Whenever possible, the applicant/developer of new and infill development projects shall be conditioned to fund, implement, operate and/or

participate in transportation systems management (TSM) programs to manage travel demand associated with the project.

- **Policy CI-43.** The County shall promote transit-supportive programs in new development, including employer-based trip-reduction programs (employer incentives to use transit or non-motorized modes), "guaranteed ride home" for commute trips, and car-share or bike-share programs.
- **Policy EJ-20.** The County will continue to support walking and bicycling by requiring smart growth streets (bike lanes, and sidewalks separated from the roadway with trees and planted landscaping) in transit priority areas, in Environmental Justice Communities and in new communities and developments wherever practicable.
- **Policy EJ-21.** Provide safe, low stress, interesting and convenient environments for pedestrians and bicyclists, including inviting and adequately lit streetscapes, networks of trails, paths, parks, and open spaces that connects residences with key destinations, and encourages regular exercise and the reduction of vehicular emissions.
- **Policy LU-39.** Support implementation of the ADA Transitional Plan and the Pedestrian Master Plan to create a network of safe, accessible and appealing pedestrian facilities and environments.
- **Policy LU-40.** Employ appropriate traffic calming measures in areas where pedestrian travel is desirable but made unsafe by a high volume or excessive speed of automobile traffic. Preference shall be given to measures that slow traffic and improve pedestrian safety while creating the least amount of conflict with emergency responders.
- **Policy LU-42.** Master planning efforts for new growth areas shall provide for separated sidewalks along all arterials and thoroughfares to make walking a safer and more attractive transportation option.
- **Policy PF-55.** New development shall provide access arrangements pursuant to the requirements of the California Fire Code.

Transportation Analysis Guidelines

The TAG was adopted by the County Board of Supervisors in October 2020. The TAG outlines screening criteria by which projects may be exempt from VMT analysis and provides methodologies to analyze a project's VMT if screening criteria are not met (Sacramento County 2020). As detailed above, a project's effect on automobile delay is no longer a consideration when identifying a significant impact under CEQA; thus, the portions of the TAG not directly applicable to CEQA are not included here. The TAG and the County General Plan specify VMT per capita as the metric used to evaluate residential projects. It includes all vehicle "tours" (both work/commute vehicle tours and non-work vehicle tours) that start and end at residential units. The VMT from these tours are grouped and summed to the home location of those tours. The VMT for each home is then summed for all homes in a particular area and divided by the total population of that area to arrive at VMT per capita (Sacramento County 2020: 17).

The TAG and County General Plan also specify VMT per employee as the metric used to evaluate non-residential land uses. It includes all vehicle commute tours that begin and end at an employment location. The VMT for commute tours are summed to the employment location of each tour. The commute VMT for all employment locations in the particular area are summed and divided by the total employment of that area to arrive at VMT per employee (Sacramento County 2020: 17). The TAG also includes guidelines and requirements for multimodal (bicycle, pedestrian, and transit) transportation analysis, hazards related to design, on-site circulation, and construction. The TAG establishes thresholds of significance for project-generated VMT (Table 19-2) and recommendations for applying them, as described below:

- **Residential** – aggregate all residential land uses and compare the resulting VMT per Capita to the regional average. The threshold is exceeding 85 percent of the regional average VMT per Capita per Table 19-2. (>15.0 VMT per capita).
- **Office/Business Professional Employment** – aggregate all office/business professional employment land uses and compare the resulting VMT per employee to the regional average. The threshold is exceeding 85 percent of the regional average VMT per employee per Table 19-2 (>13.9 VMT per employee).
- **Industrial Employment** – aggregate all industrial employment land uses and compare the resulting VMT per employee to the regional average. The threshold is exceeding the regional average VMT per employee per Table 19-2 (>16.4 VMT per employee).
- **Retail and Public Facilities/Services** – evaluate the effect that adding these land uses has on regional VMT. The threshold is an increase in total regional VMT.
- **Roadway Capacity** – The threshold is a net increase in regional VMT.

Active Transportation Plan

The 2022 Active Transportation Plan for unincorporated Sacramento County is the guiding document for achieving the County's goal to build a balanced transportation system that supports and encourages active modes of travel. The Active Transportation Plan analyzes existing conditions and provides policy, program, and infrastructure recommendations to improve active transportation within the unincorporated county (Sacramento County 2022a). Note that the 2022 Active Transportation Plan replaced the Sacramento County Bicycle Master Plan (2011) and the Sacramento County Pedestrian Master Plan (2007).

Dynamic Implementation Tool

The County has developed an approach to identify and require the construction of necessary transportation improvements sensitive to the location of individual developments. The result of this approach is the Dynamic Implementation Tool. For development proposed in the Jackson Highway Corridor, the tool can estimate vehicle trips that would be generated from those new developments, where new vehicle trips would be distributed, and if such trips would result in congestion (i.e., reduced LOS

standard) along specific roadways or intersections (Sacramento County 2021). The County can use the tool to determine appropriate improvements and assign funding and/or construction responsibility as development is implemented. Specifically, the tool is used to calculate new roadway traffic volumes and intersection turn movements, and County staff analyze this data to determine which roadways would be impacted and the improvements required to alleviate impacts on the transportation network (Sacramento County 2021).

County Code of Ordinances

Chapter 10 of the Sacramento County Code addresses vehicles, parking, and traffic. Chapter 16 provides regulations related to building and construction, and Chapter 17 provides regulations related to fire prevention including the County's adoption of the 2022 California Fire Code.

Community Plans

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

Cordova Community Plan

The Cordova Community Plan, which was last updated in 2003, provides guidance for both new development and the redevelopment of existing land uses within the community planning area. The Cordova Community Plan contains the following objectives related to transportation:

- **Policy LU-3.** Promote linkages between LRT station and adjacent land uses, particularly within a 1/4-mile radius of the LRT station.
- **Policy UDNC-9.** Promote pedestrian-friendly, human-scale urban environments that provide safe and pleasant places for people to live and work.
- **Policy TC-1.** Promote a high-quality multi-modal transportation system by reducing mobile-source emissions and reliance on the personal automobile.
- **Policy TC-4.** Encourage linkages between LRT stations and adjacent land uses, particularly within a 1/4-mile radius of the LRT station, and encourage the design of employment centers to be convenient for walk-on patrons of LRT.
- **Policy TC-5.** Promote public transit services to all employment and activity centers; or alternatively, encourage the formation of privately funded shuttle bus services within the community.
- **Policy TC-6.** Promote the location of convenient LRT stations to provide access for all segments of the population to a broad range of neighborhoods, employment centers, retail and community services.
- **Policy TC-7.** Promote a high-quality off-street bicycle/pedestrian system that connects all major employment and activity centers.

- **Policy TC-8.** Ensure adequate pedestrian circulation by sidewalks or similar means within and between land uses.
- **Policy TC-9.** Ensure adequate bicycle provisions within new land uses to encourage bicycle usage.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan, which was developed in 1985, provides guidance for growth and development in the community planning area. The following Vineyard Community Plan policy applies to the WJHMP:

Public Facilities/Services, Goals and Objectives 1: To provide adequate and appropriate infrastructure and public services to all residents and businesses of the Vineyard Community.

COUNTYWIDE DESIGN GUIDELINES AND CASE STUDIES

The Countywide Design Guidelines and Case Studies (Design Guidelines) apply to the unincorporated county and include design strategies that support the County in creating a built environment that is healthy, sustainable, livable, and promotes active transportation choices (Sacramento County 2022c).

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

This analysis uses significance criteria based on Section 15064.3 and Appendix G of the State CEQA Guidelines, the Sacramento County General Plan, and the County TAG.

BICYCLE AND PEDESTRIAN FACILITY IMPACTS

Impacts on bicycle and pedestrian facilities would be significant if implementation of the project would:

- eliminate or adversely affect an existing bikeway or pedestrian facility in a way that would discourage its use,
- interfere with the implementation of a planned bikeway as shown in the County Active Transportation Plan or conflict with the County Active Transportation Plan, or
- result in unsafe conditions for bicyclists or pedestrians.

TRANSIT FACILITY IMPACTS

Impacts on the transit system would be significant if implementation of the project would:

- adversely affect public transit operations or
- fail to adequately provide access to transit.

VMT Impacts

Impacts on VMT would be significant if implementation of the project would:

- exceed 85 percent of the existing regional average VMT per capita for residential uses,
- exceed 85 percent of the existing regional average VMT per employee for office employment,
- exceed 100 percent of the existing regional average VMT per employee for industrial employment,
- result in a net increase between regional VMT plus project without regional retail component and regional VMT plus project with regional retail component, or
- result in a net change in regional VMT as a result of widening roadways not already identified in the SACOG MTP/SCS.

Transportation Hazards

Impacts related to transportation hazards would be significant if implementation of the project would:

- substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Emergency Access

Impacts on emergency access would be significant if implementation of the project would:

- result in inadequate emergency access.

Issues Not Discussed Further

Construction VMT

Construction activities associated with the project would not result in long-term increases in vehicular trips along roadways in and around the plan area because construction would be temporary and intermittent in nature. Additionally, the VMT generated by construction workers during project construction would not be newly generated; instead, it would be redistributed throughout the regional roadway network based on the different work sites in which workers travel to each day. Because the plan area is in proximity to population centers (e.g., city of Sacramento, city of Rancho Cordova, and city of Folsom), construction workers would not be anticipated to travel greater than typical distance to the plan area. Therefore, construction would redistribute worker trips otherwise associated with the construction industry in the region and would not generate a substantial number of trips over existing conditions. This issue is not discussed further.

METHODOLOGY

BICYCLE AND PEDESTRIAN ANALYSIS

The bicycle and pedestrian analyses evaluate if the WJHMP would either directly or indirectly, disrupt existing bicycle or pedestrian programs or facilities; interfere with the implementation of a planned bicycle or pedestrian facility; or create a physical or operational transportation outcome that conflicts with applicable bicycle or pedestrian system plans, guidelines, policies, or standards.

TRANSIT ANALYSIS

The transit analysis evaluates if the WJHMP would, either directly or indirectly, disrupt existing transit services or facilities; interfere with the implementation of a planned transit facility; or create physical or operational transportation outcomes that conflict with desired conditions expressed in transit policies adopted by the County or SacRT for their respective facilities in the unincorporated county.

VMT ANALYSIS

The VMT analysis relies on the County TAG and OPR Technical Advisory to evaluate the VMT that would result from implementing the WJHMP. County guidelines require that each land use associated with a project be analyzed separately when identifying impacts. Therefore, in accordance with the County TAG, VMT per capita for residential land uses and VMT per employee for commercial (office and industrial) uses were used. Additionally, total net change was used as the VMT metric for regional retail, as recommended by OPR. For land uses that cannot be screened out and are subject to further VMT analysis, the WJHMP VMT per capita and/or VMT per employee are compared to a threshold of 85 or 100 percent of the regional average for each metric, as applicable. Regional averages are calculated to be consistent with the SACOG activity-based travel demand model (SACSIM19), which is used by local jurisdictions for regional transportation impact analyses. The individual impacts on VMT are quantified based on housing, employment, new project roadways, roadway widenings, and retail associated with the WJHMP. However, SACSIM is limited in its ability to represent all project features, such as the implementation of a Transportation Management Association (TMA) program. Therefore, an off-model analysis was also performed to calculate the VMT reductions for each land use type (see Appendix K for detailed VMT methodology and outputs). The methodology for each individual impact, as well as the overall effect on VMT from the project, are detailed below.

VMT PER CAPITA (RESIDENTIAL USES)

As detailed above, the residential uses associated with implementation of the WJHMP would result in a significant impact if the project's VMT per capita exceeds 85 percent of the baseline (no project) regional average VMT per capita. To calculate the VMT per capita metric for the WJHMP, all residential units and their associated households and population were incorporated into a modified "existing plus project" version of the SACSIM19 model. The residential units were isolated into their own traffic analysis zones (TAZs) so that their daily travel tours per person could be isolated from other land

uses. The results were then compared to the results of the regionwide "existing no project" model to determine if the WJHMP exceeds the applicable thresholds.

VMT PER EMPLOYEE (OFFICE AND INDUSTRIAL USES)

As detailed above, the office uses associated with the WJHMP would result in a significant impact if the project's VMT per employee exceeds 85 percent of the baseline (no project) regional average VMT per employee. Additionally, the industrial uses associated with implementation of the WJHMP would result in a significant impact if the project's VMT per employee exceeds 100 percent of the baseline (no project) regional average VMT per employee. VMT for commute tours were summed to the employment location of each tour. The commute VMT for all employment locations in the WJHMP area was summed and divided by the total employment of the WJHMP area. Office VMT per employee was calculated based on results from TAZs that contain predominately office land uses. Industrial VMT per employee was calculated based on results from TAZs that contain predominantly industrial land uses. The results were then compared to the results of the regionwide "existing no project" model to determine if the WJHMP exceeds the applicable thresholds.

ROADWAY NETWORK VMT ASSESSMENT

The WJHMP would involve the widening of existing roadways and construction of new roadways. As detailed above, roadway projects associated with implementation of the WJHMP would result in a significant impact if there is a net increase between regional VMT plus project without roadway widenings and regional VMT plus project with roadway widenings. These capacity enhancements could induce VMT due to changes in travel demand, route, and/or mode choice. As discussed in the TAG, roadway projects that are not included in the MTP/SCS must be evaluated to determine potential transportation impacts. Consistent with the TAG, existing or future roadway widenings not identified in the MTP/SCS were modeled with and without project added roadway capacity to yield the net change in regional VMT. The SACSIM19 model was run with and without the regional roadway widenings anticipated as a result of the WJHMP but with all other components of the WJHMP included.

RETAIL VMT

As detailed above, the retail projects associated with implementation of the WJHMP would result in a significant impact if there is a net increase between regional VMT plus project without regional retail and regional VMT plus project with regional retail. Local serving retail is defined as generally having up to 200,000 square feet of total gross floor area in growth areas, or with a market area of 3 miles or less. The OPR Technical Advisory provides that, because local-serving retail improves retail destination proximity it tends to shorten trips and reduce VMT, and thus can be presumed to create a less than significant impact. Some retail land use designations within the WJHMP area were determined to fit within the definition of local serving retail and as such, were screened from further VMT analysis. However, most commercial parcels within the WJHMP area are on sites large enough to be considered regional (i.e., over 200,000 square feet based on floor area ratios). Therefore, the SACSIM19 model was run once with the full project and once without the full project minus the regional retail components in order to

determine the change in net regionwide VMT that could be associated with the regional retail portions of the WJHMP.

TRANSPORTATION MANAGEMENT ASSOCIATION PARTICIPATION

The WJHMP includes a mandatory communitywide TMA program to reduce vehicle trips. The WJHMP TMA program would require mandatory participation (i.e., funding) from all residents and employers within the WJHMP area. The calculations to determine VMT reductions for each component of the TMA program are based on Sacramento County TMA participation and calculations provided in the California Air Pollution Control Officers Association Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health Equity (CAPCOA 2021). Please see Appendix K for a detailed discussion of the methodology and inputs for analysis of the WJHMP TMA program.

OVERALL EFFECT ON VMT

To evaluate the overall VMT that would result from implementation of the WJHMP, each of the separate VMT metrics described above were translated into absolute VMT over or under that allowed by the County TAG so that the effects of each of the WJHMP components could be accurately combined. To translate VMT per capita and VMT per employee into absolute VMT, the number of anticipated residents and the number of anticipated employees were multiplied by the amount the VMT exceeds or falls below the applicable threshold.

TRANSPORTATION HAZARDS AND EMERGENCY ACCESS

The transportation hazards and emergency access analyses evaluate if the WJHMP would, directly or indirectly, substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or result in inadequate emergency access. The transportation hazards analysis relies on the Local Traffic Study prepared for the WJHMP which examines the transportation safety implications of implementing the WJHMP (DKS Associates 2023).

WEST JACKSON HIGHWAY MASTER PLAN POLICIES

The proposed WJHMP includes the following policies related to transportation:

- **Policy 5.1.** Future development applications shall work with the County to implement the roadway system as shown in Figure 5.2 and the street sections summary, Table 5.1.
- **Policy 5.2.** Future development applications shall work with the County to implement the mobility system as shown in Figure 5.13 Transit Plan and Figure 5.14 Proposed Trails, which illustrates the non-vehicular system of multi-use trails, on-street bike lanes and transit facilities.

IMPACTS AND ANALYSIS

IMPACT TR-1: ADVERSELY AFFECT AN EXISTING BICYCLE AND PEDESTRIAN FACILITY, INTERFERE WITH THE IMPLEMENTATION OF A PLANNED BIKEWAY, OR RESULT IN UNSAFE CONDITIONS FOR BICYCLISTS OR PEDESTRIANS

Implementation of the WJHMP would include a variety of residential, commercial, office, industrial, agricultural, recreational, open space, natural preserve, public, and educational uses. The increase in residential and employment opportunities within the WJHMP area would presumably increase the demand for bicycle and pedestrian facilities. As described above, there are Class II bicycle lanes present along South Watt Avenue and Bradshaw Road within the WJHMP area and sidewalks along segments of Bradshaw Road, Kiefer Boulevard and Elder Creek Road. The WJHMP would not adversely affect or damage these existing facilities. Instead, implementation of the WJHMP would involve the construction of an extensive bicycle and pedestrian network consisting of off-street trails and Class I and Class II bicycle facilities that would support and encourage increased use of alternative modes transportation (see Figure 2-20 in Chapter 2, “Project Description”). Individual development projects associated with the WJHMP would be required to be consistent with County plans, policies, and programs.

For example, several General Plan policies pertain to the implementation and accommodation of alternative modes of transportation to result in a safe, integrated, and efficient transportation network that serves bicyclists and pedestrians. Specifically, General Plan Policy CI-34 calls for the construction and maintenance of bikeways and multi-use trails to minimize conflicts between bicyclists, pedestrians, and motorists. General Plan Policy CI-35 requires new development to install bicycle and pedestrian facilities in accordance with the Sacramento County Improvement Standards and/or pay their fair share portion to implement the multi-use trail system identified in the Sacramento County Active Transportation Plan. General Plan Policy CI-36 describes collaboration with neighboring jurisdictions to coordinate planning and development of County bikeways, pedestrian facilities, and multi-use trails, and to support a regional bicycle and pedestrian network.

The WJHMP is consistent with General Plan policies which detail how the circulation system would be improved to meet the needs of all users. Several objectives established in the WJHMP support bicycle and pedestrian travel within the WJHMP area (see Objectives 2, 3, 4, 6, and 9). Through WJHMP Policy 5.2, future development applications would be required to work with the County to implement the mobility system non-vehicular system of multi-use trails, on-street bike lanes, and transit facilities identified in the WJHMP. As a result, subsequent development associated with the WJHMP would provide sidewalks and bicycle lanes on all collector, arterial, and thoroughfare roadways in compliance with County Improvement Standards and Design Standards.

The County Active Transportation Plan includes recommendations for upgraded and new bicycle and pedestrian facilities throughout the WJHMP area. Although many of the bicycle facilities proposed under the WJHMP align with those included in the most recent

County Active Transportation Plan, the WJHMP would request several entitlements, including a General Plan amendment to modify the Land Use Diagram and Transportation Plan of the 2030 General Plan, and recognize the proposed land uses, streets, and bikeways on the Transportation Plan Amendment diagram (Figure 2-19) and Active Transportation Plan Amendment diagram (Figure 2-20). If adopted, the WJHMP would become the primary land use documents for the WJHMP area and would stipulate allowable uses and designs. Future developments would be required to incorporate improvements consistent with applicable County guidelines, standards, and specifications related to bicycle and pedestrian facilities. This would include the most recently adopted version of the Active Transportation Plan at the time of project consideration. Implementation of the WJHMP would improve existing bicycle and pedestrian facilities and offer new routes not currently available in the area. Therefore, development associated with the WJHMP would not conflict with adopted policies, plans, or programs for bicycle and pedestrian facilities. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT TR-2: ADVERSELY AFFECT PUBLIC TRANSIT OPERATIONS OR FAIL TO PROVIDE ACCESS TO TRANSIT

Public transit is not currently provided throughout the WJHMP area. As detailed above in the “Environmental Setting” section, the closest transit stop serves the Elk Grove Commuter E19 Route and is located near the intersection of Bradshaw Road and Kiefer Boulevard adjacent to the eastern perimeter of the WJHMP area. The WJHMP area is, however, located along major planned transit corridors on Jackson Highway, South Watt Avenue, Bradshaw Road, and Excelsior Road. As the implementation of the WJHMP increases residences and employment centers over time, it can be expected that transit ridership and demand for transit services would also increase. However, the OPR Technical Advisory states that agencies generally should not treat the addition of new transit users as an adverse impact (OPR 2018). As shown in Figure 2-19, the project would, through the provision of an interconnected street system, facilitate connections to future transit stops within the WJHMP area. All projects associated with the WJHMP that could result in physical impacts to the transportation network would be required to meet County standards such as those included in the County Improvement Standards and the most recently adopted SacRT *Design Guidelines for Bus and Light Rail Facilities*, which requires transit facilities to be designed to promote convenient, comfortable, and safe bus facilities for transit users.

Several General Plan policies pertain to the implementation and accommodation of transit services. For example, General Plan Policy CI-29 states that new development shall have an orientation to travel patterns that are conducive to transit service, including the concentration of development along linear corridors such that trip origins and destinations are concentrated near transit services. Per Section 5.4, “Transit,” of the WJHMP, proposed transit service within the WJHMP would be located within a half mile of approximately 88 percent of WJHMP residential uses, thus providing improved proximity and connections between residential, commercial, and employment uses to

transit service. In addition, the WJHMP proposes bus rapid transit lanes along SR 16 and mixed use lanes within the plan area that would support frequent transit service and enhance to the County's transportation plan for the area (refer to Figure 2-19 in Chapter 2, "Project Description," of this EIR). WJHMP Policy 5.2 would require future applicants to work with the County to implement the proposed mobility system (e.g., proposed transit facilities) and thus, would augment transit operations in the area. Future development under the WJHMP would enhance public transit facilities and provide adequate access to transit. Therefore, this impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT TR-3: GENERATE VMT THAT EXCEEDS COUNTY STANDARDS

As detailed above in the "Methodology" section of this chapter, in accordance with the County TAG, the VMT Memo analyzed the VMT of each WJHMP component individually based on their respective threshold of significance. Table 19-3 shows the VMT of each individual component of the project.

Table 19-3 Project-Generated VMT by Component

Project Component	Regional VMT Metric	Existing (No Project) Regional VMT	Project-Specific VMT	Project-Specific VMT as Percentage of Regional Average	Applicable Threshold	Exceeds Applicable Threshold
Residential	VMT per capita	20.20	14.29	70.70%	85% of the regional average	No
Office	VMT per employee	16.04	16.23	101.1%	85% of the regional average	Yes
Industrial	VMT per employee	16.04	14.63	91.2%	100% of the regional average	No
Project Roadways Beyond MTP/SCS	Net Increase in Regional VMT	—	—	—	Any net increase in regional VMT	Yes
Regional Serving Retail	Net Increase in Regional VMT	—	—	—	Any net increase in regional VMT	Yes

Source: Data provided by DKS in 2023.

As shown in Table 19-3, the residential component of the WJHMP is anticipated to generate 14.29 VMT per capita, which is approximately 71 percent of the regional average, below the applicable threshold of 85 percent. The office component of the WJHMP is estimated to generate 16.23 VMT per employee, which exceeds the applicable threshold of 85 percent of the regional average VMT per employee for office projects. Finally, the industrial component of the WJHMP would generate 14.63 VMT

per employee, which would not exceed the threshold of 16.4 VMT per employee for industrial projects as detailed in the County TAG and County General Plan.

The WJHMP would also include the construction of new roadways and the implementation of roadway capacity enhancements. Roadway expansions are included in the plan due to the modeled potential for degradation of operation conditions on several roadways in the vicinity of the plan area. Regional VMT was calculated for the proposed roadway widenings. The regionwide VMT without the roadway widenings would be 59,172,494 and the regionwide VMT with the roadway widenings would be 59,188,647, an increase of 16,153 VMT. The WJHMP would also include the construction of new roadways and the implementation of roadway capacity enhancements. These capacity enhancements would add 24.2 lane miles of roadways to the County regional roadway system compared to what was identified in the MTP.

Although the TAG recommends analyzing project components individually, to consider the overall effect of the WJHMP on VMT, a “VMT Budget” that accounts for the various components of the WJHMP was created to reconcile the VMT “savings” and “exceedances” of the WJHMP. As shown in Table 19-4, the WJHMP VMT per capita falls below the 85 percent regional threshold for a total of -112,637 VMT; the WJHMP VMT per office employee exceeds the 85 percent threshold for a total of 40,982 excess VMT; and the WJHMP VMT per industrial employee falls below the 100 percent threshold for a total of -4,774 VMT per industrial employee. This results in a total net change in VMT compared to regional thresholds of -76,429 daily VMT. Additional increases in VMT from implementation of the WJHMP include an additional 21,880 VMT due to project roadways beyond the MTP/SCS, an additional 16,153 VMT due to roadway widenings to address deficiencies, and an additional 44,810 VMT associated with regional serving retail. Therefore, the total increase in regionwide VMT resulting from implementation and buildout of the WJHMP would be 6,414 VMT (i.e., -76,429 VMT + 82,843 VMT).

Table 19-4 WJHMP Absolute VMT

Metric	No Project	Plus WJHMP	% of Regional Average	VMT Over or Under Threshold
VMT Per Capita	20.20	14.29	70.7	-112,637
VMT Per Office Employee	16.04	16.23	101	40,982
VMT Per Industrial Employee	16.04	14.63	91.2	-4,774
WJHMP Absolute VMT				**-76,429**
Project Roadways Beyond MTP/SCS VMT	—	—	—	21,880
Roadway Widenings to Address Deficiencies VMT	—	—	—	16,153
Regional Serving Retail VMT	—	—	—	44,810
WJHMP Total VMT Compared to Threshold				**6,414[1]**

Notes: VMT = vehicle miles traveled; % = percent

[1] (i.e., -76,429 +82,843)

Sources: DKS Associates 2023; Kimley Horn 2023.

As summarized below in Table 19-5, with implementation of the mandatory communitywide TMA program included in the project, VMT would be reduced for residential, office, and industrial uses.

Table 19-5 Overall Effect of the WJHMP on VMT

Metric	Total VMT
Residential VMT with WJHMP TMA program	-11,737
Office VMT with WJHMP TMA program	-31,587
Industrial VMT with WJHMP TMA program	-6,093
Net WJHMP VMT after TMA program	**-49,417**
Net WJHMP VMT compared to threshold	**-43,003[1]**

Notes: TMA = Transportation Management Association; VMT = vehicle miles traveled: WJHMP = West Jackson Highway Master Plan.

[1] (i.e., 6,414 + -49,417)

Source: Kimley Horn 2023.

With implementation of the TMA program, VMT per office employee would be reduced from 16.23 to 14.23, VMT per capita for residential development would be reduced from 14.29 to 13.99, and VMT per industrial employee would be reduced from 14.63 to 12.83. Both VMT per capita (i.e., 13.99) and VMT per industrial employee (i.e., 12.83) would be below the County thresholds of 17.17 VMT per capita and 16.04 VMT per industrial employee, respectively. As shown in Table 19-5, when incorporating the 12.3 percent reduction achieved by implementing the WJHMP TMA program for non-residential uses and 2.1 percent reduction for residential uses, VMT would be reduced by 11,737 VMT for residential uses, 31,587 VMT for office uses, and 6,093 VMT for industrial uses. In total, implementation of the WJHMP TMA program would result in an overall VMT reduction of -49,417 VMT. After implementation of the TMA program, the WJHMP would result in a net total of -43,003 VMT compared to the County thresholds. Although specific components of the WJHMP exceed County VMT thresholds, net total VMT would be reduced to below County thresholds through the implementation of the WJHMP TMA program. Therefore, this impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT TR-4: SUBSTANTIALLY INCREASE HAZARDS DUE TO A GEOMETRIC DESIGN FEATURE OR INCOMPATIBLE USES

CONSTRUCTION

Construction of individual projects associated with the WJHMP would be localized and temporary. However, construction activity could result in increased transportation-related hazards (e.g., heavy vehicle movement, the transport of equipment and materials to the plan area). Additionally, the construction of new roadways and roadway widenings associated with the WJHMP could result in temporary lane closures and detours. In accordance with General Plan Policy CI-7, new and improved roadways

would be consistent with the Sacramento County Construction Specifications and Improvement Standards which address potential design hazards including sight distance, driveway placement, and signage.

The construction contractor(s) of individual projects within the WJHMP area would be required to obtain encroachment permits for all construction work performed within County right-of-way (Sacramento County 2023). Additionally, per Section 12-4.02 of the County Standard Construction Specifications, the preparation and implementation of a traffic control plan would be required for all construction work performed within the road right-of-way that modifies vehicular, bicycle, and/or pedestrian traffic patterns (Sacramento County 2016). Each traffic control plan is required to be developed in accordance with the latest version of the California Manual on Uniform Traffic Control Devices, which ensures the provision of reasonably safe and effective movement of all roadway users in a traffic control area. Construction would be localized and temporary and would not introduce a permanent hazardous condition to the surrounding roadway network. Additionally, encroachment permit applications and traffic control plans would be subject to County review prior to approval, thus ensuring that construction activities would comply with local and industrywide safety standards.

Operations

Future development within the WJHMP area would be required to meet all applicable County guidelines and regulations for development projects, including General Plan Policy CI-10, which addresses a project's adverse effects on local roadways and Policy CI-40, which requires new development projects to fund, implement, operate, and/or participate in transportation system management programs to manage travel demand associated with the project. On-site design would comply with street improvement standards detailed in Chapter 12 of the County Code as well as the design guidelines included in Section 4 of the County Improvement Standards. Additionally, per Section 2-1 of the County Improvement Standards, complete plans for all proposed streets and bikeways are required to be submitted to the County Engineering Division of the Office of Development and Code Services, for approval, thus ensuring that implementation of the WJHMP would not result in conflicting uses. Further, the WJHMP includes objectives, such as Objectives 3, 6, 7, and 9, that support a safe, comprehensive, and interconnected transportation system.

Although the WJHMP would be designed to meet County standards, the Local Traffic Study found that implementation of the WJHMP could increase congestion in a manner that could increase safety impacts from queuing and potential bicycle/pedestrian/vehicular conflicts at several intersections. For example, queueing that extends beyond the turn pocket or into surrounding intersections could disrupt pedestrian, bicycle, and vehicular movement resulting in potential conflicts between all modes of transportation. The Local Traffic Study identified roadways and intersections within and surrounding the plan area that could be adversely affected such as Bradshaw Road/Elder Creek Road and SR 16/Bradshaw Road. Therefore, implementation of the WJHMP could potentially substantially increase hazards during operations.

SUMMARY

Development associated with the WJHMP would be required to adhere to all County design guidelines and development standards. Additionally, all projects would be subject to County review, which would ensure that projects would meet applicable design guidelines and standards. However, the Local Traffic Study determined that implementation of the WJHMP could disrupt vehicular movement on existing and new roadways within the WJHMP, thus increasing the potential for safety hazards from queuing and/or potential bicycle/pedestrian/vehicular conflicts. Therefore, this impact would be potentially significant.

The implementation of Mitigation Measures TR-4A, TR-4B, and TR-4C would require responsible applicants of subsequent development under the WJHMP to implement improvements along affected roadways and associated intersections to reduce anticipated safety hazards from substantial congestion. These modifications would include the installation of traffic signals, grade separation, bus rapid transit lanes, and bus queue jumps. However, because the County does not have authority over roadways located outside of County jurisdiction and transit improvements, it cannot be guaranteed that all recommended improvements would be made. Therefore, this impact would be **significant and unavoidable.**

MITIGATION MEASURES

MITIGATION MEASURE TR-4A: INSTALL TRAFFIC SIGNALS THROUGHOUT WJHMP AREA

If the County determines, through application of the Dynamic Implementation Tool or similar means, that any subsequent entitlement would result in roadway design deficiencies, the applicant for the development shall be required to construct or fund the improvement. Required traffic signal installations will include the following improvements proposed in the Local Traffic Study, as determined appropriate by the County:

- Hedge Avenue and Florin Road,
- Happy Lane and Old Placerville Road,
- Excelsior Road and Gerber Road,
- Eagles Nest Road and Jackson Road,
- Excelsior Road and Calvine Road,
- Douglas Extension/Douglas Road and Mather Road, and
- Mayhew Road and Rock Creek Parkway eastbound and westbound.

MITIGATION MEASURE TR-4B: ROADWAY DESIGN IMPROVEMENTS

If the County determines, through application of the Dynamic Implementation Tool or similar means, that any subsequent entitlement would result in roadway design deficiencies, the applicant shall be required to construct or fund the improvement. Required physical roadway modifications will include the following improvements proposed in the Local Traffic Study, as determined appropriate by the County:

- **Watt Avenue and Folsom Boulevard**: Configuration involving grade separation of the northbound and southbound through movements of Watt Avenue. Access to and from Folsom Boulevard would be accomplished via on and off ramps from the left lanes of Watt Avenue to a single signalized intersection. A bus rapid transit lane along Watt Avenue would also intersect Folsom Boulevard at the traffic signal.
- **Watt Avenue and Kiefer Boulevard**: The ultimate improvement would involve a tight diamond interchange. The through movements (and bus rapid transit lane) on Watt Avenue would be grade separated from Kiefer Boulevard. Access to and from Kiefer Boulevard would be accomplished via on and off-ramps at two signalized intersections along Kiefer Boulevard.
- **Watt Avenue and Jackson Road**: Improvements would include the implementation of a standard six-by-six signalized intersection (two left-turn lanes, three through lanes, and one right-turn lane, on each approach) with three modifications.
  - The southbound left-turn movement would be grade separated;
  - The westbound right-turn movement would be grade separated; and
  - Three northbound left-turn lanes.
- **Bradshaw Road and Jackson Road**: Improvements would involve grade separating the northbound and southbound through movements.
- Grant Line Road and Prairie City Road, White Rock Road, Douglas Road, Kiefer Boulevard, Jackson Road, and Sunrise Boulevard: Implementation of grade separated intersections.

Each of these intersections have unique travel movements, volumes and existing context sensitive conditions (potential environmental issues, right-of-way, physical constraints), and the special treatments utilized at each location shall be studied to select the treatments that address the operational deficiency as it relates to safety, while avoiding or minimizing other operational or environmental implications. Other equivalent treatments may be selected to the satisfaction of the Department of Transportation to mitigate safety impacts.

MITIGATION MEASURE TR-4C: BUS QUEUE JUMPS

The responsible project applicant(s), County, and Sacramento Regional Transit District (SacRT) shall work in coordination to implement bus queue jump lanes at signalized intersections to provide dedicated channelization for buses that allow buses to approach and traverse an intersection in priority position as deemed necessary. Bus queue jumps are only recommended where volume of right-turning vehicles would not cause significant interference with transit operations; locations where right turn volumes are less than 200 vehicles per hour per lane would meet this criteria (DKS 2024: 142). Bus queue jumps shall meet the following infrastructure and geometric improvements unless otherwise agreed upon by the County and SacRT:

- Extend the right turn pocket on the approach (or construct a right turn pocket if one has not previously been identified) long enough to extend past the end of queue for the adjacent through travel lanes;
- Install signal heads for the right turn lane to allow for dedicated right turn phase and bus through phase;
- Build a dedicated receiving lane and far-side bus stop for intersections where a nearby bus stop is desired; and
- Install "No Right turn on red" blank out signs on the perpendicular approaches to the transit queue jump which would be activated based on bus calls for the queue jump.

As identified in the Local Traffic Analysis, at a minimum, the following locations for bus queue jump lanes shall be considered:

- Jackson Road and Excelsior Road (southbound, westbound, and eastbound);
- Vineyard Road and Jackson Road (southbound and westbound);
- Mayhew Road and Jackson Road (all directions of travel);
- South Watt Avenue and Jackson Road (northbound); and
- South Watt Avenue and Kiefer Boulevard (southbound).

IMPACT TR-5: RESULT IN INADEQUATE EMERGENCY ACCESS

Implementation of the WJHMP would include the construction of new roadway connections which would provide a high level of connectivity throughout the WJHMP area. Additionally, per Objective 8.6 of the WJHMP, two new fire stations would be developed in the WJHMP area if deemed necessary by the Sacramento Metropolitan Fire District, thus enhancing emergency services within the WJHMP area and surrounding communities if implemented. In addition, County General Plan Policies PF-55 and CI-7 relate to emergency access and are applicable to development associated with the WJHMP.

General Plan Policy CI-7 requires that transportation facilities are consistent with County standards, including the County Standard Construction Specifications. Section 12-3.03 of the County Standard Construction Specifications requires that a project contractor provide for the uninterrupted passage of emergency vehicles through or around a work area, at all times. Additionally, General Plan Policy PF-55 requires that new development provide access arrangements pursuant to the California Fire Code, adopted by reference in Section 17.04.010 of the County Code. Section 503.1.1 of the 2022 California Fire Code ensures that fire apparatus roads are provided for every facility, building, or portion of a building construction or moved into or within the jurisdiction. Additionally, Section 503.2.1 of the 2022 California Fire Code requires that the width of an unobstructed roadway measure no less than 20 feet to provide adequate access for fire and emergency responders. Therefore, required adherence to the California Fire Code and the County Standard Construction Specifications would ensure

that adequate emergency access is provided throughout the WJHMP area as individual projects are developed.

Additionally, applications for individual projects within District 1 and 2 under the WJHMP would be submitted to the County Department of Planning & Environmental Review to ensure consistency with the WJHMP and other applicable County regulatory documents. Therefore, due to the required adherence to local and state emergency access and design standards, implementation of the WJHMP would not result in inadequate emergency access. This impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

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20 WATER SUPPLY

INTRODUCTION

The following chapter addresses the ability of the existing water service provider to supply drinking water to the project. The analysis describes relevant master planning of the utility services and whether the infrastructure and demands of the project are consistent with the utility master plans.

During the notice of preparation (NOP) scoping process, the County received one comment from the Cordova Community Planning Advisory Council regarding the sources of water. The comment is addressed in the "Environmental Setting" section below. The NOP and comments received in response to the NOP are provided in Appendix A.

ENVIRONMENTAL SETTING

WATER PURVEYORS

The plan area is located within the service areas of the Sacramento County Water Agency (SCWA) and the California American Water Company (Cal Am) (Figure 20-1). The amount of water available to these two purveyors to supply the plan area is defined by their individual water rights, surface water contracts, groundwater pumping limitations, and infrastructure necessary to treat, pump, and deliver water.

SACRAMENTO COUNTY WATER AGENCY

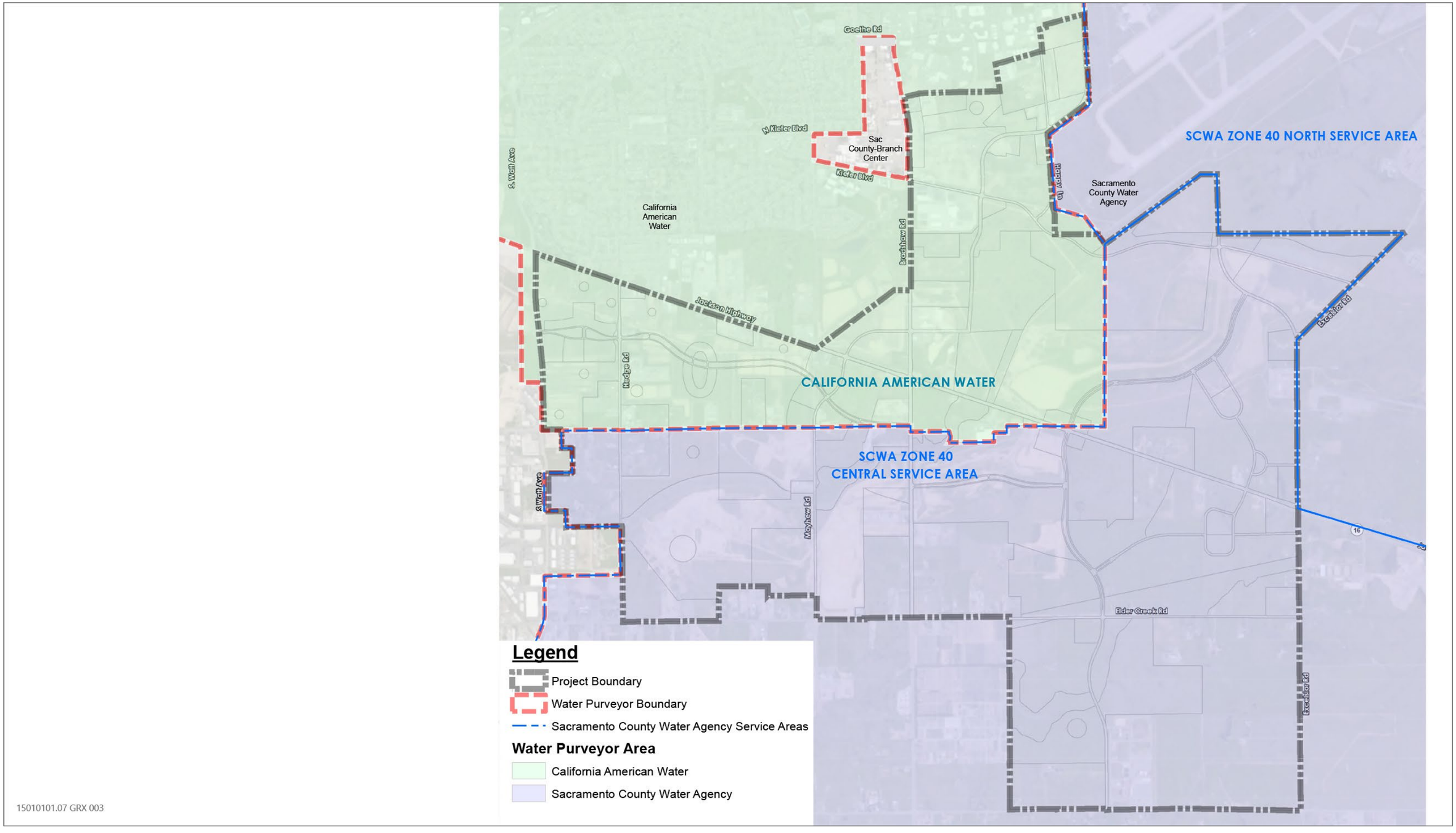
Approximately 4,021 acres of the plan area is within SCWA's Zone 40. The Zone 40 service area is the largest area served by SCWA and is further subdivided into the North Service Area (NSA), the Central Service Area (CSA), and the South Service Area (SSA). NSA is located south of the American River and includes part of the City of Rancho Cordova. CSA is located to the south of NSA and is supplied by surface water from the Vineyard Surface Water Treatment Plant (SWTP) and groundwater. SSA is located south of CSA and to the west of Highway 99. The plan area is located within CSA of Zone 40.

Zone 40 is in the central portion of the county, and has traditionally been a largely rural, agricultural region. Zone 40 plans, acquires, constructs, and operates facilities for the conjunctive use of groundwater and surface water in the area of influence of the South American Subbasin (SASb), described in detail below under the "Groundwater" section. Once planned facilities have been constructed by SCWA, they are operated and maintained by Zone 41, which retails the water to customers. Zone 40 and 41 have largely overlapping jurisdictional boundaries.

SCWA operates a conjunctive use program in Zone 40. Conjunctive use means relying heavily on surface water in years when there is plenty of water and more heavily on groundwater in years that are dry. SCWA generally takes its surface water through an intake on the Sacramento River near Freeport. The water is then treated and distributed to customers. In dry years, less surface water is available and SCWA operates a system of wells and groundwater treatment plants to extract and serve groundwater. SCWA utilizes this conjunctive use program to manage surface water and groundwater supplies to maximize the yield of available water resources with the least adverse impact to either the river system or the groundwater aquifers (SCWA 2023). Using surface water and groundwater conjunctively makes it easier for SCWA to meet demands in a single dry year or in multiple dry years. The goal of the conjunctive use program is to meet all demands during wet and dry years.

California American Water Company

Cal Am delivers water service throughout California. Approximately 1,892 acres of the plan area is within Cal Am's Suburban-Rosemont Public Water System (PWS). The Suburban-Rosemont PWS service area covers approximately 13,600 acres in Sacramento County south of the American River. It is bordered to the north by the American River and to the west by the Mather Airport. The Suburban-Rosemont PWS service area extends to Fruitridge Road in the south and approximately 1 mile west of Watt Avenue in the west (Murraysmith 2021). The Suburban-Rosemont PWS services primarily residential and commercial customers.



Source: Image produced and provided by Wood Rodgers in 2023, adapted by Ascent 2023.

Figure 20-1 Water Purveyors

SURFACE WATER

SACRAMENTO COUNTY WATER AGENCY

Initial water demands of the project could be met with groundwater. SCWA would exercise its right as a groundwater appropriator to extract groundwater from the basin for delivery to the project; surface water would be from existing entitlements diverted from the Sacramento River and treated at the Vineyard SWTP. In the long-term, the water demands for the project would be met in accordance with the conjunctive use program. The surface water supplies associated with SCWA's conjunctive use program fall into the following water rights and contracts (SCWA 2024):

- Purchased water supplies available through a current United States Bureau of Reclamation (Reclamation) Central Valley Project (CVP) contract.
- Purchased water available through the City of Sacramento for use within the American River Place of Use (POU).
- Water supplies available through State Water Resources Control Board (SWRCB) Permit 21209.
- SWRCB Appropriative Water Right License 1062
- SWRCB Appropriative Water Right License 4060
- Agreement Between Sacramento County, SCWA and Aerojet with respect to Transfer of Groundwater Extraction and Treatment (GET) Water
- Contract Between State of California Department of Water Resources (DWR) and North Delta Water Agency
- 2002 Wholesale Agreement Between SRCSD and SCWA
- 2004 Agreement with the City of Sacramento for Wholesaling and/or Wheeling Water Service for Sacramento International Airport and Metro Air Park
- 2000 Agreement Between City of Sacramento and the Sacramento County Water Agency to Treat and Deliver (Wheel) Surface Water
- 2000 Memorandum of Understanding Regarding the Operation of A Water System Interconnection at 2750 Mercantile Drive
- Fruitridge Vista Water Company Contract now held by Cal American Water Company

The project is included in the SCWA's 2020 Urban Water Management Plan (UWMP). The SCWA 2020 UWMP describes SCWA's projected water demands through 2045 (Table 20-1).

Table 20-1 Zone 40 Water Supply Availability Through 2045 (AFY)

Total Supply		2025	2030	2035	2040	2045
Normal		159,096	164,096	174,096	174,096	174,096
Single Dry Year		87,199	92,676	103,926	105,176	107,676
Multi-Year Drought	Year 1	111,954	118,386	132,136	135,886	143,386
	Year 2	99,576	105,531	118,031	120,531	125,531
	Year 3	87,199	92,676	103,926	105,176	107,676
	Year 4	95,054	100,531	111,781	113,031	115,531
	Year 5	107,431	113,386	125,886	128,386	133,386

Source: SCWA 2021: Table 3-50.

California American Water

Cal Am has an agreement with the City of Sacramento to purchase water. The agreement was revised in 2010 to receive a maximum of 3.46 million gallons per day (MGD) of non-firm supply during off-peak periods from October 15 through May 14, plus an additional 2.3 MGD of firm capacity, for a total of 5.76 MGD. Because the non-firm capacity of 3.46 MGD can only be used during seven months of the year, the total yearly amount available is estimated to be 1,576 MG (Cal Am 2024). In a dry year or multiple dry years, it is assumed that only the firm supply would be available. Additionally, this agreement includes three of Cal Am's service areas, so it is assumed that this firm supply would be available to each of these service areas proportional to their respective demands (Cal Am 2024). For the Suburban-Rosemont PWS, this equates to 403 MG. Cal Am's annual surface water supply for the Suburban-Rosemont PWS is summarized as follows (Cal Am 2024):

- Normal Year – 1,576 MG
- Single Dry Year – 403 MG
- Multiple Dry Years – 403 MG

Groundwater

Groundwater Basin and Conditions

The groundwater basin underlying Sacramento County has been utilized for domestic, agricultural, and urban water supply since the mid-1800s. In the 1940s, groundwater extractions began to exceed levels of recharge, which caused a gradual lowering of groundwater levels in the region (DWR 1974). There are two primary groundwater subbasins in Sacramento County that are described in the DWR Bulletin 118: the Sacramento Valley Basin – North American Subbasin (5-21.64) and the Sacramento Valley Basin – SASb (5-21.65). The project is located in SASb.

SASb is roughly bound by the American River to the north, the Sacramento River to the west, the Cosumnes and Mokelumne Rivers to the south, and the Sierra foothills to the

east. Groundwater in SASb generally occurs in a shallow aquifer zone or in an underlying deeper aquifer zone. Within SASb, the shallow aquifer extends approximately 200 to 300 feet below ground surface (bgs). Water quality in the shallow aquifer zone is considered good, with the exception of arsenic detections in a few locations. The shallow aquifer is typically used for private domestic wells requiring no treatment unless high arsenic values are encountered, causing owners to possibly target other water-bearing strata (SCWA 2021).

The deep aquifer is separated from the shallow aquifer by a discontinuous clay layer that serves as a semi-confining layer for the deep aquifer. The base of the potable water portion of the deep aquifer averages approximately 1,400 feet bgs. Water in the deep aquifer typically has higher concentrations of total dissolved solids, iron, and manganese. Groundwater used in SASb is supplied from both the shallow and deeper aquifer systems (SCWA 2021).

GROUNDWATER SUPPLIES

SACRAMENTO COUNTY WATER AGENCY

The plan area is largely located within SCWA's Zone 40. Zone 40 has a total of 41 wells. These wells also draw water from SASb and have a reasonable design capacity of 62.6 MGD (SCWA 2021). Table 20-2 summarizes the Zone 40 projected groundwater production through 2045.

Table 20-2 Zone 40 Projected Groundwater Production through 2045 (AFY)

Total Supply		2025	2030	2035	2040	2045
Normal		41,000	46,000	56,000	56,000	56,000
Single Dry Year		41,000	46,000	56,000	56,000	56,000
Multi-Year Drought	Year 1	41,000	46,000	56,000	56,000	56,000
	Year 2	41,000	46,000	56,000	56,000	56,000
	Year 3	41,000	46,000	56,000	56,000	56,000
	Year 4	41,000	46,000	56,000	56,000	56,000
	Year 5	41,000	46,000	56,000	56,000	56,000

Source: SCWA 2021: Table 3:31.

CALIFORNIA AMERICAN WATER COMPANY

A portion of the plan area is located within Cal Am's Suburban-Rosemont PWS. The Suburban-Rosemont PWS is primarily served by groundwater wells. These wells draw water from SASb. The Suburban-Rosemont PWS currently has 25 operational groundwater wells with a total capacity of 19,319 gallons per minute. The firm capacity of these wells (the capacity with the largest well out of service) is approximately 17,654 gallons per minute or 9,279 MG per year (Cal Am 2024).

WATER INFRASTRUCTURE

SACRAMENTO COUNTY WATER AGENCY

SURFACE WATER FACILITIES

SCWA surface water supplies for Zone 40 are diverted from the Sacramento River at Freeport and through the City of Sacramento's Sacramento River SWTP. Surface water diverted from the Sacramento River at the Freeport diversion structure is conveyed through the Freeport Regional Water Authority pipeline, treated at the Vineyard SWTP, and then delivered to the Zone 40 service area. In 2011, the Freeport Regional Water Authority completed the Sacramento River diversion at Freeport and a conveyance pipeline. The 84-inch-diameter pipeline starts at the Freeport intake, crosses Interstate 5 and Highway 99 to the east, and then parallels Gerber Road to a bifurcation at Vineyard Road. A SCWA owned 60-inch diameter pipeline then conveys water north from this point to the Vineyard SWTP.

The current capacity of the Vineyard SWTP is 50 MGD with an ultimate capacity of 100 MGD. Treatment facilities include coagulation, flocculation, sedimentation, filtration, and chlorine disinfection. The plant is also provided with solids-handling facilities. Other facilities include a clear well / chlorine contact tank, an electrical building, and treated water pump station. The Vineyard SWTP's current 50 MGD capacity is more than adequate to supply CSA's current maximum day demand (SCWA 2016).

EXISTING GROUNDWATER FACILITIES

Groundwater is supplied to Zone 40 from wells that that are connected to groundwater treatment plants (GWTPs) and from wells that pump directly into the distribution system (direct feed). Each GWTP facility consists of wells that are manifolded into a treatment plant, a ground level storage tank, and a pump station. Most GWTPs are supplied by more than one well. The existing GWTPs use oxidation and filtration with a manganese zeolite (green sand) filter media for iron and manganese treatment. Treated water from the GWTPs flows into the ground level storage tanks and is subsequently pumped into the distribution system. The pump stations are typically sized larger than the GWTP capacities so that peak hour supply can be pumped to the distribution system from the storage tanks (SCWA 2016).

CSA is supplied water from the Vineyard SWTP and five GWTPs. There are also three direct feed wells that supply CSA. In the case of the Dwight Road GWTP in SSA, the pump station is sized larger than the GWTP to also pump the Franklin Intertie supply into SSA. The direct feed wells pump directly into the distribution system and do not require treatment. Direct feed wells are located in some areas of CSA and SSA. SCWA also has some wells that were drilled and planned to be equipped in the future. The existing capacity of groundwater facilities is sufficient to meet CSA's existing water demand (SCWA 2016).

PLANNED FACILITIES

SCWA is planning to develop a West Jackson GWTP. The future West Jackson GWTP will be used to supply CSA with a capacity of 18.0 MGD (SCWA 2016).

CALIFORNIA AMERICAN WATER COMPANY

As discussed above, the Suburban-Rosemont service area is served primarily by groundwater wells. Cal Am's existing water supply facilities in the plan area include a network of groundwater wells. Cal Am requires project applicants to provide the necessary infrastructure to convey water to the proposed development, including water mains and peaking facilities (e.g., tank[s] and pump station[s]).

REGULATORY SETTING

FEDERAL

UNITED STATES BUREAU OF RECLAMATION

The Bureau of Reclamation is part of the United States Department of the Interior and is responsible for the development and conservation of much of the water resources in the western United States. The Bureau operates Folsom Dam, Nimbus Dam, and the Folsom South Canal. While the original purpose of the Bureau was to provide for the reclamation of arid and semiarid lands in the west, the agency's current mission covers a wider range of interrelated functions. These functions include providing municipal and industrial water supplies through the Central Valley Project; generating hydroelectric power; providing irrigation water for agriculture; improving water quality, flood control, and river navigation; providing river regulation, control, and fish/wildlife enhancement; offering water-based recreation opportunities; and conducting research on a variety of water-related topics.

STATE

CALIFORNIA DEPARTMENT OF WATER RESOURCES

DWR is responsible for the preparation of the California Water Plan, management of the State Water Project, protection and restoration of the Sacramento-San Joaquin River Delta, regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources. DWR is also responsible for categorizing groundwater basins in the state for sustainable management as required by the Sustainable Groundwater Management Act of 2014 (SGMA). SGMA is discussed in more detail below.

STATE WATER RESOURCES CONTROL BOARD

SWRCB was established in 1967 to administer water rights and protect water quality. SWRCB and its nine regional water quality control boards administer water rights and enforce pollution control standards. SWRCB is responsible for the granting of water right permits and licenses through an appropriation process following public hearings and appropriate environmental review by applicants and responsible agencies. In granting water right permits and licenses, SWRCB must consider all beneficial uses, including water for downstream human and environmental uses.

URBAN WATER MANAGEMENT PLANNING ACT

Pursuant to California Water Code Sections 10610-10657, as last amended by Senate Bill (SB) 318 in 2004, the Urban Water Management Planning Act requires all urban water suppliers with more than 3,000 service connections or water use of more than 3,000 acre-feet per year (AFY) to submit an urban water management plan (UWMP) to DWR every 5 years and update the plan on or before December 31 in years ending in 5 and 0. Amendments to SB 318 have focused on ensuring that UWMP emphasizes and addresses drought contingency planning, water demand management, reclamation, and groundwater resources.

CALIFORNIA WATER CODE

Water Code Section 10910 et seq. defines the projects for which the preparation of a water supply assessment (WSA) is required, as well as the lead agency's responsibilities related to WSA. The Water Code also clarifies the roles and responsibilities of the lead agency under CEQA and of the water supplier with respect to describing current and future supplies compared to current and future demands. A WSA is required for:

- A proposed residential development of more than 500 dwelling units;
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 250,000 square feet of floor space;
- A proposed hotel or motel, or both, having more than 500 rooms;
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
- A mixed-use development that includes one or more of the uses described above;
- A development that would demand a volume of water equivalent to or greater than the volume of water required by a 500-dwelling unit project; and
- For lead agencies with fewer than 5,000 water service connections, any new development that would increase the number of water service connections in the service area by 10 percent or more.

Under Section 10910 of the Water Code, the lead agency must identify the affected water supplier and ask the supplier whether the new demands associated with the project are included in the supplier's UWMP. If UWMP includes the demands, it may be incorporated by reference in the WSA. If there is no public water system to serve the project, the lead agency must prepare a WSA.

SENATE BILL 221

SB 221 requires a city or county to include as a condition of approval of any tentative map, parcel map, or development agreement for certain residential subdivisions a requirement that a "sufficient water supply" be available. Proof of a sufficient water

supply must be based on a written verification from the public water system that would serve the development.

Sustainable Groundwater Management Act of 2014

SGMA became law on January 1, 2015 and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting the SGMA, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction (Water Code Section 10720.1).

SGMA requires DWR to categorize each groundwater basin in the state as high, medium, low, or very low priority (Water Code Sections 10720.7, 10722.4). All basins designated as high- or medium-priority basins must be managed by a groundwater sustainability agency (GSA) under a groundwater sustainability plan (GSP) that complies with Water Code section 10727, et seq. If required to be prepared, GSPs must be prepared by January 31, 2020 for all high- and medium-priority basins that are subject to critical conditions of overdraft, as determined by DWR, or by January 31, 2022 for all other high- and medium-priority basins. In lieu of preparation of a GSP, a local agency could submit an alternative that complies with SGMA no later than January 1, 2017 (Water Code Section 10733.6).

California Model Water Efficient Landscape Ordinance

The California Model Water Efficient Landscape Ordinance (MWELO) sets restrictions on outdoor landscaping. Because Sacramento County is a “local agency” under MWELO, it must require project applicants to prepare plans consistent with the requirements of MWELO for review and approval by the County. MWELO was most recently updated by DWR and approved by the California Water Commission on July 15, 2015. All provisions became effective on February 1, 2016. The revisions, which apply to new construction with a landscape area greater than 500 square feet, reduced the allowable coverage of high-water-use plants to 25 percent of the landscaped area. MWELO also requires use of a dedicated landscape meter on landscape areas for residential landscape areas greater than 5,000 square feet or non-residential landscape areas greater than 1,000 square feet and requires weather-based irrigation controllers or soil-moisture based controllers or other self-adjusting irrigation controllers for irrigation scheduling in all irrigation systems.

California Green Building Standards Code

Chapter 4, Division 4.3 of the 2022 California Green Building Standards Code (CALGreen) requires conservation of water used indoors, outdoors, and in wastewater conveyance associated with residential land use. These include requiring the installation of water conserving plumbing fixtures and fittings, and requirements for outdoor potable water use in land use areas consistent with MWELO. Chapter 5, Division 5.3 includes standards for indoor and outdoor water use associated with non-residential land uses.

LOCAL

WATER FORUM AGREEMENT

The Water Forum is made up of a diverse group of businesses, agricultural leaders, environmentalists, citizen groups, water managers, and local governments from Sacramento, Placer, and El Dorado Counties. These stakeholders came together in 2000 to form an agreement for water management with the goals of providing a reliable and safe water supply for the region's economic health through the year 2030 and preserving the fishery, wildlife, recreation, and aesthetic values of the lower American River. The Water Forum Agreement was formalized through a Memorandum of Understanding whereby all signatories agreed to carry out the actions specified for them (Water Forum 2015). Sacramento Central Groundwater Authority (SCGA) relied on the negotiated volume of groundwater production referred to in the Water Forum Agreement as the basis for the groundwater yield thresholds.

SACRAMENTO COUNTY WATER AGENCY ZONE 40 WATER SUPPLY MASTER PLAN

The Water Forum Agreement is the foundation for the Zone 40 Water Supply Master Plan (WSMP), which was adopted in February 2005 by SCWA. The Zone 40 WSMP describes available water supply and makes recommendations to meet future water demands in Zone 40 through 2030 through implementation of a regional conjunctive use program that balances the use of groundwater, surface water, and recycled water supplies. SCWA prepared amendments to the 2005 Zone 40 WSMP to address the sufficiency of water supply for WJHMP, Jackson Township, and NewBridge projects (SCWA 2016).

SACRAMENTO COUNTY WATER AGENCY ZONE 40 2016 WATER SUPPLY INFRASTRUCTURE PLAN

In 2006, SCWA prepared the Water Supply Infrastructure Plan (WSIP), which identified the water supply infrastructure needs necessary to support the buildout of Zone 40. SCWA updated the plan in 2016 to reflect changes in the Zone 40 water supply portfolio, adoption of the Sacramento County General Plan, and completion of the Freeport Regional Water Project. The 2016 WSIP includes water demand factors, growth projections, and estimates of projected water demand and supply (SCWA 2016). It also identifies recommended infrastructure types, locations, and timing to meet future demand through buildout. WJHMP is within the buildout area of the 2016 WSIP.

SACRAMENTO AMERICAN SUBBASIN GROUNDWATER SUSTAINABILITY PLAN

SASb has been designated by DWR as a high priority subbasin. There are six local entities that responded to the mandate of SGMA and formed GSAs within SASb: SCGA, Omochumne-Hartnell Water District (OHWD), Sloughhouse Resource Conservation District (SRCD), North Delta GSAs (NDGSA), Reclamation District 551 (RD 551), and Sacramento County. The six GSAs agreed to work together to develop and implement a GSP for SASb. SCWA and Cal Am are members of the SCGA GSA. The South American Subbasin Groundwater Sustainability Plan (SASb GSP) was prepared in

October 2021 by the six local GSAs. The SASb GSP identified the sustainable yield[1] for SASb to be at or below 235,000 AFY (South American Subbasin Groundwater Sustainability Agencies 2021). Projects and management actions that would contribute to the achievement of the sustainability goal of the SASb GSP include the following:

- Existing projects that include diversification of water supplies (Freeport Regional Water Project, Vineyard SWTP, and conjunctive use improvements).
- Near-term planned projects that include the Sacramento Regional County Sanitation District Harvest Water project, OHWD Groundwater Recharge Project, Regional Conjunctive Use Program, and Sacramento Area Flood Control Agency Flood-MAR.

Sacramento County 2030 General Plan

The following policies of the 2030 General Plan are applicable to the project:

- **Policy AG-27.** The County shall actively encourage groundwater recharge, water conservation and water recycling by both agricultural and urban water users.
- **Policy CO-1.** Support conjunctive use water supply for development.
- **Policy CO-7.** Support the Water Forum Agreement Groundwater Management Element. Prior to approving any new development water supply plan shall be approved that demonstrates consistency with an adopted groundwater management plan.
- **Policy CO-9.** Developments in areas with significant contamination shall utilize remediated groundwater as part of their water supply when feasible.
- **Policy CO-14.** Support the use of recycled wastewater to meet non-potable water demands where financially feasible.
- **Policy CO-16.** Ensure developments are consistent with the County Water Efficient Landscape Ordinance, which shall be updated as needed to conform to state law.
- **Policy CO-22.** Support water management practices that are responsive to the impacts of Global Climate Change such as groundwater banking and other water storage projects.
- **Policy CO-23.** Development approval shall be subject to a finding regarding its impact on valuable water-supported ecosystems.
- **Policy CO-34.** Development applications shall be subject to compliance with applicable sections of the California Water Code and Government Code to

[1] Sustainable yield is defined for SGMA purposes as “the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result.” (Clean Water Act Section 10721 (w)).

determine the availability of an adequate and reliable water supply through the Water Supply Assessment and Written Verification processes.

- **Policy CO-35.** New development that will generate additional water demand shall not be approved and building permits shall not be issued if sufficient water supply is not available, as demonstrated by Water Supply Assessment and Written Verification processes.
- **Policy CO-36.** Water supply entitlements will be granted on a first come first serve basis to optimize the use of available water supplies.
- **Policy LU-73.** Sewer and water treatment and delivery systems shall not provide for greater capacity than that authorized by the General Plan.
- **Policy PF-2.** Municipal and industrial development within the Urban Service Boundary but outside of existing water purveyors' service areas shall be served by either annexation to an existing public agency providing water service or by creation or extension of a benefit zone of the SCWA.
- **Policy PF-4.** Connector fees for new development shall cover the fair share of costs to acquire and distribute surface water to the urban area.
- **Policy PF-5.** New treatment facilities and all facility operations shall be funded by beneficiaries.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community Plans relevant to the WJHMP are the Cordova Community Plan and the Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

- **Policy PS-2.** Provide a reliable, contaminant-free, long-term source of water to serve the community, which protects the groundwater aquifer(s) from long-term damage attributable to drawdown by the use of public/private wells.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan does not contain specific policies related to water supply.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

A water supply impact would be significant if implementation of the project would:

- Require or result in the construction of new, or the expansion of existing, water facilities, the construction of which could cause significant environmental effects.
- Have insufficient water supplies available to serve the project and reasonably foreseeable development during normal, dry, or multiple dry years.

- Result in a service demand that cannot be met by existing or reasonably foreseeable future service capacity.
- Contribute to groundwater pumping to serve project growth such that the average annual sustainable yield of 235,000 acre-feet for the South American Subbasin Basin is exceeded.
- Interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Issues not Discussed Further

Groundwater Recharge

Project impacts related to groundwater recharge and conflict with a sustainable groundwater management plan are discussed in Impact HYD-2 and Impact HYD-5 of Chapter 14, "Hydrology, Drainage, and Water Quality," respectively. Therefore, these topics are not discussed further in this chapter.

Methodology

The evaluation of water supply is based on review of the following documents and technical studies:

- The SASb GSP (South American Subbasin Groundwater Sustainability Agencies 2021)
- Zone 40 Water System Infrastructure Plan (SCWA 2016)
- SCWA 2020 UWMP (SCWA 2021)
- Cal AM 2020 UWMP for Sacramento Main District (Murraysmith 2021)
- SCWA Water Supply Assessment for West Jackson Highway Master Plan (SCWA 2024)
- Cal Am Water Supply Assessment for West Jackson Highway Master Plan (Cal Am 2024)

West Jackson Highway Master Policies

The proposed WJHMP includes the following policy related to water supply.

- **Policy 7.2.** Sufficient water resources shall be identified, and the necessary transmission and storage facilities shall be constructed to provide potable water to meet the Plan Area needs.

IMPACTS AND ANALYSIS

IMPACT WS-1: ENVIRONMENTAL EFFECTS DUE TO THE CONSTRUCTION OF NEW OR THE EXPANSION OF EXISTING WATER FACILITIES

Implementation of the project would require on-site and off-site water line extensions to the existing SCWA and Cal Am infrastructure surrounding the plan area. On-site water transmission lines would be routed throughout the plan area. Generally, the on-site transmission system would consist of 16-inch to 24-inch mains. A grid of 8-inch to 12-inch distribution mains would extend from the transmission system to serve local developments. Off-site improvements would consist of SCWA's transmission mains looping to the Vineyard SWTP along Florin Road and Elder Creek Road, a 24-inch Cal Am water line extending to Folsom Boulevard within Watt Avenue, and a 12-inch Cal Am water line extending north in Mayhew Road to the existing domestic water facilities at Oxwood Drive. The existing and proposed water infrastructure are shown in Figure 2-10 in Chapter 2, "Project Description." Water infrastructure would be phased with development to meet end user demands as well as operational criteria of the system.

Connections to SCWA's and Cal Am's water systems are considered part of the project. The impacts associated with their construction are analyzed in other chapters of this EIR. For example, Chapter 6, "Air Quality," Chapter 9, "Climate Change," and Chapter 16, "Noise," evaluate increases in air pollutant and greenhouse gas emissions, and noise levels associated with all construction activities, including any ground disturbance needed for connecting to existing water infrastructure, as well as increases in emissions associated with the project's water demands. Chapter 8, "Biological Resources," evaluates the potential impacts to special-status species and sensitive habitats resulting from ground disturbance activities (e.g., trenching and excavation) needed for connecting to existing water infrastructure. Chapter 10, "Cultural Resources," evaluates the potential impacts that trenching and excavation, including any ground disturbance needed for connecting to existing water infrastructure, may have on buried resources. Chapter 12, "Geology and Soils," Chapter 13, "Hazards and Hazardous Materials," and Chapter 14, "Hydrology and Water Quality," evaluate the potential impacts that trenching and excavation, including any ground disturbance needed for connecting to existing infrastructure, may have related to erosion and siltation, degradation of water quality, and the release of contamination into the environment.

As required by law, utility connections would be constructed in accordance with all applicable building codes and standards to ensure an adequately sized and properly constructed transmission and conveyance system. Any necessary connections would be constructed prior to building occupancy and in a manner that would minimize the potential for utility service disruption of existing uses.

Based on the above discussion, the project would not result in significant environmental effects from the construction of water infrastructure needed to serve the project. The impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

IMPACT WS-2: RESULT IN DEMAND FOR WATER THAT CANNOT BE MET BY EXISTING OR REASONABLY FORESEEABLE FUTURE SERVICE CAPACITY

As discussed in the "Environmental Setting" section above, SCWA and Cal Am would be the water purveyors supplying water to serve development within the plan area. Two WSAs, one from Cal Am and one from SCWA, have been prepared in accordance with the California Water Code Section 10910, which demonstrate that the planned water supplies for SCWA's Zone 40 and Cal Am's Suburban-Rosemont PWS would be sufficient to meet the demands of the project in addition to the existing and projected water supply obligations for a 20-year period (see Appendix L). Although the buildout of the project would take longer than 20 years to complete, the WSAs were prepared in accordance with the California Water Code Section 10910 to determine whether there are sufficient water supplies to serve the project during normal, single dry, and multiple dry year for a 20-year period between 2025 and 2045. The proposed water demands and supplies for the plan area within SCWA and Cal Am service areas are described below.

SACRAMENTO COUNTY WATER AGENCY

SCWA prepared a WSA in accordance with the California Water Code Section 10910, which demonstrates that the planned water supplies for Zone 40 would be sufficient to meet the demands of the project in addition to the existing and projected water supply obligations through 2045. The proposed lands uses and projected water demand for the project within Zone 40 service area are summarized in Table 20-3.

Table 20-3 Proposed Land Use and Water Demands Estimate for the Project in SCWA Zone 40

Land Use	Unit Water Demand Factor (AFY per acre)	Area (acre)	Water Demand (AFY)[a]
Residential Designation			
Multi-family Residential (low density)	2.44	41	100.0
Multi-family Residential (high density)	3.33	149	496.2
Single Family	2.13	1,511	3,218.4
Rural Estate	1.37	95	130.2
Subtotal – Residential	—	1,796	3,944.8

Land Use	Unit Water Demand Factor (AFY per acre)	Area (acre)	Water Demand (AFY)[a]
Non-Residential Designation			
Light Industrial	2.02	79	159.6
Commercial	2.02	303	612.1
Public Recreation	2.80	281	786.8
Public	0.81	76	61.6
Right-of-Way	0.818	131	23.6
Vacant	—	1,355	—
Subtotal – Non-Residential	—	2,225	1,643.7
Total without System Loss	—	-	5,588.5
System Loss (7.5 percent)	—	-	419.2
TOTAL	**—**	**4,021**	**6,007.7**

a Minor discrepancies occur due to rounding.

Source: SCWA 2024.

As shown in Table 20-3, the project is anticipated to have an annual average water demand of approximately 6,008 AFY (including 7.5 percent system losses) at buildout. The project's estimated demands for water are accounted for in the SCWA 2020 UWMP. While it is probable that the buildout of WJHMP would take more than 20 years to complete, construction of the project is assumed to begin in 2025 and be completed in 2045 for the purpose of water supply planning. The projected water demands were incorporated into the 2020 UWMP in 5-year increment, as shown in Table 20-4, with 2045 assumed to reflect full buildout of the plan area.

Table 20-4 Projected Water Demand Growth in 5-Year Increments for the Project (AFY)

	2025	2030	2035	2040	2045
Projected Water Demand	1,201	2,401	3,602	4,802	6,008

Source: SCWA 2024.

Within CSA of Zone 40, treated surface water would be provided to the plan area from the Vineyard SWTP. The Vineyard SWTP's current 50 MGD capacity is more than adequate to supply CSA's current maximum day demand (SCWA 2016). With an ultimate capacity of 100 MGD, the Vineyard SWTP would be capable of supplying treated water needs of the CSA for the near term. There would be adequate water available to meet the project's annual water demand for normal and dry years because current surface water supplies alone are demonstrated to exceed the projected buildout water demand for Zone 40, including the project, through 2045, as illustrated below in Table 20-5.

Table 20-5 Zone 40 Surface Water Supply Reliability Through 2045, in 5-Year Increments (AFY)

Water Year	2025	2030	2035	2040	2045
Normal Year					
Total Supply	159,096	164,096	174,096	174,096	174,096
Total Demand	46,235	54,494	62,006	68,143	74,388
Surplus	112,861	109,602	112,090	105,953	99,708
Single Dry Year					
Total Supply	87,199	92,676	103,926	105,176	107,676
Total Demand	48,547	57,219	65,106	71,551	78,107
Surplus	38,652	35,457	38,820	33,625	29,569
Multiple Dry Year – Year 1					
Total Supply	111,954	118,386	132,136	135,886	143,386
Total Demand	48,547	57,219	65,106	71,551	78,107
Surplus	63,407	61,167	67,030	64,335	65,279
Multiple Dry Year – Year 2					
Total Supply	99,576	105,531	118,031	120,531	125,531
Total Demand	48,547	57,219	65,106	71,551	78,107
Surplus	51,029	48,312	52,925	48,980	47,424
Multiple Dry Year – Year 3					
Total Supply	87,199	92,676	103,926	105,176	107,676
Total Demand	48,547	57,219	65,106	71,551	78,107
Surplus	38,652	35,457	38,820	33,625	29,569
Multiple Dry Year – Year 4					
Total Supply	95,054	100,531	111,781	113,031	115,531
Total Demand	48,547	57,219	65,106	71,551	78,107
Surplus	46,507	43,312	46,675	41,480	37,424
Multiple Dry Year – Year 5					
Total Supply	107,431	113,386	125,886	128,386	133,386
Total Demand	48,547	57,219	65,106	71,551	78,107
Surplus	58,884	56,167	60,780	56,835	55,279

Source: SCWA 2021: Tables 5-3 and 5-4.

California American Water Company

Cal Am also prepared a WSA for the project, which demonstrates that the planned water supplies for the Suburban-Rosemont PWS would be sufficient to meet the demands of the project in addition to the existing and projected water supply obligations

through 2045. The proposed lands uses and projected water demand for the project within the Suburban-Rosemont PWS are summarized in Table 20-6.

Table 20-6 Proposed Land Use and Water Demands Estimate for the Project in Cal Am Suburban-Rosemont PWS

Land Use	Area (acre)	Average Annual Demand (MG)	Average Day Demand (gallon per minute)	Maximum Day Demand (gallon per minute)	Peak Hour Demand (gallon per minute)
Residential Designation					
Very Low Density Residential	20	10	18	37	74
Low Density Residential	444	331	631	1,261	2,522
Medium Density Residential	18	15	29	57	115
High Density Residential	35	41	79	157	314
Mixed Use	50	58	111	222	443
Subtotal – Residential	*567*	*455*	*868*	*1,734*	*3,468*
Non-Residential Designation					
Commercial	210	149	282	565	1,130
Employment	321	227	433	865	1,731
Industrial	75	53	101	202	404
School	13	13	25	50	99
Park	60	59	111	223	446
Open Space (Irrigated)	27	27	51	102	204
Open Space (Non-irrigated)	358	0	0	0	0
Open Space/Urban Farm	140	0	0	0	0
Institutional	23	7	13	25	51
Arterial/Collector Roads	99	6	12	24	47
Subtotal – Non-Residential	*1,325*	*541*	*1,028*	*2,056*	*4,112*
TOTAL	**1,892**	**996**	**1,896**	**3,790**	**7,580**

Source: Cal Am 2024.

As shown in Table 20-6, the project is anticipated to have an annual average water demand of approximately 996 MG within the Suburban-Rosemont PWS. As explained in the Cal Am WSA, the 2020 UWMP for Suburban-Rosemont does not include the anticipated 996 MG water demands from the project. However, there have been no significant changes or updates to demand projections for Cal Am's Suburban-Rosemont PWS since the 2020 UWMP. Historical demands from the past 5 years are presented in Table 20-7.

Table 20-7 Cal Am Suburban-Rosemont PWS Historical Water Demands

Year	2018	2019	2020	2021	2022
Demand (MG)	2,691	2,629	2,872	2,622	2,699

Source: Cal Am 2024.

Future water demands for the Suburban-Rosemont PWS are estimated by applying historical growth rates as well as the projected demands for the project. As described above for the SWCA assessment, this analysis conservatively assumes that the project construction would begin in 2025 and conclude in 2045. It is assumed that 25 percent of the project would be completed by 2030, 50 percent completed by 2035, 75 percent completed by 2040, and 100 percent completed by 2045. Therefore, 25 percent of the estimated project water demand is applied to projected demands for Suburban-Rosemont PWS in 2030, 50 percent of the estimated project water demand is applied in 2035, 75 percent of the estimated project water demand is applied in 2040, and 100 percent the estimated project water demand is applied in 2045. The overall projected water demands for the Suburban-Rosemont PWS through 2045 are summarized in Table 20-8.

Table 20-8 Projected Water Demands for Cal Am Suburban-Rosemont PWS

Year	2023	2024	2025	2030	2035	2040	2045
Demand (MG)	2,709	2,718	2,727	3,024	3,322	3,620	3,920

Source: Cal Am 2024.

Cal Am's Suburban-Rosemont PWS is served primarily by 25 groundwater wells. These wells draw water from SASb. Actual groundwater withdrawals from SASb for the past 5 years are shown in Table 20-9.

Table 20-9 Suburban-Rosemont PWS Historical Groundwater Withdrawals

Year	2018	2019	2020	2021	2022
Groundwater Withdrawal (MG)	2,570	2,466	2,531	2,622	2,590

Source: Cal Am 2024.

As described above under the "Environmental Setting" section, the 25 operational wells serving the Suburban-Rosemont PWS have a firm capacity of 9,279 MG per year. Cal Am also has an agreement with the City of Sacramento to purchase water. With this agreement, the Suburban-Rosemont PWS receives approximately 1,576 MG of water per year during normal year and 403 MG of water per year during single dry years and multiple dry years from the City of Sacramento. Therefore, the total water supplies for the Suburban-Rosemont PWS are as follows:

- Normal Year – 10,855 MG (9,279 MG plus 1,576 MG)
- Single Dry Year – 9,682 MG (9,279 MG plus 403 MG)
- Multiple Dry Year – 9,682 MG (9,279 MG plus 403 MG)

Table 20-10 summarizes the total water supplies, demands (including the average annual water demand for project), and surplus within the Cal Am Suburban-Rosemont PWS through 2045 during normal year, single dry year, and multiple dry years.

Table 20-10 Suburban-Rosemont PWS Water Supply Reliability Through 2045 (MG per year)

Water Year	2022	2025	2030	2035	2040	2045
Normal Year						
Total Supply	10,855	10,855	10,855	10,855	10,855	10,855
Total Demand	2,699	2,727	3,024	3,322	3,620	3,920
Surplus	8,156	8,128	7,831	7,533	7,234	6,935
Single Dry Year						
Total Supply	9,682	9,682	9,682	9,682	9,682	9,682
Total Demand	2,699	2,727	3,024	3,322	3,620	3,920
Surplus	6,983	6,955	6,658	6,360	6,061	5,762
Multiple Dry Year						
Total Supply	9,682	9,682	9,682	9,682	9,682	9,682
Total Demand	2,699	2,727	3,024	3,322	3,620	3,920
Surplus	6,983	6,955	6,658	6,360	6,061	5,762

Source: Cal Am 2024.

According to California Code of Regulations, Title 22 Section 64554, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand. Table 20-11 presents a comparison of maximum day demand versus supply for the Suburban-Rosemont PWS.

Table 20-11 Maximum Day Demand and Supply Throughout 2045 (MG per day)

Year	2023	2024	2025	2030	2035	2040	2045
Normal Year							
Supply	27.7	27.7	27.7	27.7	27.7	27.7	27.7
Maximum Day Demand	14.1	14.2	14.2	15.9	17.5	19.1	20.7
Surplus	13.6	13.5	13.5	11.9	10.3	8.6	7.0
Single Dry Year							
Supply	26.5	26.5	26.5	26.5	26.5	26.5	26.5
Maximum Day Demand	14.1	14.2	14.2	15.9	17.5	19.1	20.7
Surplus	12.4	12.3	12.3	10.6	9	7.4	5.8

Year	2023	2024	2025	2030	2035	2040	2045
Multiple Dry Year							
Supply	26.5	26.5	26.5	26.5	26.5	26.5	26.5
Maximum Day Demand	14.1	14.2	14.2	15.9	17.5	19.1	20.7
Surplus	12.4	12.3	12.3	10.6	9	7.4	5.8

Note: Maximum day demand and supply during normal year are obtained from the Cal Am Water Supply Assessment for West Jackson Highway Master Plan (Cal Am 2024). Water supplies during single dry year and multiple dry year are calculated based on the water supplies shown in Table 20-10. Maximum day demands during single dry year and multiple dry year are assumed to be the same as maximum day demand during normal year.

Source: Cal Am 2024.

As shown in Table 20-10, there would be sufficient water supplies to serve the project's average annual demand through 2045 during normal year, single dry year, and multiple dry year. Table 20-11 shows that there would be sufficient water supplies to serve the project's maximum day demand through 2045 during normal year, single dry year, and multiple dry year.

Summary

As analyzed above, SCWA and Cal Am would have sufficient water supplies to serve the project through 2045. Therefore, the project would not result in demand for water that cannot be met by existing or reasonably foreseeable future service capacity. The impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact WS-3: Contribute to Groundwater Pumping Such That the Average Annual Sustainable Yield for the South American Subbasin Basin is Exceeded

The SASb GSP identifies the sustainable yield for SASb at or below 235,000 AFY, representing the long-term average annual groundwater pumping for SASb that would not result in significant and unreasonable impacts (South American Subbasin Groundwater Sustainability Agencies 2021). The Cal Am 2015 UWMP, SCWA 2020 UWMP, and SCWA conjunctive use program were included in the development of the SASb GSP's water budget and sustainable yield.

Sacramento County Water Agency

As explained in the SCWA WSA, the project water demands have been included and addressed in the SCWA 2020 UWMP, which has been included in the development of the SASb sustainable yield of 235,000 AFY. Implementation of the project would not generate additional water demands that may exceed the annual sustainable yield of SASb. SCWA is a signatory to the Water Forum Agreement and a member of the SCGA GSA, SCWA has committed to the implementation of the SASb GSP and to meet the groundwater sustainability goal of the SASb GSP. In addition, project water demands

within Zone 40 would be met by conjunctive use of groundwater and surface water. The conjunctive use program relies on an abundance of surface water in wet years when as much surface water as possible is diverted, within entitlement limitations, minimizing the use of groundwater. The project water demands would be met through the conjunctive use of surface and groundwater supplies and adequate supplies would be available such that overdraft of SASb would not occur.

California American Water Company

The project was not included in the Cal Am 2015 UWMP or 2020 UWMP. Therefore, the water demand from the project was not included in the development of the SASb sustainable yield of 235,000 AFY. Implementation of the project would generate additional water demands that may exceed the annual sustainable yield of SASb. As shown in Table 20-10 and Table 20-11, there would be adequate water supplies available to serve the Suburban-Rosemont PWS, including the project. In addition, Cal Am is a member of the SCGA GSA, which would require Cal Am to implement the SASb GSP to achieve the SASb sustainability goal of protecting and ensuring the long-term viability of groundwater resources for domestic, urban, agricultural, industrial, and environmental beneficial users of groundwater. Therefore, the project would not result in overdraft of SASb.

Summary

As described above, there would be adequate water supplies available to serve the project within both the SCWA and Cal Am service areas. SCWA and Cal Am are members of the SCGA GSA and would be required to implement the SASb GSP and to maintain the long-term average annual groundwater sustainable yield of 235,000 AFY of SASb. Implementation of the project would not contribute to groundwater pumping that would exceed the average annual sustainable yield for SASb. The impact would be ***less than significant***.

Mitigation Measures

No mitigation is required.

21 TRIBAL CULTURAL RESOURCES

INTRODUCTION

Under CEQA, lead agencies must consider the effects of their projects on tribal cultural resources. This chapter describes the potential impacts on tribal cultural resources that could occur as a result of implementation of the proposed project.

Tribal cultural resources, as defined by Assembly Bill (AB) 52, Statutes of 2014, in Public Resources Code (PRC) Section 21074, are sites, features, places, cultural landscapes, sacred places and objects, with cultural value to a Tribe. A Tribal cultural landscape is defined as a geographic area (including both cultural and natural resources and the wildlife therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

This chapter includes both environmental and regulatory settings followed by an accounting of the archival research that was conducted within the plan area and an analysis of any potential impacts on cultural resources associated with implementing the proposed project.

The comments on the notice of preparation (NOP) pertaining to tribal cultural resources were provided by the Native American Heritage Commission (NAHC). The NAHC's letter outlined the obligations under CEQA to evaluate potential impacts on cultural resources and the obligations for consultation with tribes under AB 52 and Senate Bill (SB) 18. The NOP and comments received on the NOP are presented in Appendix A.

ENVIRONMENTAL SETTING

ETHNOGRAPHY

The plan area lies 5 miles west of the former territory of the Plains Miwok *Amuchamne* tribelet. The Plains Miwok were recognized as a distinct language group as early as 1806 when Spanish explorers first entered the region. The *Amuchamne* tribelet was the northernmost tribelet on the Cosumnes River drainage within the boundaries of the Sacramento Valley. Missionization of the *Amuchamne* people began in 1834-1835 but the *Amuchamne* were the only organized Cosumnes River Miwok village to survive the Gold Rush. Sometime between 1850 and 1870, the people of *Amuchamne* moved their village to the outskirts of Elk Grove possibly in response to several factors including an influx of Nisenan in the Michigan Bar area after the discovery of gold at this location.

PLAINS MIWOK

Plains Miwok are members of the Utian Language Family of the Penutian Stock. Plains Miwok inhabited the lower reaches of the Mokelumne and Cosumnes Rivers and the banks of the Sacramento River from Rio Vista to Freeport (JCC 2020:6.4).

The basic social and economic group of Plains Miwok was the family or household unit, with the nuclear and/or extended family forming a corporate unit. These basic units were combined into distinct, named village or hamlet groups, which functioned as headquarters of a localized patrilineage. Lineage groups were important political and economic units that combined to form tribelets, with the largest sociopolitical unit of Plains Miwok numbering between 300 and 500 persons (JCC 2020:6.4).

Each tribelet had a chief or headman who exercised political control over the villages that comprised it. Tribelets assumed the name of the head village where the chief resided. The office of tribelet chief was hereditary, with the chieftainship being the property of a single patrilineage within the tribelet. The office usually passed from father to son, but in the absence of a male heir a daughter could assume the office of chief (JCC 2020:6.4).

Plains Miwok built a variety of structures including residential dwellings, ceremonial structures, semisubterranean sweat lodges, and menstruating huts. The typical dwelling was a thatched house, consisting of a conical framework of poles that was covered by brush, grass, or tules. Semi subterranean earth lodge roundhouses were also built for ceremonial gatherings, assemblies, local feasts, and housing visitors (JCC 2020:6.4-5).

A variety of flaked and ground stone tools were common among Plains Miwok (e.g., knives, arrow and spear points, and rough cobble and shaped pestles). Plains Miwok imported obsidian, which was a highly valued material for tool manufacture. They also maintained trading relationships with neighboring groups for commodities such as salt, marine shells, and basketry. In addition, other tools and weapons were made of bone and wood, including both simple and sinew-backed bows, arrow shafts and points, looped stirring sticks, flat-bladed mush paddles, pipes, and hide preparation equipment. Cordage was made from plant material and used to construct fishing nets and braided and twined tumplines. Soaproot brushes were commonly used during grinding activities to collect meal and/or flour (JCC 2020:6.5).

Fishing formed a large component of Plains Miwok subsistence activity. Consequently, they used an extensive assemblage of fishing-related implements and facilities including spears; cordage lines with bone fishhooks; harpoons with detachable points; dams for stream diversion; nets of cordage and basketry; weirs; and an array of fish traps. In addition, tules, lashed logs, and bark rafts were used to acquire resources and facilitate travel (JCC 2020:6.5).

Specialized food processing and cooking techniques used by Plains Miwok included grinding and leaching of ground acorn and buckeye meal. Acorns, buckeyes, pine nuts, seeds and other plant foods, and meat were routinely processed using bedrock mortars and pestles. A soaproot brush was used to sweep meal into mortar cups and collect flour. Fist-sized, heated stones were used to cook and/or warm liquid-based foods such as acorn gruel. In addition to these plant resources, other plants may have been managed, primarily by controlled burning, for both food (e.g., edible grasses and seed producing plants) and the manufacture of baskets and other useful equipment (JCC 2020:6.5).

Contemporary Native American Setting

Tribes view themselves as contemporary stewards of their culture and the landscape, representing a continuum from the past to the present. They are resilient, vibrant, and active in the community. Tribes maintain their connection to their history and ongoing culture by practicing traditional ceremonies, engaging in traditional practices (e.g., basketry), and conducting public education and interpretation. The acknowledgement of Native American history and the persistence of Tribal knowledge are recognized and evaluated under CEQA. Contemporary Californian Native American tribes with ancestral connections to the study area include the United Auburn Indian Community of the Auburn Rancheria (United Auburn), Shingle Springs Band of Miwok Indians (SSBMI), Ione Band of Miwok Indians, and Wilton Rancheria.

These tribes today maintain connection to their history and culture in a multitude of ways, including through ceremony, language and traditional knowledge instruction, community service, and tribal governance. For example, a “Big Time” is typically celebrated every September to mark the start of autumn and acorn gathering time at Chaw’se Grinding Rock State Park in Pine Grove. This celebration includes serving traditional foods, traditional dancing, healing rituals, and worship in the roundhouse. Language and traditional skill classes are offered by most of the tribes, including by the SSBMI which has a Traditional Ecological Knowledge department to assist members with learning about respectful and traditional uses of plants and animals, and the United Auburn who has a Pre-K through 8th grade school where key aspects of Indian culture and critical thinking are taught to prepare tribal members to face future challenges (Private School Review 2022; SSBMI 2022a). Tribal community service departments provide family support services to adults and children in order to promote the health and well-being of tribal community members and their families as well as connection to their heritage. Common services offered by all tribes include Indian Child Welfare Act (ICWA) advocacy and intervention, housing assistance, health care assistance, Elder programs, and grants and scholarships for higher education (Ione Band of Miwok Indians 2022; SSBMI 2022a; United Auburn 2022; Wilton Rancheria 2022a). Governance on tribal lands is typically outlined by tribally prepared constitutions, codes and/or ordinances, and are carried out by tribal departments which are in turn typically overseen by the tribal council. This includes the office of Tribal Historic Preservation Officer. Because tribes retain inherent sovereign powers over their members and territory, SSBMI and the Wilton Rancheria also have Tribal Courts which serve as culturally- sensitive, independent judicial forums where tribal cultural values are held at the forefront of dispute resolutions (SSBMI 2022b; Wilton Rancheria 2022b).

Regulatory Setting

Federal

There are no federal regulations that pertain to tribal cultural resources for this project.

STATE

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

All properties in California that are listed in or formally determined eligible for listing in the National Register of Historic Places (NRHP) are also listed in the California Register of Historical Resources (CRHR). The CRHR is a listing of State of California resources that are significant in the context of California's history. It is a Statewide program with a scope and with criteria for inclusion similar to those used for the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR.

A historical resource must be significant at the local, State, or national level under one or more of the criteria defined in the California Code of Regulations Title 15, Chapter 11.5, Section 4850 to be included in the CRHR. The CRHR criteria are tied to CEQA because any resource that meets the criteria below is considered a significant historical resource under CEQA. As noted above, all resources listed in or formally determined eligible for listing in the NRHP are automatically listed in the CRHR.

The CRHR uses four evaluation criteria:

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

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

(3) Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values; or

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

Similar to the NRHP, a historical resource must meet one of the above criteria and retain integrity to be listed in the CRHR. The CRHR uses the same seven aspects of integrity used by the NRHP: location, design, setting, materials, workmanship, feeling, and associations.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires lead agencies to consider whether projects will affect *tribal cultural resources*. PRC Section 21074 states:

a) "Tribal cultural resources" are either of the following:

1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.

B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

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

b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Native American Burials and Inadvertent Discoveries

California law protects Native American burials, skeletal remains and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains (Section 7050.5 of the Health and Safety Code and PRC 5097.9).

When human remains are discovered, the protocol to be followed is specified in California Health and Safety Code, which states:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

State CEQA Guidelines Section 15064.5(e) requires that excavation activities be stopped whenever human remains are uncovered and that the County coroner be called in to assess the remains. If the County coroner determines that the remains are those of

Native Americans, the NAHC must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the NAHC. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the State CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5(f), these provisions should include "an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

Senate Bill 18

SB 18 (Burton, Chapter 905, Statutes of 2004) requires local governments to consult with state- and federally recognized Native American tribes prior to making certain planning decisions and to provide notice to the tribes at certain key points in the planning process. These consultation and notice requirements apply to adoption and amendment of both general plans and specific plans. The principal objective of SB 18 is to preserve and protect cultural places of California Native Americans. SB 18 is unique in that it requires local government consultation with Native American tribes in early stages of land use planning, extends to both public and private lands, and includes both state- and federally recognized Native American tribes. The California Civil Code was amended by SB 18 and now allows state-recognized California Native American tribes to acquire and hold conservation easements.

Assembly Bill 52

Pursuant to AB 52 (Statutes of 2014), "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2.). To help determine whether a project may have such an effect, a lead agency is required to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. That consultation must take place prior to the determination of whether a negative declaration, mitigated negative declaration, or EIR is required for a project (PRC Section 21080.3.1).

As stated in Section 11 of AB 52, this act shall apply only to a project that has a NOP or a notice of negative declaration or mitigated negative declaration filed on or after July 1, 2015. The revised NOP for this EIR was filed with the State Clearinghouse on April 26, 2017. Therefore, this EIR is subject to AB 52.

LOCAL

SACRAMENTO COUNTY 2030 GENERAL PLAN

The 2030 General Plan Conservation Element contains the following policies:

- **Policy CO-150**. Utilize local, state and national resources, such as the NCIC [North Central Information Center], to assist in determining the need for a cultural resources survey during project review.
- **Policy CO-151.** Projects involving an adoption or amendment of a General Plan or Specific Plan or the designation of open space shall be noticed to all appropriate Native American tribes in order to aid in the protection of traditional tribal cultural places.
- **Policy CO-154.** Protection of significant prehistoric, ethnohistoric and historic sites within open space easements to ensure that these resources are preserved in situ for perpetuity.
- **Policy CO-155.** Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archeological significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that off site reinterment is the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.
- **Policy CO-157.** Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.
- **Policy CO-158.** As a condition of approval for discretionary permits, a procedure shall be included to cover the potential discovery of archaeological resources during development or construction.

COMMUNITY PLANS

Community plans provide goals and policies that guide the physical development of individual communities in the county. Community plans relevant to the WJHMP are the Cordova Community Plan and Vineyard Community Plan.

CORDOVA COMMUNITY PLAN

The Cordova Community Plan does not contain specific policies related to tribal cultural resources.

VINEYARD COMMUNITY PLAN

The Vineyard Community Plan does not contain specific policies related to tribal cultural resources.

SIGNIFICANCE CRITERIA AND METHODOLOGY

SIGNIFICANCE CRITERIA

An impact on tribal cultural resources would be significant if implementation of the project would:

- cause a substantial adverse change in the significance of a tribal cultural resource.

ISSUES NOT DISCUSSED FURTHER

All the issues identified in the significance criteria are addressed in the following analysis.

METHODOLOGY

DISCLOSURE OF CULTURAL RESOURCES INFORMATION

Public disclosure of site-specific cultural resources information is expressly exempt from the California Public Records Act, Government Code Sections 6250-6270. Furthermore, information obtained during Native American consultation or through consultation with the local and state agencies, including NCIC, should remain confidential and is exempt from public disclosure under Senate Bill 922. Additionally, Sacramento County staff has signed an "Agreement to Confidentiality" with the NCIC that states that site specific information will not be distributed or released to the public or unauthorized individuals. An authorized individual is a professional archaeologist or historian that qualifies under the Secretary of the Interior's standards to view confidential cultural resources materials.

NATIVE AMERICAN CONSULTATION

In accordance with SB 18 and Sacramento County General Plan Policy CO-151, County staff requested a sacred lands file search and Native American contact list from the Native American Heritage Commission (NAHC) on February 21, 2017. SB 18 requires that local governments contact and consult with local tribes for projects that require General Plan amendments. The reply from the NAHC, dated and received February 27, 2017, included a consultation list of tribes who may have traditional lands or cultural places within the plan area.

Staff subsequently sent two sets of SB 18 letters requesting information regarding the plan area on May 1, 2017, and May 16, 2017, to the seven Native American tribal representatives identified by the NAHC who might have knowledge of the area. Follow-up telephone calls were placed on July 5, 2017. Three of the tribal representatives were also on the AB 52 consultation list. Four responses were received by email and mail and are summarized below:

- May 16, 2017, email from Mr. Marcos Guerrero, Cultural Resources Manager, United Auburn Indian Community of the Auburn Rancheria (United Auburn). Mr. Guerrero requested a copy of the cultural resources survey.
- May 31, 2017, email from Ms. Cherilyn Neider, Administrative Assistant, United Auburn. Ms. Neider requested consultation. However, according to Mr. Guerrero (email dated June 1, 2017), a consultation and tribal monitor were not needed based on the information that was sent to him in response to his May 16, 2017, request.
- May 22, 2017, letter from Mr. Robert C. Columbro, Tribal Historic Preservation Officer, Buena Vista Rancheria of Me-Wuk Indians. Mr. Columbro declined consultation.
- June 14, 2017, letter from Mr. Daniel Fonseca, Tribal Historic Preservation Officer, Shingle Springs Rancheria. Mr. Fonseca requested the cultural resources survey and continued consultation through updates as the project progresses.

On April 12, 2022, AB 52 letters were sent to three tribes: the Ione Band of Miwok Indians, United Auburn, and Wilton Rancheria. The County requested information regarding sites, traditional cultural properties, or other cultural resource considerations within the plan area. No requests for consultation were received by the County.

On September 22, 2023, the Sacramento County Planning and Environmental Review Division (PER) distributed updated AB 52 notification letters. Notices were sent to the following registered consulting parties of the County:

- Chairperson Sara Dutschke, Ione Band of Miwok Indians;
- Chairperson Gene Whitehouse, United Auburn Indian Community; and
- Director Steven Hutchason, Wilton Rancheria.

On October 18, 2023, Wilton Rancheria formally opened consultation on the project during their monthly consultation meeting with Sacramento County PER, requesting a site tour of the open space buffer proposed in the WJHMP.

On April 11, 2024, Wilton Rancheria conducted a tribal cultural survey of selected areas of the plan area. During the survey, no tribal cultural resources were identified. Wilton representatives provided comments on the overall viewshed within the Morrison Creek green space and were concerned about the likelihood of isolated resource discoveries throughout the plan area, because the history of disturbance within the plan area has heightened the chance that resources may be displaced in unexpected locations.

On May 29, 2024, Sacramento County PER sent draft mitigation measures to Wilton Rancheria for review. These measures address ongoing tribal monitoring and inadvertent discoveries response throughout the construction and development process. Wilton Rancheria agreed with these proposed mitigations and closed consultation on June 4, 2024.

Information Center Record Search

In accordance with Sacramento County General Plan Policy CO-150 and standard professional practice, an extensive search of data maintained by the NCIC of the California Historical Resources Information System at California State University, Sacramento, including state and federal listings of significant cultural resources and associated data bases was conducted by WAVE Consulting (WAVE) on August 19, 2013, and September 4, 2013.

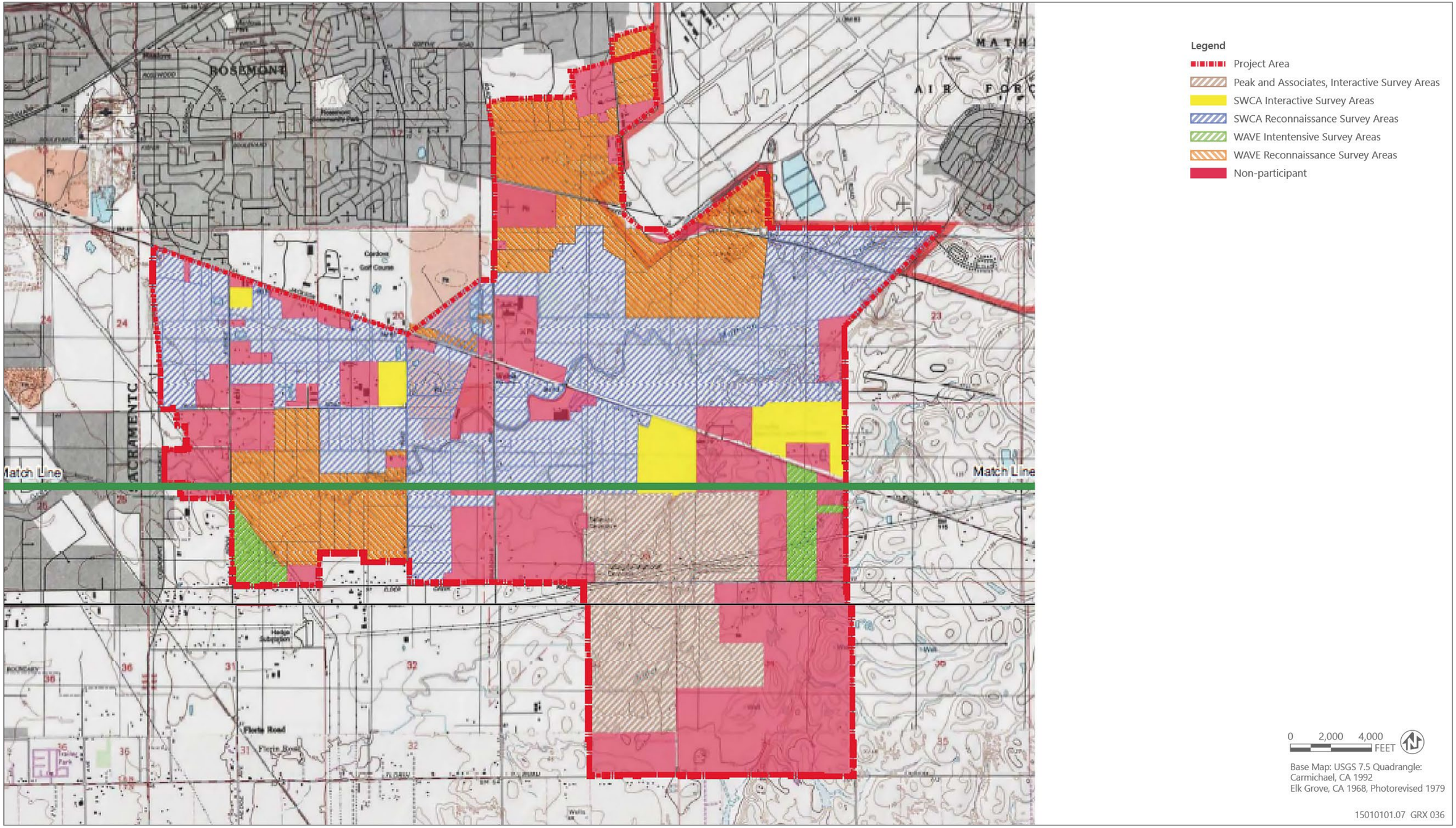
The records search by WAVE indicates that 27 cultural resources studies have been conducted within the plan area and three more studies have been conducted within a 0.5-mile radius of the plan area. As a result of these previous surveys, 24 cultural resources have been previously recorded within the plan area and an additional six resources have been recorded with a 0.5-mile radius of the plan area. None of the resources identified were precontact/indigenous in nature (WAVE 2013: 21).

Previous Field Assessments

In 2006, Peak & Associates and NORCAL Geophysical Consultants, Inc. conducted surveys of a portion of the plan area (Figure 21-1). A pedestrian survey was completed of the entire site and in select areas ground penetrating radar and trenching was also used to identify potential resources. In 2009, SWCA conducted a pedestrian survey of a portion of the plan area. In 2013, WAVE archaeologists conducted a pedestrian survey of the plan area. The pedestrian and reconnaissance surveys conducted by WAVE (during 2013 and for SWCA's 2009 study) did not identify any precontact resources in the plan area. These surveys did not include the non-participant properties.

West Jackson Highway Master Policies

The proposed WJHMP does not include policies related to cultural or tribal cultural resources.



Source: Image produced and provided by WAVE Consulting, adapted by Ascent in 2024.

Figure 21-1 Survey Areas

IMPACTS AND ANALYSIS

This analysis is based on the outcome of tribal consultation under AB 52 and the Cultural Resources Survey of the West Jackson Highway Master Plan, Sacramento County, California (WAVE 2013).

IMPACT TCR-1: CAUSE A CHANGE IN SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE

There are no known tribal resources located within the plan area. A search of the NAHC's sacred lands file database did not reveal any known tribal resources. Two sets of correspondence were sent to the tribes in 2017 that requested information under SB 18 and asked if the tribes had concerns regarding known or suspected sites of Native American significance. Four tribes responded, two declined consultation and one requested consultation through updates as the project progresses. None of the responses stated specifically that known resources are located within the plan area, but one requested to review the studies. Per AB 52, on September 22, 2023, letters were sent to three tribes: the Ione Band of Miwok Indians, United Auburn, and Wilton Rancheria. The County requested information regarding sites, traditional cultural properties, or other cultural resource considerations within the plan area. As described above, Wilton Rancheria requested consultation in October of 2023 and performed a site survey in April of 2024. No tribal cultural re sources were identified during the limited surveys conducted by Wilton Rancheria representatives. Nevertheless, tribal cultural resources could be present within the plan area and discovery could occur in unexpected locations due to the history of disturbance in the area.

California law recognizes the need to protect tribal cultural resources from inadvertent destruction and the procedures for the treatment of tribal cultural resources are contained in PRC Section 21080.3.2 and Section 21084.3(a). Within 14 days after the County determines that it may undertake a project, the County must provide formal notification to the California Native American tribes that have requested notification of proposed projects in the lead agency's jurisdiction. The County would be required to begin the consultation process with the tribes that have requested consultation within 30 days of receiving the request for consultation. Compliance with PRC Section 21080.3.2 and Section 21084.3(a) would provide an opportunity to avoid or minimize the disturbance of any identified tribal cultural resources, and to appropriately treat any remains that are discovered.

Mitigation Measure TCR-1a and TCR-1b would require tribal monitoring and inadvertent discoveries response throughout the construction and development process. Wilton Rancheria agreed with these proposed mitigations and closed consultation on June 4, 2024. With implementation of Mitigation Measures TCR-1a and TCR-1b, impacts on potentially significant tribal cultural resources would be **less than significant**.

MITIGATION MEASURES

MITIGATION MEASURE TCR-1A: INVENTORY AND SIGNIFICANCE EVALUATION OF TRIBAL CULTURAL RESOURCES

Upon submittal of subsequent development applications, the Project Applicant(s) or subsequent developer(s) shall coordinate with the County and consulting Native American tribes (tribes) for each project-specific area. The tribes shall be offered the opportunity to identify portions of the project site that could be sensitive or potentially sensitive for tribal cultural resources.

Tribes may request additional testing and boundary delineation prior to the disturbance of any potential tribal cultural resource site. In consultation with County, the treatment plan may include identification methods including, but not limited to, canine forensic surveys, ground penetrating radar, vegetation clearing for surface visibility, and/or subsurface testing.

When subsequent development applications are deemed complete, the tribes shall be provided the following information for each subsequent notification to assist in their determination of the potential to impact tribal cultural resources:

- map(s) and verbal description of the project-specific area that delineates both the horizontal and vertical extents of where a project could result in impacts, including both direct and indirect, on tribal cultural resources;
- descriptions of proposed ground disturbances and construction activities;
- the results of an updated records search of the project-specific area from the Northwest Information Center of the California Historical Resources Information System;
- the results of an archaeological sensitivity analysis to assess the potential for buried archaeological resources using geologic and historic maps, soils data, and other sources; and
- the results of an archaeological field survey. Tribes may also request separate tribal cultural surveys.

If the consulting Native American tribe(s) determine that a tribal cultural monitor is warranted for a project, the tribe(s) shall be offered the opportunity to engage in compensated construction monitoring. Tribes must be contacted for the opportunity to monitor each separate development stage. For monitoring, the provisions of Mitigation Measure CUL-2b will be followed.

If potentially significant impacts on tribal cultural resources that qualify as historical resources (per State CEQA Guidelines Section 15064.5) are identified, a treatment plan for avoiding or minimizing such impacts shall be developed, in coordination with tribes. Measures for avoiding or minimizing impacts include:

- avoidance and preservation of the resources in place, including planning and construction to avoid the resources and protect the cultural and natural context or planning greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria;
- treating the resource with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including:
    - protecting the cultural character and integrity of the resource;
    - protecting the traditional use of the resource;
    - protecting the confidentiality of the resource;
    - permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places; or
    - protecting the resource.

The consultation shall be considered concluded when (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.

MITIGATION MEASURE TCR-1B: TRIBAL REPATRIATIONS

In the event that remain-in-place measures are infeasible for disturbed human remains, the Project Applicant(s) or subsequent developer(s), in consultation with tribal and County representatives, shall identify an on-site repatriation location with conservation easement. This shall include an agreement to maintain resource location confidentiality.

Tribes may request additional materials and monitoring in the event of human remains discovery. This may include, but is not limited to, on-site storage of remains in a locked, air-conditioned facility with access controlled by tribal monitors, materials required for appropriate recovery and reinternment, and physical control mechanisms such as subsurface coverings and above-ground deterrents such as site fencing.

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22 SUMMARY OF IMPACTS AND THEIR DISPOSITION

This chapter provides (1) a summary of the project's potential impacts, including significant and unavoidable impacts, impacts that can be reduced to a less-than-significant level with mitigation, and impacts that would be less than significant without mitigation; (2) a discussion of the significant and irreversible environmental changes that would be caused by the project; (3) an evaluation of the cumulative impacts of the project; and (4) an evaluation of the project's potential for growth-inducing impacts.

SUMMARY OF IMPACTS BY SIGNIFICANCE DETERMINATION

The following provides a summary of the conclusions reached in the evaluation of the project in Chapters 4–21 of this Draft EIR. For a tabulated summary of the project's potential impacts, applicable mitigation measures, and significance determinations, refer to Table ES-1 in the Executive Summary.

SIGNIFICANT EFFECTS THAT CANNOT BE AVOIDED

Section 15126.2(b) of the State CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. The evaluation of resources in Chapters 4–21 of this EIR identifies significant and unavoidable impacts in the following categories:

- Impact AE-1: Degradation of Existing Character or Quality of Public Views of the Plan Area and Its Surroundings
- Impact AE-2: New Sources of Light or Glare
- Impact AR-1: Convert Farmland to Non-Agricultural Uses
- Impact AIR-2: Generate Long-Term Operational Emissions of Criteria Air Pollutants and Ozone Precursors (ROG, NO_X, PM_{10}, and $PM_{2.5}$) that Exceed Standards
- Impact AIR-3: Conflict With an Air Quality Plan
- Impact AIR-5: Exposure of Sensitive Receptors to TACs
- Impact CR-1: Cause a Substantial Adverse Change in the Significance of a Built-Environment Historical Resource
- Impact NO-1: Exceed County Standards During Construction
- Impact NO-3: Generate a Substantial Permanent Increase in Traffic Noise Levels
- Impact TR-4: Substantially Increase Hazards Due to a Geometric Design Feature or Incompatible Uses

SIGNIFICANT EFFECTS THAT COULD BE AVOIDED WITH IMPLEMENTATION OF MITIGATION MEASURES

The following impacts were determined to be less than significant with mitigation:

- Impact AR-2: Result in Conversion of Farmland to Non-Agricultural Use Due to Conflict with Existing, Adjacent Agricultural Use and Zoning

- Impact AIR-1: Generate Construction Emissions of Criteria Air Pollutants and Precursors (ROG, NO_X, PM_{10}, AND $PM_{2.5}$) that Exceed Standards
- Impact AC-2: Result in Exposure to Excessive Noise Levels Associated with Airport Operations
- Impact BR-1: Result in Loss of Wetlands and Surface Waters
- Impact BR-2: Have a Substantial Adverse Effect on Special-Status Mammals
- Impact BR-3: Have a Substantial Adverse Effect on Special-Status Birds
- Impact BR-4: Have a Substantial Adverse Effect on Special-Status Reptiles
- Impact BR-5: Have a Substantial Adverse Effect on Special-Status Amphibians
- Impact BR-6: Have a Substantial Adverse Effect on Special-Status Invertebrates
- Impact BR-7: Have a Substantial Adverse Effect on Special-Status Plants
- Impact BR-8: Result in the Loss of Trees
- Impact BR-9: Disturb Riparian Habitats
- Impact BR-10: Interfere With the Movement of any Native Resident or Migratory Species or Impede the Use of Native Wildlife Nursery Sites
- Impact CC-1: Result in Project-Generated GHG Emissions and Potential Inconsistency With Plans and Regulations
- Impact CR-2: Cause a Substantial Adverse Change to an Archaeological Resource
- Impact GS-1: Exacerbate Unstable Soil Conditions
- Impact GS-4: Exposure to Landslides
- Impact GS-6: Potential Destruction of Buried Paleontological Resources
- Impact HAZ-2: Potential for Release of Hazardous Materials from Undocumented or Documented Sites of Contamination
- Impact HYD-3: Substantially Alter the Existing Drainage Pattern of the Plan Area Such That Substantial Erosion, Flooding, or Polluted Runoff Could Occur
- Impact HYD-4: Risk Release of Pollutants Due to Inundation in Flood Hazard Zones
- Impact HYD-7: Contribute to Flooding of Beach Stone Lakes
- Impact NO-2: Generate Excessive Construction Vibration
- Impact NO-4: Expose New or Existing Sensitive Receptors to New Stationary Noise Sources
- Impact TCR-1: Cause a Change in Significance of a Tribal Cultural Resource

Effects Found Not to Be Significant

The following impacts were determined to be less than significant:

- Impact AIR-4: Result in Substantial Mobile-Source CO Concentrations
- Impact AIR-6: Exposure to Odors Affecting a Substantial Number of People
- Impact AC-1: Result in a Safety Hazard to People Living and Working in the Vicinity of an Airport
- Impact AC-3: Result in Effects on Safe and Efficient Use of Navigable Airspace
- Impact BR-11: Result in Potential Inconsistency with the South Sacramento Habitat Conservation Plan
- Impact CR-3: Disturb Human Remains

- Impact EN-1: Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy
- Impact EN-2: Conflict With or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency
- Impact GS-2: Result in Substantial Soil Erosion
- Impact GS-3: Result in Soil Subsidence
- Impact GS-5: Exposure to Expansive Soils
- Impact GS-7: Obstruction of Access to Mineral Resources
- Impact HAZ-1: Accidental Release Due to Transport, use, or Disposal of Hazardous Materials
- Impact HAZ-3: Result in Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste Within 0.25 Mile Within an Existing or Proposed School
- Impact HAZ-4: Impair Implementation of or Physically Interfere With an Adopted Emergency Response Plan or Emergency Evacuation Plan
- Impact HAZ-5: Expose People or Structures to Wildland Fires
- Impact HYD-1: Violate Water Quality Standards
- Impact HYD-2: Substantially Decrease Groundwater Supplies or Interfere Substantially With Groundwater Recharge
- Impact HYD-5: Conflict With a Water Quality Control Plan or Sustainable Groundwater Management Plan
- Impact LU-1: Physically Divide an Established Community
- Impact LU-2: Cause a Significant Environmental Impact Due to a Conflict With any Land Use Plan, Policy, or Regulation Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect
- Impact LU-3: Induce Substantial Unplanned Population Growth
- Impact LU-4: Displace Substantial Numbers of Existing People or Housing, Necessitating the Construction of Replacement Housing Elsewhere
- Impact PS-1: Result in Substantial Adverse Physical Impacts Associated With the provision of Fire Protection and Emergency Services
- Impact PS-2: Result in Substantial Adverse Physical Impacts Associated With the Provision of Law Enforcement
- Impact PS-3: Result in Substantial Adverse Physical Impacts Associated With the Provision of Schools
- Impact PS-4: Result in Substantial Adverse Physical Impacts Associated With the Provision of Parks and Recreation Services or Substantial Physical Deterioration of an Existing Facility
- Impact PS-5: Result in Substantial Adverse Physical Impacts Associated With the Provision of Libraries
- Impact PU-1: Result in adverse Effects Associated With Construction of Expanded Wastewater Treatment Infrastructure
- Impact PU-2: Result in Adverse Effects Associated With Construction of Stormwater Infrastructure
- Impact PU-3: Result in Adverse Effects Associated With Construction of Electric Power and Telecommunications Facilities

- Impact PU-4: Exceed the Capacity of the Wastewater Treatment Provider
- Impact PU-5: Generate Solid Waste in Excess of State Standards or in Excess of the Capacity of Local Infrastructure
- Impact TR-1: Adversely Affect an Existing Bicycle and Pedestrian Facility, Interfere With the Implementation of a Planned Bikeway, or Result in Unsafe Conditions for Bicyclists or Pedestrians
- Impact TR-2: Adversely Affect Public Transit Operations or Fail to Provide Access to Transit
- Impact TR-3: Generate VMT That Exceeds County Standards
- Impact TR-5: Result in Inadequate Emergency Access
- Impact WS-1: Environmental Effects Due to the Construction of New or the Expansion of Existing Water Facilities
- Impact WS-2: Result in Demand for Water That cannot be Met by Existing or Reasonably Foreseeable Future Service Capacity
- Impact WS-3: Contribute to Groundwater Pumping Such That the Average Annual Sustainable Yield for the South American Subbasin Basin is Exceeded

IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA requires that EIRs assess whether a project would result in significant irreversible changes to the physical environment. The State CEQA Guidelines discuss three categories of significant irreversible changes that should be considered. Each is addressed below. Although the project would require commitment of resources, these environmental changes are not considered significant for the purposes of this analysis. The primary irreversible environmental change associated with the project involves the permanent conversion of undeveloped and rural land with associated habitat values to a mix of land uses including residential, commercial, industrial, recreational, farming, and employment.

CHANGES IN LAND USE THAT COMMIT FUTURE GENERATIONS

Site preparation, construction, and operation of the project would irreversibly commit future generations to urban land uses on approximately 3,812 acres of the approximately 5,913-acre plan area. The remaining 2,101 acres would be maintained as a combination of parks, open space, and open space/urban farm.

IRREVERSIBLE DAMAGE FROM ENVIRONMENTAL ACCIDENTS

No significant environmental damage, such as accidental spills or explosion of a hazardous material, is anticipated with development of the WJHMP. The use of hazardous materials, including standard construction supplies, household hazardous waste, and industrial uses, would occur in compliance with regulations and oversight mechanisms. Remediation of previously contaminated sites within the plan area would be completed as part of the project, and materials would be properly disposed of in accordance with federal, state, and local regulations.

CONSUMPTION OF NONRENEWABLE RESOURCES

Consumption of nonrenewable resources includes increased energy consumption, conversion of agricultural lands, and lost access to mining reserves. Although there is an established mineral resource overlay in the zoning within the plan area, the aggregate resources have, or will be, fully exhausted prior to development of the land uses identified in the plan. As such, developing the property would not result in loss of access to mineral resources. Implementation of the project would convert approximately 1,500 acres of Important Farmland to non-agricultural use, including 31 acres of Prime Farmland, 667 acres of Farmland of Statewide Importance, 796.5 acres of Farmland of Local Importance, and 5.4 acres of Unique Farmland (see Table 5-2). This represents roughly 66 percent of the average annual conversion of Important Farmland in Sacramento County (see Table 5-1).

Project construction would consume fossil fuels and other non-renewable or slowly renewable resources through the operation of vehicles and equipment for site grading and construction activities. Other resources, including materials such as wood products, metals, cement, asphalt, and other products, would be used or consumed during project construction or would be permanently committed as project materials. Operation of the project would also require additional electricity and water; however, the scale of such consumption would be typical for a mixed-use development of this size. For further discussion of energy use, refer to Chapter 11, “Energy.”

CUMULATIVE IMPACTS

The State CEQA Guidelines Section 15355 defines a cumulative impact as “two or more individual effects which, when considered together, are considerable.” An individual effect need not itself be significant to result in significant cumulative effects; the impact is the result of the incremental effects of the project combined with the effects of “other closely related past, present, and reasonably foreseeable probable future projects.” CEQA does not define “closely related,” but 40 Code of Federal Regulations 1508.25 indicates that a “closely related” project is one which is automatically triggered by the project; one which cannot proceed without the project first proceeding (mutual dependency); one which requires the project for justification or is an interdependent part of the same action; or one which is a similar action with common timing, geography, and other features.

The requirements for a cumulative analysis are described in CEQA Guidelines Section 15130. A cumulative analysis “need not provide as great detail as is provided for the effects attributable to the project alone.” The analysis should focus on analyzing the effects of the project to which other projects contribute, to the extent practical and reasonable.

The significance criteria used for analysis are the same as those used throughout the topical chapters of the EIR. Section 15130(a)(3) states that a project’s contribution to an impact is “less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures to alleviate the cumulative

impact. The lead agency shall identify facts and analysis supporting its conclusion that the contribution will be rendered less than cumulatively considerable."

CUMULATIVE IMPACT ANALYSIS METHODOLOGY

State CEQA Guidelines Section 15355 defines a cumulative impact as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. Section 15130(a)(3) of the State CEQA Guidelines states that an EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable, and thus not significant, if a project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

For purposes of this EIR, the project would have a significant cumulative effect if it meets either one of the following criteria:

- The cumulative effects of related projects (past, current, and probable future projects) without the project are not significant but the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact; or
- The cumulative effects of related projects (past, current, and probable future projects) without the project are already significant and the project represents a considerable contribution to the already significant effect. The standards used herein to determine "considerable contribution" are that the impact either must be substantial or must exceed an established threshold of significance.

The analysis herein evaluates whether, after adoption of project-specific mitigation, the residual impacts of the project would cause a cumulatively significant impact or would contribute considerably to existing/anticipated (without the project) cumulatively significant effects.

SCOPE OF THE CUMULATIVE ANALYSIS

The State CEQA Guidelines (Section 15130) identify two basic methods for establishing the cumulative environment in which the project is to be considered: (1) the use of a list of past, present, and probable future projects; or (2) the use of adopted projections from a general plan, other regional planning document, or a certified EIR for such a planning document. This analysis is primarily based on the latter approach but is supplemented with details about regionally significant proposed projects. The effects of past and present projects on the environment are reflected by the existing conditions in the plan area. Probable future projects are those in the project vicinity that have the possibility of interacting with the project to generate a cumulative impact (based on proximity and construction schedule) and either:

- are partially occupied or under construction,
- have received final discretionary approvals,

- have applications accepted as complete by local agencies and are currently undergoing environmental review, or
- are proposed projects that have been discussed publicly by an applicant or that otherwise become known to a local agency and have provided sufficient information about the project to allow at least a general analysis of environmental impacts.

The cumulative environmental setting for all resource areas, with the exception of transportation and noise, is based upon the development forecasts of the Sacramento Area Council of Governments' (SACOG's) adopted 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) development forecast. The MTP/SCS included development projections for Sacramento County and its incorporated cities, as well as for adjacent counties and cities, based on adopted and in-development General Plans, Specific Plans, and Community Plans in each jurisdiction. Reasonably foreseeable development areas already considered in the MTP/SCS include the 2030 General Plan, the Cordova Community Plan, Florin-Vineyard Community Plan, Mather Field Specific Plan, along with other planned development in Sacramento County and the city of Rancho Cordova. The above baseline cumulative setting was then augmented with current data on approved, proposed and reasonably foreseeable projects in Sacramento County. These include several master plan proposals within the project area, including the NewBridge Specific Plan, Mather South Community Master Plan, and Jackson Township Specific Plan.

Table 22-1, below, includes a brief description of the projects considered in the cumulative analysis of transportation and the related assessment of greenhouse gas (GHG) emissions and transportation noise. The projects listed include all reasonably foreseeable development at the time that the transportation study was initiated in 2017.

Table 22-1 Cumulative Project List

Project Number	Project Name	Location	Description	Status
Unincorporated Sacramento County				
1	Vineyard Springs Comprehensive Plan	South-central portion of Sacramento County	2,650 acres bounded by Gerber Road to the north, Calvine Road to the south, Excelsior Road on the east, and Bradshaw Road on the west	Approved 2000
2	North Vineyard Station Specific Plan	South-central portion of Sacramento County	1,594 acres bound by Florin Road to the north, Gerber Road to the south, Vineyard Road to the east, and Elder Creek on the west	Approved 1998
3	Florin Vineyard Gap Community Plan	Within the community plan areas of Vineyard and South Sacramento	3,872 acres bounded by Elder Creek Road on the north, Bradshaw Road on the east, Churchill Downs neighborhood to the south, and Union Pacific Railroad tracks on the west	Approved 2010

Project Number	Project Name	Location	Description	Status
4	Mather Airport Master Plan	10425 Norden Ave, Mather	Establishes a program for modifications of existing facilities and development of new facilities through 2035	Approved 2014, Amended 2016
5	Cordova Hills	Southeastern Sacramento County	2,669 acres east and adjacent to Rancho Cordova	Approved 2013
6	Easton Project, including Glenborough at Easton and Easton Place	Within Cordova Community Planning Area	1,391 acres south of Highway 50 and east of Rancho Cordova	Approved 2008
7	NewBridge Specific Plan	Eastern Sacramento County along SR 16	1,095 acres	Approved
8	Mather South Community Master Plan	Eastern Sacramento County along SR 16	884 acres located northeast of the plan area	Approved
9	Jackson Township Specific Plan	Eastern Sacramento County along SR 16	1,391 acres east of Excelsior Road and SR 16, west of Eagles Nest Road, and south of Keifer Boulevard	Approved
10	Capital SouthEast Connector Expressway	Link I-5 and Highway 99 South of Elk Grove to Highway 50 East of El Dorado Hills	Designed to provide congestion relief	Preliminary design
11	Stoneridge Quarry	Eastern Sacramento County south of Highway 50	Quarry mining and processing of materials on 619 acres of a 1,360-acre property	Approved 2011
12	Teichert Quarry	Eastern Sacramento County south of Highway 50	Quarry mining and operation of a processing plant on 380 acres of a 584-acre property for 25 years	Approved 2010
13	Milgate Quarry	Eastern Sacramento County south of Highway 50	Quarry mining on 194 acres for 50 years	Currently Inactive
14	Upper Westside Specific Plan	Northwest Sacramento County, west of Interstate 80	Proposed Specific Plan for 2,066 acres	In Process

Project Number	Project Name	Location	Description	Status
15	GrandPark Specific Plan	Northwest Sacramento County, east of State Route 99, north of Elkhorn Boulevard	Proposed Specific Plan for 5,675 acres	In Process
16	Metro Air Park	Northwest Sacramento County, north of Interstate 5	Approximately 1,867 acres, Industrial/Office park	Approved
17	Elverta Specific Plan	Northern Sacramento County, bounded by Gibson Ranch on the east, U Street on the South, various property lines approximately 1,350 feet west of Palladay Road on the west	1,820 acres of residential, ag-res, commercial, parks, schools	Approved 2007
18	Northborough (within Elverta Specific Plan)	East of 16th Street in Elverta Specific Plan	298 acres within Elverta Specific Plan, including 1,127 residential units, parks, and school	Approved 2017
19	Sacramento International Airport Master Plan	Northwest Sacramento County, north of Interstate 5	Updates a program for modifications of existing facilities and development of new facilities through 2035	Approved 2022
City of Rancho Cordova				
20	Arboretum	Within the Grant Line North Planning Area	1,349 acres bounded by Highway 16 to the south, Grant Line Road to the east, Kiefer Boulevard to the north, and Sunrise Boulevard to the west	Currently Inactive
21	Suncreek Specific Plan	Located in southern Rancho Cordova	1,265 acres located east of the Folsom Canal	Approved 2013
22	Sunridge Ranch Specific Plan	Located in southern Rancho Cordova	2,606 acres south of Douglas Road, east of Sunrise Boulevard, and north of Grantline Road	Approved 2002
23	Rio del Oro Specific Plan	Located in central Rancho Cordova	3,828 acres south of White Rock Road, east of Sunrise Boulevard, and north of Douglas Road	Approved 2010
24	Westborough Specific Plan	Located in central Rancho Cordova	1,695 acres north of White Rock Road and including Rancho Cordova Parkway	In Process

Project Number	Project Name	Location	Description	Status
25	Rancho Cordova General Plan	City of Rancho Cordova	All land uses assumed in the City of Rancho Cordova General Plan	Approved
City of Folsom				
26	Folsom South of 50 Specific Plan	Eastern Sacramento County, south of US 50 and west of Folsom city limits	3,510 acres south of US 50, north of White Rock Road, east of Prairie City Road, and west of Sacramento/El Dorado County Line	Approved 2011, Proposed Amendments in Process
City of Sacramento				
27	Aspen 1/New Brighton	Eastern city of Sacramento at county line	232 acres at the corner of SR 16 and Watt Avenue	Approved 2015
28	Arena Reuse/Innovation Park/CNU Medical Center Campus	Located in northern city of Sacramento	Reuse of the former Sleep Train Arena in North Natomas, includes California Northstate University Medical Center Campus.	Approved
29	Northlake	Northern city of Sacramento, west of State Route 99, north of Interstate 5	577± acres located at the southwest corner of the intersection of Elkhorn Boulevard and Highway 99.	Approved 2008
30	Downtown/Central City Specific Plan	Downtown Sacramento	Generally bounded by the Sacramento River to the west, Business 80 to the east, the American River on the north (excluding the River District and Railyards)	Approved 2018
31	Panhandle	Northeast city of Sacramento	589± acres in the city of Sacramento, which includes the land north of Del Paso Road, south of Elkhorn Boulevard, west of Sorento Road/E. Levee Road, and east of the developed neighborhoods known as Natomas Park and Regency Park	Approved 2018
32	West Broadway Specific Plan	Central city of Sacramento	292 acres area generally bounded by the Sacramento River on the west; US Highway 50 and Broadway on the north; Muir Way and 5th Street on the east; and 4th Avenue on the south.	Approved 2020

Project Number	Project Name	Location	Description	Status
33	Railyards	North of Downtown Sacramento, east of I-5	244 acres formerly used by Union Pacific Railroad, entitled for dense urban residential neighborhoods, a historic museum, a shopping and market district, a regional intermodal transit station, a county courthouse, a medical campus, a soccer stadium, pedestrian-oriented streets, shopping and entertainment complexes, riverfront access, and high-rise mixed-use buildings	Approved 2016
34	River District Specific Plan	North of Downtown Sacramento, east of I-5	773 acres including a transit-oriented mixed use urban environment that would include 8,144 dwelling units, 3.956 million square feet of office, 854,000 square feet of retail/wholesale, 1.463 million square feet light industrial, and 3,044 hotel units.	Approved 2011
City of Elk Grove				
35	Southeast Industrial Area	East of Grant Line Road and SR 99	Southeast Industrial Area (382 acres annexed to city of Elk Grove in 2019), potential for additional 189 acres to be annexed in future	Approved 2019
36	Elk Grove Crossing Specific Plan	Within the Kammerer/Hwy 99 Sphere of Influence Area between the future extension of Big Horn Boulevard on the west and the future extension of Murphy's Corral Road on the east.	319 acres including high and medium density residential, commercial, office, retail, entertainment, and light industrial/"flex" uses.	In process

Project Number	Project Name	Location	Description	Status
37	Southeast Policy Area (SEPA)	North of Kammerer Road, east of Bruceville Road, west of Hwy 99	1,200 acres including industrial/"flex" uses, mixed use, offices, parks, schools, and residential uses.	SEPA approved 2014, land use amendment that established the Livable Employment Area Community Plan that includes the approved Elk Grove Zoo site was approved in 2023
38	Bilby Ridge	South of Bilby Road, north of the Planned Kammerer Road extension, between Bruceville Road and Willard Parkway	484 acres planned for residential, retail, service commercial, schools, parks, and open space	In process
39	Lent Ranch/Elk Grove Promenade	North of Kammerer Road, west of Hwy 99	Approximately 270 acres including commercial, office uses	Approved. Land use amendment that established the Livable Employment Area Community Plan was approved in 2023

Source: Provided by Sacramento County in 2022-2024.

CUMULATIVE ISSUE AREAS

Cumulative impacts for each technical area are discussed below. Significance criteria, unless otherwise specified, are the same for cumulative impacts as project impacts for each environmental topic area. With the exception of resource categories in which separate modeling of cumulative conditions has been conducted for evaluation against the established threshold (i.e., air quality, noise, transportation), resource evaluations are presented wholistically below. When considered in relation to other probable future projects, cumulative impacts to some resources could be significant and more severe than those caused by the project alone.

AESTHETICS

CUMULATIVE SETTING

The viewshed for the cumulative aesthetics setting is eastern Sacramento County, which encompasses the plan area and vicinity and includes viewing groups which are mostly composed of people traveling along arterial roadways which traverse the viewshed, such as Jackson Highway (State Highway 16), Kiefer Boulevard, Goethe Road, Elder Creek Road, Florin Road, and Excelsior Road. As described in Chapter 4, "Aesthetics," of this EIR, this is a non-urbanized area that has experienced substantial disturbance and is planned for increasing urbanization. The overall visual character of the area has been shaped by past mining activity, industrial development (including Mather Airport), and development of single-family homes.

The viewshed is within the Urban Services Boundary of the existing Sacramento County General Plan, and as such, is anticipated to develop with urban uses over the coming decades. In addition to the plan area, the projects listed above are in the general vicinity of the Jackson Highway corridor and are currently being processed by the County. Therefore, they are considered within the cumulative evaluation. The approved Jackson Township Specific Plan area is located immediately east of the plan area and includes approximately 1,391 acres and is planned to include up to 6,143 housing units. The approved Florin-Vineyard Community Plan area and the North Vineyard Station Specific Plan are located adjacent to the southern border of the plan area and include approximately 1,595 acres and 3,872 acres, respectively. The plan area is bordered by the city of Sacramento to the west and the unincorporated community of Rosemont to the north. In total, the four master plans (including the project) cover approximately 12,771 acres and would provide for additional residential and commercial development.

The introduction of anticipated growth in largely undeveloped, non-urbanized areas would add bulk, scale, and massing that could be visually prominent compared to the existing landscape. This could degrade existing visual character and/or quality of public views in non-urbanized areas. Depending on the design and siting of new developments in non-urbanized areas, these new views could potentially result in degradation of existing visual character or quality of public views of sites and their surroundings (SACOG 2019). The anticipated change in the visual character of the region would result in a significant impact in the cumulative condition.

CUMULATIVE IMPACTS EVALUATION

As discussed in Chapter 4, "Aesthetics," development of the project would not result in significant impacts related to scenic resources or light or glare. The project would comply with County lighting policies and standards and would also use fixtures approved by the International Dark Sky Association through implementation of Mitigation Measure AE-2. However, the project would result in significant and unavoidable impacts related to visual character because of the anticipated permanent conversion of undeveloped rural land to developed uses. While the project includes adoption of design guidelines and development standards and would implement a cohesive landscaping program to ensure an attractive new development that would integrate the new uses, the change in visual character would be permanent and drastic,

regardless of whether or not the new development community would be visually appealing. To sensitive viewer groups, particularly area residents, this could be perceived as a substantial degradation.

Besides design guidelines and policies that would guide the visual characteristics of development, including landscaping, building design standards, setbacks, and massing, which are already required for the project, no other feasible mitigation is available to reduce the magnitude of visual changes that would occur. While the project would represent a relatively small portion of the overall conversion of the area, each large-scale development contributes to the permanent change in visual character in a way that induces further change, and the project would have a considerable contribution to the overall significant and unavoidable impact. There is no mitigation available to reduce the impacts related to the change in visual character and, thus, the project would result in a considerable contribution to a **significant and unavoidable** cumulative impact.

MITIGATION MEASURES

No mitigation is available to reduce the impacts related to changes in visual character.

AGRICULTURAL RESOURCES

CUMULATIVE SETTING

The cumulative setting for agricultural resources is the SACOG region, which includes the areas surrounding and adjacent to the plan area. The 2019 EIR for the SACOG MTP/SCS estimates that approximately 0.1 percent of all existing FMMP-designated farmland in the SACOG region will be converted to non-agricultural uses as a result of planned development (SACOG 2019). Land surrounding the plan area, particularly along its southern border, includes Important Farmland. Furthermore, lands converted from agricultural use to non-agricultural use typically do not return to agricultural use at a later date but become part of a more urban condition. As described in Chapter 5, “Agricultural Resources,” over the 6-year period from 2014 to 2020, the California Department of Conservation estimates that the total acreage of Important Farmland in Sacramento County decreased by approximately 2,335 acres annually, with notable losses to Prime Farmland and gains in Unique Farmland (DOC 2016, 2020). The documented past conversion of agricultural lands combined with the projected loss of farmland due to anticipated regional development is an existing significant cumulative impact in the cumulative condition.

CUMULATIVE IMPACTS EVALUATION

Implementation of the project would convert approximately 1,500 acres of Important Farmland to non-agricultural use, including 31 acres of Prime Farmland, 667 acres of Farmland of Statewide Importance, 796.5 acres of Farmland of Local Importance, and 5.4 acres of Unique Farmland (see Table 5-2). This represents roughly 66 percent of the average annual conversion of Important Farmland in Sacramento County (see Table 5-1) and constitutes a significant loss under 2030 General Plan Policy AG-5, which defines substantial loss of farmland as conversion of more than 50 acres of farmland designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland,

Farmland of Local Importance, and Grazing Land located outside of the Urban Services Boundary (USB).

Mitigation Measure AG-1 would result in preservation of land in a manner that is consistent with Policy AG-5 of the 2030 General Plan. However, because prime soils are a finite resource and new agricultural soils would not be created there would be a substantial net-loss of agricultural production within Sacramento County. Conversion of approximately 1,364 acres of Important Farmland to non-agricultural use is considered a substantial contribution to a significantly adverse cumulative condition. The cumulative impact is **significant and unavoidable**.

MITIGATION MEASURES

Implement Mitigation Measure AG-1.

AIR QUALITY

CUMULATIVE SETTING

The plan area is within the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD). The SMAQMD jurisdictional boundary is considered the cumulative project boundary. Sacramento County is currently in nonattainment for ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) with respect to the California ambient air quality standards (CAAQS) and is in nonattainment for ozone and $PM_{2.5}$ with respect to the national ambient air quality standards (NAAQS).

Ozone impacts are the result of cumulative emissions from numerous sources in the region and transport from outside the region. Ozone is formed in chemical reactions involving reactive organic gases (ROG), oxides of nitrogen (NO_X), and sunlight. All but the largest individual sources emit NO_X and ROG in amounts too small to have a measurable effect on ambient ozone concentrations by themselves. However, when all sources throughout the region are combined, they can result in severe ozone problems.

Particulate matter (PM), including PM_{10} and $PM_{2.5}$, have a similar cumulative regional emphasis when they are entrained into the atmosphere and build to unhealthful levels over time. PM also has the potential to cause significant local problems during periods of dry conditions accompanied by high winds, and during periods of heavy earth–disturbing activities. PM may have cumulative local impacts if, for example, several unrelated grading or earth moving activities are underway simultaneously at nearby sites. Operation-related PM is less likely to result in local cumulative impacts as operational PM sources tend to be spread throughout the region (i.e., vehicles traveling on roads), not affecting any one receptor. However, substantial increases in traffic on roadways already experiencing high traffic volumes may result in considerable contributions to nearby existing land uses.

Although carbon monoxide (CO) can accumulate with traffic at intersections, it is recommended to be evaluated locally, and not regionally because it disperses rapidly with distance from the source under normal meteorological conditions. Toxic air contaminants (TACs) behave similarly. As discussed in Chapter 6, “Air Quality,” TAC concentrations substantially decrease within a distance of 500 feet from a source;

therefore, it is unlikely that project-related sources of TACs would combine with emissions from other projects in the area to produce adverse TAC concentration. Therefore, CO and TACs are not significant at a regional air-basin level.

Because of the existing nonattainment status of Sacramento County (as discussed above), there is an existing adverse cumulative condition regarding air quality. Therefore, ROG, NO_X, and PM emissions from cumulative development (see Chapter 6, "Air Quality," Table 6-2) are cumulatively significant in the air basin. The discussion below addresses whether the project's contribution is considerable.

CUMULATIVE IMPACTS EVALUATION

A cumulative impact analysis is provided for each of the air quality topics addressed in the project impact analysis in consideration of other planned future developments within the plan area.

CONSTRUCTION EMISSIONS OF CRITERIA AIR POLLUTANTS AND PRECURSORS

Sacramento County and the Sacramento Valley Air Basin (SVAB) are in state and federal nonattainment for ozone and PM air quality standards. Construction activities in the region would add additional ozone and PM emissions into the SVAB that may conflict with attainment efforts. project-related construction emissions of NO_X would exceed the applicable mass emission threshold established by SMAQMD.

Mitigation Measure AIR-1a would reduce construction-related exhaust and fugitive dust emissions by requiring dust suppression and limiting equipment idle time. Thus, considering that worst-case scenario construction-related activities would not exceed SMAQMD-adopted thresholds for PM and mitigation is in place to further reduce these emissions, construction-related PM emissions would not result in substantial concentrations at nearby receptors. Given that construction-related emissions would be mitigated to the extent feasible, construction-related emissions would not exceed SMAQMD's cumulative thresholds for criteria pollutants and ozone precursors.

Although it is foreseeable that construction emissions from cumulative projects constructed in close proximity to the plan area (e.g., Mather, NewBridge, and Jackson Township) would produce construction emissions in exceedance of the SMAQMD's mass emissions thresholds, SMAQMD develops its thresholds of significance in consideration of achieving attainment status under the CAAQS and NAAQS and has determined that projects that demonstrate emissions below these thresholds would not have a cumulatively considerable contribution to regional air quality degradation.

The Project Applicants or subsequent developers of the specific plan would be required to apply exhaust control measures to heavy-duty equipment and pay a mitigation fee for every day that NO_X emissions exceed the threshold of 85 pounds per day (lb/day) adopted by SMAQMD provided under Mitigation Measure AIR-1b in Chapter 6, "Air Quality." The mitigation fee program is designed to reduce emissions throughout the SMAQMD jurisdiction through various measures such as installing newer engines on construction equipment or installing US Environmental Protection Agency–certified woodstoves in the place of non-certified woodstoves in residential units. Incorporation of this mitigation would ensure that all additional NO_X emissions would be offset through

the SMAQMD program and, therefore, project construction would not result in a considerable contribution to the regional air quality condition and would not interfere with attainment of CAAQS or NAAQS.

SMAQMD recommends using a 0 lb/day and 0 tons per year (tpy) threshold of significance for evaluating construction-related emissions of PM_{10} and $PM_{2.5}$ prior to the implementation of best management practices (BMPs) or best available control technology. Regarding PM_{10} and $PM_{2.5}$, project construction would exceed SMAQMD thresholds prior to mitigation (see Chapter 6, "Air Quality," Table 6-4). Following implementation of BMPs and/or best available control technology, construction emissions of PM_{10} are evaluated against a threshold of significance of 80 lb/day or 14.6 tpy and $PM_{2.5}$ is evaluated against a threshold of significance of 82 lb/day or 15 tpy. The project would include BMPs and/or best available control technology and would be evaluated against the latter thresholds. The project's short-term project-generated construction emissions would be a **less-than-significant** cumulative impact.

MITIGATION MEASURES

Implement Mitigation Measures AIR-1a and AIR-1b.

LONG-TERM OPERATIONAL EMISSIONS OF CRITERIA AIR POLLUTANTS AND PRECURSORS

Air districts in California develop air quality attainment plans designed to reduce emissions of ozone precursors enough to attain the federal ozone standard by the earliest practicable date. Air quality attainment plans include a multitude of air pollution control strategies. When developing air quality attainment plans, air districts account for the emissions from all present and future development in the region by relying on city and county general plans. Thus, projects that are consistent with adopted general plans and the most recent air quality attainment plans would not conflict with regional air quality planning efforts and the ability of the region to meet reduction targets set by the adopted plans. In cases where projects are proposed that were not included in the adopted general plan or accounted for in regional air quality projects, SMAQMD has developed guidance and determined the level of emissions reduction that would be considered feasible, thus not conflicting with regional air quality attainment status. The project was not included in the most current State Implementation Plan (the air quality plan for the region) and is anticipated to have significant operational air quality impacts. Thus, SMAQMD has recommended that the project achieve a 35-percent reduction in mobile-source operational emissions.

As discussed in Chapter 6, "Air Quality," Mitigation Measure AIR-2a would be applied to the project. Mitigation Measure AIR-2a requires that the project develop an SMAQMD-verified Air Quality Management Plan that demonstrates that the project is able to reduce operational emissions of criteria air pollutants and ozone precursors to SMAQMD's 35-percent reduction target as compared to an "unmitigated" scenario (i.e., modeled emissions based on default vehicle miles traveled [VMT] values in the California Emissions Estimator Model [CalEEMod]) against a "mitigated" scenario (i.e., modeled emissions using VMT values derived from a traffic study conducted for the project). However, compliance with this requirement may not reduce emissions to below the applicable mass emissions thresholds. Mitigation Measure AIR-2b would require the

project to adhere to the most recent Tier 2 voluntary standards of the California Green Building Standards (CALGreen Code), which would further reduce emissions from the mobile source sector. Mitigation Measure AIR-2c would promote the use of low-VOC content consumer projects throughout the plan area. Mitigation Measure AIR-2d would reduce mobile source emissions through the electrification of heavy-duty trucks accessing the plan area. Further, Mitigation Measure AIR-2e would also reduce areawide sources of emissions through the electrification of landscaping equipment. And Mitigation Measure AIR-2f would reduce stationary sources through the application of best available control technology for generators. While these measures would reduce operational emissions, they would not be sufficient to reduce emissions to SMAQMD's thresholds of significance.

Therefore, operation-related emissions for the project would likely exceed SMAQMD thresholds for NO_X and PM_{10}. Projects that exceed established SMAQMD thresholds of significance would contribute to the regional, and thus cumulative, air quality conditions. The project would likely emit levels of emissions that would exceed SMAQMD's mass emissions thresholds. This would be a considerable contribution to a **significant and unavoidable** cumulative impact.

MITIGATION MEASURES

Implement Mitigation Measures AIR-2.

MOBILE-SOURCE CO CONCENTRATIONS

As described in Chapter 6, "Air Quality," project implementation would result in less-than-significant local mobile-source CO-related air quality impacts from construction and operation. SMAQMD recommends a project's contribution of new vehicle trips should be compared to a screening criteria of 31,600 vehicles per hour at one affected intersection. At buildout, the project would generate up to 20,000 trips during the a.m. peak hour and up to 21,500 trips during the p.m. peak hour.

CO emission factors in future years are expected to be lower than current levels because of more stringent vehicle emissions standards and improvements in vehicle emissions technology. Ambient local CO concentrations under future, cumulative conditions would continue to decline. Therefore, 1- and 8-hour CO concentrations for the future cumulative conditions would not be anticipated to exceed the significance thresholds of 20 parts per million (ppm) and 9 ppm, respectively. Consequently, the project's contribution to cumulative CO impacts would not be cumulatively considerable and would result in a **less-than-significant** cumulative impact.

MITIGATION MEASURES

No mitigation is required.

EXPOSURE OF SENSITIVE RECEPTORS TO TACS

As discussed in Chapter 6, "Air Quality," the project would generate significant health risks associated with TACs because it could expose any single receptor to a level of cancer risk that exceeds an incremental increase of 10 in one million, or to a noncarcinogenic hazard index of 1. The project may result in the construction and

operation of industrial sources of pollution; therefore, TAC emissions could be substantial and exceed thresholds. Mitigation Measures AIR-5a, AIR-5b, AIR-5c, and AIR-5d would reduce the potential for exposure to substantial concentrations of TAC emissions through adherence to siting requirements recommended by the California Air Resources Board, preparation of project-level health risk assessments, and use of clean on- and off-road construction equipment.

This mitigation would reduce TAC emissions from subsequent projects in the plan area; however, given the plan-level and programmatic nature of the project, TAC emissions may cumulatively combine to result in a cumulatively considerable significant impact. This would be a considerable contribution to **significant and unavoidable** cumulative impact.

MITIGATION MEASURES

Implement Mitigation Measures AIR-5a through AIR-5d.

EXPOSURE OF SENSITIVE RECEPTORS TO ODORS

As discussed in Chapter 6, “Air Quality,” the project would generate temporary odors during construction and new odor sources associated with the commercial and educational land uses (e.g., delivery truck idling at commercial loading zones, odors associated with certain land uses such as dry cleaners). Construction-related odors would be minimal, temporary, and would cease once construction is complete. Because of the localized character of odor-related impacts, as well as the site-specific design measures in place to reduce odor exposure, the project’s contribution to odor issues would not be cumulatively considerable and would not result in a considerable contribution such that a new significant cumulative impact would occur. Cumulative odor impacts would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

AIRPORT COMPATIBILITY

CUMULATIVE SETTING

The cumulative boundary for airport compatibility is generally the areas in the immediate vicinity near the jurisdictional boundary of the *Mather Airport Airport Land Use Compatibility Plan* (ALUCP) (SACOG 2022). The plan area is located southeast of and adjacent to Mather Airport, and a portion of the plan area is located within the ALUCP boundary. Most of the airport operations occur north of the runway, which is centrally located within the airport boundary; however, the airport traffic control tower, as well as some hangar space and numerous installation restoration program sites are located south of the runway. The airport is 2,253 acres in size and is surrounded by a mix of residential, commercial, industrial, and open space land uses, including the Mather Preserve. Mather Airport includes two parallel runways that have a northeast/southwest orientation and typically receives between 240 to 275 landings a month, with the majority of these being cargo planes (SCDA 2019-2023). Approximately 88 percent of

all aircraft operations occur on the southern runway, which is the longer one of the two. Through the ALUCP, land use is regulated to ensure that potential incompatibilities from new development do not occur.

Cumulative development identified in the SACOG MTP/SCS, including development of the NewBridge, Mather South, and Jackson Township projects, would result in new residents in the vicinity. It is assumed that all projects in the region would be developed in compliance with the adopted ALUCP. No existing cumulative airport compatibility issues are present within the plan area.

Cumulative Impacts Evaluation

The project would introduce new sensitive receptors adjacent to Mather Airport and within the ALUCP. Mitigation Measure AC-2a would require all residential development proposed within the Mather Airport 60 CNEL noise contours to include sufficient noise mitigation to satisfy the requirements of Sacramento County General Plan Policies NO-2, NO-3, and NO-4. Mitigation Measure AC-2b would require implementation of the Acoustical Testing Plan for Mather Airport for residences proposed within the 60-65 dB CNEL Mather Airport noise contours to further ensure compliance with these adopted General Plan policies. The project would not result in a considerable contribution such that a new significant cumulative impact would occur. Therefore, cumulative airport compatibility impacts would be **less than significant with mitigation**.

Mitigation Measures

Implement Mitigation Measures 2a and 2b.

Biological Resources

Cumulative Setting

Generally, the geographic extent of cumulative impacts on biological resources consists of Sacramento County and the Central Valley region of California that supports similar biological resource values and functions to those of the plan area. Past and present actions by humans have substantially altered biological resources in the Central Valley region of California, including Sacramento County, specifically, compared to historical conditions. Among the most important of these past actions have been conversion of natural vegetation and habitats to agricultural and developed land uses; fill and alteration of aquatic habitats; flood control and water supply projects; and the introduction of invasive species, which in many cases have competed with, preyed upon, and degraded habitat for native species. More recently, the large-scale conversion of agricultural habitats to urban land uses has resulted in substantial loss of habitat for species such as state-listed Swainson's hawk that have adapted to use agricultural habitats in response to loss of their natural habitats.

Past, present, and foreseeable future urbanization in Sacramento County has contributed, and continues to contribute substantially to the loss of grassland, wetland, and agricultural habitats that are important to many species in the region, including state and federally listed species like Swainson's hawk, vernal pool fairy shrimp, and vernal pool tadpole shrimp. The continued conversion of natural habitats would contribute to

the ongoing decline of these habitats in the region and in the state. This represents an existing significant cumulative impact.

Cumulative Impacts Evaluation

The project would result in conversion of annual grassland, vernal pools, wetlands, ponds and marshes, riparian woodlands, and native and nonnative trees that provide habitat for common and special-status species, as well as the potential loss of individuals of common and special-status species. For the habitat conversion and special-status species covered under the South Sacramento Habitat Conservation Plan (SSHCP), the Project Applicants would obtain coverage and implement SSHCP avoidance and minimization measures (AMMs), as required by Mitigation Measure BR-1b. Additional mitigation measures identified in Chapter 8, "Biological Resources," would avoid or minimize impacts to non-covered species and would reduce impacts to a less-than-significant level.

The project and related projects would contribute to the countywide conversion of open space land to non-open space uses. However, the SSHCP was developed to minimize and mitigate impacts on plant and wildlife habitat (and associated species) resulting from this regional loss of open space lands. The SSHCP relies, in part, on compensation for such conversion through preservation of agricultural lands and preservation and creation of natural habitats to be managed in perpetuity through the establishment of conservation easements and preserves. The goal of the SSHCP is to provide approximately 36,282 acres of habitat preserve (Sacramento County et al. 2018).

Mitigation Measure BR-1b includes preparing project plans in accordance with the SSHCP, following AMMs outlined in the SSHCP, and paying fees or land dedications to compensate for losses of wetlands and other waters. Mitigation Measures BR-2 through BR-8 would require species-specific activities such as pre-construction surveys, buffers, and monitoring, as well as permits from the appropriate regulatory agencies and the implementation of AMMs included in those permits. As a result, the project's contribution to cumulative impacts on biological resources would not be cumulatively considerable. Therefore, cumulative impacts related to biological resources would be **less than significant with mitigation**.

Mitigation Measures

Implement Mitigation Measures BR-1a, BR-1b, BR-2, BR-3, BR-6a, BR-6b, BR-6c, and BR-8.

Climate Change

Cumulative Setting

Prominent GHG emissions contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate

change or global warming. Climate change is a global problem caused by global pollutants and is inherently cumulative. Therefore, the cumulative setting for climate change is global, and there is an existing significant cumulative impact.

Cumulative Impacts Evaluation

Development of the project would result in the production of GHG emissions during construction activities and throughout the operational period of the project, attributed to vehicle use, energy use, waste generation, water treatment and distribution, and other area sources. With the implementation of mitigation, the project would reduce GHG emissions generated on-site through excluding natural gas combustion on-site, implementing Tier 2 CALGreen requirements for electric vehicle charging stations, and reducing VMT through various mechanisms (e.g., participation in a Transportation Management Association, incorporation of traffic calming measures and pedestrian facilities, promotion of transit access points), among other on-site GHG reduction strategies.

It is important to note that the development of the plan area in conjunction with surrounding future planned development would provide regional VMT reductions compared to the project alone. The four large-scale development projects in unincorporated Sacramento County (i.e., Mather South Community Master Plan, NewBridge Specific Plan, and Jackson Township Specific Plan, and WJHMP) would provide additional community amenities (e.g., shopping, jobs, entertainment) and transportation networks that would support development associated with the project, resulting in a decrease in VMT associated with WJHMP. Specifically, as identified in Appendix K, the project would result in VMT that is less than the cumulative, regional per resident VMT target level (set at 15 percent below the regional average) due to design features described in Chapter 9, “Climate Change.” This corresponds to a 66-percent reduction in mobile-source GHG emissions and a 55-percent reduction in total operational GHG emissions when compared to modeling defaults. Considering incorporated mitigation measures, future anticipated reductions in project-generated VMT, and the continuation of GHG-reducing state regulations, long-term operational GHG emissions are anticipated to be lower than those estimated in Chapter 9, “Climate Change.” Although an existing cumulative adverse condition exists, the project would not result in a cumulatively considerable contribution to an existing adverse cumulative condition and this impact would be **less than significant with mitigation**.

Mitigation Measures

Implement Mitigation Measures CC-1a, CC-1b, and CC-1c.

Cultural Resources

Cumulative Setting

The geographic scope of potential cumulative impacts related to cultural resources is the Sacramento County portion of the SACOG region. Historical built environment resources are more prevalent in urban areas of the SACOG region that were initially developed more than 50 years ago. Outside of urban areas, examples of historical built

environment resources include historic mines, rural residences and barns, roads, bridges, canals, and rural landscapes.

Archaeological resources exist throughout the cumulative area and are most likely to be intact in areas that have not been previously disturbed through urbanization or mining. Because all significant archaeological resources are unique and nonrenewable members of finite classes, all adverse effects or negative impacts erode a dwindling resource base. The loss of any one archaeological site affects all others in a region because these resources are best understood in the context of the entirety of the cultural system of which they are a part. The cultural system is represented archaeologically by the total inventory of all sites and other cultural remains in the region. Together, the potential direct regional impacts on historical or unique archaeological resources related to the projected land use pattern could result in substantial alteration or removal of an archaeological resource (SACOG 2019). Therefore, because of past and current projects, cumulative impacts to cultural resources in Sacramento County are significant in the cumulative context.

CUMULATIVE IMPACTS EVALUATION

As described in Chapter 10, “Cultural Resources,” of this EIR, there is a potential that existing and former homesteads that have not been surveyed or evaluated on the non-participant properties could be historically significant. With implementation of the project, there would be the potential for alteration to or destruction of a building or structure that has not been evaluated as eligible for listing as a historic resource; this could result in a substantial adverse change in its historical significance.

The project would result in ground-disturbing activities during construction and have the potential to unearth previously unidentified cultural resources. Significant archaeological resources have not been identified in the plan area. Approximately half of the plan area has been mined for aggregate resources, resulting substantial excavation and ground disturbance that diminishes the potential for future discovery of archeological resources on these sites. However, this does not preclude the possibility of buried archaeological materials or previously undiscovered surface resources within the plan area. In addition, a portion of the plan area has not been surveyed and it is unknown whether there may be archaeological resources. CEQA requires that lead agencies protect both known and unknown resources. This is supported by County General Plan Policies CO-157 and CO-158. Additionally, mitigation is recommended to ensure that all work shall be halted until a qualified archaeologist may evaluate the resource encountered and next steps are identified if significant archaeological resources are discovered in the event that archaeological resources are discovered during implementation phases.

Buried resources may consist of historic remains such as structural features (e.g., foundations, cellars) or buried trash deposits containing glass, ceramics and metal, or the resources may be of precontact origin containing chipped stone, shell, bone, and other remains. Significant impacts could result if a resource is damaged accidentally during construction or removed from its original location. Implementation of mitigation measures would reduce impacts associated with archaeological resources to a less-than-significant level because they would require the performance of professionally

accepted and legally compliant procedures for the discovery and protection of previously undocumented significant archaeological resources. With mitigation, the project would not result in a considerable contribution to a significant cumulative impact related to cultural resources. The cumulative impact would be **less than significant**.

MITIGATION MEASURES

Implement Mitigation Measures CR-1, CR-2a, and CR-2b.

ENERGY

CUMULATIVE SETTING

The geographic area considered for cumulative impacts regarding energy use is Sacramento County and the service area for Sacramento Municipal Utility District (SMUD). SMUD employs programs and mechanisms to support provision of services for new developments to be built within their service territory. The most common mechanism includes connection fees to recoup the cost of infrastructure required to service new developments through standard billing services. Additionally, energy efficiency, power management strategies, and conservation measures that reduce energy demand in existing development can serve to reduce additional energy infrastructure and services required for new development.

SMUD purchases, generates, and distributes electric power to a 900-square-mile service area in Sacramento County. Electricity purchased and produced by SMUD is generated from a variety of sources including hydro generation; cogeneration plants; advanced and renewable technologies such as wind, solar, and biomass/landfill gas power; and power purchased on the wholesale market. Various federal, state, and local regulations govern the use of energy to limit the potential for wasteful, inefficient, or unnecessary consumption of energy. There is not an existing adverse cumulative condition related to inefficient use of energy.

Sacramento County is currently processing or has recently approved four specific and community master plans within the Jackson Highway (SR 16) corridor, each of which is undergoing a separate evaluation for environmental impacts. Buildout of the plans, if approved, would occur across a 20-plus year horizon. The projects include the NewBridge Specific Plan, the WJHMP, the Jackson Township Specific Plan, and the Mather South Community Master Plan. The total impact of these plans would result in the development of over 9,247 acres and would include at least 27,425 dwelling units, and over 20 million square feet of commercial, retail, office, and other nonresidential uses. In anticipation of the increased energy demand that would result from the implementation of these plans, the following new electrical infrastructure would be required to serve all four developments combined:

- one new bulk substation: Jackson Bulk Electrical substation;
- eight project-specific distribution substations located on-site throughout the plan areas;
- two expanded project-specific distribution substations within the WJHMP area; and

- ancillary infrastructure including on-site and off-site distribution, subtransmission, and connections to existing transmission lines in the area.

The above infrastructure would be needed to provide adequate service for the development of each new community while continuing to maintain adequate service levels for the existing development within the area. The bulk electrical substation and off-site transmission and subtransmission lines are not specific to any one of the projects but are needed to meet the cumulative needs for all the projects in combination with existing development.

Based on the size and land uses included within each project, SMUD has estimated the following future energy demand:

- Mather South Community Master Plan - 27 megawatts (MW),
- Jackson Township Specific Plan - 44 MW,
- NewBridge Specific Plan - 21 MW, and
- WJHMP - 223 MW.

ELECTRICAL INFRASTRUCTURE NEEDS

DISTRIBUTION SUBSTATIONS

The following description generally summarizes the requirements for new SMUD distribution substations, such as those that will be located within each of the specific and community master plan areas. While exact design specifications are not available, this summary provides a good faith effort at evaluating the size, capacity, infrastructure, and design of each of the distribution substations to analyze the potential environmental impacts associated with the infrastructure.

Each of the eight substations would be approximately 1.5 acres in size and would be energized by connecting to 69,000 volt (69 kilovolt [kV]) subtransmission lines that are supplied by the proposed Jackson Bulk Substation (described in detail below) and existing SMUD Bulk Substations. Bulk substations typically step-down transmission line voltage of 230 kV to subtransmission voltage of 69 kV through power transformers. The distribution substations would in turn step down the electricity supply to 12 kV for delivery to residential neighborhoods. Each distribution substation would include up to two transformers, eight capacitor banks, two backup battery systems, two metal clad switchgears, and two poles with a disconnect switch. Substations will require an access road at least 20 feet wide if the access roads are straight and 24 feet wide if there are turns. The distribution substations would receive electricity from 69-kV subtransmission lines. SMUD's standard construction for subtransmission lines is overhead construction with poles that if pole-mounted would be approximately 65 feet tall. The distribution substations would distribute electricity via underground and/or overhead 12-kV lines to neighborhoods. Permanent utility easements would be required. Construction of the distribution substations would occur over a 1-year period.

Implementing the WJHMP would require the expansion of two existing distribution substations, one on the east side of Happy Lane south of Old Placerville Road and one along the west side of Mayhew and north of SR 16. The expansion of these distribution

substations would result in impacts to the adjacent parcels. The project would also require four new distribution substations, near Fruitridge Road and Hedge Avenue; SR 16 and Vineyard Road extension; Fruitridge Road and Bradshaw Road; Excelsior and Kiefer Boulevard; and Florin Road and Vineyard Road. The project may also result in the removal of an existing distribution substation if no longer required by the existing customer, near Kiefer Boulevard and Bradshaw Road.

The four existing 230-kV transmission lines that are located south of SR 16 and described above, also run along the northern portion of the WJHMP area. The cumulative projects would require seven new 69-kV subtransmission lines, including one along Kiefer Boulevard, one along Happy Lane, one along SR 16, one along Vineyard Road, one along Bradshaw Road, one along the east/west road between Bradshaw Road and Vineyard Road, and one along Hedge Avenue.

BULK SUBSTATION LOCATION

SMUD would require the dedication of approximately 22 acres of land north of the existing Cordova-Hedge and Cordova-Pocket 230-kV transmission lines that are located within a utility easement south of SR 16. Two options have been identified for the location of this substation.

Option 1 is located adjacent to the southeast corner of SR 16 and Excelsior Road and is not located within any of the four proposed master plan projects discussed above. It is located within parcels APN 067-0050-039-0000 and 067-0050-040-0000. The parcels also include two single-family, detached homes and are designated as AG-160 (Agricultural-160 Acres). There are two retention ponds on the site which are designated wetlands and included in the US Fish and Wildlife Service National Wetland Inventory. The substation location for Option 1 is located approximately 680 feet north of the nearest sensitive receptors. The site is located directly south of SR 16 and north of two SMUD 230-kV transmission lines, and two PG&E lines, that run through the proposed south-easterly portion of the WJHMP area.

Option 2 is located approximately 2,000 feet south of SR 16 and 2,000 feet west of Excelsior Road and is within the project boundary of the WJHMP area. This location is within a civic/employment designated portion of the master plan.

BULK SUBSTATION INFRASTRUCTURE

BULK SUBSTATION

The bulk substations would step down transmission line voltage of 230 kV to subtransmission voltage of 69 kV for distribution to distribution substations located within the four community and master plan areas. The bulk substation area would be graded and partially covered in crushed gravel, except where concrete foundations for the control building, transformers, circuit breakers and other equipment, oil containment, metal clad switchgear, and paved access roads would be built.

The main components of a bulk substation are the power transformers, steel structures, switches, control and relay equipment, circuit breakers, capacitor banks, electrical busses, cables and control building. Each power transformer would be approximately 35 feet tall, and would contain approximately 25,000–30,000 gallons of insulating mineral

oil. The maximum average sound level for each transformer would not exceed 80 decibel A-weighting (dBA) measured at a distance of 6 feet around the periphery of the transformer.

The bulk substation would also include circuit breakers and circuit switchers to receive and distribute electricity. Circuit breakers would be approximately 25 feet tall and would contain sulfur hexafluoride (SF_6) or other insulating medium. Sound levels would not exceed 140 decibels measured at 50 feet around the perimeter of the circuit breaker. Noise generated by the circuit breaker is typically intermittent.

The bulk substation also includes pad-mounted transformers which will contain approximately 85 gallons of insulating oil, which is typically nontoxic and biodegradable natural ester oil. The bulk substation would also include battery systems using lead acid, which would be located inside the control building. Other optional electrical components may be included which utilize mineral oil for insulation.

Electrical Bus

The bulk substation would include a network of steel structures that would support equipment, electrical buses, varying in height from approximately 16 to 80 feet tall. The electrical bus would support equipment such as insulators and would support overhead conductors entering the bulk substation from the interconnecting transmission and subtransmission overhead lines.

Control Building

The bulk substation would include a control building up to 50 feet high. The control building would be constructed with masonry block, concrete, or steel walls. The control building would include a restroom for employees and would be connected to municipal water and sewer if available.

Access Road

The bulk substation would require two access roads at least 20 feet wide if the access roads are straight and 24 feet if there are turns.

Bulk Substation Fencing, Landscaping, and Lighting

To maintain security and public safety, a minimum 10-foot-tall fence would be installed around the perimeter of the bulk substation site. SMUD would work with Sacramento County to determine the most appropriate landscaping and screening improvements. Lighting would be included as required by the National Electrical Safety Code for substation operation. The installed lighting system would be designed for purposes of nighttime operations and maintenance and would be oriented to minimize glare onto surrounding property.

Transmission Lines

Transmission and subtransmission lines would be required to receive electricity from the grid at the Jackson Bulk Substation and distribute to the distribution substations. The receipt and distribution of electricity along electrical lines would require the dedication of a utility easement. Receipt of electricity from the grid would occur by connecting the

Jackson Bulk Substation to the two SMUD 230-kV transmission lines. To make these connections, SMUD would install new steel poles up to 130 feet tall to the location of the new bulk substation. The number of new transmission poles needed would be determined by the distance between the new bulk substation and the existing transmission line right of way. Two poles at a minimum would be required. Distribution of electricity would occur across existing and new 69-kV wood or steel subtransmission poles approximately 65 feet tall or along underground lines. The additional cost of underground 69-kV subtransmission would be borne by the applicant requesting the facilities be installed underground and would require a feasibility study.

CONSTRUCTION, OPERATION, AND MAINTENANCE

Construction of the Jackson Bulk Substation would occur over approximately 2 years, in typical construction phases. During normal operations, the bulk substation would be operated remotely and continuously. Bulk substation maintenance would occur on a regular basis from two to four times per month for internal inspections and four times per year for perimeter maintenance. Major maintenance would occur about once every 3 years.

CUMULATIVE IMPACTS EVALUATION

RESULT IN WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY

Impact EN-1 concludes that the project would not result in the wasteful or inefficient use of energy because the project would not use natural gas or natural gas infrastructure, complying with the California Energy Code. Similarly, Impact EN-2 concludes that the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The project would incorporate various design features, such as prohibiting on-site natural gas infrastructure. Additionally, Mitigation Measures CC-1a, CC-1b, and CC-1c would reduce the project's overall energy consumption through decreasing gasoline and diesel fuel emissions. Proposed development surrounding the plan area would be subject to individual environmental analysis and mitigation impacts and would be required to comply with federal, state, and local requirements related to energy. Because implementing the project would not result in the wasteful or inefficient use of energy and the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, the project's contribution to cumulative energy use **would not be cumulatively considerable**.

CUMULATIVE IMPACTS OF SMUD SUBSTATION CONSTRUCTION

Energy demand from the project would not combine with the anticipated energy demand of cumulative projects in the region to result in wasteful, inefficient, or unnecessary consumption of energy. However, implementation of the four proposed master plans would result in a substantial increase in the regional demand for energy and the subsequent need to develop new supportive infrastructure (i.e., one bulk substation, eight distribution substations, two expanded distribution substations, transmission lines, subtransmission lines, and accessory infrastructure). All new project-specific distribution substations would be located within the project boundaries of their associated maps,

with the exception of the expanded distribution substations required by the WJHMP project.

The Jackson Bulk Substation (bulk substation) and ancillary facilities, however, would be at least partially located outside of the boundaries of these master plans. Should Option 1 be selected for the bulk substation, it would be located off-site for the four master plans. For infrastructure located within project boundaries, impacts would be addressed as direct impacts within the appropriate resource areas within each project's EIR. However, because in most cases Option 1 and Option 2 would not be located within project boundaries of the four proposed Jackson Highway master plans, an evaluation of cumulative impacts associated with each location is provided below. Table 22-2 includes an evaluation of the potential impacts of the new bulk substation if it were to be developed in either location. This analysis is programmatic in nature; a more detailed CEQA analysis will be performed by SMUD before construction of any of the proposed substations which will determine the environmental impacts and respective mitigation measures.

Table 22-2 Summary of Potential Environmental Impacts from Jackson Bulk Substation Construction and Operation

Affected Resources	Potential Impacts
Aesthetics and Visual Resources	The aesthetic and visual characteristics of the proposed sites for Option 1 and 2 are similar and are characterized by grassland, rural residential homes, and agricultural land uses. The surrounding area is currently relatively rural, but with implementation of the Jackson Bulk Substation, eight distribution substations, and proposed community and master plan projects, would gradually transition to an urbanized community. The proposed bulk substation would be typical of other bulk substations in the region and would include a two-story control building, transformers (approximately 35 feet tall), power circuit breakers (approximately 25 feet tall), a network of steel structures to support electrical equipment (up to 100 feet tall), and overhead conductors entering the substation from the interconnecting subtransmission and transmission overhead lines (up to 130 feet tall). Project construction would temporarily disrupt the existing visual environment as project materials would be staged and workers would be present on-site during the construction phase which would be approximately 2 years. However, these changes in the existing visual environment would be temporary, and consistent with the overall change to existing visual context in the SR 16 corridor because of multiple large proposed master plans. Under both options, the bulk substation would be located adjacent to urbanizing areas and SR 16, and would be typical of supportive urban infrastructure seen in the community. The overall visual transformation of the surrounding areas is addressed in the project-specific visual resources chapter of this EIR and is inclusive of supporting infrastructure needed to support the community. As described therein, the Franklin Bulk Substation Mitigated Negative Declaration concluded that the project would result in less than significant impacts. No scenic resources nor scenic vistas are located on or adjacent to the sites or nearby for either Option 1 or Option 2. While development of the bulk substation would result in the visual transformation of the site from a rural character to urban infrastructure, its development would be completed in concert with the overall urbanization of the surrounding area such that construction of this facility would not result in the substantial degradation of views of the site. As described

Affected Resources	Potential Impacts
	above, nighttime lighting would be included for safety and maintenance purposes but would be shielded and directionally controlled to prevent impacts to nearby sensitive land uses. Overall, the project would not result in a considerable contribution to a new significant cumulative impact related to visual resources. Cumulative impacts would be less than significant.
Air Quality	Construction of the Jackson Bulk Substation and related infrastructure components under Options 1 and 2 would involve the use of off-road heavy-duty construction equipment. Construction of the bulk substation would be typical of construction activity for the project type and size. Use of this equipment during various construction phases would result in emissions of fugitive dust, diesel particulate matter, and other criteria air pollutants. It is anticipated that certain phases in the construction of the substation may result in fugitive dust emissions and criteria air pollutants which exceed applicable standards set by the Sacramento Metropolitan Air Quality Management District (SMAQMD). Given the proximity of both Option 1 and Option 2 to existing sensitive receptors, the use of construction equipment may also expose sensitive receptors to substantial pollutant concentrations. As a result, construction activity associated with bulk substation construction could result in significant air quality impacts. Construction of the bulk substation would be the responsibility of Sacramento Municipal Utility District (SMUD) and would not be subject to the control of the County. Nonetheless, SMUD would be responsible for implementing appropriate mitigation developed in consultation with regulatory agencies to mitigate air quality impacts. Such mitigation could include construction practice and equipment limitations and renewable energy features. With implementation of mitigation, project-related impacts associated with the bulk substation could be reduced to a less-than-significant level. Mitigation Measure CU-2 below is recommended to reduce the project's contribution to impacts, specifically a reduction in fugitive dust emissions through the implementation of Fugitive Dust Control Plan during project construction. Mitigation Measure CU-3 below is recommended to reduce the project's contribution to impacts, specifically oxides of nitrogen (NO_X) emissions during project construction through the implementation of NO_X reduction measures. However, even with implementation of this mitigation, cumulative construction-related air quality impacts could result in emissions above SMAQMD's thresholds for certain pollutants and, therefore, cumulative impacts would remain considerable and significant and unavoidable. Operation of the bulk substation under Option 1 or 2 would result in emissions associated with routine maintenance tasks including worker commute trips and the use of maintenance equipment, as needed. Similar to existing facilities such as the Franklin Bulk Substation, emissions during operations would be limited over the lifetime of the project and no permanent staff would be expected to be stationed at the facility. Therefore, no significant operational impacts would be expected, and this would not result in a considerable contribution to a significant cumulative impact. Cumulative impacts related to operations would be **less than significant**.
Biological Resources	The site for Option 1 includes two single-family, detached homes on large lots which are surrounded by grassland habitat. There are also two retention ponds located within the parcel that are designated wetlands and could be disturbed during construction. The site for Option 2 is located within the project boundary of the West Jackson Highway Master Plan and consists of grassland habitat. Disturbance of special-status plant species and wildlife as well as their habitats could occur because of construction activities for the development of either

Affected Resources	Potential Impacts
	Option 1 or Option 2. The total area of disturbance for development of the bulk substation would be a maximum of approximately 22 acres. SMUD would be responsible for implementing appropriate mitigation developed in consultation with resource agencies to mitigate the impacts to special-status species and their habitats. Mitigation Measure CU-4 General Construction Measures, Mitigation Measure CU-5 Pre-Construction Surveys, Mitigation Measure CU-6 Avoid Disturbance or Harm to Wildlife Species below is recommended to reduce the project's contribution to construction-related impacts. Development of the project would contribute to the loss of biological resources within the region, but due to the relatively small amount of anticipated impacts this is not a considerable contribution to a significant cumulative biological resources impact. Mitigation Measure CU-7, Clean Water Act Permitting, and Mitigation Measure CU-8, Compensate for Permanent Loss of Wetlands below is recommended to reduce the project's contribution to this impact. However, even with implementation of the mitigation measures listed above cumulative construction-related impacts would remain **considerable and significant and unavoidable**.
Cultural Resources	Construction activities for the development of the Jackson Bulk Substation and related infrastructure under Option 1 or Option 2 would involve ground disturbance, grading, and trenching activities that could result in the uncovering of previously undiscovered cultural resources on the site. Mitigation Measures CU-9 and CU-10 are recommended to minimize the potential for the project to result in potential impacts on cultural resources. With mitigation, the project would not result in a considerable contribution to a significant cumulative impact. Cumulative impacts would be **less than significant**.
Geology and Soils	Construction activities for the development of the Jackson Bulk Substation and related infrastructure under Option 1 or Option 2 would involve ground disturbance, grading, and trenching activities that could result in activities which expose soils and result in accelerated erosion. Construction activity could result in the movement of soils to other locations in the plan area to assist in the leveling the site. Because the project would disturb more than 1 acre of ground surface, the project would be required to comply with the Sacramento County Land Grading and Erosion Control Ordinance (Sacramento County Code Ch. 16.44). The ordinance establishes administrative procedures, minimum standards of review, and implementation and enforcement procedures for the control of erosion and sedimentation that are directly related to land grading activities. In addition to complying with the County's ordinances, because the construction site would disturb more than 1 acre, it would be required to comply with the state's General Stormwater Permit for Construction Activities, which is Mitigation Measure CU-11. The Construction General Permit is issued by the State Water Resources Control Board and enforced by the Regional Water Quality Control Board and requires preparation and implementation of a site-specific Stormwater Pollution Prevention Plan (SWPPP) that must always be kept on site for review by the state inspector. As such, the project would not result in substantial soil erosion or the loss of topsoil and would not contribute considerably to a significant cumulative impact. Cumulative impacts would be **less than significant**.
Greenhouse Gas Emissions	Operation of the Jackson Bulk Substation under Option 1 or 2 would result in greenhouse gas (GHG) emissions associated with routine maintenance tasks including worker commute trips and the use of maintenance equipment, as

Affected Resources	Potential Impacts
	needed. Similar to existing facilities such as the Franklin Bulk Substation, GHG emissions during operations would be limited over the lifetime of the project and no permanent staff would be expected to be stationed at the facility. Construction of the project and related infrastructure components under Option 1 or Option 2 would involve the use of off-road heavy-duty construction equipment resulting in GHG emissions and vehicle miles associated with construction worker commute trips. The full design and construction details for the bulk substation are not known at this time. However, the Franklin Bulk Substation, which is similar in size to the Jackson Bulk Substation, resulted in 1,230 metric tons of carbon dioxide equivalent ($MTCO_2e$) during the initial year of construction. Based on similar size of the Jackson Bulk Substation, GHG emissions during the initial year of construction could potentially exceed SMAQMD's significance threshold of 1,100 $MTCO_2e$/year for construction activity. Therefore, implementation of Mitigation Measure CU-12 (described below) is suggested to reduce construction-generated GHG emissions to below 1,100 $MTCO_2e$/year. With implementation of the Mitigation Measure CU-12, the project would not result in a considerable contribution to a significant cumulative impact. Cumulative impacts would be **less than significant**.
Hazards and Hazardous Materials	Construction of the Jackson Bulk Substation and related infrastructure components under Option 1 or Option 2 would involve the transport and use of hazardous materials. These include mineral oil used to insulate transformers which would be in sealed transformer equipment, substation battery backup systems, containing liquid sulfuric acid, which would be in sealed cases, and petroleum products for use in construction equipment. As part of the SWPPP required for the project, a Spill Prevention and Response Plan would be implemented and would include action measures to minimize the potential release of hazardous materials into the environment. Mitigation Measures CU-13, CU-14, and CU-15 are suggested to ensure impacts of a potential release of hazardous materials into the environment are reduced to the largest degree possible. Mitigation Measure CU-13 requires environmental training on best management practices (BMPs) that would be employed for phases of construction in which hazardous materials are encountered. Mitigation Measure CU-14 requires the development of a Hazardous Substance Control and Emergency Response Plan. The plan would include BMPs for avoiding hazardous materials spills and specific measures to implement if a hazardous materials spill does occur. Operation the substation would require the storage and use of mineral oil on-site for the purpose of insulating the substation transformers. As part of Mitigation Measure CU-15, a Spill Prevention, Control, and Countermeasures Plan would be prepared to identify storage devices and containment measures for spill events. For operation of the project, Mitigation Measure CU-16 is also suggested, which would require the preparation of A Hazardous Materials Business Plan (HMBP), if operation of the project required the handling or storage of hazardous materials equal to or greater 55 gallons for liquids, 500 pounds for solids and 200 cubic feet (at standard temperature and pressure) for compressed gases. The HMBP would also include an operation specific emergency response plan for the specific type of hazardous materials used on site. Although hazardous material would be used on site, with the implementation of Mitigation Measures CU-13 through CU-15, the risks for the accidental release of hazardous materials into the environment would be reduced such that the project would not result in a considerable contribution to a significant cumulative impact. Cumulative impacts would be **less than significant**.

Affected Resources	Potential Impacts
Hydrology and Water Quality	Construction of the Jackson Bulk Substation at Option 1 or Option 2 would result in increased sediment erosion because of ground disturbance associated with activities such as grading, trenching, foundation installation, fence construction, and road improvements. Increased erosion could affect water quality in on-site and off-site water bodies. Substation construction could also result in the degradation of water quality from runoff of petroleum-based products associated with the use of construction equipment. Option 1 contains wetland features and Option 2 contains two retention basins that are identified as freshwater ponds and classified as part of the Palustrine System, which includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, as well as all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ppt. Substation construction could result in changes in drainage patterns on the site. Substation construction would be required to comply with the Sacramento County Land Grading and Erosion Control Ordinance (Sacramento County Code Ch. 16.44). As discussed in the "Geology and Soils" section, above, because the construction site would disturb more than 1 acre, it would also be required to comply with the state's General Stormwater Permit for Construction Activities which is issued by the State Water Resources Control Board and enforced by the Regional Board. This permit would require the preparation and implementation of a site-specific SWPPP. Based on the results of this permitting process, if deemed applicable, standard erosion control measures would be implemented to protect water quality consistent with Regional Water Quality Control Board and County requirements. The use of standard control measures through the permitting process would ensure that substation construction activity would not violate any water quality standards or waste discharge requirements. Implementation of standard construction-related hydrology and water quality measures listed below as well as implementation of Mitigation Measures CU-11, and CU-13 through CU-15 would feasibly reduce this impact. Further, the facility would be designed to meet current state and County stormwater and water quality standards for the operation of the facility such that no significant operational hydrology and water quality impacts would occur. Therefore, the project would not result in a considerable contribution to a significant cumulative hydrology or water quality impact. Cumulative impacts would be **less than significant**.
Noise and Vibration	Construction activities for the development of the Jackson Bulk Substation and related infrastructure under Option 1 or Option 2 would involve the use of off-road heavy-duty construction equipment resulting in noise and vibration levels that could result in impacts on nearby sensitive receptors (e.g., residential land uses). Site construction characteristics would be similar to those in Mather South Community Master Plan (i.e., construction activity occurring in close proximity to sensitive receptors). Existing noise sensitive receptors exists approximately 2,035 feet east of the substation location in Option 1 and within approximately 680 feet south of the plan area boundary for Option 2. Construction activities would be intermittent and temporary in nature. Construction activities occurring during the quieter nighttime hours are of particular concern. If construction activities were to occur during the nighttime hours this could result in increased levels of annoyance and potential for sleep disruption to occupants of nearby dwellings. Construction of the substation would be the responsibility of SMUD and would not be subject to the control of the County. Nonetheless, SMUD would be responsible for implementing appropriate mitigation developed in consultation with regulatory agencies to mitigate noise impacts. As such, construction noise mitigation strategies

Affected Resources	Potential Impacts
	identified within Mitigation Measure CU-17 are proposed to mitigate substation construction activity on nearby noise sensitive receptors and could feasibly reduce this impact to below a level of significance. In general, this mitigation can and should be implemented by SMUD and would generally include the limitation of construction activity to daytime hours as prescribed in the Sacramento County Noise Ordinance. Although this mitigation would help to reduce potential impacts on nearby sensitive receptors, because the full detail of construction activity is not known at this time, including the type and amount of construction equipment to be used as well as when construction activity would occur, noise impacts may still occur. A 224 mega-volt ampere transformer is estimated to generate a maximum noise level of 80 dBA L_{eq}/L_{50} at 6 feet. Because the exact size of the proposed bulk substation is unknown at this point, there is potential for an impact to occur if noise sensitive receptors could be affected by operations of the bulk substation. Mitigation could include the siting of noise-generating equipment away from sensitive receptors. With implementation of mitigation, project-related impacts would be reduced to below a level of significance. Mitigation Measure CU-16 below is recommended to reduce the project's contribution to a new significant cumulative impact. Cumulative impacts would be **less than significant**.
Transportation	Construction activities for the development of the Jackson Bulk Substation under Option 1 or Option 2 would result in construction-related commute and haul trips that could temporarily increase traffic volumes on local roadways. Construction of the facility would take place over approximately 2 years and would be temporary. Construction of the bulk substation would be the responsibility of SMUD and would not be subject to the control of the County. Nonetheless, SMUD would be responsible for implementing appropriate construction-traffic measures to ensure adequate access to and from the facility would be maintained. SMUD would also be required to coordinate with the County regarding construction-traffic management plans consistent with the Sacramento County Department of Transportation's Construction Traffic Management Program (Chapter 6 of the County's Project Delivery Manual). Therefore, no significant construction-related traffic impacts would occur. The facility would not require any permanent staff and would only require periodic maintenance. Therefore, this facility would not result in the substantial generation of operational traffic such that significant traffic impacts to local roadways and intersections would occur. Overall, the project would not result in a considerable contribution to a significant cumulative impact related to traffic impacts. Cumulative impacts would be **less than significant**.

MITIGATION MEASURES

Mitigation Measure CU-E-1: Coordinate with SMUD

The project applicants for the NewBridge Specific Plan, the WJHMP, the Jackson Township Specific Plan, and the Mather South Community Master Plan, shall each coordinate with SMUD to identify the timing of construction of the Jackson Bulk Substation and seek to facilitate efficiencies in grading and pre-construction activities as feasible, as a condition of project approval.

AIR QUALITY

Mitigation Measure CU-E-2: Develop and Implement a Dust Control Plan

SMUD shall develop a Fugitive Dust Control Plan (FDCP) for the bulk substation. The FDCP shall be prepared before the start of construction activities. Measures to be included in the plan include, but are not limited to, the following:

a. Water all exposed surfaces at least two times daily when soil moisture conditions have the potential to result in dust generation. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

b. Cover or maintain at least two feet of freeboard space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.

c. Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

d. Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

e. Temporary construction entrances shall be stabilized to control fugitive dust emissions.

f. The FDCP shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures, as necessary, to minimize the transport of dust off-site and to ensure compliance with identified fugitive dust control measures. Their duty hours shall include holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the SMAQMD Compliance Division before the start of any grading, or earthwork.

g. Signs shall be posted at the substation site entrance a minimum of 30 days prior to initiation of project construction. The signs shall include the following information: (a) Project Name; (b) Anticipated construction schedule(s); and (c) Telephone number(s) for designated construction activity monitor(s) or, if established, a complaint hotline. The designated construction monitor shall document and immediately notify SMUD and SMAQMD of any air quality complaints received. If necessary, the contractor will coordinate with SMUD and SMAQMD to identify any additional feasible measures and/or strategies to be implemented to address public complaints.

Mitigation Measure CU-E-3: Implement NOx Reduction Measures

Consistent with SMAQMD-recommended “basic” and “enhanced” NO_x reduction measures, the following measures shall be implemented during bulk substation construction:

Basic Measures:

a. Minimize idling time of diesel-powered equipment either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (required by California Code of Regulations, Title 13, Sections 2449[d][3] and 2485). Provide clear signage that posts this requirement for workers at the entrances to the site.

b. Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before initial use in the project area. Documentation verifying compliance with this measure shall be retained on site and provided to SMAQMD upon request.

c. When leasing equipment, the contractor shall use alternatively fueled equipment (e.g., electric, propane, etc.), in lieu of diesel- or gasoline fueled equipment, whenever possible and to the extent practicable.

Enhanced Measures:

d. A comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that would be used in aggregate of 40 or more hours during substation construction shall be submitted to the SMAQMD.

   - The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment.
   - The contractor shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.
   - This information shall be submitted at least four business days before the use of subject heavy-duty off-road equipment.
   - The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.

e. A plan shall be submitted to the SMAQMD demonstrating that combined emissions from heavy-duty off-road equipment (50 horsepower or more), construction vehicles, and haul truck to be used during substation construction, including owned, leased, and subcontractor vehicles, will achieve NO_x reductions sufficient to demonstrate compliance with the SMAQMD's maximum allowable mass emissions threshold of 85 pounds per day (lb/day) of NO_x.

   - The plan shall include an inventory of all off-road equipment and haul trucks to be used during construction.
   - Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, limitations on the use of off-road equipment and/or haul trucks, changes in construction schedules, the payment of mitigation fees to the SMAQMD, and/or other options as they

become available. The SMAQMD's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction.

f. SMUD shall ensure that emissions from all off-road diesel powered equipment used in the project area do not exceed 40% opacity for more than three minutes in any one hour.

- Any equipment found to exceed 40-percent opacity (or Ringelmann 2.0) shall be repaired immediately.
- Non-compliant equipment shall be documented and a summary provided to SMAQMD monthly. A visual survey of all in-operation equipment shall be made at least weekly.
- A monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey.

Once more detailed construction information becomes available, a refined emissions modeling analysis can be performed to determine if all or a portion of the above "Enhanced Measures" should be implemented to demonstrate compliance with SMAQMD's maximum allowable mass emissions threshold of 85 lb/day of NO_x.

This analysis shall be conducted in accordance with applicable SMAQMD-recommended methodologies.

BIOLOGICAL RESOURCES

Mitigation Measure CU-E-4: Implement General Construction Measures

The following general construction measures shall be implemented to avoid impacts to biological resources during construction of the bulk substation:

- Construction personnel shall minimize the work area footprint and the duration at a work area site, to the extent possible.
- Construction personnel shall use existing paved and unpaved roads to access the work area where present. Vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas to the maximum extent feasible.
- Trash dumping, littering, open fires (such as barbecues), hunting, and pets shall be prohibited in work areas.

Mitigation Measure CU-E-5: Conduct Pre-Construction Surveys

The following measures shall be implemented to avoid impacts to special-status plants during construction of the bulk substation:

- Pre-construction surveys for special-status plants will be conducted within 250 feet of the SMUD project area, where access is possible, during the appropriate bloom period for identification.
- If surveys for special-status plants cannot be completed during the appropriate bloom period, topsoil (upper 2-4 inches) in the appropriate habitat for the surveyed species where ground disturbance will occur will be stockpiled before construction and respread after construction in suitable areas
- If any special-status plant species are found in the SMUD project area, orange or yellow construction flagging or fencing will be erected to provide a 20-foot -buffer area around the population to prevent encroachment by construction activities, if possible given the location of the population. The fencing will be maintained until construction is complete.
- If any special-status plant species are found in the SMUD project area and avoidance is not possible due to the location of the population, SMUD will consult with the appropriate resource agencies (California Department of Fish and Wildlife and/or California Native Plant Society) to develop mitigation and/or compensation measures needed to reduce the impact to a less than significant level.
- Where it is not feasible to avoid special-status plant locations within construction areas, seed collection and transplanting shall be performed for annual plant species in suitable areas.
- If an affected special-status plant is a perennial species, native plant nursery propagation shall be performed as well as planting within suitable areas.
- All special-status plant restoration and planting areas shall be monitored for a minimum of one year.

Mitigation Measure CU-E-6: Avoid Disturbance or Harm to Wildlife Species

Following preconstruction surveys and initiation of project construction, it is possible that wildlife species could subsequently enter or return to the plan area. The following measures will be implemented to avoid disturbance or harm to these species:

- If any special-status species or other wildlife species are observed in the plan area during construction, construction will cease until the species is allowed to move out of harm’s way on their own accord.
- If they cannot be allowed to move out of harm’s way on their own accord, SMUD field crews shall contact SMUD Environmental Services at (916) 732-5836, who will report the sighting to the appropriate agency (US Fish and Wildlife Service and/or California Department of Fish and Wildlife). SMUD Environmental Management will have authority to stop activities until appropriate corrective

measures have been completed or it is determined that the individual will not be harmed. Capture and relocation of trapped or injured species can only be attempted by agency-approved biologists.

Mitigation Measure CU-E-7: Obtain Clean Water Act Permits

SMUD will obtain relevant Clean Water Act (CWA) permits (Sections 404 and 401). Additionally:

- All proposed discharges of dredge or fill material into waters of the United States will first be authorized by the US Army Corps of Engineers (USACE), pursuant to Section 404 of the CWA. All USACE permit conditions will be implemented.
- Pursuant to Section 401 of the CWA, SMUD will obtain Water Quality Certification from the Regional Water Quality Control Board for the proposed project.

Mitigation Measure CU-E-8: Compensate for Permanent Loss of Wetlands

SMUD will compensate for the permanent loss of wetland habitat through the purchase of mitigation credits at a 1:1 creation ratio from the SMUD Nature Preserve Mitigation Bank or an alternative USACE-approved mitigation bank. This mitigation requirement may be refined or superseded by the terms of the USACE Section 404 permit for the project.

CULTURAL RESOURCES

Mitigation Measure CU-E-9: Conduct Cultural Resource Surveys

SMUD shall complete cultural resource surveys before any ground disturbing activities or construction activities associated with the bulk substation. Surveys will be completed prior to any ground disturbing activities or the project construction activities to inventory and evaluate cultural resources affected by the project, or affected by any components that might be added to the project, or any existing components that may be modified.

Mitigation Measure CU-E-10: Prepare and implement Archaeological Resource Management and Treatment Plan to Address Significant or Unique Archaeological Resources

In the case of the inadvertent discovery of a resource that is listed or eligible for listing in the National Register of Historic Places or California Register of Historical Resources or of a unique archaeological resource as defined by CEQA, SMUD will have a qualified archaeologist prepare and implement an Archaeological Resource Management and Treatment Plan that specifies the treatment of the resources. Before implementation, this document shall be submitted for review to SMUD as CEQA Lead Agency. This plan shall be tailored to the specific needs of the project and the particular resources present there. The proposed Archaeological Resources Management and Treatment Plan must minimally address the following:

A general research design shall be developed that:

- Charts a timeline of all research activities.

- Recapitulates any existing paleo-environmental, prehistoric, ethnohistoric, ethnographic, and historic contexts to create a comprehensive historic context for the plan area.
- Poses research questions and testable hypotheses specifically applicable to the resource types encountered.
- Clearly articulates why it is in the public's interest to address the research questions that it poses.
- Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to archaeological materials and documentation resulting from evaluation and data recovery of the resource.
- Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.
- The manner in which Native American observers or monitors shall be included, the procedures to be used to select them, and their roles and responsibilities shall be described.
- All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented before the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.
- The commitment to curate of all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with CEQA Lead Agency requirements and the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum shall be stated.

GEOLOGY AND SOILS

Mitigation Measure CU-E-11: Implement a Storm Water Pollution Protection Plan

SMUD shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that includes erosion control measures and construction waste containment measures to ensure that waters of the United States and the state are protected during and after project construction. The SWPPP shall include site design measures to minimize off-site storm water runoff that might otherwise affect surrounding habitats. The SWPPP would also include a Spill Prevention and Response Plan (SPRP) and a construction-specific Hazardous Substance Control and Emergency Response Plan (HSCERP) to minimize the potential for accidental releases of hazardous materials into the environment.

The SWPPP shall be prepared with the following objectives: (a) to identify pollutant sources, including sources of sediment, that may affect the quality of storm water discharges from the construction of the project; (b) to identify BMPs to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the site during construction; (c) to outline and provide guidance for BMPs monitoring; (d) to identify project discharge points and receiving waters; (e) to address post-construction BMPs implementation and monitoring; and (f) to address sedimentation, siltation, turbidity, and non-visually detectable pollutant monitoring, and outline a sampling and analysis strategy.

The contractor shall implement the SWPPP including all BMPs and perform inspections of all BMPs. Potential SWPPP BMPs could include, but would not be limited to the following:

- Placing fiber rolls around on-site drain inlets to prevent sediment and construction-related debris from entering inlets.
- Placing fiber rolls along the perimeter of the site to reduce runoff flow velocities and prevent sediment from leaving the site.
- Placing silt fences down-gradient of disturbed areas to slow down runoff and retain sediment.
- Stabilizing construction entrance to reduce the tracking of mud and dirt onto public roads by construction vehicles.
- Staging and covering excavated and stored construction materials and soil stockpiles in stable areas to prevent erosion.

The construction-specific SPRP and HSCERP shall include preparations for quick and safe cleanup of accidental spills. It shall prescribe hazardous materials handling procedures for reducing the potential for a spill during construction and shall include an emergency response program to ensure quick and safe cleanup of accidental spills. The plan shall identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, will be permitted, with secondary containment.

Construction personnel shall not refuel or conduct equipment maintenance activities within 250 feet of any aquatic features. The SPRP and HSCERP shall identify BMPs in the event a spill occurs. BMPs may include but are not limited to the following: use of oil-absorbent materials, tarps, and storage drums to contain and control any minor releases; and storage and use of emergency-spill supplies and equipment in locations adjacent to work and staging areas.

GREENHOUSE GAS EMISSIONS

Mitigation Measure CU-E-12: Implement Greenhouse Gas Reduction Measures

Prior to project construction, SMUD shall provide a plan to SMAQMD which demonstrates that the combined emissions from all off-road equipment, construction vehicles, and haul truck to be used in the construction project will implement GHG reduction strategies demonstrating that annual GHG emissions would be the

SMAQMD's construction mass emissions threshold of 1,100 metric tons of carbon dioxide equivalent per year ($MTCO_2e$/year).

- The plan shall include an inventory of all off-road equipment and haul trucks to be used during construction.
- Strategies for reducing GHG emissions could include the use of alternative fuels, changes in construction schedules, the phasing of haul truck trips. and/or other options as they become available.

If more detailed construction information becomes available a refined emissions modeling analysis can be performed. This analysis shall be conducted in accordance with applicable SMAQMD-recommended methodologies. The analysis shall include reduction measures sufficient to ensure construction activity would not exceed SMAQMD's mass emissions threshold of 1,100 $MTCO_2e$/year.

HAZARDS AND HAZARDOUS MATERIALS

Mitigation Measure CU-E-13: Conduct Worker Training for Hazardous Materials

SMUD shall establish an environmental training program to communicate environmental concerns and appropriate work practices to all field personnel, including spill prevention, emergency response measures, and proper BMP implementation. All personnel will review all site-specific plans, including, but not limited to, the project's SWPPP, health and safety plan, and fugitive dust control plan.

Mitigation Measure CU-E-14: Prepare and Maintain Spill Prevention, Control, and Countermeasures Plan

SMUD shall prepare and maintain an operation-specific Spill Prevention, Control, and Countermeasures Plan (SPCC Plan) in accordance with state and federal requirements, including 40 Code of Federal Regulations 112. The SPCC Plan shall identify engineering and containment measures for preventing oil releases into waterways. An SPCC Plan is required when there is over 1,320 gallons of petroleum products on-site (excluding vehicles).

Mitigation Measure CU-E-15: Evaluate Applicability of Hazardous Materials Business Plan

SMUD will evaluate applicability of the Hazardous Materials Business Plan (HMBP) requirements (the project would use or store hazardous materials equal to or greater than 55 gallons of liquids, 500 pounds of solids and/or 200 cubic feet [at standard temperature and pressure] of compressed gases) and file operation-specific HMBP in accordance with local, state, and federal laws. The HMBP shall identify site activities, provide an inventory of hazardous materials used on-site, provide a facilities map, and identify an emergency response plan/contingency plan.

NOISE AND VIBRATION

Mitigation Measure CU-E-16: Limit Construction Activity to Daytime Hours

Per Sacramento County Noise Ordinance requirements (Sacramento County Code Section 6.68), construction activity associated with the development of the Jackson Bulk Substation shall be limited to the hours of 6:00 a.m. and 8:00 p.m. on weekdays and between 7:00 a.m. and 8:00 p.m. on weekends.

Significance after Mitigation

Future project applicants for each of the community and master plan projects would be required to comply with Mitigation Measure CU-1 to coordinate with SMUD during the grading and pre-construction activities to facilitate efficiencies where feasible.

Additionally, the specific design and siting details for the construction and operation of the bulk substation are not known at this time. The EIR has provided an analysis of the potential project and cumulative impacts associated with development of the bulk substation and other ancillary off-site facilities (e.g., power lines) based upon the best available information at this time. Development of the facility is the responsibility of SMUD as the utility provider and SMUD can and should mitigate impacts related to development. Additional or substitute mitigation may be available when a specific site and the design of the project is known. Where standard development policies and requirements can be implemented to reduce impacts, they have been assumed in the above analysis. However, until specific site and design plans are developed, it is unknown whether specific impacts related to air quality, biological resources, greenhouse gas emissions, noise can be reduced. Therefore, at the program-level it is not possible to guarantee that all impacts related to would be able to be mitigated and this EIR conservatively assumes that the project would have cumulatively considerable and **significant impacts** related to these resources.

GEOLOGY, SOILS, AND MINERAL RESOURCES

CUMULATIVE SETTING

Impacts on geology and soils are generally localized and do not result in regionally cumulative impacts. Unless a project would alter the soils and rock underlying other adjacent projects or affect surrounding land due to landslides, impacts related to geology and soils would be limited to the plan area. The geographic scope of cumulative impacts related to geology and soils, therefore, includes only projects immediately adjacent to the plan area. Because the region is generally level, not seismically active, and has a low probability of ground shaking, the risk of ground failure, including liquefaction and landslides caused by earthquakes is also generally low. The risk of surface fault rupture in the SACOG region is generally low because of the scarcity of active faults. Section 1803.7 of the 2019 California Building Code (CBC) requires preparation of a geohazard reports for all proposed construction, with few exceptions. The purpose of the engineering report is to identify geologic and seismic conditions that may require mitigation. The reports, which are prepared by a California certified engineering geologist in consultation with a California-registered geotechnical engineer, assess the nature of the site and potential for earthquake damage based on

appropriate investigations of the regional and site geology, project foundations conditions, and potential seismic shaking at the site. In connection with grading, foundation, building, and other site development permits, the local jurisdiction reviews the geotechnical investigation and recommendations and imposes permit requirements based on the geotechnical recommendations and CBC provisions. Recommended corrective measures, such as structural reinforcement and replacing native soils with engineered fill, must be incorporated into project designs. Developments must also adhere to local building code requirements for seismic safety, which identify and require specified construction techniques that aid in structural resistance to ground shaking (SACOG 2019).

Generally, earthwork and ground-disturbing activities, unless below minimum requirements, require a grading permit, compliance with which minimizes erosion, and local grading ordinances ensure that construction practices include measures to protect exposed soils such as limiting work to dry seasons, covering stockpiled soils, and use of straw bales and silt fences to minimize off-site sedimentation. Additional reports, such as a soil engineering report, engineering geology report, or plans and specifications for grading may be required by the local building or engineering departments, depending on the development proposal. Earthwork recommendations for improved erosion controls, based on site conditions, would be incorporated into the project construction documents. Development that disturbs more than 1 acre is subject to compliance with a NPDES permit, including the implementation of BMPs, some of which are specifically implemented to reduce soil erosion or loss of topsoil, and the implementation of a SWPPP through the local jurisdiction. BMPs that are required under a SWPPP would include erosion prevention measures that have proven effective in limiting soil erosion and loss of topsoil. Projects that would disturb less than 1 acre would be subject to the CALGreen requirements related to stormwater drainage that have been designed to prevent or reduce discharges of sediments through BMPs that include on-site retention and filtration. Generally, once construction is complete and exposed areas are revegetated or covered by buildings, asphalt, or concrete, the erosion hazard is substantially eliminated or reduced. Existing regulatory requirements specify mandatory and relatively prescriptive actions that must occur during project development. There are regulations in place that would effectively reduce the potential for loss of topsoil or erosion impacts (SACOG 2019).

The Sacramento County General Plan EIR concluded that geologic conditions are highly localized and implementation of the General Plan would not make a cumulatively considerable contribution to this less-than-significant cumulative effect (Sacramento County 2010). Therefore, no significant cumulative geology or soils impacts are present on or near the plan area.

Although the plan area does not include land containing valuable mineral resources that have not been, or would not be, fully extracted prior to buildout of the master plan, development of adjacent properties could preclude mining operations in a manner that could be considered significant in a cumulative setting. Cumulative development could result in a reduction in availability of important designated mineral resources by making certain mineral resources inaccessible for future extraction.

The geographic scope of potential cumulative impacts related to paleontological resources is the plan area and the immediate geographic area, including Sacramento County. Because all significant paleontological resources are unique and nonrenewable members of finite classes, all adverse effects or negative impacts erode a dwindling resource base. The loss of any one paleontological site affects all others in a region because these resources are best understood in the context of the entirety of the system of which they are a part. The system is represented by the total inventory of all sites and other paleontological remains in the region. Therefore, because of past and current projects, cumulative impacts to paleontological resources in Sacramento County are significant.

Cumulative Impacts Evaluation

The plan area is not located within an active seismic fault area. The project would not result in a reduction in the availability of (i.e., access to or removal of) any mineral resource, because all resource that exists within the plan area would be fully exhausted prior to development. Additionally, the project would not result in the closure of adjacent mining resources. The project would be constructed in accordance with the most recent version of the California Building Code, which includes construction and seismic safety requirements and recommendations contained in project-specific geotechnical reports (i.e., Mitigation Measures GS-1 and GS-4). However, there is a potential for the project to encounter paleontological resources, which would require implementation of Mitigation Measure GS-6.

It is anticipated that any potential impacts associated with geologic, soil conditions, and paleontological resources could be mitigated within the plan area and other nearby project sites. The project would not result in a considerable contribution to the significant cumulative paleontological resources impact such that a new significant cumulative geology and soils impacts would occur. Therefore, cumulative impacts related to geology, soils, and mineral resources would be **less than significant with mitigation**.

Mitigation Measures

Implement Mitigation Measures GS-1, GS-4, and GS-6.

Hazards and Hazardous Materials

Cumulative Setting

Although some hazardous materials releases can cover a large area and interact with other releases (e.g., atmospheric contamination, contamination of groundwater aquifers), incidents of hazardous materials contamination are more typically isolated to a small area, such as leaking underground storage tank sites or releases at individual businesses. These relatively isolated areas of contamination typically do not interact in a cumulative manner with other sites of hazardous materials contamination. Impacts related to emergency vehicle access and evacuation are considered site specific and are not cumulative. Additionally, the Sacramento County General Plan EIR concluded that implementation of the General Plan would not result in a cumulatively considerable contribution to cumulative hazard impacts (Sacramento County 2010).

The general vicinity of Mather Airport was utilized for military operations for most of the 20th century and contains contaminated soils and groundwater from these past uses. While most of the contamination on-site has been identified and remediated, it is possible that pre-construction surveys could determine that new sources of contamination are present. However, there is no record of existing contamination within or immediately adjacent to the plan area. Therefore, the existing cumulative condition is less than significant.

Cumulative Impacts Evaluation

The project could exacerbate the existing hazardous waste conditions near the plan area if it were to result in additional contamination or increase the risk of hazardous materials exposure during the transport, use, and disposal of hazardous materials. The project would be required to comply with federal, state, and local hazardous materials regulations and codes monitored by the state and/or local jurisdictions, which may include preparation of a site-specific Health and Safety Plan, conducting soil sampling before construction activities begin, preparation of a contaminated soil contingency plan, and notification of future landowners of the potential for hazardous materials. As identified in Chapter 13, "Hazards and Hazardous Materials," hazard impacts related to the project would be limited to potential on-site contamination and would be mitigated to a less-than-significant level through implementation of Mitigation Measures HM-2a through HM-2c. Therefore, the project would not result in a considerable contribution to a significant cumulative impact related to hazards. Cumulative impacts related to hazards and hazardous materials would be **less than significant with mitigation**.

Mitigation Measures

Implement Mitigation Measures HAZ-2a, HAZ-2b, and HAZ-2c.

Hydrology, Drainage, and Water Quality

Cumulative Setting

The plan area is within the Morrison and Elder Creek watersheds, as the two creeks run through the plan area. The Morrison and Elder Creeks are the cumulative watershed boundary for the evaluation of cumulative effects. Development of past, present, and future projects in the area could have a significant cumulative effect on hydrology and water quality due to changes in permeability of land surfaces and the potential for increased pollutants within groundwater and surface water. The Morrison Creek stream group ultimately drains to the Beach Stone Lakes area, which has a history of flooding because of upstream runoff, direct precipitation in the area, and backwater from the Cosumnes and Mokelumne Rivers during periods of flooding and high river stages.

Non-point source water pollution from the combination of past, present, and future projects in the Morrison and Elder Creek watersheds may contribute to a general degradation of water quality over time. With increased urbanization, new land uses and associated impermeable surfaces have resulted in runoff of various pollutants into local and regional waterways. A variety of programs have been implemented with the goal of halting degradation of water quality and reversing this trend. Several state and federal

agencies are involved in these programs, many of which are required by or originate in the federal CWA. Nonetheless, a cumulative adverse water quality condition exists.

CUMULATIVE IMPACTS EVALUATION

The County of Sacramento currently implements several County ordinances such as the Sacramento County Stormwater Ordinance and the Land Grading and Erosion Control Ordinance; the National Pollutant Discharge Elimination System (NPDES) General Construction Permit; 2030 General Plan Policies CI-65, CO-24, CO-28, CO-30, and SA-14; as well as required BMPs and Low Impact Design (LID) standards. As discussed in Impact HYD-1, compliance with these policies, permits, and regulations would reduce the generation of water pollutants to the maximum extent practicable, consistent with the goals of the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board water quality criteria and stormwater regulations through the use of structural and nonstructural BMPs.

As described in Chapter 14, “Hydrology, Drainage, and Water Quality,” most of the plan area is located within an area designated by FEMA to be within the 100-year floodplains, as well as the 500-year floodplains. Development within the plan area may create impervious and pervious surfaces that could alter the drainage pattern of the plan area, with the development of new land uses consisting of hardscapes. However, implementation of BMPs and LID stormwater management components; Urban Levee Design Criteria requirements; State Plan of Flood Control; Sacramento County Floodplain Management Ordinance; Cordova Community Plan Policy PS-3; Vineyard Community Plan Policy PF 3; 2030 General Plan Policies AG-29, CO-93, CO-94, SA-5, SA-16, SA-17, and SA-22; as well as implementing flood protection improvements planned within the WJHMP would improve the level of flood safety for the plan area and downstream properties by providing a reliable levee and weir system to reduce peak flows in Morrison and Elder Creeks, as concluded within Appendix H. Implementation of the stated regulations and policies would minimize the potential for substantial erosion, flooding, or polluted runoff by achieving limited/controlled flows entering Morrison Creek and through the development of detention basins proposed within the WJHMP.

While the WJHMP would introduce impervious surfaces that have the potential to interfere with groundwater recharge, incorporation of LID and BMPs in each future project’s design would redirect stormwater runoff to local detention basins within proposed open spaces to aid in groundwater recharge. In addition, compliance with 2030 General Plan Policies CI-95, CO-24, CO-28, CO-30, and CO-31, the County’s Municipal Storm Water Permit, the Stormwater Quality Design Manual for the Sacramento Region, the South American Subbasin Groundwater Sustainability Plan, and the Central Sacramento County Groundwater Management Plan would prevent degradation of groundwater supply, quality, and recharge. Mitigation Measure HYD-3a would require evidence that the suite of LID techniques implemented at the project-level would meet the Sacramento County Stormwater Quality Partnerships Hydromodification Management Plan criteria and achieve the credits assumed in the modeling. Mitigation Measure HYD-3b would require County approval of all project-level detention basin and channel designs prior to implementation. The plan-level flood control study indicates that stormwater outflows from the plan area would be metered to address the potential

for the plan area to contribute to offsite flooding, including in the Beach Stone Lakes area. Mitigation Measure HYD-7 requires either assurance that no net project-related increase in flood volume in Beach Stone Lakes would occur or payment into the County's BSL mitigation fund, which provides financial assistance to the programs the County has in place to reduce the cumulative flooding impact.

The WJHMP's contribution to the significant cumulative impact would be less than cumulatively considerable. Overall, cumulative impacts related to hydrology, drainage, and water quality would be **less than significant**.

MITIGATION MEASURES

Implement Mitigation Measures HYD-3a, HYD-3b, HYD-4, and HYD-7.

LAND USE, POPULATION, AND HOUSING

CUMULATIVE SETTING

The plan area is located on the eastern edge of the Sacramento metropolitan area. Surrounding land uses include a mix of industrial, residential, employment, mining, and agricultural uses, as well as undeveloped property that is currently being planned for development. Impacts related to consistency with land use plans or policies would generally be localized and would not combine to result in cumulative impacts.

Population growth, by itself, is not considered a significant cumulative effect because it is not an environmental impact. However, population growth, and the related need for housing and infrastructure, does lead to conversion of land to other uses, the impacts of which are considered in the appropriate chapters of this EIR.

CUMULATIVE IMPACTS EVALUATION

As discussed in Chapter 15, "Land Use, Population, and Housing," development of the project would not result in a significant impact related to physically dividing an established community; causing a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect; or displacing substantial numbers of people or housing, necessitating the construction of replacement housing elsewhere. Further, although implementing the project would increase development density, such development would be generally consistent with the County's vision for growth in the Jackson Highway corridor. To obtain consistency with the General Plan, the project includes a General Plan Amendment to move the Urban Policy Area (UPA) boundary south and east to include the portion of the plan area not already included within the UPA boundary. It also includes a General Plan amendment to amend the Land Use Diagram so that it is consistent with the land uses proposed under the project. As a result, the project's contribution to cumulative impacts would not be cumulatively considerable. Therefore, cumulative impacts related to land use, population, and housing would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

NOISE

CUMULATIVE SETTING

The geographic area considered for cumulative impacts regarding noise levels is Sacramento County. The cumulative evaluation also includes the NewBridge, Mather South, and Jackson Township projects. The projects and their associated traffic volume impacts were taken into consideration for the Traffic Impact Analysis (TIA) and noise study conducted for this EIR and have been included in this cumulative noise analysis. Consistent with the TIA analysis, the cumulative noise analysis also takes into consideration development forecasts for the county included in SACOG's 2020 MTP/SCS including anticipated development projects within incorporated cities in the county.

The primary factors analyzed in the cumulative impact analysis are cumulative traffic noise levels and potential noise and vibration impacts from cumulative construction activity. Cumulative airport noise is addressed above under, "Airport Compatibility."

CUMULATIVE IMPACTS EVALUATION

CONSTRUCTION NOISE AND VIBRATION

Because construction noise and vibration are localized effects, only construction projects that occur close to one another could combine to result in a cumulative noise or vibration effect. Cumulative impacts from construction-generated noise and vibration could result if other future planned construction activities were to occur in close proximity to individual project sites. Noise associated with construction activities is of primary concern within proximity of sensitive land uses. Implementation of Mitigation Measure NOI-1 would reduce construction noise levels and ensure that exposure from on-site construction noise at off-site noise-sensitive receivers would be minimized.

Vibration associated with construction activities is of primary concern within proximity of sensitive land uses. At increasing distances from the source, vibration levels dissipate rapidly and have less potential to cause disturbance to people or damage to structures. Vibration generated from construction would occur for brief and intermittent periods of time. Implementation of Mitigation Measure NOI-2 would reduce vibration levels at off-site noise sensitive receptors. In consideration of other future development, vibration impacts would remain local and would not combine with vibration sources from other construction activities, even if construction activities at other future development were to occur simultaneously with project construction activities. Therefore, when combined with past, present, and reasonably foreseeable future projects, the project's contribution to cumulative construction noise and vibration impacts would be less than cumulatively considerable and the cumulative impact would be **less than significant.**

MITIGATION MEASURES

Implement Mitigation Measures NO-1 and NO-2.

TRAFFIC NOISE

Implementation of the WJHMP, and the three other master plans in the immediate vicinity, would result in the generation of new vehicle trips from the development of new land uses throughout the region. These new vehicle trips would result in traffic volume increases and subsequent increases in traffic-related noise levels on various roadway segments. Table 22-3 presents the predicted traffic noise levels for cumulative and cumulative plus project scenarios.

Table 22-3 Cumulative Plus Project Traffic Noise Levels (L_{dn} at 100 feet)

Roadway	Segment From	Segment To	Cumulative	Cumulative Plus Project	Net Change (dB)
Bradshaw	Folsom	US 50	68.6	68.3	-0.3
Bradshaw	US 50	Lincoln Village	71.7	72.7	1.0
Bradshaw	Lincoln Village	Old Placerville	70.8	72.3	1.5
Bradshaw	Old Placerville	Goethe	71.7	72.1	0.4
Bradshaw	Goethe	Collector WJ-8	70.5	71.4	0.9
Bradshaw	Collector WJ-8	Kiefer	70.4	71.2	0.8
Bradshaw	Kiefer	Collector WJ-9	71.1	70.8	-0.3
Bradshaw	Collector WJ-9	Mayhew	71.1	70.8	-0.3
Bradshaw	Mayhew	Jackson	71.1	71.1	0.0
Bradshaw	Jackson	Rock Creek	69.8	69.3	-0.5
Bradshaw	Rock Creek	Collector WJ-10	69.8	69.5	-0.3
Bradshaw	Collector WJ-10	Collector WJ-11	70.9	70.2	-0.7
Bradshaw	Collector WJ-11	Elder Creek	70.9	69.8	-1.1
Bradshaw	Elder Creek	Florin	70.5	71.7	1.2
Bradshaw	Florin	Gerber	70.3	71.7	1.4
Bradshaw	Gerber	Calvine	69.7	71.1	1.4
Calvine	Waterman	Bradshaw	65.8	66.1	0.3
Calvine	Bradshaw	Vineyard	65.4	65.1	-0.3
Calvine	Vineyard	Excelsior	65.4	65.2	-0.2
Chrysanthy	Sunrise	Rancho Cordova	63.5	63.3	-0.2
Douglas	Mather	Zinfandel	67.6	68.7	1.1
Douglas	Zinfandel	Sunrise	69.5	70.5	1.0
Douglas	Sunrise	Rancho Cordova	72.4	72.6	0.2
Douglas	Rancho Cordova	Americanos	72.6	72.5	-0.1
Douglas	Americanos	Grant Line	71.4	71.3	-0.1
Eagles Nest	Kiefer	N Bridgewater	66.7	66.7	0.0
Eagles Nest	N Bridgewater	S Bridgewater	67.0	66.9	-0.1

Roadway	Segment From	Segment To	Cumulative	Cumulative Plus Project	Net Change (dB)
Eagles Nest	S Bridgewater	Jackson	67.8	67.4	-0.4
Eagles Nest	Jackson	Florin	67.1	66.6	-0.5
Eagles Nest	Florin	Grant Line	64.0	63.6	-0.4
Elder Creek	65th Street	Power Inn	67.6	68.0	0.4
Elder Creek	Power Inn	Florin-Perkins	67.8	68.0	0.2
Elder Creek	Florin Perkins	South Watt	68.1	68.4	0.3
Elder Creek	South Watt	Hedge	70.8	71.8	1.0
Elder Creek	Hedge	Mayhew	69.4	69.8	0.4
Elder Creek	Mayhew	Bradshaw	71.2	70.6	-0.6
Elder Creek	Bradshaw	Vineyard	67.8	69.4	1.6
Elder Creek	Vineyard	Excelsior	67.9	68.6	0.7
Elk Grove-Florin	Florin	Gerber	70.5	70.2	-0.3
Excelsior	Kiefer	Douglas	57.7	59.5	1.8
Excelsior	Douglas	Collector WJ-1/ Collector JT-1	64.5	67.8	3.3
Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	66.4	67.6	1.2
Excelsior	Collector WJ-2/ Collector JT-2	Jackson	66.5	67.5	1.0
Excelsior	Jackson	Collector WJ-6	68.2	69.2	1.0
Excelsior	Collector WJ-6	Elder Creek	68.2	69.1	0.9
Excelsior	Elder Creek	Florin	62.9	64.5	1.6
Excelsior	Florin	Gerber	63.5	64.7	1.2
Excelsior	Gerber	Calvine	59.8	62.7	2.9
Excelsior	Calvine	Sheldon	61.7	64.1	2.4
Florin	Power Inn	Florin-Perkins	69.4	69.9	0.5
Florin	Florin-Perkins	So Watt/Elk Grove Florin	68.5	69.1	0.6
Florin	South Watt	Hedge	64.8	64.3	-0.5
Florin	Hedge	Mayhew	65.3	64.7	-0.6
Florin	Mayhew	Bradshaw	67.2	69.5	2.3
Florin	Bradshaw	Vineyard	69.3	69.8	0.5
Florin	Vineyard	Excelsior	67.9	68.6	0.7
Florin	Excelsior	Sunrise	70.3	70.1	-0.2
Folsom	Howe	Jackson	70.6	71.0	0.4

Roadway	Segment From	Segment To	Cumulative	Cumulative Plus Project	Net Change (dB)
Fruitridge	[6]5th Street	Power Inn	67.3	67.9	0.6
Fruitridge	Power Inn	Florin Perkins	67.9	69.5	1.6
Fruitridge	Florin Perkins	South Watt	65.9	67.9	2.0
Fruitridge	South Watt	Hedge	57.8	66.2	8.4
Fruitridge	Hedge	Collector WJ-12	57.9	66.2	8.3
Fruitridge	Collector WJ-12	Mayhew	57.9	65.8	7.9
Grant Line	White Rock	Douglas	73.6	73.5	-0.1
Grant Line	Douglas	Chrysanthy	75.8	75.6	-0.2
Grant Line	Chrysanthy	Kiefer	74.9	74.7	-0.2
Grant Line	Kiefer	Rancho Cordova	72.8	73.1	0.3
Grant Line	Rancho Cordova	Jackson	73.5	73.6	0.1
Grant Line	Jackson	Sunrise	72.4	72.2	-0.2
Grant Line	Sunrise	Calvine	73.7	73.6	-0.1
Grant Line	Calvine	Elk Grove City Limit	72.2	72.1	-0.1
Grant Line	Elk Grove City Limit	Sheldon	72.2	72.1	-0.1
Grant Line	Sheldon	Wilton	72.0	72.2	0.2
Grant Line	Wilton	Bond	71.5	71.7	0.2
Happy Lane	Old Placerville	Routier Ext	60.4	64.9	4.5
Happy Lane	Routier Ext	Kiefer	61.2	66.6	5.4
Hedge	Jackson	Rock Creek	58.0	63.1	5.1
Hedge	Rock Creek	Fruitridge	58.1	61.2	3.1
Hedge	Fruitridge	Elder Creek	61.4	62.4	1.0
Hedge	Elder Creek	Florin	65.8	65.9	0.1
Howe	US 50	Folsom	71.8	72.0	0.2
International	Mather Field	Zinfandel	70.9	70.2	-0.7
International	Zinfandel	Sunrise	70.2	69.5	-0.7
Jackson	Folsom	Florin Perkins	69.0	69.5	0.5
Jackson	Florin Perkins	14th	69.2	70.4	1.2
Jackson	14th	Rock Creek	70.2	71.9	1.7
Jackson	Rock Creek	Aspen 1 Dwy	69.7	71.5	1.8
Jackson	Aspen 1 Dwy	South Watt	69.4	71.4	2.0
Jackson	South Watt	Hedge	71.2	73.1	1.9
Jackson	Hedge	Collector WJ-3	70.1	72.4	2.3

Roadway	Segment From	Segment To	Cumulative	Cumulative Plus Project	Net Change (dB)
Jackson	Collector WJ-3	Mayhew	70.5	72.5	2.0
Jackson	Mayhew	Bradshaw	69.6	71.4	1.8
Jackson	Bradshaw	Collector WJ-4	68.8	71.7	2.9
Jackson	Collector WJ-4	Happy Ln	68.8	71.7	2.9
Jackson	Happy Ln	Rock Creek	68.7	70.1	1.4
Jackson	Rock Creek	Collector WJ-5	68.7	70.1	1.4
Jackson	Collector WJ-5	Collector WJ-6	70.6	71.7	1.1
Jackson	Collector WJ-6	Excelsior	70.6	71.7	1.1
Jackson	Excelsior	Collector JT-3	72.8	73.7	0.9
Jackson	Collector JT-3	Tree View Ln	71.5	72.4	0.9
Jackson	Tree View Ln	Collector JT-4	70.8	71.9	1.1
Jackson	Collector JT-4	Eagles Nest	70.5	71.5	1.0
Jackson	Eagles Nest	Rockbridge	70.5	71.5	1.0
Jackson	Rockbridge	Sunrise	70.7	71.6	0.9
Jackson	Sunrise	Grant Line	74.0	74.5	0.5
Kiefer	Florin Perkins	South Watt	58.3	60.3	2.0
Kiefer	South Watt	Mayhew	67.2	68.6	1.4
Kiefer	Mayhew	Bradshaw	65.5	69.8	4.3
Kiefer	Bradshaw	Collector WJ-14	62.2	70.6	8.4
Kiefer	Collector WJ-14	Routier Ext	62.3	70.2	7.9
Kiefer	Routier Ext	Happy Lane	62.3	70.5	8.2
Kiefer	Eagles Nest	W Collector MS-1	68.6	71.3	2.7
Kiefer	W Collector MS-1	Northbridge	68.6	71.0	2.4
Kiefer	Northbridge	E Collector MS-1	69.1	71.2	2.1
Kiefer	E Collect MS-1	Sunrise	71.1	72.2	1.1
Kiefer	Sunrise	Rancho Cordova	66.4	67.6	1.2
Mather/Norden	Von Karman St	Bleckely St	65.0	64.1	-0.9
Mather	Bleckely St	Femoyer St	65.0	64.1	-0.9
Mather	Femoyer St	Douglas	65.0	64.1	-0.9
Mather-Excelsior	Douglas	Kiefer	57.4	55.9	-1.5
Mather Field	US 50	Rockingham	73.7	73.4	-0.3
Mather Field	Rockingham	International	74.2	74.0	-0.2
Mather Field	International	Peter A McCuen	65.8	66.7	0.9
Mayhew	Folsom	Goethe	62.7	65.1	2.4

Roadway	Segment From	Segment To	Cumulative	Cumulative Plus Project	Net Change (dB)
Mayhew	Folsom	Goethe	64.1	64.9	0.8
Mayhew	Goethe	Kiefer	58.9	70.3	11.4
Mayhew	Jackson	Rock Creek	58.9	70.2	11.3
Old Placerville	Bradshaw	Granby	69.5	67.1	-2.4
Old Placerville	Granby	Happy Ln	69.2	66.7	-2.5
Old Placerville	Happy Ln	Routier	69.0	66.1	-2.9
Old Placerville	Routier	Rockingham	66.9	68.0	1.1
Power Inn	Folsom	14th	69.9	70.2	0.3
Rockingham	Old Placerville	Mather Field	69.0	69.5	0.5
South Watt	Folsom	Kiefer	72.9	73.6	0.7
South Watt	Kiefer	Jackson	72.9	73.0	0.1
South Watt	Jackson	Rock Creek	72.3	72.2	-0.1
South Watt	Rock Creek	Fruitridge	72.5	72.3	-0.2
South Watt	Fruitridge	Elder Creek	72.4	72.2	-0.2
South Watt	Elder Creek	Florin	73.0	73.2	0.2
Sunrise	US 50	Folsom	71.6	71.5	-0.1
Sunrise	Folsom	Trade Center	71.4	71.3	-0.1
Sunrise	Trade Center	White Rock	69.5	69.2	-0.3
Sunrise	White Rock	International	70.5	72.4	1.9
Sunrise	International	Rio Del Oro	71.3	72.7	1.4
Sunrise	Rio Del Oro	Douglas	73.7	73.4	-0.3
Sunrise	Douglas	Kiefer	71.2	70.9	-0.3
Sunrise	Kiefer	Jackson	70.8	70.7	-0.1
Sunrise	Jackson	Florin	71.1	71.1	0.0
Sunrise	Florin	Grant Line	67.9	68.0	0.1
Vineyard	Gerber	Calvine	62.7	63.8	1.1
Watt	US 50	Folsom	75.3	75.7	0.4
White Rock	International	Quality	60.0	59.8	-0.2
White Rock	Quality	Zinfandel	65.1	64.9	-0.2
White Rock	Zinfandel	Kilgore	67.6	67.3	-0.3
White Rock	Kilgore	Sunrise	68.6	68.3	-0.3
White Rock	Sunrise	Fitzgerald	69.9	70.0	0.1
White Rock	Fitzgerald	Rancho Cordova	72.1	71.9	-0.2
White Rock	Rancho Cordova	Americanos	68.2	67.7	-0.5

Roadway	Segment From	Segment To	Cumulative	Cumulative Plus Project	Net Change (dB)
White Rock	Americanos	Grant Line	68.6	68.5	-0.1
White Rock	Grant Line	Prairie City	75.9	75.9	0.0
Zinfandel	US 50	White Rock	71.8	71.5	-0.3
Zinfandel	White Rock	International	69.0	68.7	-0.3
Zinfandel	International	Baroque	69.1	68.7	-0.4
Zinfandel	Baroque	City Limit	69.1	68.7	-0.4
Zinfandel	City Limit	Douglas	69.1	68.7	-0.4
Zinfandel	Douglas	Collector MS-2	67.9	67.0	-0.9
Zinfandel	Collector MS-2	Collector MS-3	65.5	65.8	0.3
Zinfandel	Collector MS-3	Collector MS-4	65.1	65.8	0.7
Zinfandel	Collector MS-4	Kiefer	64.5	65.8	1.3

Notes: dB = decibel; L_{dn} = day-night sound level.
Source: Bollard Acoustical Consultants 2024.

As shown in Table 22-3, several roadway segments under both cumulative and cumulative plus project scenarios are anticipated to experience an increase in traffic noise levels. Additionally, several roadways would experience a significant increase in traffic noise levels above existing conditions. Therefore, cumulative traffic noise from implementation of the WJHMP would exceed County noise standards.

It cannot be guaranteed to what extent the implementation of Mitigation Measures NO-3a, NO-3b, and NO-3c would reduce impacts from traffic noise. Therefore, there would be a cumulatively considerable contribution to the cumulative condition and the impact would be **significant and unavoidable**.

MITIGATION MEASURES

Implement Mitigation Measures NO-3a, NO-3b, and NO-3c.

STATIONARY NOISE

Cumulative impacts related to on-site operational and stationary noise sources are site specific, dissipate with distance from the source, and typically result in cumulative impacts only when project-generated noise is located close to other off-site noise sources. Implementation of the WJHMP would result in residential, commercial, and industrial land uses that include stationary noise sources such as heating, ventilation, and air conditioning units. The specific locations of new stationary equipment at the project level are unknown and could exceed the County noise threshold for stationary sources. Implementation of Mitigation Measures NO-4a and NO-4b would require appropriate site design and setbacks to reduce noise exposure for noise sensitive land uses. However, stationary noise sources are generally limited to the vicinity of individual project sites and would generally not combine with other stationary equipment in the overall area to result in a cumulative effect. Therefore, the project would not result in a

cumulatively considerable contribution to a cumulative impact related to stationary noise and this impact would be **less than significant**.

MITIGATION MEASURES

Implement Mitigation Measures NO-4a and NO-4b.

PUBLIC SERVICES

CUMULATIVE SETTING

The cumulative context for police protection, fire protection, and emergency services is the County of Sacramento, which is the service area for both the Sacramento County Sheriff's Department and Sacramento Metropolitan Fire District (Metro Fire), respectively. The cumulative context for school services is the Elk Grove Unified School District and the Sacramento City Unified School District. Finally, the cumulative context for parks and recreation facilities is the Cordova Recreation and Park District (CRPD) and the Southgate Recreation and Park District within the county. Existing services in the plan area are sufficient to meet existing demand. There is not an existing cumulative impact related to public services.

CUMULATIVE IMPACTS EVALUATION

As noted in Chapter 17, "Public Services," the project would construct adequate public services facilities and infrastructure consistent with anticipated demand of new residents and employees. Further, payment of development impact fees and property taxes would mitigate impacts to public services. Land within the plan area would be dedicated to Metro Fire as a part of WJHMP implementation for the development of two new fire stations to serve the entirety of the plan area, and no other fire protection or emergency services facilities would be required to serve the project. The project also includes five school sites, plus an additional two undetermined sites, which would fulfill the demand for schools generated by the project. Additionally, the project includes 24 neighborhood parks (totaling approximately 219 acres) that would be distributed throughout the plan area, as well as approximately 1,489 acres of open space. The project also includes a land use designation of Open Space/Urban Farm for approximately 393 acres, which in addition to open space uses, and would allow community-based agriculture and education within the plan area. A Public Facilities Financing Plan has been prepared for the project to ensure that adequate funding is available to CRPD and Southgate for development, maintenance, and programming of parks and recreational facilities within the plan area.

The projects identified in Table 22-1 would be subject to standards similar to those described for the project, which would require the development of new/expanded facilities to accommodate project demands and/or payment of development impact fees and property taxes to fund adequate levels of public services. Therefore, cumulative impacts to public services would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

PUBLIC UTILITIES

CUMULATIVE SETTING

The WJHMP is in the service area of the Sacramento Area Sewer District. Wastewater is routed to the EchoWater Resource Recovery Facility before it is treated and discharged into the Sacramento River. There is currently capacity within the regional wastewater infrastructure. Solid waste processing services are provided by the Sacramento County Department of Waste Management and Recycling. Kiefer Landfill would serve the solid waste disposal needs of the project residents, and the permitted landfill capacity is anticipated to serve the County's needs through 2064, including future growth. Cumulative development would be required to demonstrate an adequate capacity of public utilities before project approval. Cumulative development would be required to contribute fair share funding to fund necessary expansion of utility infrastructure and conduct appropriate CEQA analyses to evaluate potential environmental impacts of utility relocation, construction, or expansion. There is not an existing cumulative impact related to public utilities.

CUMULATIVE IMPACTS EVALUATION

The on-site and off-site sewer infrastructure described for the WJHMP are designed to handle cumulative conditions, and the analysis in Chapter 18, "Public Utilities," concludes that capacity would be sufficient. Direct impacts would be less than significant and the WJHMP would not result in a cumulatively considerable contribution to a significant cumulative impact. Similarly, solid waste disposal would be provided by Kiefer Landfill, which has sufficient remaining permitted capacity to accommodate waste generated by the WJHMP. Because of these requirements, project-related cumulative impacts would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

TRANSPORTATION

CUMULATIVE SETTING

The geographic scope of analysis for cumulative impacts related to VMT includes the Sacramento region, based on the County Transportation Analysis Guidelines. The geographic scope for the analysis of the impacts related to a program, plan, ordinance, or policy addressing the circulation system, substantially increasing hazards due to geometric features or incompatible uses, and inadequate emergency access, would be different than the geographic scope for the VMT analysis, which would include all past, present, and probable future projects that would have the potential to affect the same transit, roadway, bicycle, and pedestrian facilities within the WJHMP area and the interconnected circulation system of Sacramento County.

CUMULATIVE IMPACTS EVALUATION

CUMULATIVE IMPACTS ON TRANSIT, BICYCLE, AND PEDESTRIAN FACILITIES

Development associated with the WJHMP would occur incrementally over time. Combined with other cumulative development in the area, the demand for transit service and facilities, bicycle facilities, and pedestrian facilities is anticipated to increase. The WJHMP would include the implementation of improvements to transit, bicycle, and pedestrian facilities to enhance connectivity within the WJHMP area and support the increased use of alternative modes of transportation. Future development under the WJHMP would be subject to and would implement General Plan and Active Transportation Plan policies applicable to transit, bicycle, and pedestrian facilities and service. Additionally, subsequent development projects under the WJHMP would be subject to all applicable County guidelines, standards, and specifications related to transit, bicycle, and pedestrian facilities. Therefore, the contribution of the WJHMP to substantial effects related to transit, bicycle, and pedestrian facilities would be less than cumulatively considerable. Cumulative impacts would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

CUMULATIVE VMT IMPACTS

The significance threshold for the cumulative VMT analysis is existing VMT per capita, consistent with County guidelines. The cumulative VMT analysis evaluates whether the WJHMP would result in an increase in regionwide VMT from the cumulative scenario to the cumulative plus project scenario. Table 22-4 provides a summary of the Cumulative No Project and Cumulative Plus Project conditions, as well as the thresholds and the percentage by which the project would have to reduce its relative VMT to equal the regional threshold.

Table 22-4 Cumulative VMT Assessment

Scenario	Threshold	Cumulative No Project	Cumulative Plus Project	Project's Contribution to Cumulative VMT	Reduction Needed for Cumulative Plus Project to Achieve Threshold
Average VMT/Capita	17.17 (15% Below Regional Average)	18.40	12.98	-5.42	-32.3%
Average VMT/Employee (Office)	13.64 (15% Below Regional Average, Office)	13.31	13.02	-0.29	-4.8%
Average VMT/Employee (Industrial)	16.04 (Regional Average Industrial)	13.31	11.81	-1.5	-35.8%

Notes: VMT = vehicle miles traveled.

Source: Kimley-Horn 2023.

As shown in Table 22-4, the cumulative VMT per capita would be 32.3 percent below the regional threshold for residential uses, the cumulative VMT per employee for industrial development would be 35.8 percent below the applicable regional threshold, and cumulative VMT per employee for office development would be 4.8 percent below the applicable threshold with implementation of the WJHMP.

As illustrated in Table 22-4, average VMT per capita is anticipated to exceed County thresholds in the cumulative scenario without the project. This would result in an adverse cumulative condition. However, the project would decrease per capita VMT by 5.42 and reduce overall VMT below the County threshold. The project would also decrease cumulative no project average VMT per office employee by 0.29 and cumulative no project average VMT per industrial employee by 1.5; thus, reducing cumulative plus project VMT further below County thresholds. Therefore, the project would not result in a substantial contribution to cumulative VMT.

As described in Chapter 19, “Transportation,” the WJHMP would include the implementation of a Transportation Management Association (TMA) program. When implemented, the TMA would result in a 12.3-percent reduction of WJHMP VMT per office employee. Therefore, after implementation of the TMA, VMT per employee would be reduced to below the County threshold and the cumulative VMT impact from the WJHMP would not be cumulatively considerable. Cumulative VMT impacts would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

CUMULATIVE TRANSPORTATION HAZARDS DUE TO A DESIGN FEATURE OR INCOMPATIBLE USES

Cumulative transportation hazards could result if other future planned construction activities were to take place near construction in the WJHMP area. The WJHMP is one of four major planning applications for future urban growth along the Jackson Highway Corridor. These four master plans cover approximately 9,250 acres and are anticipated to be built over several decades. Construction of individual developments associated with the WJHMP would be temporary and short-term. Although temporary, because of the magnitude of these projects, potential duration of construction, and the number of roadways that would be affected, there could be increased potential for transportation hazards. However, the contractor(s) for individual projects associated with the WJHMP would need to prepare and implement a Construction Traffic Control Plan that meets the standards required by County Right of Way Management. The traffic control plan templates provided by the County are developed in conformance with the latest California Manual on Uniform Traffic Control Devices and would reduce the potential for transportation hazards during construction of individual projects.

Additionally, all transportation-related infrastructure improvements would be subject to, and designed in accordance with, applicable roadway design and safety guidelines. The implementation of Mitigation Measures TR-4A, TR-4B, and TR-4C would require responsible applicants of subsequent development within the plan area to implement improvements along affected roadways and associated intersections to reduce anticipated safety hazards from substantial congestion. The mitigation requirements are

intended to specifically correlate the anticipated traffic hazards in the cumulative condition with the project's contribution to traffic volume and influence on anticipated traffic patterns. Modifications identified through the mitigation approach may include the installation of traffic signals, grade separation, bus rapid transit lanes, and bus queue jumps. However, because the County does not have authority over roadways located outside of County jurisdiction or over transit improvements, it cannot be guaranteed that all recommended improvements would be made. Therefore, the project may result in a cumulatively considerable contribution to regional traffic hazards and cumulative impacts would be **significant and unavoidable**.

MITIGATION MEASURES

No mitigation is available to reduce the impacts related to transportation hazards and design features outside of the County's jurisdiction.

CUMULATIVE IMPACTS ON EMERGENCY ACCESS

Cumulative impacts associated with emergency access or road design are primarily a localized effect. As such, the cumulative projects with the potential to result in a significant cumulative impact would be the projects located in the immediate vicinity of the WJHMP area. Implementation of the individual developments under the WJHMP would be subject to, and constructed in accordance with applicable roadway design and safety guidelines. Mitigation Measures TR-4A, TR-4B, and TR-4C would require responsible applicants of subsequent development under the WJHMP to implement improvements along affected roadways and associated intersections to reduce anticipated safety hazards from substantial congestion. Additionally, individual developments would be subject to review by Metro Fire to ensure that adequate emergency access is provided and maintained at subsequent developments under the WJHMP. Further, all projects within the vicinity of the WJHMP area would need to demonstrate that they would not impede emergency access or cause a potential transportation-related hazard. Therefore, the contribution of the WJHMP to substantial effects related to emergency access would be less than cumulatively considerable and the cumulative impact would be **less than significant**.

MITIGATION MEASURES

Implement Mitigation Measures TR-4a, TR-4b, and TR-4c.

WATER SUPPLY

CUMULATIVE SETTING

The plan area is located in unincorporated Sacramento County, within the service areas of the Sacramento County Water Agency (SCWA) and the California American Water Company (Cal Am). Several other projects are located nearby, including NewBridge, Mather South, and Jackson Township. The portion of the county where these projects would be developed is largely rural and sparsely developed. Regional water infrastructure is present near the plan area. Population growth and local regulation of associated development within the county prevent the occurrence of existing cumulative water supply impacts by implementing the *Sacramento County 2030*

General Plan that includes a policy framework that ensures adequate capacity exists to support proposed development.

CUMULATIVE IMPACTS EVALUATION

As described in Chapter 20, "Water Supply," SCWA has been planning for and implementing regional water supply infrastructure upgrades in the Zone 40 area that serves the plan area and vicinity. As a result, the Zone 40 Water Supply Master Plan has been developed to address the sufficiency of water supply for WJHMP, Jackson Township, and NewBridge projects (SCWA 2016). Additionally, the Water Supply Improvement Plan (WSIP) has been prepared to address specific infrastructure needs to support the buildout of Zone 40. The 2016 WSIP includes water demand factors, growth projections, and estimates of projected water demand and supply (SCWA 2016).

Chapter 20, "Water Supply," evaluates the project's consistency with programs intended to ensure comprehensive, regional management of water resources. As described in Chapter 20, two Water Supply Assessments, one from Cal Am and one from SCWA, have been prepared in accordance with the California Water Code Section 10910, which demonstrate that the planned water supplies for SCWA's Zone 40 and Cal Am's Suburban-Rosemont Public Water System would be sufficient to meet the demands of the project in addition to the existing and projected water supply obligations through 2045 (see Appendix L). Therefore, the project would not result in demand for water that cannot be met by existing or reasonably foreseeable future service capacity.

SCWA and Cal Am are members of the Sacramento Central Groundwater Authority groundwater sustainability agency and would be required to implement the South American Subbasin Groundwater Sustainability Plan and to maintain the long-term average annual groundwater sustainable yield of 235,000 acre-feet per year of South American Subbasin (SASb). Thus, implementation of the project would not contribute to groundwater pumping that would exceed the average annual sustainable yield for SASb.

Similar to the project, cumulative development would be required to demonstrate an adequate water supply before project approval. Additionally, cumulative development would be required to contribute fair share funding to fund necessary new or expansion of water supply infrastructure and conduct appropriate CEQA analyses to evaluate potential environmental impacts of infrastructure relocation, construction, or expansion. Therefore, the project would not result in a considerable contribution such that a significant cumulative impact related to water supply would occur. The cumulative impact would be **less than significant**.

MITIGATION MEASURES

No mitigation is required.

TRIBAL CULTURAL RESOURCES

CUMULATIVE SETTING

The geographic scope of potential cumulative impacts related to tribal cultural resources is the former territory of the Plains Miwok within the SACOG region. The Sacramento Valley floodplains and the banks of rivers and large streams in the valley and adjacent foothills were occupied and used during the prehistoric, ethnohistoric, and historic periods with the result that archaeological resources, including human remains, are widespread and numerous within the region. River and stream drainages were often the prime locations for Native American village sites or processing camps, and for mining camps, ranches and farms, towns, and streamside transportation networks during the historic period. Prehistoric sites frequently took the form of mounds raised above the natural ground surface, but the upper portions of many of these sites are no longer visible—destroyed by modern agricultural practices, land reclamation, dam and levee construction, hydraulic or dredge mining, or Euro-American settlement. Intermittent flooding has also deposited layers of alluvium and buried intact archaeological sites below grade with no surface manifestations. Features of historic-era archaeological sites, such as privies, trash pits, wells, foundations, and burials, have also been concealed by later land uses and discovered during subsequent development (SACOG 2019).

Because all significant tribal cultural resources are unique and nonrenewable members of finite classes, all adverse effects or negative impacts erode a dwindling resource base. The loss of any one resource affects all others in a region because these resources are best understood in the context of the entirety of the cultural system of which they are a part. Therefore, because of past and current projects, cumulative impacts to cultural resources in Sacramento County are significant.

CUMULATIVE IMPACTS EVALUATION

No tribal cultural resources are known to occur in the area, which has been substantially disturbed by past agricultural and mining activities. Nevertheless, construction activities for future projects, including earth-moving, excavation, and use of heavy equipment that may cause ground compaction, may disturb or destroy any previously undisturbed and significant tribal cultural resources or deposits. With mitigation, the project would not result in a considerable contribution to a significant cumulative impact related to tribal cultural resources. The cumulative impact would be **less than significant**.

MITIGATION MEASURES

Implement Mitigation Measures TCR-1a and TCR-1b.

GROWTH INDUCEMENT

Growth can be induced through the elimination of obstacles to growth, through the stimulation of economic activity within the region, or through the establishment of policies or other precedents that directly or indirectly encourage additional growth. An EIR must discuss ways in which a project could directly or indirectly foster economic or population growth, or result in the construction of additional housing (Section 15126.2[d] of the State CEQA Guidelines). Although growth inducement itself is not considered an environmental effect, it could potentially lead to adverse environmental effects. Examples of projects likely to have significant growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand, and development of new residential subdivisions or industrial parks in areas that are only sparsely developed or are underdeveloped.

The project would result in growth in the unincorporated area of the county by planning a mixture of residential, commercial, industrial, recreational, farming, and employment land uses in an area that is primarily undeveloped. A portion (approximately 69 acres) of the WJHMP area is within the UPA and most of the WJHMP boundary (approximately 87 percent) is immediately adjacent to the UPA (see Figure 2-2 in Chapter 2, “Project Description”). The entire WJHMP area is within the USB.

The UPA boundary would need to be moved south and east to encompass the plan area (see Figure 2-14 in Chapter 2, “Project Description”). This change to the UPA boundary, which would expand the extent of the area in which growth can occur beyond the area anticipated in the General Plan, would require an amendment to the General Plan. As a result of extending the UPA, adjacent areas south of SR 16 (also referred to as Jackson Highway), which are currently zoned and used for agriculture, would be adjacent to the UPA. This area is within the USB and could be subject to increased development pressure following project implementation because it would be adjacent to the UPA. However, it is worth noting that a large portion of the area south of SR 16 directly east of, and adjacent to, the plan area is identified as an existing preserve area in the SSHCP and, thus, development pressure to the east may be reduced.

The County has adopted policies that support the eventual development of the area between the UPA and USB. Sacramento County 2030 General Plan Policies LU-119 and LU-120 set the standards for UPA expansion, and the Division of Planning and Environmental Review has determined that the project meets these standards (see Chapter 15, “Land Use, Population, and Housing”). Implementing a policy in the manner it was intended to be applied is not precedent setting. Further, there are pending draft and recently approved land use plans that border the plan area to the east and the south (see Figure 2-4 in Chapter 2, “Project Description”) that further support the County’s intent to allow growth and development in the area. Because the area is anticipated for future development, infrastructure (including roads) has been sized to accommodate buildout and the project includes the extension of utilities beyond what is currently planned in the near-term by the providers. This concurrent planning process has been implemented through the County to encourage well-planned growth and is consistent with the growth identified in the Sacramento Area Council of Governments’

2004 Blueprint and the 2030 General Plan. The development of these adjacent areas is separate from, and in no way reliant on, the project.

The decision to allow any subsequent projects that result from induced growth would be the subject of separate discretionary processes by the respective lead agency(ies). Because the decision to allow growth is subject to separate discretionary decision making, and such decision making is itself subject to CEQA, this analysis of growth-inducing effects is not intended to determine site-specific environmental impacts and specific mitigation for any potentially induced growth. Rather, the discussion is intended to disclose the potential for environmental effects to occur more generally, such that decision makers are aware that additional environmental effects are a possibility if growth-inducing projects are approved. The decision of whether impacts do occur, their extent, and the ability to mitigate them is appropriately left to consideration by the agency responsible for approving such projects at the time complete applications for development are submitted.

23 ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
2022 Scoping Plan	*Final 2022 Scoping Plan for Achieving Carbon Neutrality*
2023 Plan	2023 Sacramento Regional Plan for the 2015 70-ppb 8-Hour Ozone Standard
2024 CAP	Sacramento County Draft Climate Action Plan
AB	Assembly Bill
ADA	Americans with Disability Act
AFV	alternative fuel vehicle
AFY	acre-feet per year
ALUC	Airport Land Use Commission
ALUCP	airport land use compatibility plan
AMM	avoidance and minimization measures
AMSL	above mean sea level
APPA	Airport Planning Policy Area
APSA	Aboveground Petroleum Storage Act
AQMP	air quality mitigation plan
AQMP/GHGRP	*West Jackson Highway Master Plan Air Quality and Greenhouse Gas Technical Report*
ARA	Aggregate Resource Area
Army	US Army
ASA	Acoustical Society of America
ASEL	A-weighted sound exposure level
ATCM	Asbestos Airborne Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
bgs	below ground surface
BMP	best management practice
BP	before present

BRT	bus rapid transit
C&D	Construction and Demolition
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal Am	California American Water Company
Cal ARP	California Accidental Release Prevention Program
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Model
Cal/EPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	climate action plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Uniform Building Code
CC&R	codes, covenants, and restrictions
CCR	California Code of Regulations
CCTC-RR	Central California Traction Company Railroad
CCTS	Central California Taxonomic System
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHP	California Highway Patrol
CI	carbon intensity
City USD	Sacramento City Unified School District

CLUP	comprehensive land use plan
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
County DOT	Sacramento County Department of Transportation
County DWR	Sacramento County Department of Water Resources
CPAC	Community Planning Advisory Council
CRHR	California Register of Historical Resources
CRPD	Cordova Recreation and Park District
CRPR	California Rare Plant Ranks
CSA	Central Service Area
CSCGMP	Central Sacramento County Groundwater Management Plan
CSWMP	comprehensive stormwater management program
CUPA	Certified Unified Program Agency
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CVP	Central Valley Project
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
Delta	Sacramento River–San Joaquin River Delta
Depot	Sacramento Army Depot
Design Guidelines	Countywide Design Guidelines and Case Studies
diesel PM	particulate matter exhaust from diesel engines
DOT	US Department of Transportation
DSOD	California Division of Safety of Dams
DTSC	California Department of Toxic Substance Control
DWR	California Department of Water Resources
EIR	environmental impact report
Elk Grove USD	Elk Grove Unified School District

EMD	Environmental Management Department
EPA	US Environmental Protection Agency
EPAct	Energy Policy Act of 1992
ESA	Endangered Species Act
ESA	environmental site assessment
ESD	equivalent single-family dwelling
EV	electric vehicle
FAR	Federal Aviation Regulation
FAR	floor area ratio
Farmland	Farmland of Statewide Importance
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FICAN	Federal Interagency Committee on Aviation Noise
FICON	Federal Interagency Committee on Noise
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FPA	future planning areas
FPL	Florin Perkins Landfill
FTA	Federal Transit Administration
gal/year	gallons per year
GET	Groundwater Extraction and Treatment
GHG	greenhouse gas
GLO	Government Land Office
GPM	gallons per minute
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
GWP	global warming potential
GWTP	groundwater treatment plant
HCD	California Department of Housing and Community Development
HCP	habitat conservation plan
HDR	high density residential

HMP	Hydromodification Management Plan
HVAC	heating, ventilation, and air conditioning
Hz	hertz
I	Interstate
ICWA	Indian Child Welfare Act
IDA	International Dark-Sky Association
IEPR	Integrated Energy Policy Report
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
ISO	Insurance Service Office
lb/day	pounds per day
lbs	pounds
LCFS	low carbon fuel standard
L_{dn}	day-night level
LDR	low density residential
L_{eq}	equivalent continuous sound level
LFG	landfill gas
LID	Low Impact Development
L_{max}	maximum sound level
LOS	level of service
LRA	Local Response Area
LRT	light rail transit
LUST	leaking underground storage tank
LZ	lighting zone
Madrone	Madrone Ecological Consulting
Mather AFB	Mather Air Force Base
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MDR	medium density residential
Metro Fire	Sacramento Metropolitan Fire District
MGD	million gallons per day

MMBtu	million metric tons of British thermal units
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
mPa	micro-Pascals
MPO	metropolitan planning organization
MRZ	Mineral Resource Zone
MS4	municipal separate storm sewer system
$MTCO_2e$	metric tons of carbon dioxide equivalent
MTIP	Metropolitan Transportation Improvement Program
MTP	metropolitan transportation plan
MTP/SCS	metropolitan transportation plan/sustainable communities strategy
MU	mixed use
MWELO	California Model Water Efficient Landscape Ordinance
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NDGSA	North Delta Groundwater Sustainability Agency
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NPPA	California Native Plant Protection Act
NO	nitric oxide
NO_2	nitrogen dioxide
NOI	notice of intent
NOP	notice of preparation
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	California Native Plant Protection Act
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NSA	North Service Area
NSWD	non-storm water discharge

OEHHA	Office of Environmental Health Hazard Assessment
OES	California Office of Emergency Services
OHWD	Omochumne-Hartnell Water District
OITC	outdoor-indoor transmission class
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PEA	preliminary endangerment assessment
PFAS	polyfluoroalkyl substance
Phase 1 CAP	Sacramento County Phase 1 Climate Action Plan Strategy and Framework document
PM	particulate matter
$PM_{2.5}$	Fine particulate matter includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less
Porter-Cologne Act	Porter-Cologne Water Quality Control Act of 1970
POU	American River Place of Use
PPV	peak particle velocity
PRC	Public Resources Code
project	West Jackson Highway Master Plan
PV	photovoltaic
PWS	Public Water System
RCRA	Resource Conservation and Recovery Act
RD 551	Reclamation District 551
REC	Renewable Energy Certificates
Reclamation	United States Bureau of Reclamation
Regional San	Sacramento Regional County Sanitation District
RHNA	regional housing needs allocation
RMS	root-mean-square
ROG	reactive organic gases
RT	Regional Transit
RTP	regional transportation plan
RWQCB	regional water quality control board

SACDOT	Sacramento County Department of Transportation
SacOES	Sacramento County Office of Emergency Services
SACOG	Sacramento Area Council of Governments
Sacramento Region	Sacramento Federal Non-attainment Area
SacRT	Sacramento Regional Transit District
SacSewer	Sacramento Area Sewer District
SARA	Superfund Amendments and Reauthorization Act
SASb	South American Subbasin
SB	Senate Bill
SCGA	Sacramento Central Groundwater Authority
SCS	sustainable communities strategy
SCWA	Sacramento County Water Agency
SEL	specific sound exposure level
SFHA	Special Flood Hazard Areas
SFNA	Sacramento Federal Non-attainment Area
SGMA	Sustainable Groundwater Management Act of 2014
SIP	state implementation plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
SMUD	Sacramento Municipal Utility District
SPCC	Spill Prevention Control and Countermeasures
SPL	sound pressure level
SPLS	Sacramento Public Library System
SR	State Route
SRCD	Sloughhouse Resource Conservation District
SRPD	Southgate Recreation and Park District
SRTP	Short Range Transit Plan
SRWTP	Sacramento Regional Wastewater Treatment Plant
SSA	South Service Area
SSBMI	Shingle Springs Band of Miwok Indians
SSD	Sacramento County Sheriff's Department
SSHCP	South Sacramento Habitat Conservation Plan

SSQP	Sacramento Stormwater Quality Partnership
SVAB	Sacramento Valley Air Basin
SVE	soil vapor extraction
SVP	Society of Vertebrate Paleontology
SWA	Sacramento Regional Solid Waste Authority
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
SWTP	Surface Water Treatment Plant
TAC	toxic air contaminant
TAG	Transportation Analysis Guidelines
TAZ	traffic analysis zone
TCFM	trichlorofluoromethane
TDS	total dissolved soils
TISG	Transportation Impact Study Guide
TMA	Transportation Management Association
TMDL	total maximum daily load
Tool	Dynamic Implementation Tool
Toxic Site	Toxic Site Clean-Up Site Specific Report
TPA	Transit Priority Area
tpy	tons per year
TSM	Transportation System Management
UBC	Uniform Building Code
UDA	urban development area
ULDC	Urban Levee Design Criteria
United Auburn	United Auburn Indian Community of the Auburn Rancheria
UPA	Urban Policy Area
US	United States
USACE	US Army Corps of Engineers
USB	Urban Services Boundary
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey

UST	Underground Storage Tanks
UWMP	Urban Water Management Plan
VdB	vibration decibels
VLDR	Very Low Density Residential
VMT	vehicle miles traveled
VOC	volatile organic compound
WAVE	WAVE Consulting
WDR	waste discharge requirement
Wheel	Water Agency to Treat and Deliver
WJHMP	West Jackson Highway Master Plan
WQO	Water Quality Objective
WSA	water supply assessment
WSIP	Water Supply Infrastructure Plan
WSMP	Water Supply Master Plan
ZEV	zero-emission vehicle
Zoning Code	Sacramento County Zoning Code

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25 ACKNOWLEDGEMENTS

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Teichert

Granite Construction Company

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APPENDIX A

NOTICE OF PREPARATION, REVISED NOTICE OF PREPARATION, AND SCOPING COMMENTS RECEIVED

Department of
Community Development
Michael J. Penrose,
Acting Director

Divisions
Administrative Services
Building Permits & Inspection
Code Enforcement
County Engineering
Economic Development & Marketing
Planning & Environmental Review

COUNTY OF SACRAMENTO
PLANNING AND ENVIRONMENTAL REVIEW DIVISION
REVISED NOTICE OF PREPARATION

APRIL 26, 2017

TO: ALL INTERESTED PARTIES

SUBJECT: REVISED NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR WEST JACKSON HIGHWAY MASTER PLAN (CONTROL NUMBER: PLNP2008-GPB-CZB-ZOB-00240)

Sacramento County will be the CEQA Lead Agency for preparation of an Environmental Impact Report (EIR) for a project known as WEST JACKSON HIGHWAY MASTER PLAN. This Notice of Preparation has been sent to responsible and trustee agencies and involved federal agencies pursuant to Section 15082 of the CEQA Guidelines. Agencies should comment on the scope and content of the environmental information that is germane to the agencies' statutory responsibilities in connection with the proposed project. Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

On February 15, 2017, an NOP for the Revised Project was issued; however there was subsequently a need to revise the Project further. This NOP reflects the outcome of those discussions and supersedes the NOP that was released on February 15, 2017

The project description, location, and the probable environmental effects are contained in the attached materials and may also be viewed online at:

https://planningdocuments.saccounty.net/ViewProjectDetails.aspx?ControlNum=PLNP2008-00240

Please send your Agency's response to this Notice to:

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225, Sacramento, CA 95814
or via e-mail at: CEQA@saccounty.net.

Your response should include the name of a contact person in your agency.

Agencies with specific questions about the project should contact Tim Kohaya, Project Manager, at (916) 874-5982 for further information.

PROJECT TITLE:

WEST JACKSON HIGHWAY MASTER PLAN

CONTROL NUMBER:

PLNP2008-GPB-CZB-00240

PROJECT PROPONENT(S):

Majority Property Owners

Teichert Land Company
Attn: Norm Eilert

Granite Construction Company, a California Corporation
Attn: Yasha Saber (Project Manager)

Applicants:

Stonebridge Properties, LLC
Attn: Mike Isle (Project Manager)

Granite Construction Company, a California Corporation
Attn: Yasha Saber (Project Manager)

Architect/Engineer:

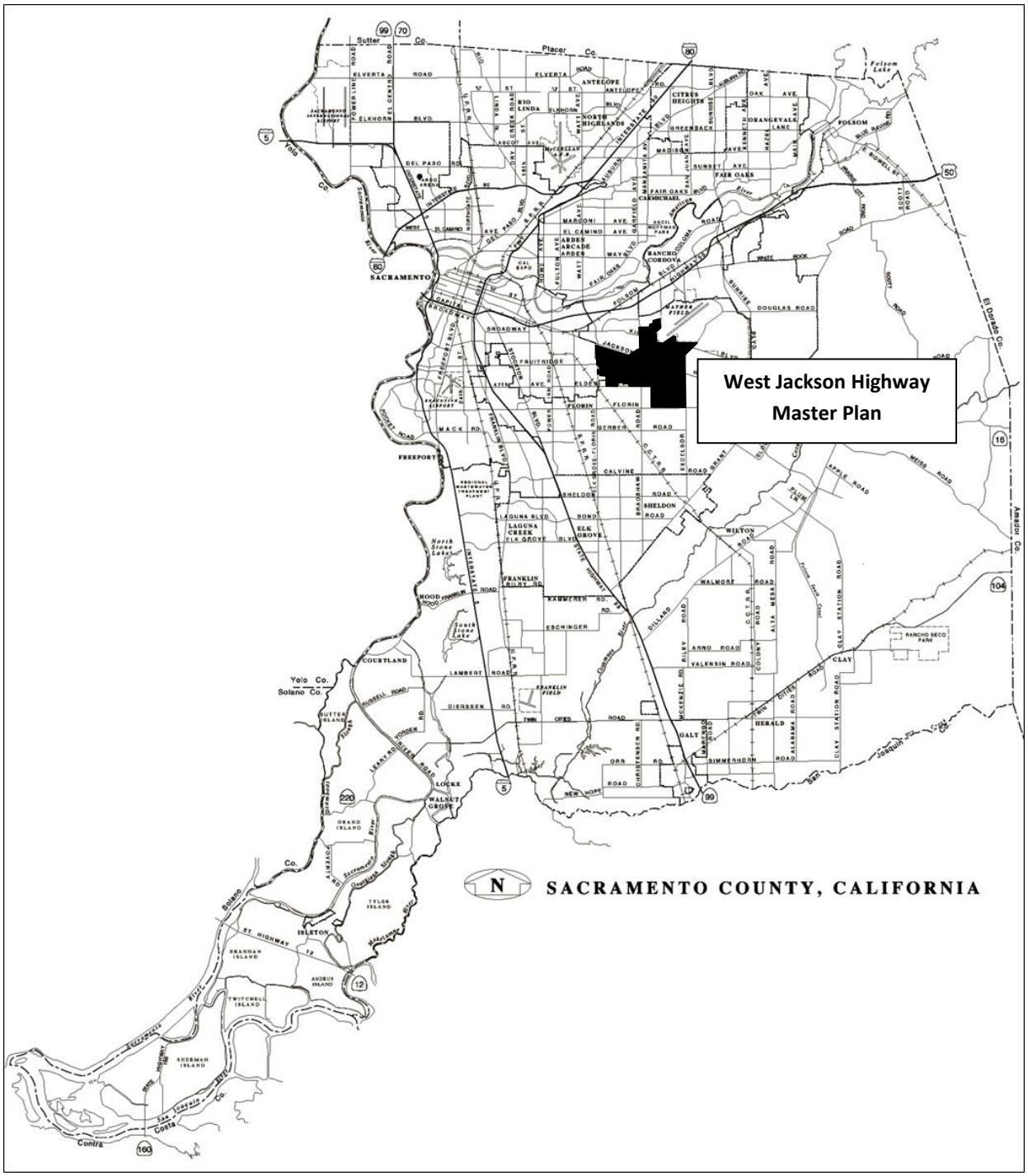
Wood Rodgers (Engineer)
Attn: Tim Crush

SWA (Landscape Architect)
Attn: Sean O'Malley

PROJECT LOCATION:

The proposed Project is located along State Route 16 (Jackson Highway) in generally the geographic center of Sacramento County (Plate NOP-1). The Project boundaries are generally Jackson Highway, Kiefer Boulevard and Goethe Road to the north, portions of Elder Creek Road and Florin Road to the south, the City of Sacramento to the west and Excelsior Road to the east (Plate NOP-2).

Plate NOP-1: Regional Location



ENVIRONMENTAL/LAND USE SETTING

The West Jackson Highway Master Plan (WJHMP) project area is located within the unincorporated portion of Sacramento County and is located adjacent to the City of Sacramento to the west and City of Rancho Cordova to the northeast. Existing and proposed urban development surrounds the Project Area. Plate NOP-3 is a context map that shows these various developments. West of the Project Area are industrial uses within the boundaries of the City of Sacramento; however, it should be noted that in 2015 the City of Sacramento adopted a new General Plan which designates this area for new residential, commercial and employment land uses. Adjacent to and west of the Project Area is Teichert Land Company's Aspen 1 - New Brighton project, located within the boundaries of the City of Sacramento. The Aspen 1- New Brighton project consists of 133.5 acres of land designated for single-family residential, located in the northwest, center and southeast portion of the Aspen 1 site. The 133.5 acres includes an elementary school. In the central and southern portions of the Aspen 1 site, 43.1 acres are designated for multi-family residential/mixed-use land uses. The Aspen 1 - New Brighton project also includes the designation of 13.1 acres of Shopping Center located in the northeastern portion of the site; 14.4 acres for parks/open space in three separate areas of the site; and 28.2 acres for Urban Farm uses in the southwest portion of the site. The project will have a total of 1,365 dwelling units and 130,000 square feet of commercial space. The Aspen 1- New Brighton project and the proposed WJHMP project have been designed to be compatible with each other.

Just north of the Project Area is a residential neighborhood known as the Rosemont community. The land north of the Project Area is almost entirely built out. Agricultural residential uses are located south of the Project Area; however, this area is a part of the previously approved Florin-Vineyard "Gap" Community Plan which consists primarily of rezones from agricultural/agricultural-residential land uses to low density residential land uses. Further south is the North Vineyard Station Specific Plan that also primarily consists of rezones from agricultural-residential to low density residential land uses.

The lands east of the Project Area are largely comprised of agricultural-residential land uses, but are now proposed for future development similar to the proposed Project in concurrent applications known as NewBridge (County Control Number PLNP2010-00081), Jackson Township (County Control Number PLNP2011-00095) and Mather South (County Control Number PLNP2013-00065). Jackson Township is adjacent to the east of the Project. The Sacramento Raceway is just east of the Project Area and is located in the Jackson Township project area. Events at the Sacramento Raceway include drag racing and motocross.

Mather Airport is located just north/northeast of the Project Area. The runways of Mather Airport are located at the northern boundary of the Project Area (refer to Plate NOP-4). Mather Airport is the former Mather Air Force Base and is now primarily used as an air cargo facility and business park (largely aviation services).

Plate NOP-2: West Jackson Highway Master Plan Project Boundary

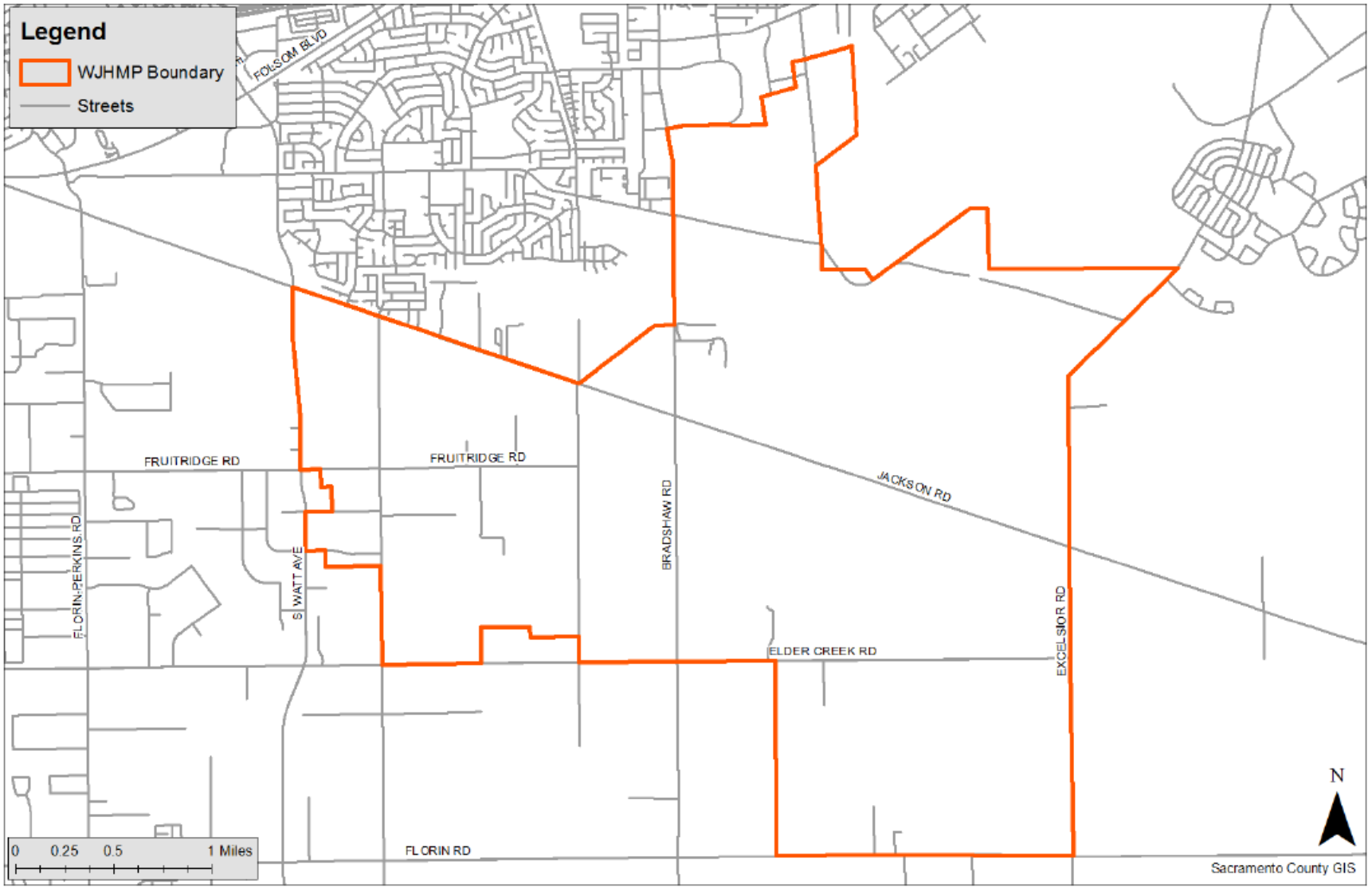


Plate NOP-3: Context Map

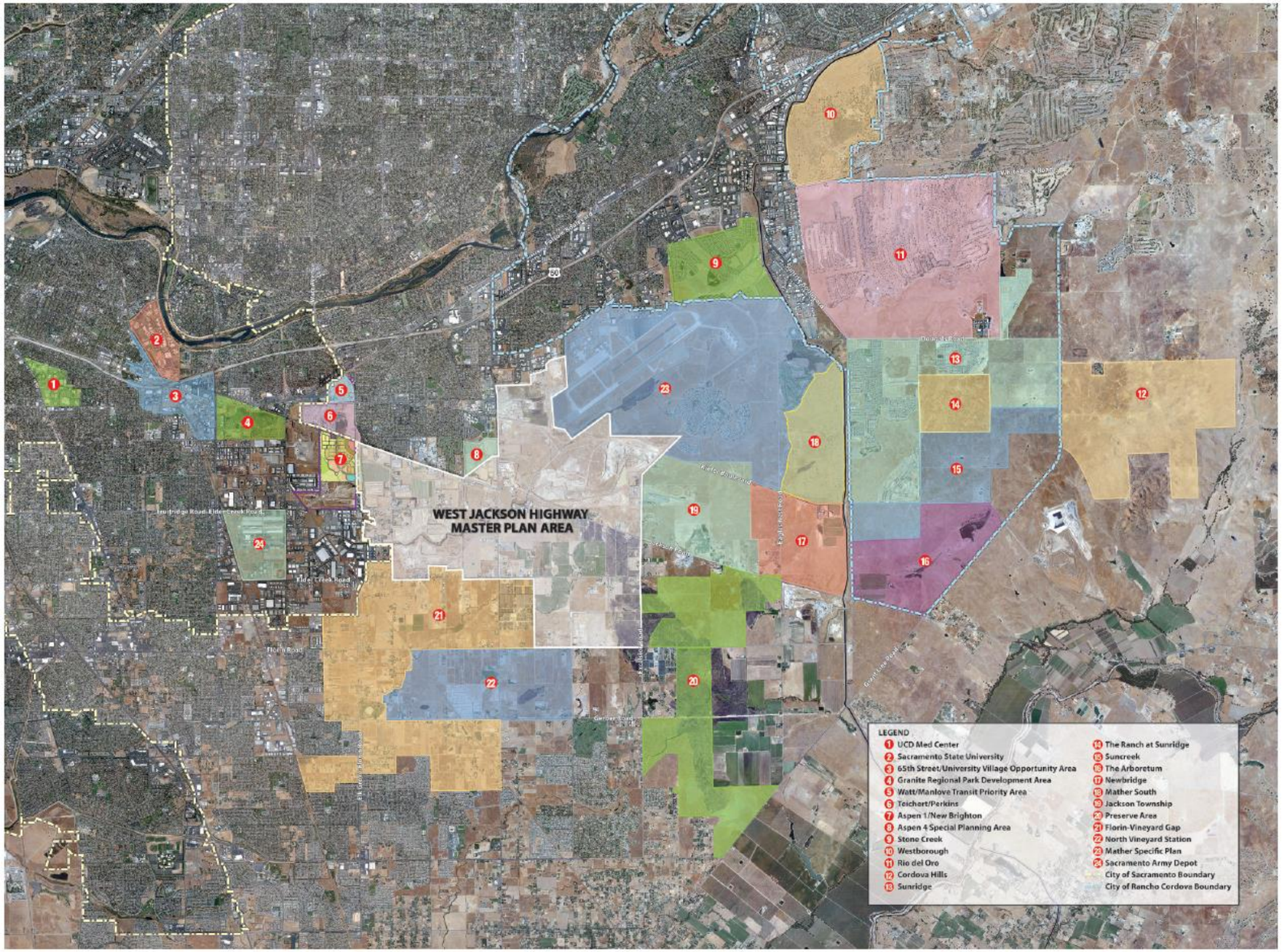
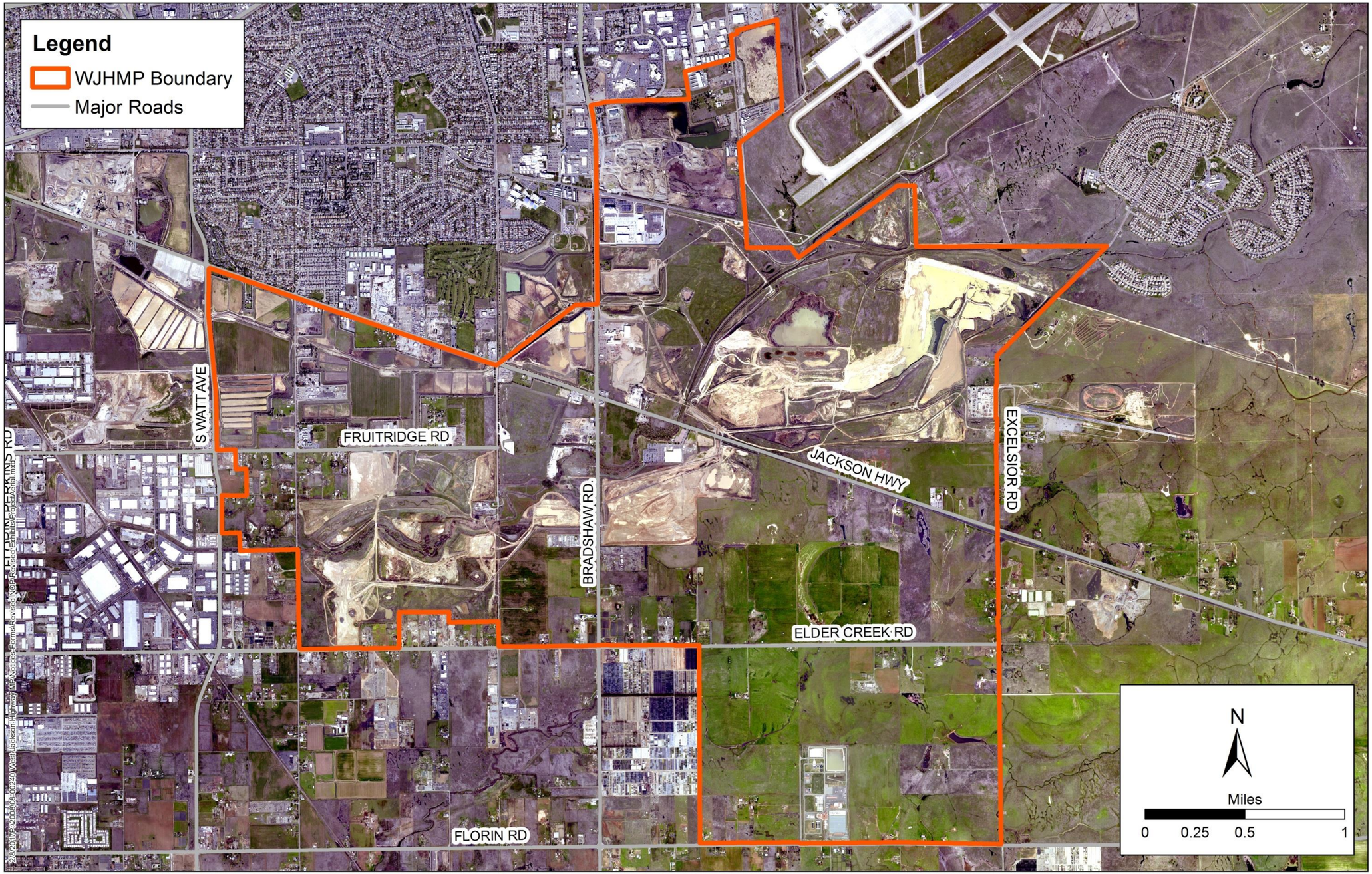


Plate NOP-4: Aerial Photo (Dated 2014) of Project Area



REVISED PROJECT DESCRIPTION

On September 10, 2013, a Notice of Preparation (NOP) was issued for the WJHMP for a land use project which is now, in this NOP, designated the "Original Project". Since that time, the Project Applicants and County of Sacramento staff have reviewed the results of several CEQA-related studies, consulted numerous stakeholders, and had extensive conversations concerning how the Original Project might adversely impact the environment. As that information has become available, the Project Applicants, along with County staff, have worked to modify the Original Project so as to lessen its environmental impacts, all of which has resulted in the "Revised Project" (or the "Project" as appropriate) which is the subject of this NOP. A precise description of that project and the reasons for the various changes are discussed below. On February 15, 2017, an NOP for the Revised Project was issued; however there was subsequently a need to revise the Project further. The Elk Grove Unified School District (EGUSD) wanted more location specificity for possible sites of the proposed middle/high school. In response, the Project Applicants had a series of discussions with the EGUSD to determine specific location options for the facility. This NOP reflects the outcome of those discussions and supersedes the NOP that was released on February 15, 2017.

The Project Area has various land uses and is currently designated by the Sacramento County General Plan as the following: General Agriculture (1,713.3 acres), Agricultural-Urban Reserve (1,722.2 acres), Extensive Industrial (2,384.5 acres), Intensive Industrial (72.1 acres), Commercial & Offices (16.8 acres), and Cemetery, Public/Quasi-Public (4.4 acres). In addition, portions of the Project Area contain an Aggregate Resource Area overlay. Of the entire 5,913± acres of the Project Area, the applicants collectively own 4,079± acres – Teichert owns 3,016± acres and Granite owns 1,063± acres. Thus, the applicant controlled properties represent 69% of the total Project Area acreage. The properties owned by the applicants primarily include aggregate mining sites used for sand and gravel extraction, many of which have already been reclaimed. Although most of the mining is complete, some of the Project Applicants' properties continue to support various mining related activities. The Revised Project Area is mostly comprised of existing and former mining properties – as mining activities have dominated the landscape since the 1930's, the Project Area is not highly developed. The remaining land uses within the Project Area are comprised of a mixture of rural residential, institutional, agricultural and industrial properties. Refer to Plate NOP-4 for an aerial photo (dated 2014) of the Project Area.

PROPOSED LAND USES

The Revised Project involves a series of entitlements which are listed below in order to establish a master planned community. The proposed Master Plan creates two District Plan Areas (labeled as District 1 and District 2), three Future Planning Areas (FPA) (labeled as FPA A, B and C), as well as general land use policies and development standards. The District Plans establish specific land uses, policies and development standards for the properties within the District Areas. Although future land uses for the FPAs will be established by the Master Plan, there will be no rezones in these areas. It is anticipated that the landowners within the FPAs will initiate District Plans or Specific

Plans in the future to comprehensively plan those areas. Should the landowners in those areas contemplate changing existing land uses within the FPA, such future use must be consistent with the provisions of the Master Plan. The applicants do not own property within the FPAs.

Overall, the Revised Project includes a mixture of residential, recreational, and employment nodes intended to reduce auto usage within the Master Plan Area and support the provision and use of transit alternatives. The Revised Project's Land Use Plan is depicted in Plate NOP-5 and the land uses are further described below:

RESIDENTIAL

The Revised Project includes five different types of residential land uses, all of which are categorized based on the proposed density. The residential land uses in Districts 1 and 2 account for a total of approximately 2,100.8± acres of the Project Area and are intended to provide for a wide diversity of housing types. The five residential types are:

- Very Low Density Residential (0.1 – 4.0 units/acre)
- Low Density Residential (3.0 – 8.0 units/acre)
- Medium Density Residential (7.0 – 18.0 units/acre)
- High Density Residential (20.0 – 30.0 units/acre)
- Mixed Use (20.0 – 30.0 units/acre)

The project will comply with the affordable housing ordinance in effect at the time of project approval. To achieve compliance, the Project's different Districts and FPAs may prepare individual Affordable Housing Plans for their respective District or FPA.

SCHOOLS, OPEN SPACE AND PARK USES

The size and number of parks and schools have been proposed based on the acreage or number of dwelling units of the proposed residential component of the Revised Project. The ratios are based on the requirements of the Southgate and Cordova Recreation and Park Districts and the Elk Grove Unified School District (EGUSD). There are four proposed elementary schools in District 1 and one proposed middle/high school that would be located within either District 1 or 2. The ultimate location for the middle/high school will be determined by EGUSD at a time of their choosing. However, for purposes of analyzing project impacts, there will be two proposed specific sites for the middle/high school. The first middle/high school site is 70 acres and is located on the west side of Mayhew Road near the Mayhew Road/Elder Creek Road intersection. This site is part of the Revised Project and Option 2 land use plans (Plate NOP-5 and Plate **NOP-13**). The second middle/high school site is 84 acres and is located on the west side of Vineyard Road near the Vineyard Road/Elder Creek Road intersection. This second site is part of the Option 1 and Option 3 land use plans (Plate NOP-12 and Plate **NOP-14**). Both of these sites have been determined by the EGUSD to have the level of feasibility to analyze in the Draft EIR.

The Revised Project designates a total of 1,469.5± acres as Open Space, which includes preserving the existing two vernal pool complexes within the Project Area. The proposed Rock Creek Parkway is expected to vary in width up to 300 feet wide in some locations and will contain separated roadways along the outer edge of the parkway. Rock Creek Parkway will include right-of-way for a future transit line, and a large swath of land in the center (designated as Open Space) which is intended to accommodate drainage as well as pedestrian/bicycle trails. Rock Creek Parkway will traverse the central portion of the Project Area and the trails of Rock Creek Parkway will connect with the trails of the recreated portion of Morrison Creek; the intent is to provide alternative modes of transportation throughout the Project Area. The Project also incorporates 162.2± acres of parks, dispersed throughout the Project Area. Finally, the Revised Project includes a land use designation of Open Space/Urban Farm for 476.3± acres, which in addition to open space uses, will allow community based agriculture and education within the Project Area.

EMPLOYMENT USES

The Revised Project provides for a mix of approximately 1,300.9± acres of commercial, employment and industrial land uses and 120.9 acres of mixed use. These uses are located throughout the Project Area in order to provide jobs and services in close proximity to residences. In addition, the land use plan has been designed around the 60 dB (decibel) Community Noise Equivalency Level (CNEL) contour line of Mather Airport. The Mather Airport Community Land Use Plan (CLUP) identifies land uses that are 'compatible', 'compatible subject to conditions' or 'incompatible' within specified Mather CNEL noise contours, which are based on guidelines for height, noise and safety near airports. The Mather Airport CLUP classifies residential uses as incompatible within the 60-65 dB CNEL. Due to these restrictions, the applicants have designed the land use plan to exclude residential land uses within this contour and place other land uses such as retail commercial, employment, industrial and open space uses. This results in a concentration of employment uses in the geographic center of the Project Area.

REQUESTED ENTITLEMENTS:

1. A **General Plan Amendment** to:

    a. Amend the Urban Policy Area (UPA) boundary south and east to include approximately 5,844 acres of the West Jackson Highway Master Plan Area (see Plate NOP-6). *Note: Approximately 69.3 acres of the Master Plan Area is currently within the UPA.*

    b. Amend the Land Use Diagram from Agricultural-Urban Reserve, General Agriculture, Extensive Industrial, Intensive Industrial, Commercial and Offices and Cemetery, Public/Quasi Public, to Low Density Residential, Medium Density Residential, Mixed Use, Commercial and Office, Recreation, Intensive Industrial, Extensive Industrial, General Agriculture, Agricultural-Urban Reserve, and Cemetery, Public/Quasi Public for approximately 5,913 acres (see Plate NOP-7). *Note: Amendments to the*

land use designations listed above will not affect the designation of the existing Aggregate Resource Area Overlay, which will remain in place.

c. Amend the Land Use Element and Land Use Consistency Matrix to add a West Jackson Highway Master Plan Combining Land Use designation.

d. Amend the Land Use Diagram to apply the West Jackson Highway Master Plan Combining Land Use Designation to the entire 5,913 acre Plan Area.

e. Amend the Land Use Diagram to include a Mixed Use Land Use Designation.

f. Amend the General Plan Transportation Plan to show proposed roadway alignments and transit routes as shown in the Transportation Plan Amendment Diagram dated April 2017 (Plate NOP-8). *Note: Changes to transit routes shown on the Transportation Plan do not require amendments to the General Plan Transportation Plan.*

g. Amend the Bikeway Master Plan to add on- and off-street bikeways as shown in the Bikeways Master Plan Amendment Diagram dated April 2017 (Plate NOP-9).

2. A **Community Plan Amendment** to:

a. Amend the Cordova Community Plan to add a West Jackson Highway Master Plan Overlay and apply it to the approximately 1,114 acres of the Master Plan Area located within the boundaries of the Cordova Community Plan.

b. Amend the Cordova Community Plan land use designations of the parcels located in the District 1 and District 2 Area Plans from Permanent Agriculture (AG-20), Limited Commercial, Light Industrial, Heavy Industrial, Industrial Reserve and Major Roads to West Jackson Highway Master Plan for approximately 1,114 acres (see Plate NOP-10). Note: Amendments to the land use designations listed above will not affect the designation of the existing Surface Mining Combining Zone, which will remain in place.

c. Amend the Vineyard Community Plan to add a West Jackson Highway Master Plan Overlay and apply it to the approximately 3,777 acres of the Master Plan Area located within the boundaries of the Vineyard Community Plan.

d. Amend the Vineyard Community Plan land use designations of the parcels located in the District 1 and District 2 Area Plans from Permanent Agriculture (AG-20), Permanent Agriculture (AG-40), Permanent Agriculture (AG-80), Permanent Agriculture (AG-160), Agricultural-Residential-1 (AR-1), Agricultural-Residential-2 (AR-2), Shopping Center,

Light Industrial, Heavy Industrial, and Industrial Reserve to West Jackson Highway Master Plan for approximately 3,777 acres (see Plate NOP-10). Note: Amendments to the land use designations listed above will not affect the designation of the existing Surface Mining Combining Zone, which will remain in place.

3. Adoption of the West Jackson Highway Master Plan for approximately 5,913 acres.

4. Adoption of the District 1 Area Plan including a Land Use Diagram, Design Guidelines, and Development Standards.

5. Adoption of the District 2 Area Plan including a Land Use Diagram, Design Guidelines, and Development Standards.

6. A Rezone to change the zoning designations within designated properties to Special Planning Area (Plate NOP-11).

7. A Development Agreement for the District 1 Area Plan by and between the County of Sacramento and Teichert Land Company.

8. A Development Agreement for the District 2 Area Plan by and between the County of Sacramento and Granite Construction Company.

9. Adoption of a Public Facilities Financing Plan for West Jackson Highway Master Plan that includes a Capital Improvement Program and Financing Plan.

10. Adoption of an Urban Services Plan for West Jackson Highway Master Plan.

11. A Water Supply Master Plan Amendment to amend the Existing Zone 40 Water Supply Master Plan to include provision of water service to the West Jackson Highway Master Plan Area.

12. Approval of the Water Supply Assessment for West Jackson Highway: Required by the California Water Code to link land use and water supply planning activities.

Plate NOP-5: West Jackson Highway Master Plan Revised Project Land Use Plan (Preferred Option)

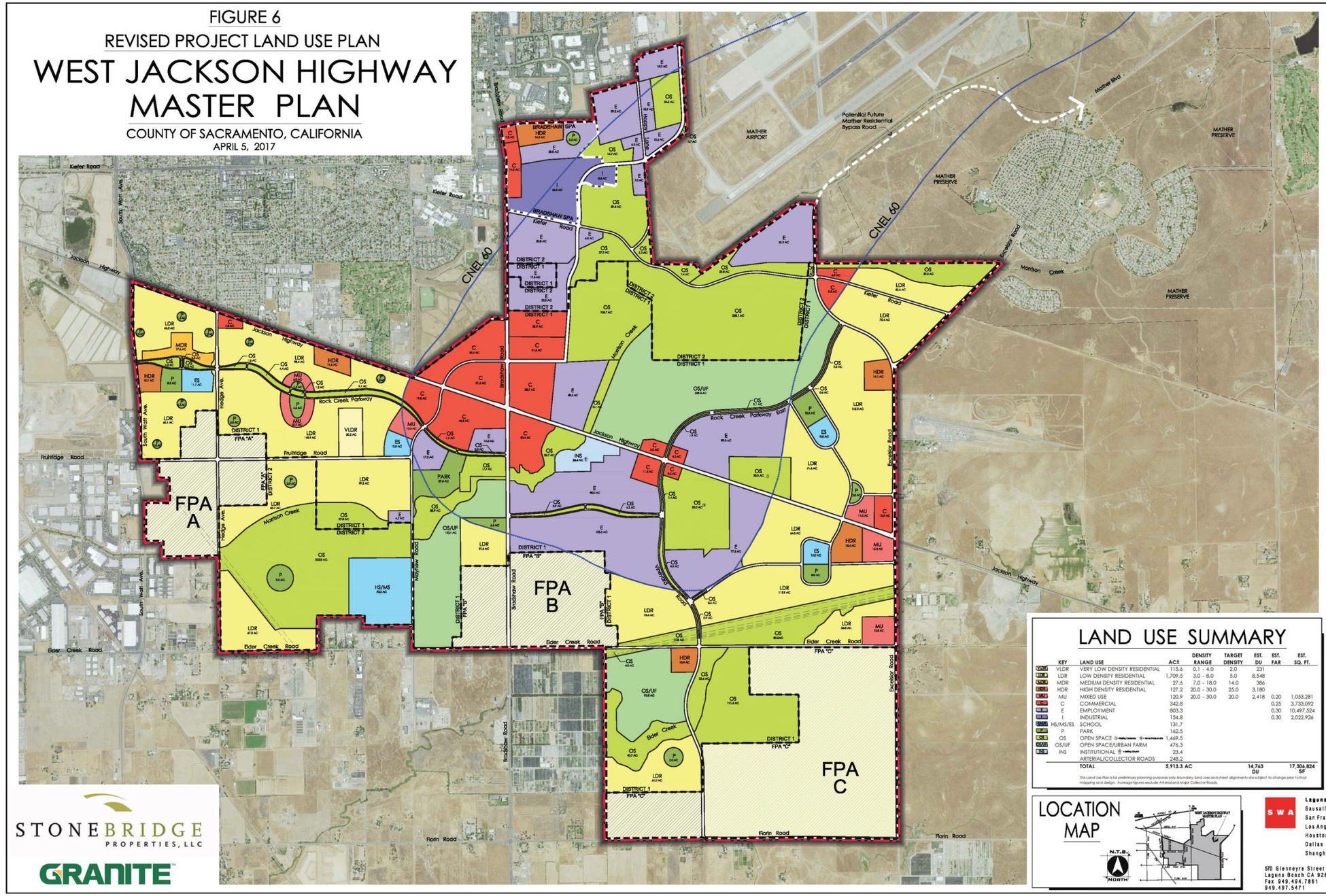
FIGURE 6

REVISED PROJECT LAND USE PLAN

WEST JACKSON HIGHWAY MASTER PLAN

COUNTY OF SACRAMENTO, CALIFORNIA

APRIL 5, 2017



LAND USE SUMMARY

KEY	LAND USE	AC±	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	0.1 - 4.0	2.0	231		
LDR	LOW DENSITY RESIDENTIAL	1,709.5	3.0 - 8.0	5.0	8,548		
MDR	MEDIUM DENSITY RESIDENTIAL	27.6	7.0 - 18.0	14.0	386		
HDR	HIGH DENSITY RESIDENTIAL	127.2	20.0 - 30.0	25.0	3,180		
MU	MIXED USE	120.9	20.0 - 30.0	20.0	2,418	0.20	1,053,281
C	COMMERCIAL	342.8				0.25	3,733,092
E	EMPLOYMENT	803.3				0.30	10,497,524
I	INDUSTRIAL	154.8				0.30	2,022,926
HS/MS/ES	SCHOOL	131.7					
P	PARK	162.5					
OS	OPEN SPACE	1,469.5					
OS/UF	OPEN SPACE/URBAN FARM	476.3					
INS	INSTITUTIONAL	23.4					
	ARTERIAL/COLLECTOR ROADS	248.2					
	TOTAL	5,913.3 AC			14,763 DU		17,306,824 SF

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

LOCATION MAP

N.T.S.

NORTH

STONEBRIDGE PROPERTIES, LLC

GRANITE

SWA

Laguna Beach
Sausalito
San Francisco
Los Angeles
Houston
Dallas
Shanghai

570 Glenneyre Street
Laguna Beach CA 92651
Fax 949.494.7861
949.497.5471

NORTH

0 1,400 700 2,100

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Sacramento, CA 95816 Fax 916.341.7767

WEST JACKSON HIGHWAY MASTER PLAN - FIGURE 6 LAND USE PLAN

REASONS FOR PROJECT REVISION:

The following are the reasons for revising the Original Project:

1. **To Reduce Traffic Impacts:** A draft cumulative traffic study was prepared for the four proposed master plans along the Jackson Highway corridor: West Jackson Highway Master Plan (Project Area), Jackson Township Specific Plan, Mather South Community Master Plan, and NewBridge Specific Plan. When that draft study was initially reviewed by County staff and the Project Applicants, it became evident that many factors contributed to the Original Project's identified traffic impacts, including the intensity of employment uses within the Project Area, roadway alignments, roadway widths and capacity, and projected transit usage. Following this draft study review, the County ran several scenarios through a traffic modeling program altering these factors by decreasing employment intensity, narrowing roadways, employing different land use arrangements, and using different transit headways (i.e., time span between bus arrival). The intent was to explore, as part of the early CEQA review process, how traffic impacts might be lessened through changes to any one of these variables. Ultimately, it became clear that the Project Area's employment intensity, which resulted in the attraction of numerous trips from outside the project area, was the project's most significant traffic driver. The Project Applicants then responded to this early determination by reducing the project employment intensity by changing predominately office uses to less intensive light industrial uses.

   To reduce traffic impacts on Bradshaw Road between Jackson Highway and Goethe Road, the Project Applicants have added a four-lane roadway connector between Routier Road at the Project's north boundary and the Mayhew Road extension near the Jackson Highway/Bradshaw Road intersection (see Plate NOP-5). This connector will function as a north-south alternative to Bradshaw Road and will provide traffic relief for Bradshaw. This connector will also provide another access for industrial and commercial uses along Bradshaw Road.

   Reducing employment intensity and adding the Routier Road connector are now reflected in the Revised Project. It is anticipated these changes will result in a substantial lessening of traffic associated with the Revised Project and substantial lessening of traffic along Bradshaw Road.

2. **To Reduce Air Quality Impacts:** The draft cumulative traffic study concluded that, as indicated, the Original Project attracted many employment-related vehicle trips from outside of the project. Those outside trips, in turn, resulted in increased regional VMT and a corresponding increase in GHG emissions. The reduction in the intensity of employment now proposed as part of the Revised Project should reduce the number of outside trips entering the Project Area, thereby reducing VMT and greenhouse gas emissions. This reduction should contribute to a better air quality situation as well as a lessening of those factors contributing to climate change.

3. **To Improve Transit:** The draft traffic study also analyzed the Original Project's transit system as part of a larger system serving the overall area. As a result of that

analysis, it became apparent that the transit system could benefit from more direct and efficient routes that would serve project residents while reducing lane miles. With those observations in mind, changes to the transit system were made that should result in the Revised Project's transit system reducing transit lane miles to 11 from the 25 in the originally proposed project while also locating 87% of the proposed Project's residential units within ½ mile of a transit route. Reducing the transit lane miles is significant as a means to reduce transit service redundancies and enable more direct transit routes, thereby creating a more efficient transit system. Also, the ½ mile figure is important because Sacramento County General Plan Policy LU-120 favors projects that locate residential development within ½ mile of transit service. This has been determined to be important to Sacramento County due to the fact that individuals living proximate to transit will utilize those services more frequently than those living farther away. The net result of increased transit ridership should be a lessening of air quality and greenhouse gas impacts.

4. To Reduce Biological Impacts

The Original Project featured land uses and roadways that would have adversely impacted biological features including jurisdictional wetlands and a native section of Morrison Creek. After identifying those impacts as part of the early CEQA review process, the County and the Project Applicants reassessed land use locations and worked to design alternative roadway alignments that would facilitate regional traffic flows without causing adverse impacts to biological resources. Specifically, the Revised Project avoids the following within the Project Area:

- Vernal pool resources in the Aspen 9 area which will be preserved as open space instead of designated for residential uses
- Crossing a native stretch of Morrison Creek at the southeast corner of Jackson Highway and Bradshaw Road
- An additional roadway crossing of Morrison Creek's realigned channel in the Aspen 6 and Granite 1 areas contemplated in the Original Project
- Crossing a Detention Basin and environmental corridor in the Aspen 6 area
- Impacts to a Wetlands and Vernal Pool Complex located in the Aspen 5/Granite 1 area
- Encroaching on the Morrison Creek preserve, located in the Vineyard 1 area, which was placed under a perpetual conservation easement grant to preserve open space and restored habitats as a component of mine reclamation

These changes should reduce the impacts to biological resources stemming from the Project.

5. To Increase Open Space: The Revised Project contains a greater amount of open space (inclusive of the Open Space/Urban Farm designation) than the Original

Project: 1,945.8 acres in the Revised Project vs. 1,583.4 acres in the Original Project. This change came after the Project Applicants identified areas in Aspen 4 South, Aspen 6, and Aspen 9 that were needed to increase drainage capacity and preserve biological resources. By designating those areas as open space in the Revised Project, environmental impacts associated with their urbanization will be avoided.

6. **To Avoid a Potential Noise Impact:** The Revised Project relocates the middle/high school and two elementary schools so as to avoid the Mather Airport Theoretic Capacity 60 CNEL noise contour. Initially, the middle/high school was planned for a location within the 60 CNEL noise contour, but the Elk Grove Unified School District, the school district serving the Project Area, expressed early in the CEQA review process a desire for the school to be located elsewhere so that students would enjoy a quieter environment. The Project Applicants accommodated the School District by rearranging land uses in a manner that caused the Middle/High School and two elementary schools to be located outside of the 60 CNEL line. Potential noise impacts related to the schools' location within the 60 CNEL line were accordingly avoided.

7. **To Improve Ground Water Recharge:** The Revised Project contains greater detention area which potentially contributes to groundwater recharge. Increasing groundwater recharge has been identified in the County of Sacramento's General Plan Policy CO-10 as an activity that should be supported as a means to improve water supply and benefit the environment.

In summary, the aforementioned modifications incorporated into the Revised Project are indicative of how the CEQA process resulted in improving the Project in a manner which should minimize its environmental impacts. Accordingly, it is anticipated the environmental analysis that follows the issuance of this NOP will reveal the Revised Project will result in a reduction in overall environmental impacts when compared to those which would have been associated with the Original Project.

PROJECT OPTIONS TO REVISED PROJECT (PREFERRED OPTION):

The applicants have requested analysis of four options for the Project with the preferred option being the Revised Project. Options 1, 2 and 3 were provided to assess variations in the Project and are not intended to be CEQA Alternatives. A CEQA Alternative is different than a Project Option in that the CEQA Alternative is intended to reduce environmental impacts associated with the Project. CEQA Alternatives will, however, be developed as part of the preparation of the EIR. Options 1, 2 and 3 are described below with the preferred option described as the Revised Project in previous sections of this NOP.

Option One to the Revised Project: Middle School/High School Site in District 1

The land use plan for Option One is similar to that of the Revised Project with the only difference being the location of the middle/high school site (see Plate NOP-12). Under Option One, the middle/high school in District 2 is replaced with residential and open space uses and moved to the west side of Vineyard Road and north of the Vineyard Road/Elder Creek Road intersection in District 1. The middle/high school site acreage has also been increased from 70 acres to 84 acres. When compared to the Revised Project, residential uses would decrease by 49.3 acres and employment uses will decrease by 10.4 acres.

Option Two to the Revised Project: Reduced Noise Contour With Middle/High School Site in District 2

Option Two proposes a land use plan that uses Mather Airport Master Plan's Forecast 60 dB CNEL line instead of Mather Airport's Theoretic Capacity 60 dB CNEL line. Using the Forecast line results in more land available for residential uses. It should be noted that Option Two is inconsistent with current General Plan policies related to airport planning and placement of new residential development within the 60 dB CNEL adopted by the County for planning purposes. As such, Option Two would require a General Plan Amendment. As shown in Plate NOP-13, this alternative would increase residential uses at the geographic center of the Project where employment uses were previously situated. When compared to the Revised Project, residential uses would increase by 371.1 acres, employment uses would decrease by 369.7 acres, commercial uses would decrease by 22.4 acres, and industrial uses acreage would not change. A fifth elementary school would also be included within District 1. Like the Revised Project, Option Two has the middle/high school site in District 2.

Option Three to the Revised Project: Reduced Noise Contour With Middle/High School Site in District 1

Option Three proposes a land use plan with reduced noise contours like Option Two (see Plate NOP-14). Like Option Two, Option Three will replace employment uses with residential uses at the geographic center of the Project and will have a fifth elementary school. Option Three is also inconsistent with current General Plan policies related to airport planning and placement of new residential development within the 60 dB CNEL adopted by the County for planning purposes, and would require a General Plan Amendment. Like Option One, Option Three has the middle/high school site in District 1. When compared to the Revised Project, residential uses would increase by 325.4 acres, employment uses would decrease by 369.7 acres, commercial uses would decrease by 22.4 acres, and industrial uses would not change.

Plate NOP-6: Urban Policy Boundary Amendment Exhibit

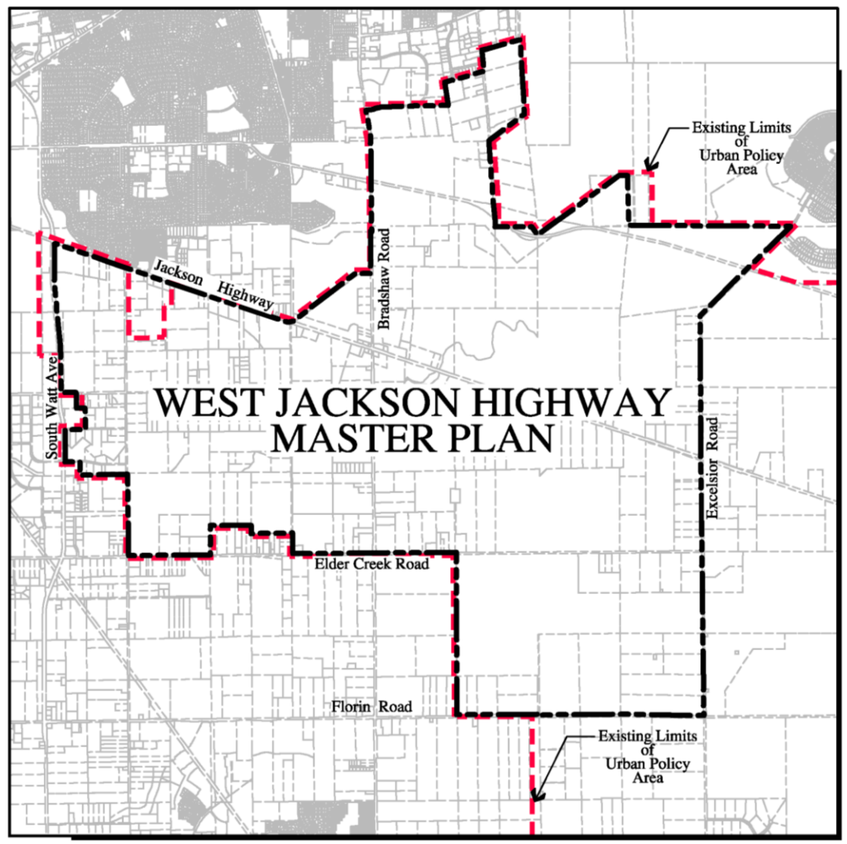
FIGURE 1

URBAN POLICY AREA AMENDMENT EXHIBIT

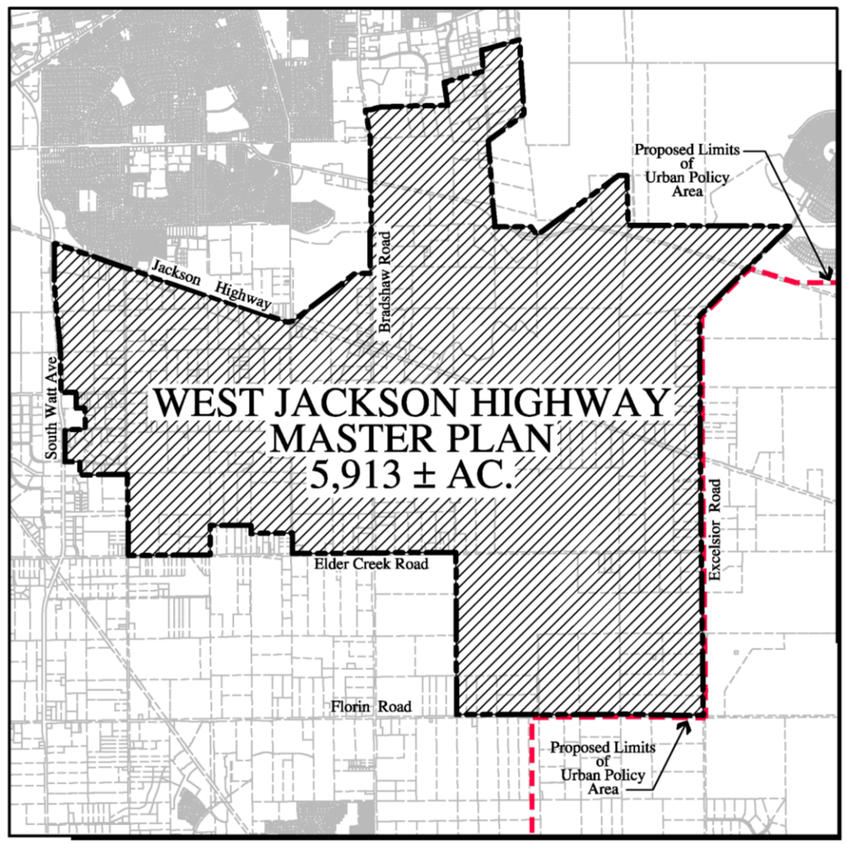
WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO COUNTY, CALIFORNIA

APRIL 2017



Existing Urban Policy Area Boundary



Proposed Urban Policy Area Boundary

Denotes Proposed West Jackson Highway Master Plan Area (5,913± Acres)

Denotes properties proposed for inclusion in the Urban Policy Area (5,913± Acres)

NORTH 0 2,000 4,000 8,000

FOR PRELIMINARY PLANNING PURPOSES ONLY. ACTUAL DIMENSIONS, ROAD ALIGNMENTS, ACREAGES AND YIELDS MAY VARY WITH MORE ACCURATE MAPPING AND DESIGN. BOUNDARIES, PARCEL LINES AND EXISTING UPA BOUNDARY SHOWN PER SACRAMENTO COUNTY GIS DATABASE.

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Plate NOP-7: General Plan Amendment Exhibit

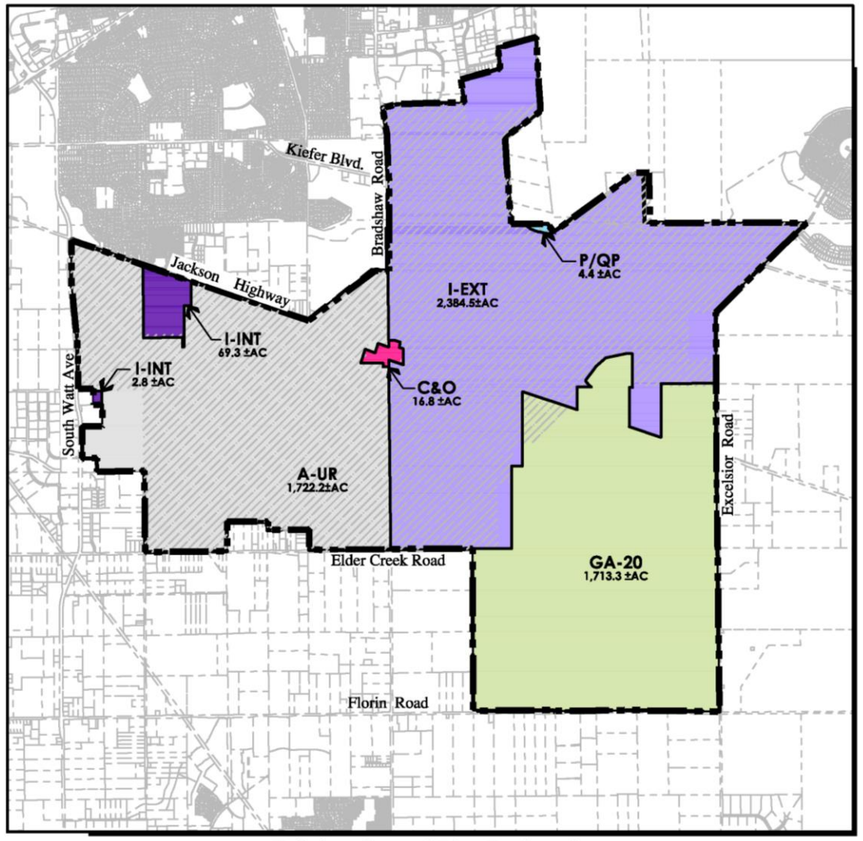
FIGURE 2

GENERAL PLAN AMENDMENT EXHIBIT

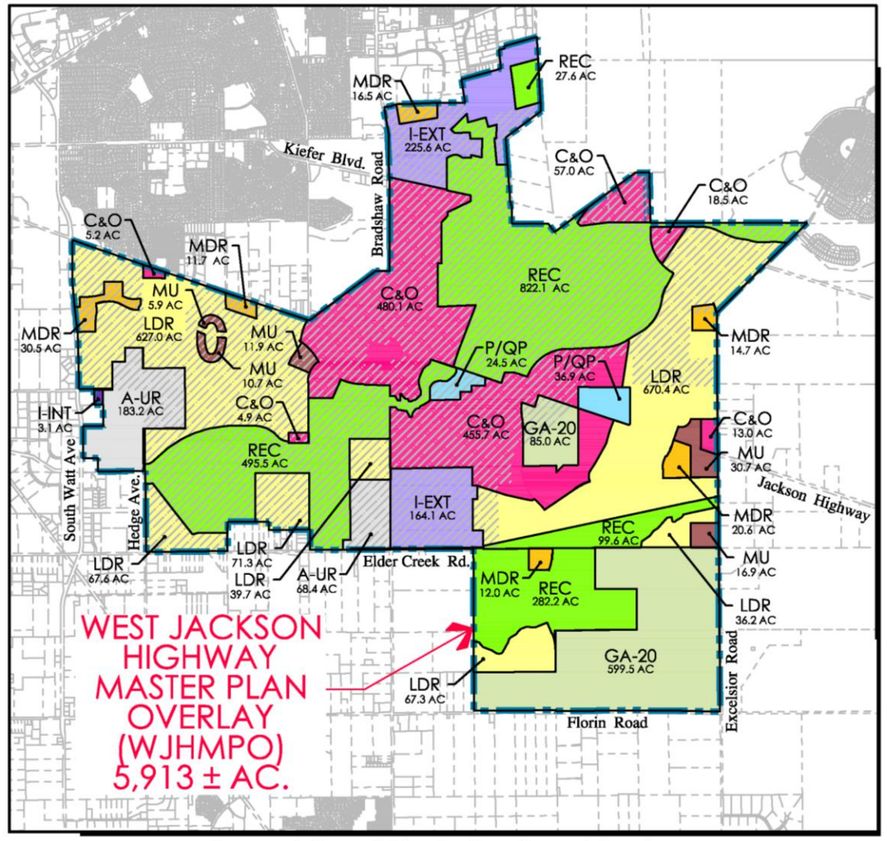
WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO COUNTY, CALIFORNIA

APRIL 2017



Existing General Plan Designations



Proposed General Plan Designations w/ Overlay

Summary

DESIGNATION	LAND USE	EXISTING	PROPOSED*	
LDR	LOW DENSITY RESIDENTIAL (1-12 DU/AC)		1,579.5	+1,579.5
MDR	MEDIUM DENSITY RESIDENTIAL (13-30 DU/AC)		106.0	+106.0
MU	MIXED USE		76.1	+76.1
C&O	COMMERCIAL & OFFICES	16.8	1,034.4	+1017.6
REC	RECREATION		1,727.0	+1727.0
PQP	CEMETERY, PUBLIC & QUASI-PUBLIC	4.4	61.4	+57.0
I-INT	INTENSIVE INDUSTRIAL	72.1	3.1	- 69.0
I-EXT	EXTENSIVE INDUSTRIAL	2,384.5	389.7	- 1994.8
GA-20	GENERAL AGRICULTURE - 20 ACRE MIN.	1,713.3	684.5	- 1028.8
A-UR	AGRICULTURAL-URBAN RESERVE	1,722.2	251.6	- 1470.6
TOTAL		5,913.3 AC	5,913.3 AC	

*PROPOSED LAND USE DESIGNATIONS ARE INCLUDED IN WEST JACKSON HIGHWAY MASTER PLAN OVERLAY AREA -5,913.3 AC.

Denotes Proposed West Jackson Highway Master Plan Overlay (5,913± Acres)

Denotes Aggregate Resource Area Overlay

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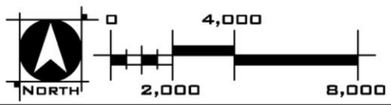

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Sacramento, CA 95816
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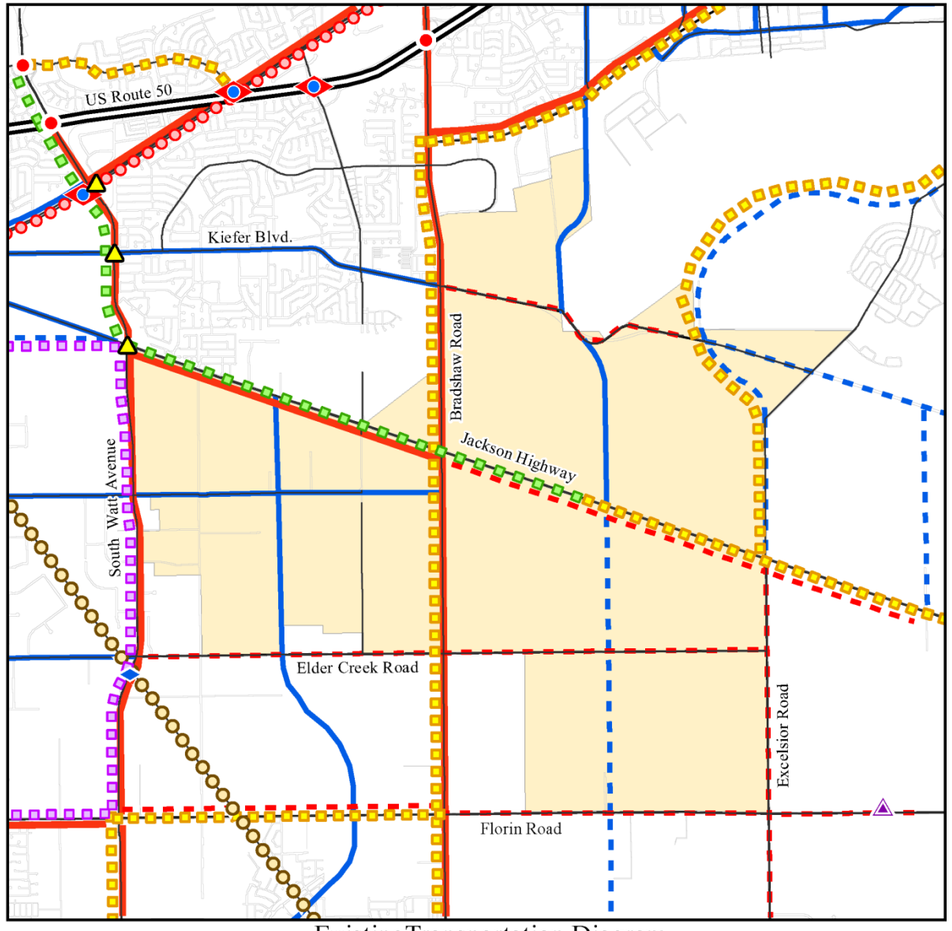
Plate NOP-8: Transportation Plan Amendment

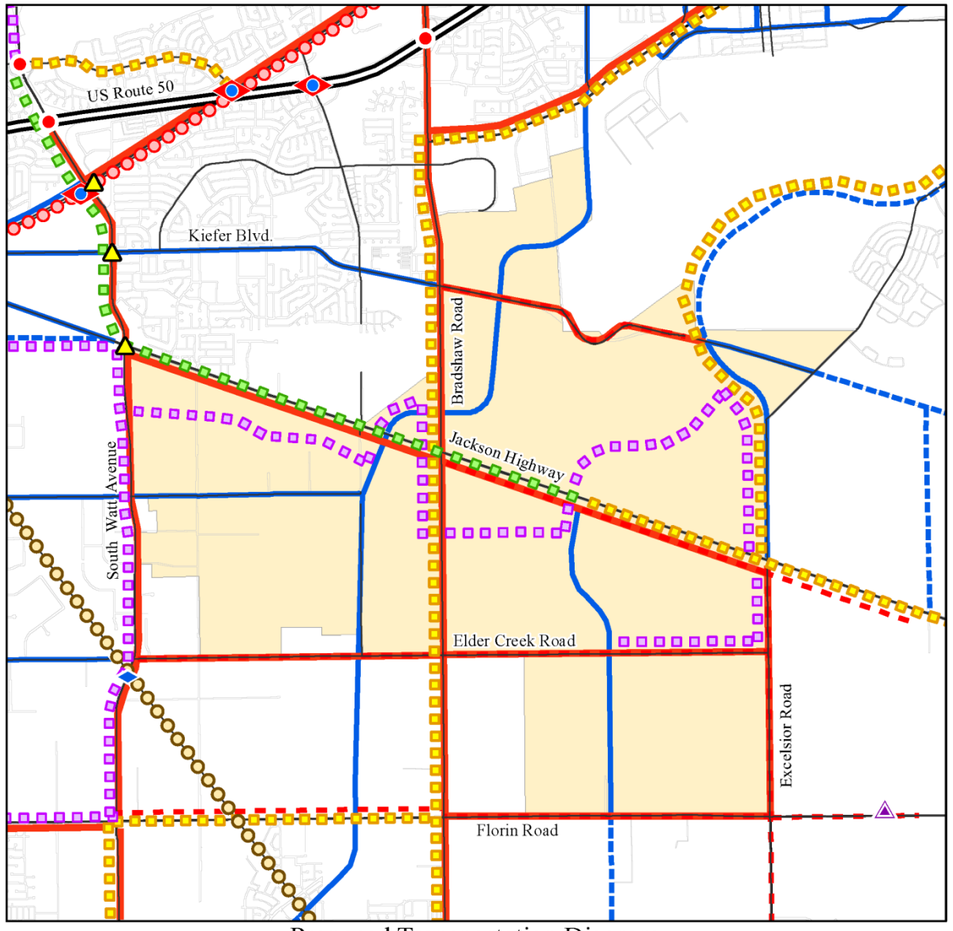
FIGURE 3
TRANSPORTATION DIAGRAM AMENDMENT EXHIBIT

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO COUNTY, CALIFORNIA
APRIL 2017



Existing Transportation Diagram



Proposed Transportation Diagram

- Freeway
- Arterial Pre - 2030
- Arterial Post - 2030
- Thorough Fare Pre 2030
- Thorough Fare Post 2030
- Future Interchange
- Existing Interchange
- Wildlife Grade Separation
- Existing Grade Separation
- Future High Capacity Intersection
- BRT - Exclusive
- BRT / HI BUS - Mixed Use Lanes
- Transportation Reservation Corridor
- Post 2030 Transit
- LRT
- Project Area

Notes:
1. FOR PRELIMINARY PLANNING PURPOSE ONLY. ACTUAL DIMENSIONS, ROAD ALIGNMENTS, ACREAGES AND YIELDS MAY VARY WITH MORE ACCURATE MAPPING AND DESIGN BOUNDARIES, PARCEL LINES AND EXISTING GENERAL PLAN BOUNDARY SHOWN PER SACRAMENTO COUNTY GIS DATABASE.
2. TRANSIT ROUTES ARE CONCEPTUAL AND SUBJECT TO CHANGE. FUTURE GENERAL PLAN AMENDMENTS ARE NOT NEEDED OR REQUIRED FOR MODIFICATIONS TO THE PLANNED TRANSIT SYSTEM.

NORTH
0 2,000 4,000 8,000
FEET

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Sacramento, CA 95816 Fax: 916.341.7767

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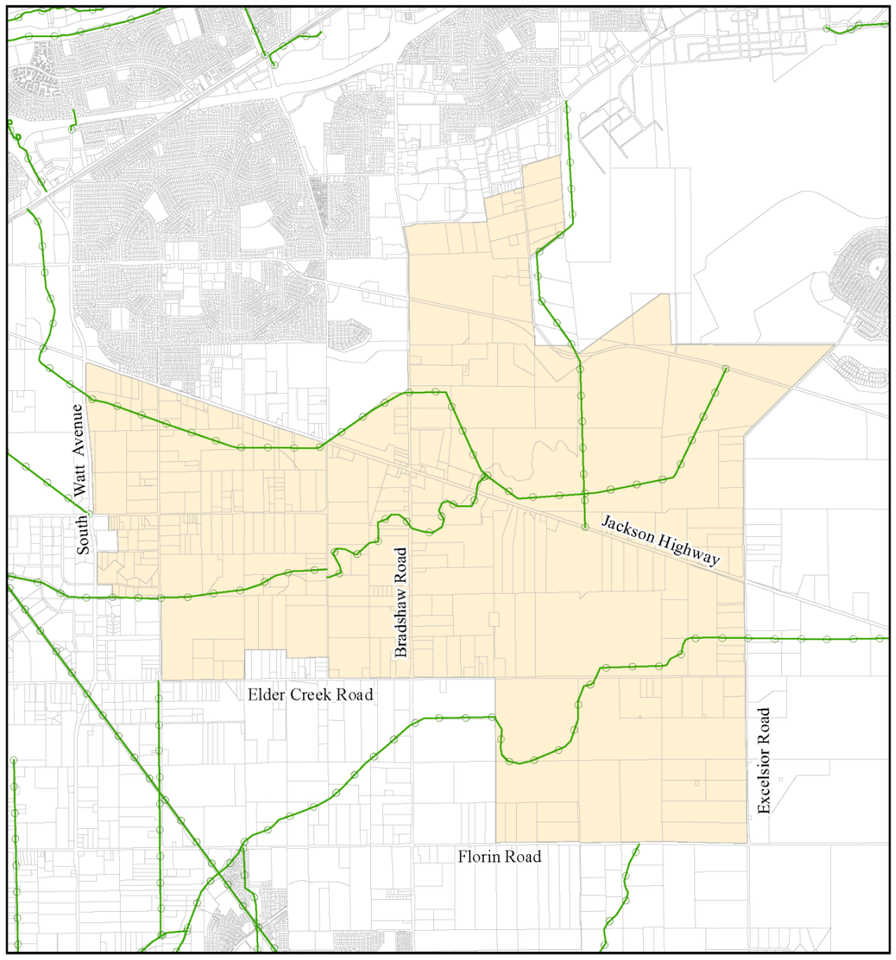
Plate NOP-9: Bicycle Master Plan Diagram

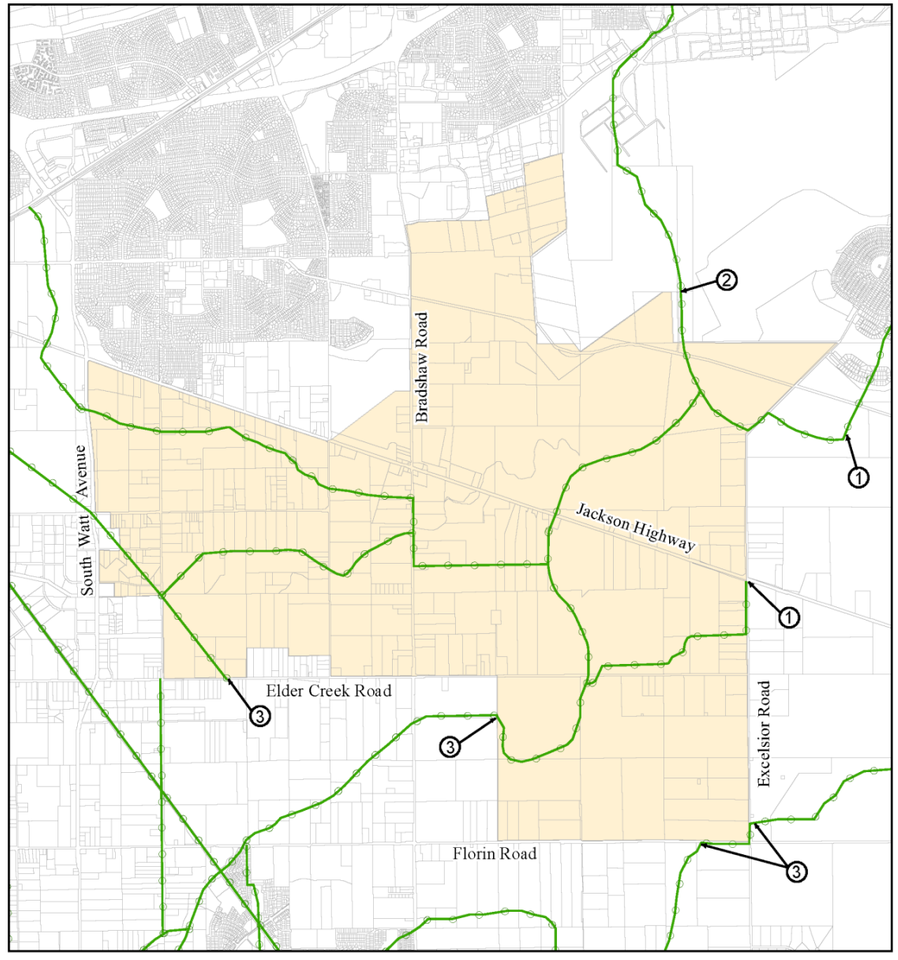
FIGURE 4
BICYCLE MASTER PLAN AMENDMENT EXHIBIT

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO COUNTY, CALIFORNIA
APRIL 2017



Existing Bicycle Master Plan



Proposed Bicycle Master Plan

Bike Trail
Project Boundary
Parcel Lines

Note:
(1) - Offsite Alignment to be determined by Jackson Township project
(2) - Offsite Alignment to be determined by Mather Airport
(3) - Offsite Alignment to be determined by Sacramento County.

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NORTH
0 2,000 4,000 8,000
FEET

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Sacramento, CA 95816 Fax: 916.341.7767

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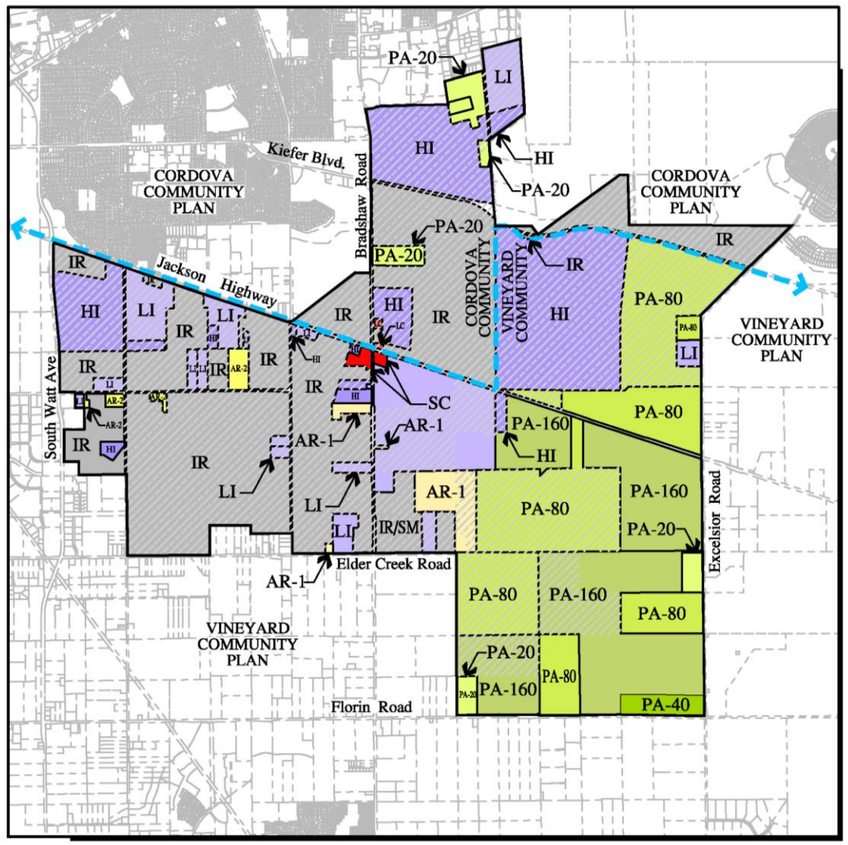
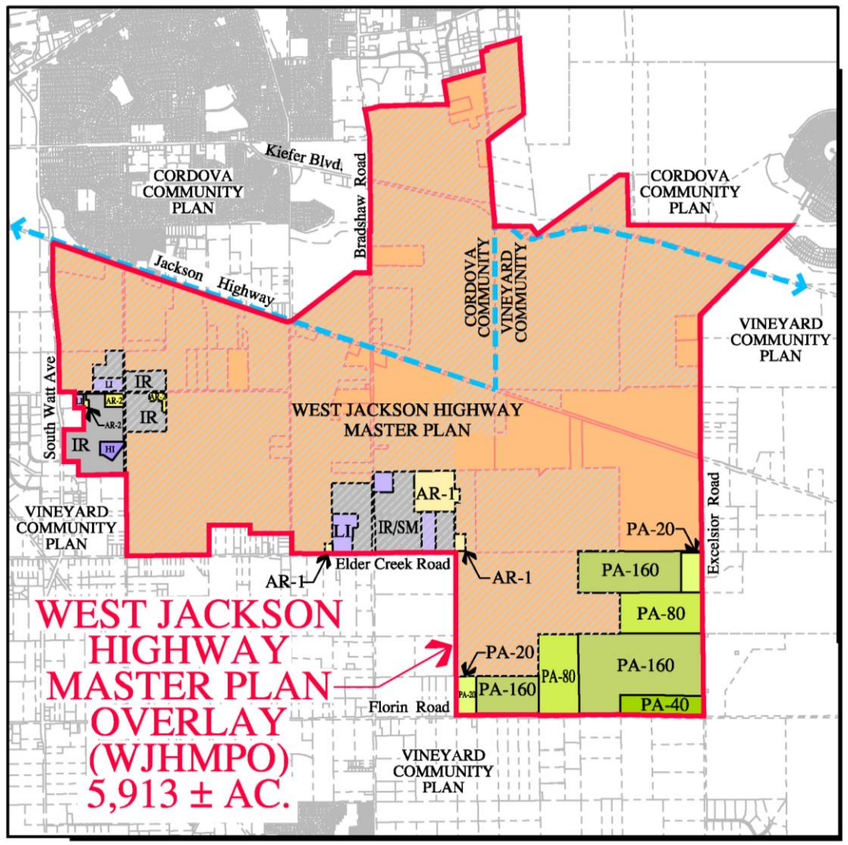
Plate NOP-10: Community Plan Amendment Exhibit

FIGURE 5
COMMUNITY PLAN AMENDMENT EXHIBIT
WEST JACKSON HIGHWAY MASTER PLAN
SACRAMENTO COUNTY, CALIFORNIA
APRIL 2017





Existing Community Plan Designations

Denotes Proposed West Jackson Highway Master Plan Overlay (5,913± Acres)

Denotes Surface Mining Overlay Zone

FOR PRELIMINARY PLANNING PURPOSES ONLY. ACTUAL DIMENSIONS, ROAD ALIGNMENTS, ACREAGES & YIELDS MAY VARY WITH MORE ACCURATE MAPPING & DESIGN. BOUNDARIES & PARCEL LINES ARE PER SACRAMENTO COUNTY GIS DATABASE. EXISTING COMMUNITY PLAN BOUNDARIES WERE DIGITIZED FROM APPROVED CORDOVA AND VINEYARD COMMUNITY AREA MAPS.

Summary

DESIGNATION	APPLICABLE COMMUNITY PLAN	LAND USE	EXISTING	PROPOSED*	DIFFERENCE
PA-20	CORDOVA	PERMANENT AGRICULTURE/AG-20	73.1	0	-73.1
LC	CORDOVA	LIMITED COMMERCIAL	3.3	0	-3.3
LI	CORDOVA	LIGHT INDUSTRIAL	58.3	0	-58.3
HI	CORDOVA	HEAVY INDUSTRIAL	286.3	0	-286.3
IR	CORDOVA	INDUSTRIAL RESERVE	657.6	0	-657.6
MAJOR ROADS	CORDOVA	MAJOR ROADS	35.7	0	-35.7
WJHMP	CORDOVA	WEST JACKSON HWY MASTER PLAN (CORDOVA)	0	1114.5	+1,114.5
PA-20	VINEYARD	PERMANENT AGRICULTURE/AG-20	38.7	38.7	0
PA-40	VINEYARD	PERMANENT AGRICULTURE/AG-40	39.4	39.4	0
PA-80	VINEYARD	PERMANENT AGRICULTURE/AG-80	1065.2	157.7	-907.5
PA-160	VINEYARD	PERMANENT AGRICULTURE/AG-160	912.6	361.9	-550.7
AR-1	VINEYARD	AGRICULTURAL-RESIDENTIAL 1	95.5	47.7	-47.8
AR-2	VINEYARD	AGRICULTURAL-RESIDENTIAL 2	30.7	11.9	-18.8
SC	VINEYARD	SHOPPING CENTER	13.5	0	-13.5
LI	VINEYARD	LIGHT INDUSTRIAL	500.6	56.4	-444.2
HI	VINEYARD	HEAVY INDUSTRIAL	658.5	7.4	-651.1
IR	VINEYARD	INDUSTRIAL RESERVE	1375.9	286.5	-1,089.4
WJHMP	VINEYARD/CORDOVA	WEST JACKSON HWY MASTER PLAN (VINEYARD)	0	5777.1	+5,777.1
MAJOR ROADS	CORDOVA/VINEYARD	MAJOR ROADS	68.6	14.3	-54.3
TOTAL			5,913.3 AC	5,913.3 AC	

Proposed Community Plan Designations w/ Overlay

NORTH
0 2,000 4,000 8,000

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C St, Bldg. 100-B Sacramento, CA 95816
Tel 916.341.7760 Fax 916.341.7767

4:\1000-s\1426-RockCreek\Dev_Brighton_SP\Dev_Brighton_SP\Planning\Exhibits\EXH_CPA_AMENDMENT_FIGURE_5.dwg 4/17/2017 2:52 PM Jeanette Marcelo

Plate NOP-11: Rezone Exhibit

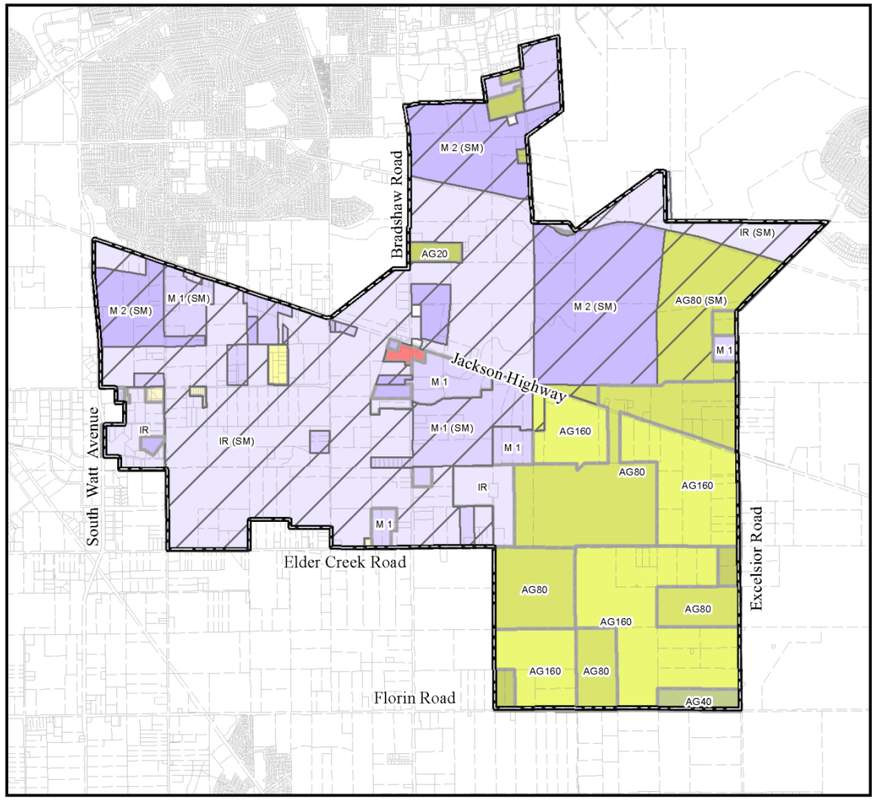
FIGURE 8

EXISTING AND PROPOSED ZONING EXHIBIT

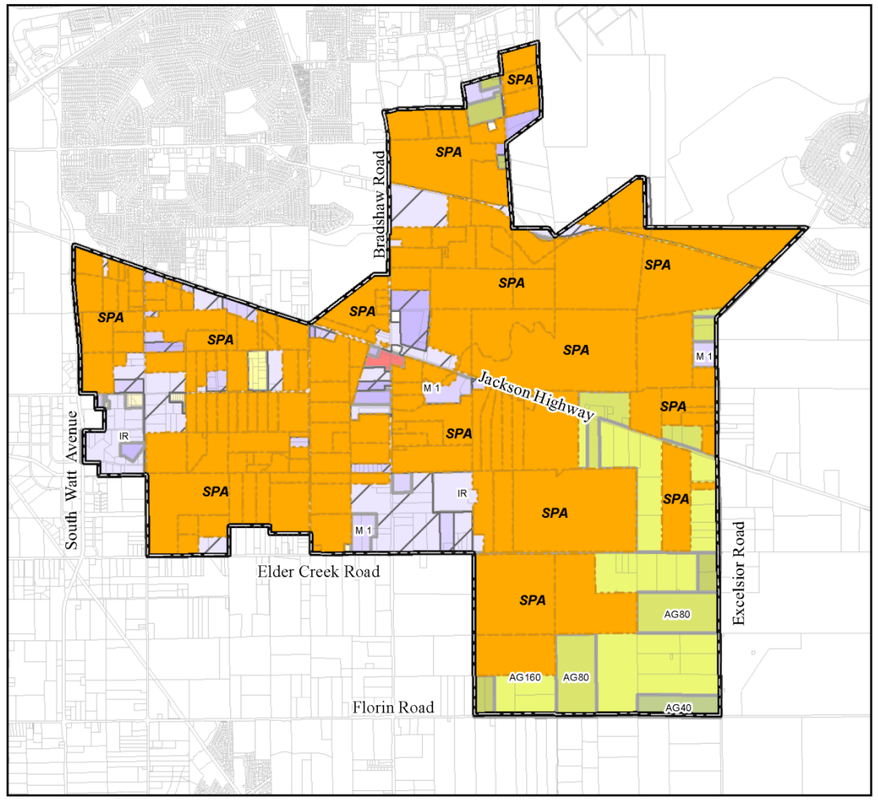
WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO COUNTY, CALIFORNIA

APRIL 2017



Existing Zoning



Proposed Zoning

ZONE

Parcel Lines
Right of Way Lines
SPA - Special Planning Area
Project Boundary

AG20 (SM)
AG80 (SM)
AG160 (SM)
M 1 (SM)
M 2 (SM)
IR (SM)
AG20
AG40
AG80
AG160
AR 1
AR 2
LC
GC
M1
M 2
IR

DESIGNATION	LAND USE	EXISTING	PROPOSED*	DIFFERENCE
AG-20	PERMANENT AGRICULTURE INTENSIVE	97.9	71.8	- 26.1
AG-40	PERMANENT AGRICULTURE INTENSIVE	44.6	44.6	0.0
AG-80	PERMANENT AGRICULTURE EXTENSIVE	1082.6	264.1	- 818.5
AG-160	PERMANENT AGRICULTURE EXTENSIVE	947.9	560.4	- 387.5
AR-1	AGRICULTURAL-RESIDENTIAL (1 AC MIN)	23.4	23.4	0.0
AR-2	AGRICULTURAL-RESIDENTIAL (2 AC MIN)	29.7	29.7	0.0
LC	LIMITED COMMERCIAL	4.5	4.5	0.0
GC	GENERAL COMMERCIAL	14.6	14.2	- 0.4
M1	LIGHT INDUSTRIAL	601.9	193.8	- 408.1
M2	HEAVY INDUSTRIAL	948.7	117.9	- 830.8
IR	INDUSTRIAL RESERVE	2117.5	509.9	- 1607.6
SPA	SPECIAL PLANNING AREA	0.0	4079.0	+ 4,079.0
TOTAL		5,913.3 AC	5,913.3 AC	0.0

NORTH

0 2,000 4,000 8,000

FEET

WOOD RODGERS
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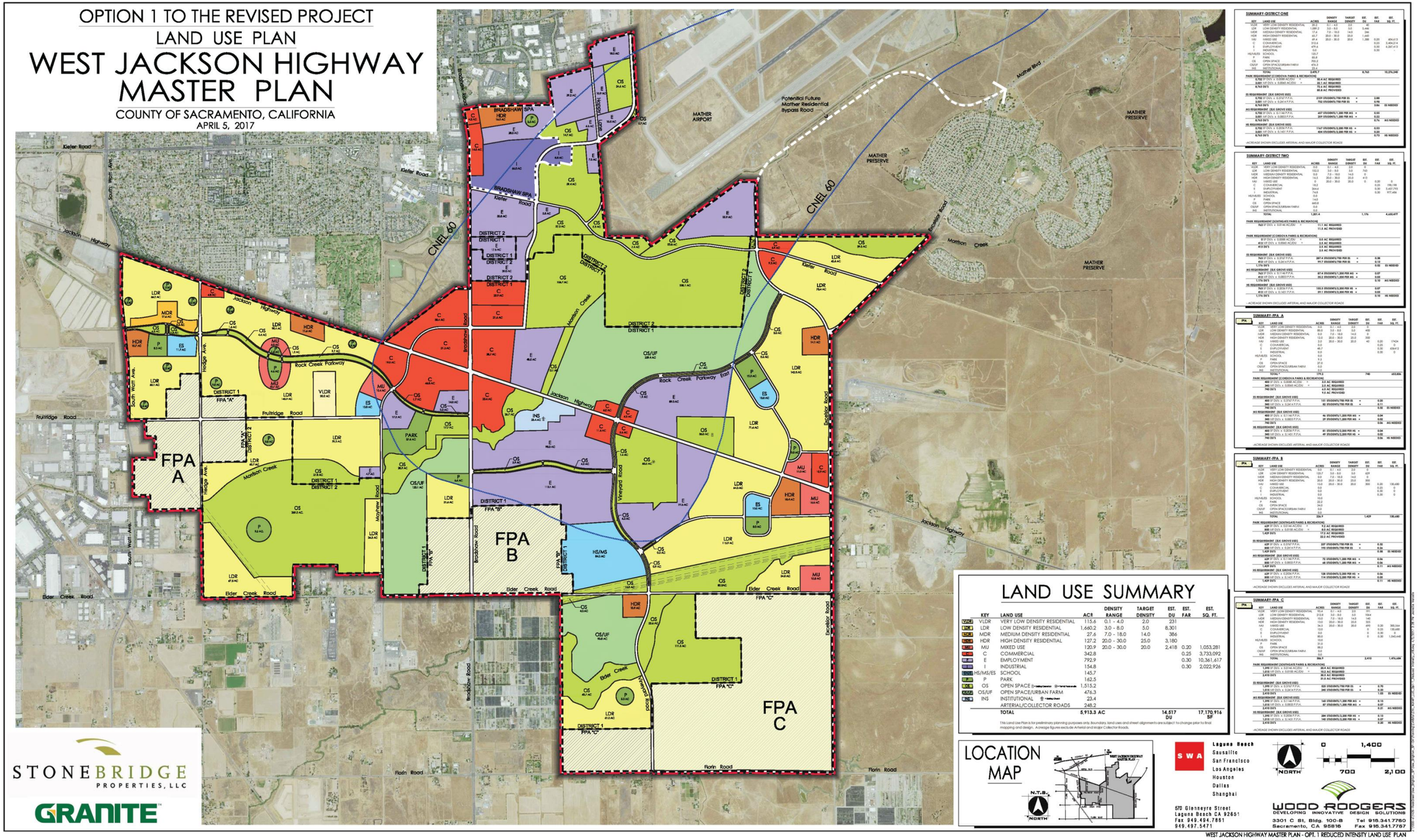
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

J:\1000-s\1426-Teichert\1426-Teichert-OA\GIS\Tasks\Figure_8_Zoning_Exhibit_20170201_V1.mxd

Plate NOP-12: Option One – Middle/High School Site in District 1



KEY	LAND USE	ACRES	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	0.1 - 4.0	2.0	231		
LDR	LOW DENSITY RESIDENTIAL	1,660.2	3.0 - 8.0	5.0	8,301		
MDR	MEDIUM DENSITY RESIDENTIAL	27.6	7.0 - 18.0	14.0	386		
HDR	HIGH DENSITY RESIDENTIAL	127.2	20.0 - 30.0	25.0	3,180		
MU	MIXED USE	120.9	20.0 - 30.0	20.0	2,418	0.20	1,053,281
C	COMMERCIAL	342.8				0.25	3,733,092
E	EMPLOYMENT	792.9				0.30	10,361,617
I	INDUSTRIAL	154.8				0.30	2,022,926
HS/MS/ES	SCHOOL	145.7					
P	PARK	162.5					
OS	OPEN SPACE	1,515.2					
OS/UF	OPEN SPACE/URBAN FARM	476.3					
INS	INSTITUTIONAL	23.4					
	ARTERIAL/COLLECTOR ROADS	248.2					
	TOTAL	5,913.3 AC			14,517 DU		17,170,916 SF

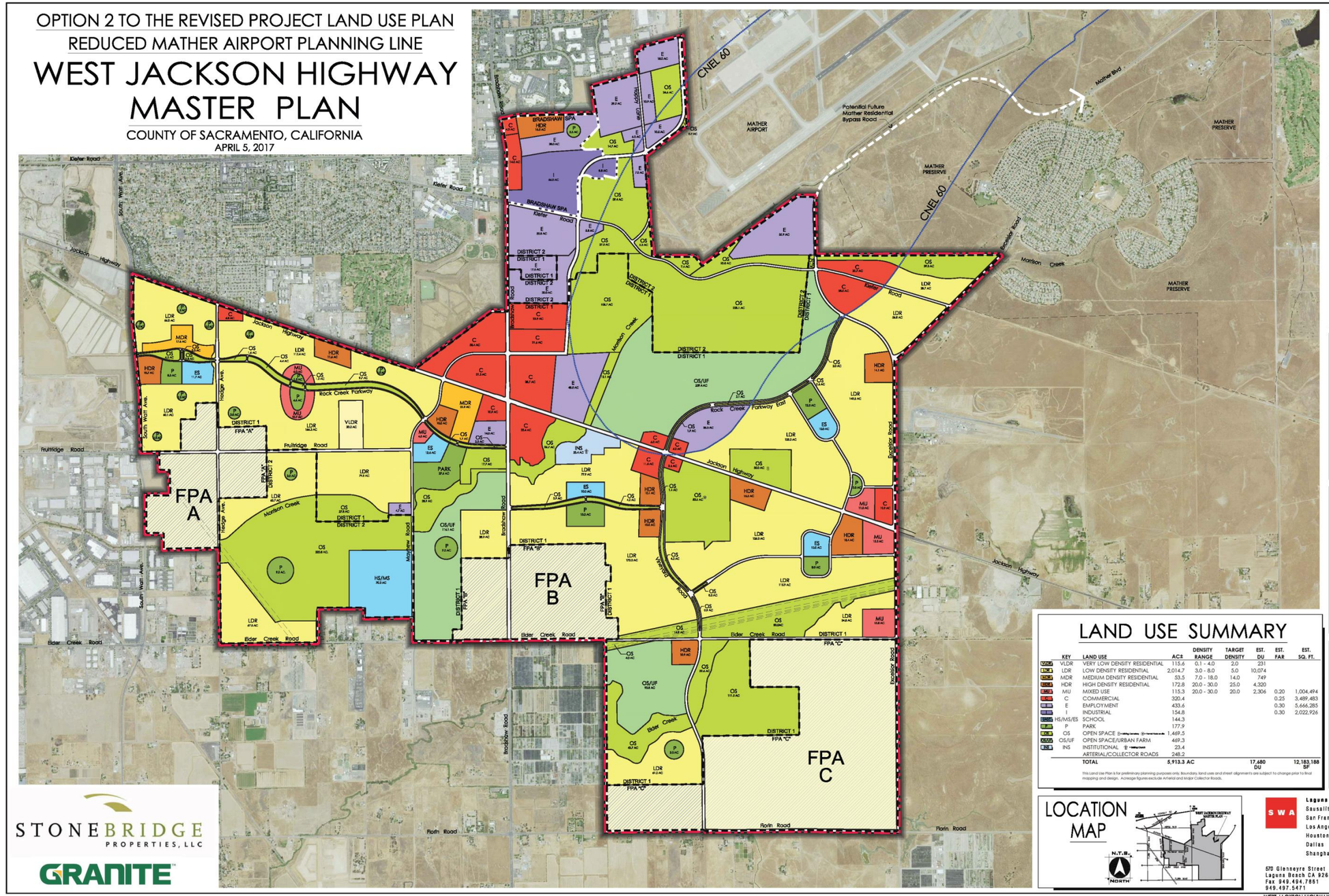
This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

Plate NOP-13: Option 2 – Reduced Noise Contour With Middle/High School Site in District 2

OPTION 2 TO THE REVISED PROJECT LAND USE PLAN
REDUCED MATHER AIRPORT PLANNING LINE

WEST JACKSON HIGHWAY MASTER PLAN

COUNTY OF SACRAMENTO, CALIFORNIA
APRIL 5, 2017



LAND USE SUMMARY

KEY	LAND USE	ACS	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	0.1 - 4.0	2.0	231		
LDR	LOW DENSITY RESIDENTIAL	2,014.7	3.0 - 8.0	5.0	10,074		
MDR	MEDIUM DENSITY RESIDENTIAL	53.5	7.0 - 18.0	14.0	749		
HDR	HIGH DENSITY RESIDENTIAL	172.8	20.0 - 30.0	25.0	4,320		
MU	MIXED USE	115.3	20.0 - 30.0	20.0	2,306	0.20	1,004,494
C	COMMERCIAL	320.4				0.25	3,489,483
E	EMPLOYMENT	433.6				0.30	5,666,285
I	INDUSTRIAL	154.8				0.30	2,022,926
HS/MS/ES	SCHOOL	144.3					
P	PARK	177.9					
OS	OPEN SPACE	1,469.5					
OS/UF	OPEN SPACE/URBAN FARM	469.3					
INS	INSTITUTIONAL	23.4					
	ARTERIAL/COLLECTOR ROADS	248.2					
	TOTAL	5,913.3 AC			17,680 DU		12,183,188 SF

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

LOCATION MAP

STONEBRIDGE PROPERTIES, LLC

GRANITE

SWA
Laguna Beach
Sausalito
San Francisco
Los Angeles
Houston
Dallas
Shanghai

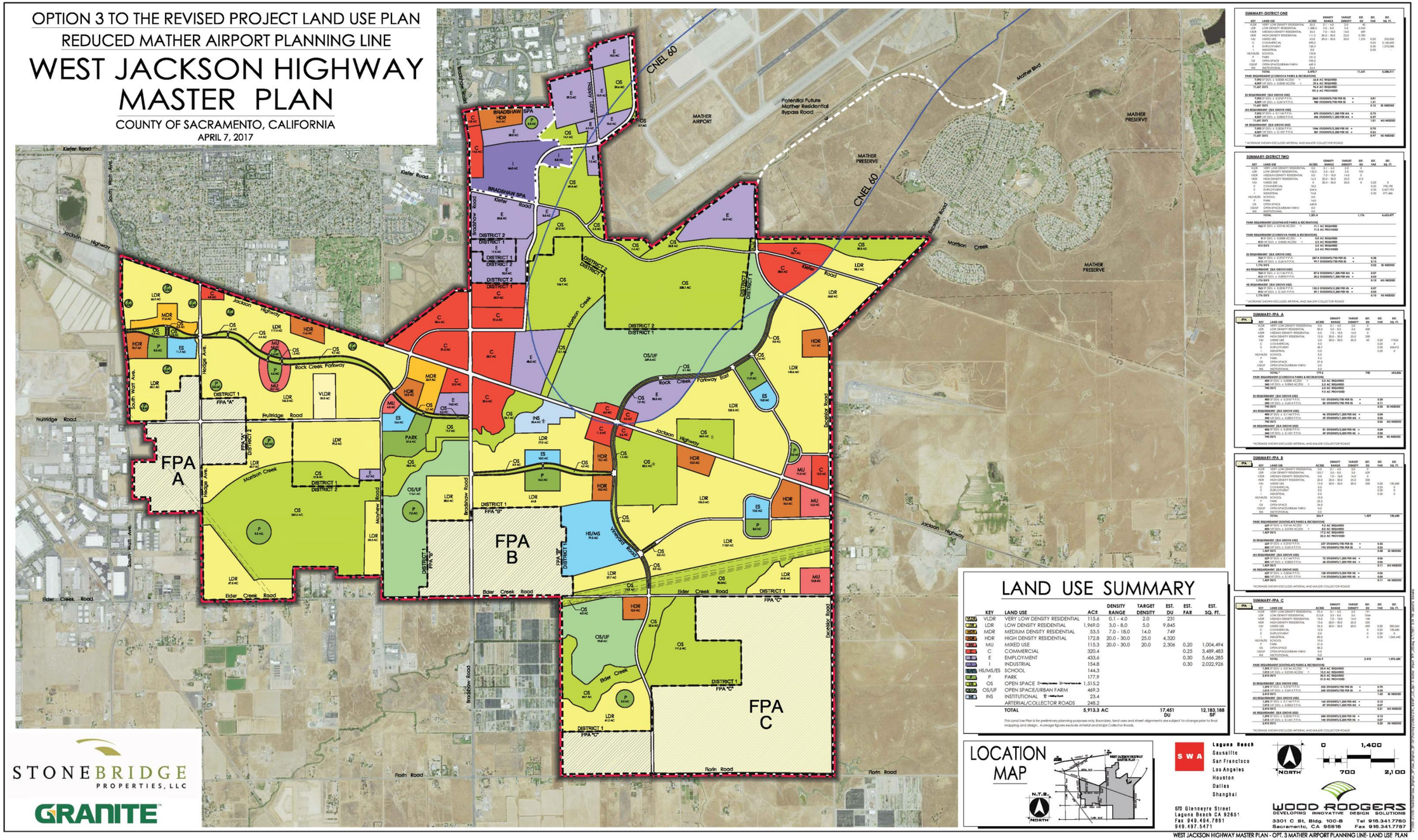
570 Glenneyre Street
Laguna Beach CA 92651
Fax 949.494.7851
949.497.5471

NORTH
0 700 1,400 2,100

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C St, Bldg. 100-B Tel 916.341.7760
Sacramento, CA 95816 Fax 916.341.7767

WEST JACKSON HIGHWAY MASTER PLAN - OPT. 2 MATHER AIRPORT PLANNING LINE- LAND USE PLAN

Plate NOP-14: Option 3 – Reduced Noise Contour With Middle/High School Site in District 1



KEY	LAND USE	ACS	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	0.1 - 4.0	2.0	231		
LDR	LOW DENSITY RESIDENTIAL	1,969.0	3.0 - 8.0	5.0	9,845		
MDR	MEDIUM DENSITY RESIDENTIAL	53.5	7.0 - 18.0	14.0	749		
HDR	HIGH DENSITY RESIDENTIAL	172.8	20.0 - 30.0	25.0	4,320		
MU	MIXED USE	115.3	20.0 - 30.0	20.0	2,306	0.20	1,004,494
C	COMMERCIAL	320.4				0.25	3,489,483
E	EMPLOYMENT	433.6				0.30	5,666,285
I	INDUSTRIAL	154.8				0.30	2,022,926
HS/MS/ES	SCHOOL	144.3					
P	PARK	177.9					
OS	OPEN SPACE	1,515.2					
OS/UF	OPEN SPACE/URBAN FARM	469.3					
INS	INSTITUTIONAL	23.4					
	ARTERIAL/COLLECTOR ROADS	248.2					
	TOTAL	5,913.3 AC			17,451 DU		12,183,188 SF

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

SWA
Laguna Beach
Sausalito
San Francisco
Los Angeles
Houston
Dallas
Shanghai
570 Glenneyre Street
Laguna Beach CA 92651
Fax 949.494.7861
949.497.5471

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C St, Bldg. 100-B Tel 916.341.7760
Sacramento, CA 95816 Fax 916.341.7767

Agricultural Commissioner/
Director of Weights & Measures
Juli D. Jensen, Agricultural Commissioner

County of Sacramento

County Executive
Nav Gill

Assistant County Executive
Nancy Newton

May 17, 2017

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

RE: NOP DEIR West Jackson Hwy Master Plan (PLNP2008-GPB-CZB-ZOB-00240)

Dear Ms. Hack,

The Sacramento County Department of Agriculture has reviewed the Revised Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan, released by the Department of Community Development. We have two main areas of concern. One concern is the close proximity of a proposed residential development to a long established commercial nursery, Village Nursery. The other is in regards to the middle/high school placement in Option 1 and Option 3 (See Plate NOP-12 and Plate NOP-14).

In Option 1 and Option 3, the Project Applicants, with input from the Elk Grove Unified School District, has proposed to place a middle/high school within a ¼ mile from a well-established commercial agricultural operation; Village Nursery. Village Nursery is located at 6901 Bradshaw Road, between Elder Creek Road and Florin Road. The business operation encompasses over 250 acres of propagation and growing grounds. The California Department of Pesticide Regulation is currently in the process of creating regulations that will require commercial agricultural operations within ¼ mile of a public K-12 school or daycare center, to provide notification of all agricultural pesticides used by that operation. The regulations will also restrict specific types of pesticide applications during normal school hours. Village Nursery applies pesticides to its nursery stock as part of its normal business practices. The placement of a public school within close proximity to an established agricultural operation will have negative impacts on the business and exacerbate the already existing conflict of pesticide use near schools. The Sacramento County Department of Agriculture finds the Revised Project Land Use Plan (Plate NOP-5) to be less impactful in regards to the placement of the middle/high school, as it locates the school approximately ½ mile from the commercial nursery.

As residential and urban uses encroach upon existing agricultural operations, complaints regarding pesticide use, odor, noise, or dust associated with accepted farming practices can create economic hardships for agricultural operations, sometimes making it difficult for them to stay in business. The West Jackson Highway Master Plan proposes low density residential (LDR) housing adjacent to the southeast area of the Village Nursery operation. Consistent with Sacramento County's General Plan (GP) Policy AG-3, we recommend that an open space buffer of a minimum of 500 feet be placed between the existing nursery operation and any proposed residential development to help mitigate any negative impacts to the nursery operation or potential future residents. We also recommend that the Project Applicants comply with GP Policy AG-4, ensuring that prospective buyers of homes in the area are alerted to locally accepted farming practices.

Respectfully,

Chrisandra J. Flores
Chief Deputy Agricultural Commissioner

Butterfield-Riviera East
Community Association
10011 Folsom Blvd, PMB 143
Sacramento, CA 95827

March 22, 2017

Catherine Hack
Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

Via e-mail: CEQA@saccounty.net

Re: Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control No. PLNP2008-GPB-CZB-ZOB-00240)

Ms. Hack:

Thank you for sending the Butterfield-Riviera East Community Association (BRECA) the Notice Of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for (the) West Jackson Highway Master Plan (Control No. PLNP2008-GPB-CZB-ZOB-00240), dated February 15, 2017. Please note that the envelope we received was postmarked February 22, 2017, and likely received by us around February 24, 2017. Thus, 30 days after receipt of the NOP would be about March 26, 2017. These are our comments on the NOP.

BRECA is a membership-based, non-profit community organization. Our goals are to promote citizen involvement and to enhance the community. Our boundaries are Folsom Blvd. on the south, the American River on the north, the Mayhew Drain on the West, and Paseo Rio Dr. on the east.

Our primary concern is the potential impacts of traffic from the proposed West Jackson Highway developments on our community. We note that Bradshaw Road roughly bisects the West Jackson Highway area, and appears to be the shortest route to Highway 50 from that area. Also, Bradshaw Road would be utilized by people who desire to access the Butterfield Light Rail station, located a short distance west of Bradshaw Road on Folsom Blvd. Bradshaw Road is the shortest route from our community to Highway 50, and also the access to many shopping areas and other features (e.g. the Sacramento County Animal Shelter) near our community.

So, we recommend that the DEIR for the West Jackson Highway Master Plan include study and reporting of traffic impacts on all thoroughfares that access Highway 50 and/or Folsom Blvd. from the West Jackson Highway area. This would specifically include Bradshaw Road up to Folsom Blvd and any parts of Folsom Blvd. that are impacted. Cumulative impacts from other planned developments adjacent to the West Jackson Highway area should also be studied and reported.

Thank you for your attention to the above comments.

Should you with to contact BRECA, please contact James Morgan at jmorgan1@ix.netcom.com or Gay Jones at h2ogay@pacbell.net, or at the BRECA address, above.

Sincerely,

James Morgan

James Morgan
BRECA Secretary

cc: Terry Dugan, Rosemont Community Association
BRECA Steering Committee

DEPARTMENT OF TRANSPORTATION
DISTRICT 3 – SACRAMENTO AREA OFFICE
2379 GATEWAY OAKS DRIVE, STE 150 – MS 19
SACRAMENTO, CA 95833
PHONE (916) 274-0635
FAX (916) 263-1796
TTY 711

Serious drought.
Help save water!

April 4, 2017

03-SAC-2017-00115
SCH # 2013092021

Catherine Hack
Sacramento County
827 Seventh Street, Room 225
Sacramento, CA 95814

Notice of Preparation (NOP) for the West Jackson Highway Master Plan draft Environmental Impact Report (EIR)

Dear Ms. Hack:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the project referenced above. The mission of Caltrans is to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. The Local Development-Intergovernmental Review (LD-IGR) Program reviews land use projects and plans through the lenses of our mission and state planning priorities of infill, conservation, and travel-efficient development. To ensure a safe and efficient transportation system, we encourage early consultation and coordination with local jurisdictions and project proponents on all development projects that utilize the multimodal transportation network.

This NOP is a revision of the 2013 NOP submitted by Sacramento County. Since that time, the Project Applicants and Sacramento County staff have modified the original project, as reflected in this current Notice of Preparation. The revised plan proposes 2,112 acres of residential units, approximately 1,310 acres of commercial, employment and industrial land uses, and approximately 1,767 acres in parks and recreational space. The plan limits are generally State Route (SR) 16 (Jackson Highway), Kiefer Boulevard and Goethe Road to the north, portions of Elder Creek Road and Florin Road to the south, the City of Sacramento to the west and Excelsior Road to the east. The following comments are based on the NOP.

Vehicle Miles Traveled (VMT)

A development of this scale has the potential to dramatically increase VMT on the SHS. Given that Caltrans current guidelines are in the process of being updated, a transportation impact study scoping

meeting with District staff could be used to discuss the most appropriate methodology for this analysis. It is suggested that the analysis provide the following:

1. Vicinity maps, regional location map, and a site plan clearly showing project access in relation to nearby roadways and key destinations. Clearly identify the SHS and local roads, intersections and interchanges, pedestrian and bicycle routes, car/bike parking, and transit routes and facilities should be mapped.

2. Project-related VMT including per capita use of transit, rideshare or active transportation modes and VMT reduction factors. The assumption and methodologies used to develop this information should be supported with appropriate documentation.

3. Schematic illustrations of walking, biking and auto traffic conditions at the project site and study area roadways, trip distribution percentages and volumes as well as intersection geometrics, i.e., lane configurations, for AM and PM peak periods. Operational concerns for all road users that may increase the potential for future collisions should be identified and fully mitigated, including nearby SHS interchanges and intersections. This includes SR 16 from the previously relinquished section to Sunrise Boulevard.

Multimodal transportation such as high frequency bus service and bike and pedestrian infrastructure can be considered to reduce VMT, along with other transportation demand management measures. The Master Plan should also consider incorporating walkable neighborhoods and a jobs/housing balance to help ensure VMT impacts to the SHS are minimized. Please also provide Synchro output for Length of Queue for all potential significantly impacted U.S. Highway 50 off-ramps.

Relinquishment

Caltrans has entered into discussions with the County of Sacramento and the City of Rancho Cordova to relinquish SR 16 between Watt Avenue and Grant Line Road. Should the relinquishment occur and the County take ownership of this facility segment, then Caltrans will have no approval role on any or all modifications to the segment relinquished to the County. However, should relinquishment not occur, or occur after construction of the West Jackson Highway Master Plan, Caltrans cannot approve any design changes that would not comply with the design standards set forth by the Highway Design Manual, and cannot approve facility modifications that are incompatible with the SR 16 Transportation Concept Report (TCR). Caltrans is available to discuss the Highway Design Manual requirements which include standards for multimodal facilities.

Amador County Impacts

The Amador County Transportation Commission has expressed concerns to Caltrans District 10 about the effects of the project and the associated Master Plans to interregional travel on SR 16. In coordination with Caltrans District 10, District 3 encourages SACOG and the lead agencies for the four Master Plans to coordinate on incorporating signal coordination, incident management, and travel demand management along with the new roadway, transit, and active transportation facilities to keep the highway working efficiently for all users. Including park and ride facilities and coordinating the existing

Amador Transit commuter service with planned Bus Rapid Transit and other transit, can work to reduce single occupant vehicle commute miles and reduce VMT.

Traffic Management Plan (TMP)

If it is determined that traffic restrictions and detours are needed on or affecting State highways, a TMP or construction Traffic Impact Study may be required of the developer for approval by Caltrans prior to construction. TMPs must be prepared in accordance with Caltrans' *Manual on Uniform Traffic Control Devices*. Further information is available for download at the following web address: http://www.dot.ca.gov/trafficops/camutcd/docs/CAMUTCD2014-Part6_rev1.pdf

Please provide our office with copies of any further actions regarding this project. We would appreciate the opportunity to review and comment on any changes related to this development.

If you have any questions regarding these comments or require additional information, please contact Alex Fong, Intergovernmental Review Coordinator at (916) 274-0566 or by email at: Alexander.Fong@dot.ca.gov.

Sincerely,

Eric Fredericks

ERIC FREDERICKS, Chief
Office of Transportation Planning – South Branch

c: State Clearinghouse
Carl Baker, Senior Transportation Planner, Caltrans District 10

a fresh take.
RANCHO CORDOVA
CALIFORNIA

TAS

April 20, 2017

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225,
Sacramento, CA 95814
e-mail at: CEQA@saccounty.net.

RE: West Jackson Highway Master Plan, Revised Notice of Preparation

Dear Ms. Hack,

The City of Rancho Cordova Public Works Department appreciates the opportunity to comment on the subject revised NOP. We understand that planning for this project has been in progress for a few years and that the City was able to comment and participate in the initial noticing process in 2013. With that in mind, we have prepared the following comments based on the revised NOP. We hope to continue our strong working relationship as these projects move forward.

Generally, we are interested in the effects of the West Jackson development on the City of Rancho Cordova's transportation and public utility systems. Access to Highway 50, the RT Gold Line and the American River Parkway should be coordinated with City planning efforts. We hope to be able to work with you on the updates to the County General Plan Transportation Plan, the County Bikeway Master Plan, Urban Services Plan and the Zone 40 Water Supply Master Plan. Our intent in these discussions would be to create seamless multi-jurisdictional services.

The new 4 lane connection to the Old Placerville Road/Routier Road intersection is an example of where the City and County should coordinate on roadway sizing needs. The City is currently contemplating reducing Routier Road to a 2 lane facility and we would like to understand how the West Jackson 4-lane roadway connection impacts that proposal. We also have a plan that envisions Peter A. McCuen

Boulevard as a 4 lane roadway in its ultimate configuration. This NOP indicates that this road would be a thoroughfare (6 lanes).

We are encouraged by the West Jackson bikeway concept. The new facility connecting through the Mather Airport property will tie in nicely with our UP Railroad Spur Bike Trail project. We hope to continue coordinating our bikeway planning efforts.

Lastly, we would like to discuss how transit service can be coordinated. Access to the RT Gold Line will be important and we hope to integrate the City's transit service with your transit service plan. We also feel that with a large job base in Rancho Cordova that there may be opportunities to provide good transit connections between Rancho Cordova and West Jackson residents.

Our historical City/County coordination is highly valued by the City and we hope to continue these efforts.

Sincerely

Elizabeth Sparkman

Elizabeth Sparkman, PE
Engineering Manager
Public Works Department

City of
SACRAMENTO
Department of Public Works

Transportation Division

City Hall
915 I Street, 2nd Floor
Sacramento, CA 95814-2604
(916) 808-5307

June 22, 2017

Catherine Hack, Environmental Coordinator
County of Sacramento
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814
Email: CEQA@saccounty.net

SUBJECT: **Revised Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number PLNP2008-GPB-CZB-ZOB-00240)**

Dear Ms. Hack:

We appreciate the opportunity to review the revised Notice of Preparation of a DEIR for West Jackson Highway Master Plan.

Please address the comments we have submitted on the NOP on October 9, 2013 (comment letter attached) in the Transportation and Circulation section of the DEIR for the Jackson Highway Master Plan.

Please provide our office with copies of any further actions regarding this project. We would appreciate the opportunity to review and comment on any changes related to this development.

If you have any questions regarding these comments, please contact me at (916) 808-7610 or by email at jmatsui-drury@cityofsacramento.org

Sincerely,

Judy Matsui-Drury, PE
Senior Engineer
City of Sacramento

DEPARTMENT OF
PUBLIC WORKS

TRANSPORTATION DIVISION

CITY OF SACRAMENTO
CALIFORNIA

915 I STREET, Room 2000
SACRAMENTO, CA
95814-2604

PH. (916) 808-5307
FAX (916) 808-8404

October 9, 2013

VIA EMAIL

DERA@saccounty.net

Catherine Hack, Environmental Coordinator
County of Sacramento
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 220
Sacramento, CA 95814

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number PLNP2008-00240)

Dear Ms. Hack:

Thank you for including the City of Sacramento Department of Public Works in the NOP reviews process for the West Jackson Highway Master Plan DEIR. The proposed Project is located along State Route 16 (Jackson Highway). The Project boundaries are generally Jackson Highway, Kiefer Boulevard and Goethe Road to the north, portions of Elder Creek and Florin Road to the south, the City of Sacramento to the west and Excelsior Road to the east.

The City of Sacramento has been involved in the development of the scope of work for the traffic impact study for the project which will consider all possible impacts to City of Sacramento intersections and roadways. The scope of work should include city facilities on Jackson Road, Kiefer Boulevard, and Folsom Boulevard, 14th Avenue, S. Watt Avenue, Florin Perkins Road, and Power Inn Road within the City of Sacramento jurisdiction. Please ensure that the following intersections and roadway segments are included the in the study area:

1. S. Watt Avenue and Folsom Boulevard
2. S. Watt Avenue and Jackson Road
3. Power Inn Road and Folsom Boulevard

4. Power Inn Road and 14th Avenue
5. Jackson Road and Folsom Boulevard
6. Jackson Road and 14th Avenue (future)
7. Florin Perkins Road and Folsom Boulevard
8. Florin Perkins Road and Kiefer Boulevard
9. 14th Avenue Power Inn Road to Florin Perkins Road
10. 14th Avenue – Florin Perkins Road to Jackson Road

Please note that the City of Sacramento General Plan Mobility policies and goals should be considered while analyzing City's facilities. For example, the traffic impact study should assume the future extension of 14th Avenue and the realignment of Jackson Road within City of Sacramento.

We would like to be able to review any proposed mitigation measure to any city facility and be involved in the discussion regarding the preparation of the finance plan of this project, specifically regarding any improvements to be proposed within the City of Sacramento jurisdiction.

If you have any questions regarding these comments or require additional information, please contact Aelita Milatzo of my staff at (916) 808-1953 or by email at: amilatzo@cityofsacramento.org

Sincerely,

Samar Hajeer

Samar Hajeer
Senior Engineer

Other Business: Chairperson Jones requested that the West Jackson Highway Master Plan Revised Notice of Preparation (NOP) (Control No. PLNP2008-00240) be added to the agenda since the deadline for the comment period was approaching (May 26, 2017). She wanted the CPAC members to have the opportunity to provide comments on the revised NOP at the meeting. The following comments were noted for the preparation of the Draft EIR:

- Traffic and Cumulative Impacts – Concerns about impacts to US Hwy 50 and Bradshaw Road and how this will impact the Rosemont and Butterfield-Riviera East (BRECA) community area.
- Bike Trails – General concerns about the community being designed for walkability and bikeability rather than an auto-oriented development. Emphasis was placed on providing visible and safe ped/bike crossings that are controlled (signaled) and with appropriate lighting and timing constraints. Upgrading to Class A bike trails and not using bike tunnels were requested. Concern was expressed on how ped/bike crossings would be addressed for rural roads within the Jackson Highway corridor such as Elder Creek, Florin, and Excelsior Roads. CPAC members requested that SABA (Sacramento Area Bicycle Advocates) and BARC (Bicycle Advocates for Rancho Cordova) are included in public outreach and discussions related to biketrail connectivity, design, and crossings for this project (and other Jackson Highway Master Plan projects). The issue of biketrails and connectivity within the Master Plan projects has been an overall concern with the CORPAC members for several years.
- Parks – The project area has multiple park districts (Southgate and Cordova Rec and Park Districts). CPAC members requested appropriate land dedication for parks is achieved within the project area (appropriate level of parkland dedicated per population). They requested that the standards were either met or exceeded. They also requested the need for comments from all appropriate park and recreation agencies within the project area.
- Transit – CPAC members requested that public transit and access to transit be addressed in the Draft EIR. In general, CPAC members expressed concerns with all forms of connectivity within the plan area and adjacent master plans, including transit, pedestrian/bike, bridge, and sewer connectivity.
- Water – Questions were asked regarding where the water would come from to serve the proposed development, either through basins, overdraft, etc.. CPAC members requested a detailed origin of water sources be addressed in the Draft EIR. CPAC members also asked whether purple water pipes will be included as part of the plan.
- Mixed Use – Comment that the revised land use plan shows a large amount of low density residential development. Considering the market, is there more opportunity for mixed use development? This should be further evaluated for the plan area, since a small amount is designated on the revised land use plan.

CPAC members recommended that County staff compile NOP comments in an official document and submit to PER as part of NOP comments. The request was approved by all CPAC members (motion by M. Strella, seconded by E. Heath).

Cordova
Recreation & Park District

June 1, 2017

Via Email to: CEQA@saccounty.net

Catherine Hack, Environmental Coordinator
County of Sacramento Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

RE: Control Number PLNP2008-GPB-CZB-ZOB-00240 – West Jackson Highway Master Plan – Revised Notice of Preparation dated April 26, 2017
Comments by Cordova Recreation and Park District

Dear Ms. Hack,

The proposed West Jackson Highway Master Plan (WJHMP) is 5,913 acres. Approximately 2,845 acres of the WJHMP is within the boundaries of Cordova Recreation and Park District (the "District" or CRPD). The remaining WJHMP acreage is within the Southgate Recreation and Park District. None of the maps found in the Revised Notice of Preparation (rNOP) clearly illustrate the boundary separating CRPD and Southgate Recreation and Park District. A land use plan map that clearly illustrates the boundary between the park districts should be provided. This will allow a more thorough analysis of proposed dwelling units and Quimby park land dedication requirements for each District.

Comments on the original Notice of Preparation for WJHMP were submitted to the County by CRPD on October 17, 2013 (attached for reference). The comments below supplement earlier comments provided by CRPD.

District staff met with applicant representatives and County planning staff on March 23, 2017 to gather additional information while preparing comments on the rNOP.

Land Use
The District's adopted Level of Service (LOS) states 52% of the Quimby park land dedication should be in community park land. The WJHMP Land Use Plan dated April 5, 2017 does not currently show any community parks inside the CRPD boundary that are 15 acres or greater (the 15 acre or greater size was previously stated in the October 17, 2013 letter).

The District's "Preliminary District-wide Facility Distribution Plan" has identified a shortage of community park land in the new growth areas in the southwest quadrant of the District. Adequate community park land is needed to provide active program space as determined by the District's LOS. District Planning staff looks forward to working with the developer, other agencies and community to plan a park system in this project that will meet the needs of residents.

Eight of neighborhood parks shown in CRPD's boundaries are less than CRPD's two-acre minimum. This is contrary to the comments provided by the District on October 17, 2013. The undersized parks are most prevalent in the northwest quadrant of proposed District 1. They are shown very close together (some less than ¼ mile apart). The District prefers neighborhood parks in the four-acre range and spaced according to the ½ to ¾ mile service areas.

The land use summary tables found on "Figure 6 Revised Project Land Use Plan (preferred option)" do not accurately correspond the "park" land use designations shown on the right side of the map.

1. "Summary - District One" states 85.8 acres of park is provided. "Park" land use designations on the map add up to 66.1 acres. Clarify.
2. "Summary - District FPA-A" states 9.5 acres of park is provided. There are no "park" land use designations in that area of the map. Clarify.

The District does not accept Quimby park land encumbered with utility easements, storm drainage basins, wetlands and habitat areas that restrict development for recreational purposes. Where adjacencies of encumbered parcels exist the District is open to discussions about joint use agency programming and maintenance of encumbered parcels where adequate funding is provided in perpetuity. The District has not addressed open space, detention areas, wetlands, or habitat areas as part of this review.

Impacts of proposed parks on surrounding land uses should consider the full range of amenities that could be place on a park site as listed in Tables 3, 4 and 5 in the District's Cordova Recreation and Park District Park Impact Fee Nexus Study adopted April 8, 2014. Community Park facilities and District-wide facilities are eligible for placement in any community park.

Traffic and Transportation

At this conceptual level the land use plan does not illustrate all roadway types proposed for the project. District standards state community parks should have street frontage on two sides where a high school property can substitute for one street and neighborhood parks have street frontage on three sides where elementary school property can be substituted for one street.

Neighborhood park sites require on-street parking. Community park sites typically contain off-street parking but also benefit from the additional capacity provided by on-street parking.

Vehicular, pedestrian and multi-modal traffic impacts generated by park use should be considered. Public transit and multi-modal access to park sites should be encouraged. Placement of traffic signals and pedestrian crosswalks should be considered where community park facilities may generate significant volumes of traffic.

The District considers trails to be a transportation element and under the purview of other agencies. This scoping comment letter does not include analysis of proposed trails.

Noise

Noise generated by the Mather Airport negatively impacts outdoor active and passive recreation. Parks should be located outside of the 60 CNEL noise contour.

Hydrology and Water Quality:

Constructed park facilities including programmed sport fields should be above the 100 year flood plain. The District does not accept Quimby park land encumbered with utility and storm drainage basins.

The project technical studies should demonstrate there will be adequate domestic water into the future sufficient to irrigate athletic fields and provide turf in both neighborhood and community parks as a public resource in perpetuity. The District will consider connection to alternative water sources in the future on a case by case basis consistent with new conservation and codes requirements.

Topography and Soils

The Draft Environmental Impact Report (DEIR) should address restoring and repurposing previously mined land for urban purposes. The topography of proposed park sites must be suitable for active recreational programming (fairly level) and have the capacity for compliance with Americans with Disabilities Act. Visibility from street level is important for safety and security in the parks. The DEIR should address the suitability of soil on proposed park sites to sustain active parks and the need to import fertile soils and/or provide soil amendments to meet District standards.

Finance

The District's current fee per dwelling unit is $9,085 based on the inflation rate added since 2012. Sacramento County is currently processing a request by CRPD to adopt a District-wide Park Development Impact fee associated with a 2014 Nexus Study.

The District will review the draft Public Facility Finance Plan for compliance with the District's current adopted Park Impact Fee Nexus Study for development costs. At the appropriate time the District will provide current costs for maintenance of facilities, services, replacement costs associated with the park and recreation impacts of this development. The Urban Services Plan should address adequate funding for on-going impacts in perpetuity.

The District appreciates the County's commitment to planning environmentally responsible and sustainable communities and we look forward to future engagement in this project. Please continue to forward documentation related to this project to the District. Please don't hesitate to contact me if you have any questions.

Sincerely,

Laura L. Taylor

Laura L. Taylor, ASLA
Park Planning and Development Manager
Cordova Recreation and Park District

CC: Patrick Larkin, District Administrator for Cordova Recreation and Park District

Cordova Recreation & Park District

2729 Prospect Park Drive, #230
Rancho Cordova, CA 95670
916-842-3300

October 17, 2013

County of Sacramento
Catherine Hack, Environmental Coordinator
Department of Environmental Review and Assessment
Planning and Environmental Review Division
827 7th Street, Room 220
Sacramento, CA 95814

RE: West Jackson Highway Master Plan NOP Comments (PLNP 2008-00240)

Dear Ms. Hack,

The Cordova Recreation and Park District (CRPD) appreciates the opportunity to review and comment on the Notice of Preparation (NOP) for the West Jackson Highway Master Plan which is requesting entitlements for General Plan and Community Plan Amendments..

CRPD offers the following comments:

I. CRPD has established development impact fees which have been adopted by its Board of Directors. The fee per Dwelling Unit Equivalent (DUE) is $8,420 based on five acres per 1,000 residents. Park acreage in excess of five acres per 1,000 requires the fee per DUE be increased proportionately. Park acreage less than five acres per 1,000 will result in an in-lieu fee assigned per the ordinance of the land use authority.

II. Neighborhood Parks shall be located with neighborhood areas. They are 2 acres to 15 acres in size with passive programming and a service radius area of ½ to ¾ mile. They shall be bordered on three sides with residential street frontage (one side of residential street frontage may be substituted by elementary school frontage). The remaining property line shall be fenced by a 6' CMU split-face wall with a decorative cap when bordered with residential or commercial properties (this may be substituted by creek frontage if applicable). When adjacent to schools, decorative fencing with access gates shall be used on the property line. Neighborhood Parks shall not be located on lands that are unusable or not programmable.

III. Community Parks shall be centralized in villages and community areas. They are 15 acres or greater in size with active programming with a service radius of 1 – 1 ½ miles. They shall be bordered on two sides with residential street frontage and one side with connector roads (one side of residential street frontage may be substituted by high school or middle school frontage). The remaining property line shall be fenced by a 6' CMU split-face wall with a decorative cap when bordered with residential or commercial properties (this may be substituted by creek or lake frontage if applicable). When adjacent to schools, decorative fencing with access gates shall be used on the property

line. Community center buildings shall be located on or adjacent to Community Parks. Community Parks shall not be located on lands that are unusable or not programmable.

IV. District-Wide Facilities are facilities that serve the entire District (Office Complex, Corporation Yard) shall be constructed in centralized locations near to or on Community Park property.

V. Urban Plazas are parks that are urban in nature with a plaza-like feel and are acceptable in commercial and densely urbanized areas. They are eligible for Quimby credit and shall be reviewed and credited on a case-by-case basis.

VI. Lakes and Creeks – CRPD will not accept or maintain lakes or creeks. These are not eligible for Quimby Credit.

VII. Drainage Basins – CRPD will not accept or maintain any portion of a drainage retention/detention basin.

VIII. Landscape Corridors - CRPD will not accept or maintain landscape corridors.

IX. Trails – CRPD will only accept and maintain bike or pedestrian trails within park boundaries.

X. Quimby Credit for Pocket and Image Parks - CRPD will not accept parks under two (2) acres in size. Parks smaller than 2 acres should be maintained by an HOA or some other means.

XI. Facilities/Land Under High Voltage Utility Lines - CRPD will not accept facilities or land under high voltage utility lines.

XII. All park development must meet the standards as set forth and approved by the Cordova Recreation and Park District.

If you have any questions or concerns regarding this comment letter, please contact kfranklin@crpd.com or 916-842-3317.

Sincerely,

Kathleen Franklin, Park Planner
Cordova Recreation and Park District

Department of Airports
John Wheat
Director of Airports

County Executive
Navdeep S. Gill

County of Sacramento

March 1, 2017

Catherine Hack
Environmental Coordinator
Sacramento County Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

RE: Response to Revised Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number PLNP2008-GPB-CZB-ZOB-00240).

Dear Ms. Hack:

The Sacramento County Department of Airports (SCDOA) is pleased to provide comment on the NOP for the EIR for the West Jackson Highway Master Plan. While the proposed development is consistent with the Land Use Compatibility Plan (LUCP) for Mather Airport (MHR), SCDOA has some concerns about the proposed project that we request be addressed in the EIR. Upon review of the NOP, SCDOA recommends the following items be reviewed for the benefit of the developers as well as future residents of this community.

SCDOA has commented on previous iterations of the West Jackson Highway Master Plan with concerns expressed regarding noise and hazardous wildlife attractants. SCDOA would refer Sacramento County Department of Planning and Review back to those comments. In regards to this revised project SCDOA has the following additional comments:

- The connection of Routier Road to the Mayhew Road extension appears to border the western boundary of Mather Airport. If any portion of that roadway will be constructed on Airport land, then the Airport and the FAA will need to approve any associated land sale/swap, or land use change for that property.

Thank you for considering our comments on this NOP. If you have any questions or concerns, I can be reached at (916) 874-0698

Best,



Chad A. Willis, M.A, RPA, CESCO, CEP-IT
Airport Environmental Planner, Planning and Environment
Sacramento County Department of Airports
WillisC@SacCounty.net

Regional Parks Department
Jeffrey R. Leatherman, Director

County of Sacramento

Divisions
Administration
Golf
Leisure Services
Maintenance
Rangers
Therapeutic Recreation Services

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

March 15, 2017

RE: REVISED NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR WEST JACKSON HIGHWAY MASTER PLAN

Dear Ms. Hack:

The Sacramento County Department of Community Development, Planning and Environmental Review Division referred the Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan to the Department of Regional Parks ("the Department") for comment.

The Department supports the addition of bikeways on Jackson Highway, Kiefer Road, and Excelsior Road to the West Jackson Highway Master Plan. See Figure 4, Bicycle Master Plan Amendment Exhibit on page NOP-21. This suggestion is consistent with the adopted Sacramento County Bicycle Master Plan (April 2011) and the January 2017 draft version of the West Jackson Corridor Trails Master Plan.

Thank you for the opportunity to comment.

Sincerely,

Jeffrey R. Leatherman, Director
Department of Regional Parks

Department of Water Resources
Michael L. Peterson, Director

SACRAMENTO COUNTY
WATER AGENCY

Including service to the Cities of
Elk Grove and Rancho Cordova

Date: March 6, 2017

To: Catherine Hack – Environmental Coordinator
County of Sacramento

From: Mike Huot – Principal Civil Engineer MH
Sacramento County Water Agency

Subject: Sacramento County Water Agency Comments on the Revised Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number: PLNP2008-GPB-CZB-ZOB-00240)

The Sacramento County Water Agency reviewed the subject document and has the following comments:

1. If changes in land use alter the needed water supply infrastructure, updates to the following documents could be required:
    a. Any affected draft Zone 40 Water Supply Master Plan amendments.
    b. Updating or amending the existing Water System Infrastructure Plan.

Cc: electronic file: P:\Shared Folders\Wsplandev\County CEQA Comments-Protests\Sacramento County

TA3

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY **EDMUND G. BROWN JR.**, GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Ste. 170
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682

May 9, 2017

Ms. Catherine Hack
Sacramento County
827 Seventh Street, Room 225
Sacramento, California 95814

Subject: CEQA Comments: West Jackson Highway Master Plan, Notice of Preparation, SCH No.: 2013092021

Location: Sacramento County

Dear Ms. Hack,

Central Valley Flood Protection Board (Board) staff has reviewed the subject document and provides the following comments:

The proposed project is within Morrison Creek and Elder Creek, regulated streams under Board jurisdiction, and may require a Board permit prior to construction.

The Board's jurisdiction covers the entire Central Valley including all tributaries and distributaries of the Sacramento and San Joaquin Rivers, and the Tulare and Buena Vista basins south of the San Joaquin River.

Under authorities granted by California Water Code and Public Resources Code statutes, the Board enforces its Title 23, California Code of Regulations (Title 23) for the construction, maintenance, and protection of adopted plans of flood control, including the federal-State facilities of the State Plan of Flood Control, regulated streams, and designated floodways.

Pursuant to Title 23, Section 6 a Board permit is required prior to working within the Board's jurisdiction for the placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee.

Permits may also be required to bring existing works that predate permitting into compliance with Title 23, or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the works has not been clearly established or ownership and use have been revised.

Other federal (including U.S. Army Corps of Engineers Section 10 and 404 regulatory permits), State and local agency permits may be required and are the applicant's responsibility to obtain.

Board permit applications and Title 23 regulations are available on our website at http://www.cvfpb.ca.gov/. Maps of the Board's jurisdiction are also available from the California Department of Water Resources website at http://gis.bam.water.ca.gov/bam/.

Please contact James Herota at (916) 574-0651, or via email at James.Herota@CVFlood.ca.gov if you have any questions.

Sincerely,

Andrea Buckley
Environmental Branch Chief
Environmental Services and Land Management Branch

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

Members of the Board:
Beth Albiani
Nancy Chaires Espinoza
Carmine S. Forcina
Chet Madison, Sr.
Dr. Crystal Martinez-Alire
Anthony "Tony" Perez
Bobbie Singh-Allen

Susan Bell
Chief Facilities Officer
Facilities and Planning

Robert L. Trigg Education Center
9510 Elk Grove-Florin Road, Elk Grove, CA 95624

(916) 686-7711
FAX: (916) 686-7754

May 31, 2017 *SENT VIA EMAIL TO: CEQA@saccounty.net*

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental review Division
827 7th Street, Room 225
Sacramento, CA 95814

Subject: Elk Grove Unified School District's Comments on the Revised Notice of Preparation of a Draft Environmental Impact Report for the West Jackson Highway Master Plan (PLNP2008-GPB-CZB-ZOB-00240)

Dear Ms. Hack,

Elk Grove Unified School District (EGUSD) appreciates the opportunity to review and comment on the Revised Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the West Jackson Highway Master Plan.

EGUSD staff worked closely with the project applicants and County Planning Department staff to determine the appropriate number of school sites needed to serve the students anticipated to reside in the planned West Jackson Highway Master Plan community. Extensive collaboration also resulted in identifying, for the purposes of environmental analysis, school site locations that meet California Department of Education school siting criteria.

EGUSD acknowledges the project applicant's response to our concerns about the lack of a specifically located high school/middle school site on the land use plan released with the February 2017 NOP. We appreciate the revisions to the land use plan that identify for environmental analysis two feasible specific alternative locations for the middle school/high school site.

If you have any questions or would like to further discuss EGUSD's comments, please feel free to contact me at 916-686-7711.

Sincerely,

Kim Williams

Kim Williams
Planning Manager

Sacramento Metropolitan Fire District

10545 Armstrong Ave., Suite 200 • Mather, CA 95655 • Phone (916) 859-4300 • Fax (916) 859-3702

TODD HARMS
Fire Chief

February 28, 2017

SENT VIA MAIL

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225, Sacramento, CA 95814

Subject: Comment Letter for West Jackson Highway Master Plan

Dear Ms. Hack:

Thank you for the opportunity to comment on the West Jackson Highway Master Plan (Project). The Sacramento Metropolitan Fire District (District) looks forward to working with the County and the Project proponents on this development.

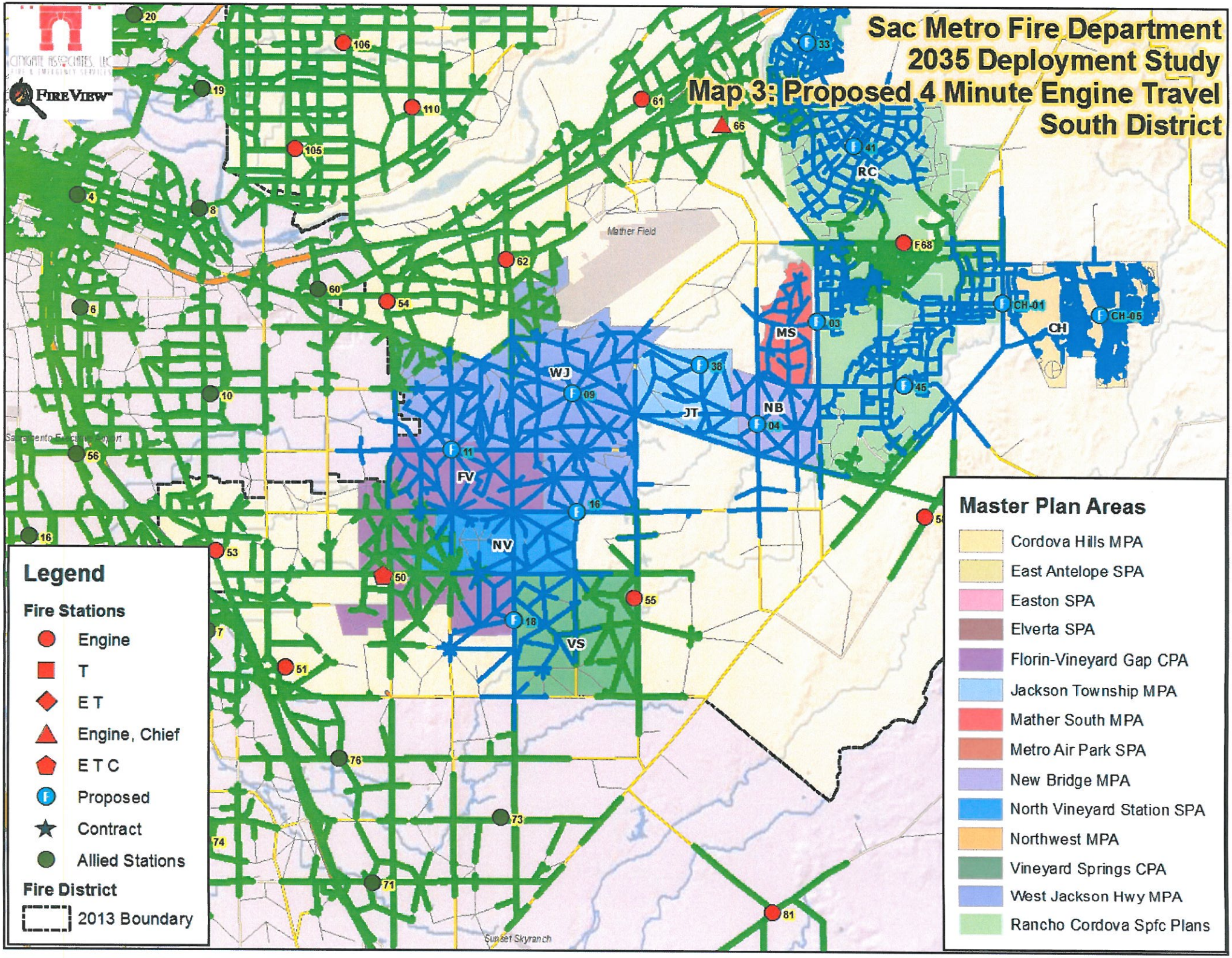
In 2010, the District adopted a neighborhood-based fire company deployment plan, with response times, meeting national best practice recommendations. These response standards are in place to deliver good outcomes to keep serious, but still emerging, fires small and to rescue and treat the emergency's victims. For areas that have over 1,000 people per square mile (Suburban/Urban Areas), the District's standard 1st due travel time is four minutes with an overall reflex time of seven minutes. Given the Project's acreage and proposed land uses, the proposed development fits within the District's Suburban/Urban Area model.

In 2013, the District commissioned the Fire Department Growth Analysis (Growth Analysis) to anticipate the number and location of new fire stations that will be required to serve the Project and surrounding areas (See Attachment A). The Growth Analysis anticipated three new stations, Future Stations #9, #11 and #16, are needed to serve the Project. While Station #9 will primarily serve the Project, Stations #11 and #16 will also serve portions of the Florin-Vineyard Gap CPA, North Vineyard Station SPA and Vineyard Springs CPA.

If you have any questions, please feel free to contact me at (916) 859-4517 or via email at frye.jeff@metrofire.ca.gov.

Sincerely,

Jeff Frye
Economic Development Manager


Sac Metro Fire Department
2035 Deployment Study
Map 3: Proposed 4 Minute Engine Travel
South District
FIRE VIEW
Mather Field
RC
MS
WJ
JT
NB
FV
NV
VS
CH
CH-01
CH-05
F68
F33
F41
F03
F38
F09
F04
F45
F11
F16
F18
Legend
Fire Stations
Engine
T
E T
Engine, Chief
E T C
Proposed
Contract
Allied Stations
Fire District
2013 Boundary
Master Plan Areas
Cordova Hills MPA
East Antelope SPA
Easton SPA
Elverta SPA
Florin-Vineyard Gap CPA
Jackson Township MPA
Mather South MPA
Metro Air Park SPA
New Bridge MPA
North Vineyard Station SPA
Northwest MPA
Vineyard Springs CPA
West Jackson Hwy MPA
Rancho Cordova Spfc Plans

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Fax (916) 373-5471
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC



June 2, 2017

Catherine Hack
Sacramento County

Sent by Email: CEQA@saccounty.net

RE: SCH#2013092021, West Jackson Highway Master Plan, Sacramento County

Dear Ms. Hack:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or

tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

a. A brief description of the project.
b. The lead agency contact information.
c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

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   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
   a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
   b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

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    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have been already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
    a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov.

Sincerely,



Sharaya Souza
Staff Services Analyst
cc: State Clearinghouse

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Fax (916) 373-5471
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

Edmund G. Brown Jr., Governor

April 4, 2017

Catherine Hack
Sacramento County
827 Seventh Street, Room 225
Sacramento, CA 95814

Sent by Email: hackc@saccounty.net

RE: SCH#2013092021, West Jackson Highway Master Plan, Sacramento County

Dear Ms. Hack:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws**.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
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b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
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If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov.

Sincerely,



Sharaya Souza
Staff Services Analyst
cc: State Clearinghouse

From: Fong, Alexander Y@DOT
To: Kohaya. Tim
Cc: Morneau, Jeffrey A@DOT
Subject: RE: Revised NOP for West Jackson Highway Master Plan Request
Date: Friday, May 12, 2017 10:23:09 AM
Attachments: image001.png

Thanks, Tim. Caltrans District 3 does not have any additional comments from our letter sent on April 4, 2017.

Please provide our office with copies of any further actions regarding this project. We would appreciate the opportunity to review and comment on any changes related to this development.

Regards,

_____

Alex Fong
Office of Transportation Planning – South Branch
Caltrans, District 3
Planning, Local Assistance, and Sustainability
(916) 274-0566
alexander.fong@dot.ca.gov

From: Kohaya. Tim [mailto:KOHAYAT@saccounty.net]
Sent: Tuesday, May 02, 2017 11:06 AM
To: Fong, Alexander Y@DOT <alexander.fong@dot.ca.gov>
Subject: RE: Revised NOP for West Jackson Highway Master Plan Request

Alex,
The only change is the middle/high school site. The Project Plan and Option 2 has the middle/high school on a 70-acre site in District 2 while Option 1 and 3 has the school on a 84-acre site in District 1. The previous revised plan used asterisks for the middle/high school and did not delineate actual sites.

Tim

Tim Kohaya, Associate Planner, AICP
Department of Community Development - Planning and Environmental Review
827 7th Street, Room 225, Sacramento, CA 95814 | (916) 874-5982 (direct)| (916) 874-6141
www.saccounty.net



From: Fong, Alexander Y@DOT [mailto:alexander.fong@dot.ca.gov]
Sent: Tuesday, May 02, 2017 8:20 AM

To: Kohaya. Tim
Subject: Revised NOP for West Jackson Highway Master Plan Request

Hi Tim,

I received the revised NOP for the West Jackson Highway Master Plan and I was wondering if you had a summary sheet that outlines the changes from the February 2017 NOP request? This would be very helpful for me so I can avoid reviewing the whole document again.

Thanks,

_____

Alex Fong
Office of Transportation Planning – South Branch
Caltrans, District 3
Planning, Local Assistance, and Sustainability
(916) 274-0566
alexander.fong@dot.ca.gov

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TP3

REGIONALSAN
TAKING THE WASTE OUT OF WATER
Sacramento Regional County Sanitation District

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Tel: 916.876.6000
Fax: 916.876.6160

Treatment Plant
8521 Laguna Station Road
Elk Grove, CA 95758-9550
Tel: 916.875.9000
Fax: 916.875.9068

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Public Affairs Manager

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Printed on Recycled Paper

May 9, 2017

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225, Sacramento, CA 95814

Subject: Revised Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number: PLNP2008-GPB-CZB-ZOB-00240)

Dear Ms. Hack:

Sacramento Regional County Sanitation District (Regional San) and the Sacramento Area Sewer District (SASD) have the following comments regarding the Notice of Preparation for the West Jackson Highway project:

SASD will provide local sewer service for the proposed project area. Regional San provides conveyance from local trunk sewers to the Sacramento Regional Wastewater Treatment Plant (SRWTP) through large pipelines called interceptors.

The Regional San Board of Directors adopted the Interceptor Sequencing Study (ISS) in February 2013. The ISS updated the SRCSD Master Plan 2000 is located on the Regional San website at http://www.regionalsan.com/ISS. The SASD Board of Directors approved the most current SASD planning document, the 2010 System Capacity Plan Update (SCP) in January 2012. The SCP is on the SASD website at http://www.sacsewer.com/devres-standards.html.

Regional San and SASD are not land-use authorities. Regional San and SASD designs their sewer systems using predicted wastewater flows that are dependent on land use information provided by each land use authority. Regional San and SASD base the projects identified within their planning documents on growth projections provided by these land-use authorities. Onsite and offsite environmental impacts associated with extending sewer services to this development should be contemplated in this Environmental Impact Report.

The proposed project lies within the SASD BR Jackson Trunk shed. Project proponents should work closely with SASD and Regional San Development Services to ensure proper connection to any existing SASD or Regional San facilities.

Customers receiving service from Regional San and SASD are responsible for rates and fees outlined within the latest Regional San and SASD ordinances. Fees for connecting to the sewer system recover the capital investment of sewer and treatment facilities that serves new customers. The SASD ordinance is located on the SASD website at http://www.sacsewer.com/ordinances.html, and the Regional San ordinance is located on their website at http://www.regionalsan.com/ordinance.

The SRWTP provides secondary treatment using an activated sludge process. Incoming wastewater flows through mechanical bar screens and then through a primary sedimentation process. This allows most of the heavy solids to settle to the

bottom of the tanks. These solids are later delivered to the digesters. Next, oxygen is added to the wastewater to grow naturally occurring microscopic organisms, which consume the organic particles in the wastewater. These organisms eventually settle on the bottom of the secondary clarifiers and are also delivered to the digesters. Clean water pours off the top of these clarifiers and is chlorinated, removing and inactivating any pathogens or other harmful organisms that may still exist. Chlorine disinfection occurs while the wastewater travels through a two-mile "outfall" pipeline to the Sacramento River, near the town of Freeport, California. Before entering the Sacramento River, sulfur dioxide is added to neutralize the chlorine.

The design of the SRWTP and collection system was balanced to have SRWTP facilities accommodate some of the wet weather flows while minimizing idle SRWTP facilities during dry weather. Regional San designed the SRWTP to accommodate some wet weather flows with onsite storage basins and interceptors designed to accommodate the remaining wet weather flows. The Central Valley Regional Water Quality Control Board (Water Board) issued an NPDES Discharge Permit in December 2010 (2010 Permit)-requiring Regional San to meet significantly more restrictive treatment levels for ammonia and nitrate by May 2021 and for pathogens by May 2023. Regional San began the necessary activities, studies, and projects to meet the new requirements with the adoption of the 2010 Permit. In April 2016, the Water Board issued an NPDES Discharge Permit (2016 Permit) which replaced the 2010 Permit while continuing the more restrictive treatment requirements and deadlines.

Regional San currently owns and operates a 5-mgd Water Reclamation (WRF) that has been producing Title 22 tertiary recycled since 2003. The WRF is located within the SRWTP property in Elk Grove. Regional San uses a portion of the recycled water at the SRWTP and the rest is wholesaled to the Sacramento County Water Agency (SCWA). SCWA retails the recycled water, primarily for landscape irrigation use, to select customers in the City of Elk Grove. Regional San currently does not have any planned facilities that could provide recycled water to the proposed project or its vicinity. Additionally, Regional San is not a water purveyor and any potential use of recycled water in the project area must be coordinated between the key stakeholders, e.g. land use jurisdictions, water purveyors, users, and the recycled water producers.

If you have any questions regarding these comments, please contact me at 916-876-9994

Sincerely,

Sarenna Moore

Sarenna Moore
Regional San/SASD
Policy and Planning

Cc: Regional San Development Services, SASD Development Services, Michael Meyer, Dave Ocenosak, Christoph Dobson

REGIONALSAN
TAKING THE WASTE OUT OF WATER
Sacramento Regional County Sanitation District

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Tel: 916.876.6000
Fax: 916.876.6160

Treatment Plant
8521 Laguna Station Road
Elk Grove, CA 95758-9550
Tel: 916.875.9000
Fax: 916.875.9068

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February 23, 2017

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225, Sacramento, CA 95814

Subject: Revised Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number: PLNP2008-GPB-CZB-ZOB-00240)

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Customers receiving service from Regional San and SASD are responsible for rates and fees outlined within the latest Regional San and SASD ordinances. Fees for connecting to the sewer system recover the capital investment of sewer and treatment facilities that serves new customers. The SASD ordinance is located on the SASD website at http://www.sacsewer.com/ordinances.html, and the Regional San ordinance is located on their website at http://www.regionalsan.com/ordinance.

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exist. Chlorine disinfection occurs while the wastewater travels through a two-mile "outfall" pipeline to the Sacramento River, near the town of Freeport, California. Before entering the river, sulfur dioxide is added to neutralize the chlorine.

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In adopting the new Discharge Permit, the Water Board required Regional San to meet significantly more restrictive treatment levels over its current levels. Regional San began the necessary activities, studies, and projects to meet the permit conditions in August of 2014. Regional San must complete construction of the new treatment facilities to achieve the permit and settlement requirements by May 2021 for ammonia and nitrate and May 2023 to meet these pathogen requirements.

Regional San currently owns and operates a 5-mgd Water Reclamation (WRF) that has been producing Title 22 tertiary recycled since 2003. The WRF is located within the SRWTP property in Elk Grove. Regional San uses a portion of the recycled water at the SRWTP and the rest is wholesaled to the Sacramento County Water Agency (SCWA). SCWA retails the recycled water, primarily for landscape irrigation use, to select customers in the City of Elk Grove. It should be noted that Regional San currently does not have any planned facilities that could provide recycled water to the proposed project or its vicinity. Additionally, Regional San is not a water purveyor and any potential use of recycled water in the project area must be coordinated between the key stakeholders, e.g. land use jurisdictions, water purveyors, users, and the recycled water producers.

If you have any questions regarding these comments, please contact me at 916-876-9994

Sincerely,

Sarenna Moore

Sarenna Moore
Regional San/SASD
Policy and Planning

Cc: Regional San Development Services, SASD Development Services, Michael Meyer, Dave Ocenosak, Christoph Dobson

TAS

Rosemont Community Association
Making Rosemont Bloom Since 1959
P.O. Box 277194 Sacramento, CA 95827 www.rosemontca.org

March 10, 2017

Catherine Hack, Environmental Coordinator/
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

RE: West Jackson Highway Master Plan (WJHMP)
Control No. PLNP2008-GPB-CZB-ZOB-00240

Dear Ms. Hack:

The Rosemont Community Association has, for the present, the following comments on this proposal and revised notice of preparation (NOP). These comments are in no particular order and are not exhaustive of our concerns, but rather are offered with the intent of being on the record with concerns about this proposal and offering to continue to engage as it is refined and ultimately approved and built. We reserve the right to continue to offer comments and concerns as the project evolves and other issues with it arise.

TRAFFIC

As presented, we are far from convinced that the proposed traffic and transportation system will adequately handle the greatly increased traffic load, not just from this project but from the several projects to the east along Jackson south of Mather, and also the Aspen I project at Watt and Jackson, as well as the inevitably increasing traffic generated to the south toward and in Elk Grove. Already morning and evening commute traffic on both Bradshaw and Watt far exceeds the carrying capacity of those already improved roads, especially on Watt Ave. crossing the river and at the Hwy 50 interchange. Nothing in this proposal suggests that RT will be able to effectively service the expanded needs generated in this development, nor are other options suggested for traffic remediation. Rather, the existing traffic congestion will only be exacerbated, and we will all experience both adverse environmental as well as social and economic degradation. These concerns MUST be adequately addressed and remediated before any approvals are

issued. This proposal calls for novel and innovative solutions that could set a new high standard.

COMMERCE

As proposed, the WJHMP project will likely suck from Rosemont most of the little remaining commercial businesses we still have, as people opt to shop in the new more attractive commercial areas on our edge. So far we have seen no interest or ability by the County to take an active role in any economic development or redevelopment in the Rosemont community. Based on data from the 2010 census, we bleed $200 million dollars a year, largely because we have so few places to spend the money. We have an outdated retail center that has been two-thirds vacant for years, and much of our other commercial space is also empty. As a result, our community suffers both economically as well as socially, and is a less appealing place to live than it should be. With the proposed new developments on our border we can expect whatever business community we still have will disappear, or at best further deteriorate, unless we can organize a serious and effective economic development program here. So far this does not seem to be likely.

ENVIRONMENTAL CONCERNS

In addition to the concerns we have regarding traffic, we are concerned about other issues including the environmental impact of the project on air, water, and potentially noise. Given the location of the project what assurances are there that a significant area of it is not affected by the pollution plume from Mather AFB and Aerojet operations in the past? Is there sufficient water available to serve the new developments? What will be done to assure that quality water will be available at a reasonable price and that those customers in the new development (and similar existing developments) will have an effective say in that water service?

HOUSING, INFILL AND SERVICES

With all the concerns and policy efforts in recent years in the greater Sacramento region focused on urban infill and sprawl avoidance, this project seems not to have given sufficient consideration to these very real concerns. While the devil will be in the details when they are more fleshed out, this issue of housing density is a very real one for future generations and it must be satisfactorily addressed before this project proceeds. As presented it will, along with the other pending projects in the area, advance the urban sprawl and create more urban areas without the real ability to provide normal municipal level services. We already experience that deficiency in the existing urbanized areas abutting this project.

IMPACT ON EXISITING COMMUNITIES

The development of a project of this magnitude abutting a long existing community has the highly likely potential of creating a seriously negative impact on the older community. The new development will benefit from new development standards dealing with landscaping, design, and maintenance; funding mechanisms for these amenities as well as for parks, open space, and public facilities; and generally a fresh new appealing place for people to live and work. The older adjoining areas will pale by comparison and without the ability to protect and enhance themselves can be expected to suffer and deteriorate. Rosemont is determined to not let that happen. We will immediately begin exploring what options we have to protect and enhance our community. And based on conversations we have had with neighboring areas in a situation similar to ours, we expect they will be joining us in this exploration.

There are many other serious issues that are buried in the details of the WJHMP that will come out as further study is done by all parties. For the present, these points are our foremost concerns. We look forward to continuing to work with Stonebridge and Teichert, and soon Granite and the other property owners, to address these concerns. They have been most supportive neighbors over the years and we anticipate that excellent and positive relationship will continue as this project comes to fruition.

Thank you for the opportunity to offer these preliminary comments.

For the Rosemont Community Association

Terry Dugan
President, Board of Directors
president@rosemontca.org

C:
Don Nottoli, Supervisor, 5th District
Mike Isle, Stonebridge
Rene Hamlin, BRECA
Cyrus Abhar, Rancho Cordova
Aaron Busch, Rancho Cordova

Sacramento Area Council of Governments

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May 23, 2017

Ms. Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

Re: Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number: PLNP2008-GPB-CZB-ZOB-00240)

Dear Ms. Hack:

Thank you for inviting SACOG's comments on the Notice of Preparation of a Draft Environmental Impact Report for the West Jackson Highway Master Plan (PLNP2008-GPB-CZB-ZOB-00240). The West Jackson Highway Master Plan area is part of SACOG's 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (2016 MTP/SCS) and longer-term Blueprint Vision. The 2016 MTP/SCS projects 4,996 new homes and 1,859 new jobs by 2036 for the West Jackson area. Next year SACOG will begin its quadrennial update of the plan (scheduled adoption in 2020) and will be working with Sacramento County to determine if there is a need to update the projections for this area for the next MTP/SCS.

The 2016 MTP/SCS includes funding for a number of roadway improvements in the area of the West Jackson Highway Master Plan; however, there are a number of differences between what is included in the MTP/SCS by 2036 and what is shown on the Proposed Transportation Diagram included in the NOP. The Proposed Transportation Diagram includes several new arterials "Pre-2030" that are not included in the MTP/SCS. The road projects not included in the MTP/SCS include the proposed north-south arterial running through the center of the project, the proposed north-south arterial that is in between Bradshaw Road and Excelsior Road, and the extension of Kiefer Boulevard. Additionally, the Proposed Transportation Diagram includes a number of transit projects that are not included in the MTP/SCS. The MTP/SCS does not include the BRT along South Watt Avenue or Jackson Highway or any of the BRT/HI BUS routes shown on the Proposed Transportation Diagram.

In general, when planning for a new development area such as the proposed master plan, it is likely that the proposed plan will include transportation projects that are different from the MTP/SCS. While a master plan envisions the ultimate development of an area, the MTP/SCS is a financially constrained plan for a

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Sutter County
West Sacramento
Wheatland
Winters
Woodland
Yolo County
Yuba City
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particular period of time (20 or more years) that is subject to a transportation conformity requirement under the federal Clean Air Act. Therefore, it is important to note that new transportation projects that are regionally significant, such as new arterials, cannot be built if they are not in the MTP/SCS and the inclusion of new transportation projects in a master plan is not a guarantee that those transportation projects will be included in the MTP/SCS.

As noted earlier, SACOG will begin the update process of the MTP/SCS next year. With limited transportation funds available and the potential for stricter regional greenhouse gas emission targets, we are encouraging all of our member jurisdictions to identify their high priority areas for growth and transportation funding. We look forward to further discussions with the County as the MTP/SCS update process moves forward next year. For information on the full, current MTIP and MTP/SCS project list, contact Clint Holtzen at (916) 340-6246 or choltzen@sacog.org.

If you have additional questions, please feel free to contact me.

Sincerely,

Kacey Lizon
Planning Manager

Sacramento Area
Council of
Governments

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www.sacog.org

March 20, 2017

Ms. Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

Re: Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (Control Number: PLNP2008-GPB-CZB-ZOB-00240)

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particular period of time (20 or more years) that is subject to a transportation conformity requirement under the federal Clean Air Act. Therefore, it is important to note that new transportation projects that are regionally significant, such as new arterials, cannot be built if they are not in the MTP/SCS and the inclusion of new transportation projects in a master plan is not a guarantee that those transportation projects will be included in the MTP/SCS.

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If you have additional questions, please feel free to contact me or Kacey Lizon, Planning Manager, at klizon@sacog.org or 916-340-6265.

Sincerely,

Kirk E. Trost
Interim Chief Executive Officer

KET:JH:le

SACRAMENTO AREA
BICYCLE ADVOCATES

909 12th St, Ste. 116
Sacramento, CA 95814

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saba@sacbike.org
916 444-6600

March 9, 2017

Catherine Hack, Environmental Coordinator
Department of Community Development
Planning and Environmental Review Division
Sacramento County
827 7th Street, Room 225
Sacramento, CA 95814
CEQA@saccounty.net

Attention: Tim Kohaya (kohayat@saccounty.net)

Subject: Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the West Jackson Highway Master Plan (Control Number: PLNP2008-GPB-CZB-ZOB-00240)

Dear Ms. Hack:

Thank you for the opportunity to comment on the subject NOP and on what environmental analysis will be presented in the DEIR.

The proposed project will cause a significant adverse effect on the environment if it will not adequately provide access by bicycle.

Adequate bicycle access within the project. The subject Master Plan envisions an extensive network of residential, commercial, recreational, and educational land uses. The DEIR must address the density and quality of bikeway facilities to be provided to ensure safe and comfortable bicycle access among these land uses. Bikeways must be comfortable for all ages and abilities of bicycle riders. For example, the project's internal bikeway network must provide access to school sites for children, to employment sites for workers, and to commercial sites for shoppers who live in the project's residential areas. The bikeway network should provide a low-traffic-stress bikeway connection within ¼ mile of every residence in the Master Plan area. This link provides a good explanation of the importance of measuring low-stress network connectivity: http://www.northeastern.edu/peter.furth/connectivity-of-low-stress-bicycle-networks/.

To address this potential impact, the DEIR should provide information on the configurations and usage patterns (typical traffic volumes and speeds) of the project's proposed roadways. Different types of roadways will require different types of bikeways to provide adequate safety and comfort to all types of bicyclists. For example, high speed arterials with volumes over 15,000 ADT and speeds over 35 mph will require buffered or separated bikeways to be considered bicycle friendly.

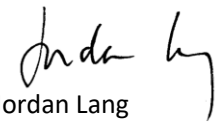
Adequate bicycle access to the project sites. The DEIR also should address the connections between the proposed bikeway network in the Master Plan area and bikeway facilities in surrounding areas. The connections are critical to provide adequate bicycle access to employment, shopping, educational, recreational, and transportation facilities in the surrounding areas. For example, bikeway facilities to be provide along and across the intersection of South Watt Avenue and Jackson Highway are critical for ensuring bicyclist access to the Light Rail Station at Folsom Boulevard. The DEIR must describe and analyze proposed bikeways through the proposed "high capacity intersections" along South Watt Avenue.

Please ensure that the subject DEIR addresses these 2 dimensions of adequate bicycle access.

SABA works to ensure that bicycling is safe, convenient, and desirable for everyday transportation. Bicycling is the healthiest, cleanest, cheapest, quietest, most energy efficient, and least congesting form of transportation.

Thank you for considering our comments.

Sincerely,



Jordan Lang
Project Analyst

CC: Paul Philley, SMAQMD, PPhilley@airquality.org

SMUD®

Sent Via E-Mail

May 25, 2017

Catherine Hack, Environmental Coordinator
Sacramento County
Department of Community Development
Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814
hackc@saccounty.net

Subject: Revised Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the West Jackson Highway Master Plan
(Control Number: PLNP2008-GPB-CZB-ZOB-00240)

Dear Ms. Hack:

The Sacramento Municipal Utility District (SMUD) appreciates the opportunity to provide comments on the Revised Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the West Jackson Highway Master Plan, released April 26, 2017. SMUD is the primary energy provider for Sacramento County and the proposed Project area. SMUD's vision is to empower our customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the cost to serve our region. As a Responsible Agency, SMUD aims to ensure that the proposed Project limits the potential for significant environmental effects on SMUD facilities, employees, and customers.

Recognizing that West Jackson Highway is one of several new growth areas being developed in approximately the same area of the County within a similar timeframe, it is our desire that the EIR for the West Jackson Highway Master Plan will acknowledge any Project impacts related to the following:

- Overhead and or underground transmission and distribution line easements. Please view the following links on smud.org for more information regarding transmission encroachment:
  - https://www.smud.org/en/business/customer-service/support-and-services/design-construction-services.htm
  - https://www.smud.org/en/do-business-with-smud/real-estate-services/transmission-right-of-way.htm
- Utility line routing
- Electrical load needs/requirements
- Energy Efficiency
- Climate Change
- Cumulative impacts related to the need for increased electrical delivery

Based on SMUD's review of the Revised West Jackson Highway Master Plan for the preferred option dated April 26, 2017, SMUD presumed that the estimated demand remains consistent with the preferred option dated January 31, 2017 (approximately 223 MW). The preferred option in the Revised West Jackson Highway Master Plan does not substantially change the estimated demand, nor does it substantially change the proposed sub-transmission facilities, distribution substation locations, and bulk substation location identified in the letter SMUD previously submitted in March 15, 2017.

Below is a list of potential sub-transmission and distribution substation electrical requirements, based on our review of the NOP; the electrical requirements are consistent with those identified in our letter dated March 15, 2017. An attached and notated copy of the West Jackson Highway Land Use Plan identifies the proposed sub-transmission routes, and proposed new and expanded distribution substation locations based on the revised land use plan. Please note that it also identifies a zone in which a new bulk substation might need to be sited and constructed adjacent to the existing transmission line corridor **(LOC 8)**. The expected need for a new bulk substation is the result of the cumulative load of the pending master plans for which preliminary information has been released to date (i.e., NewBridge, Jackson Township, Mather South, and West Jackson Highway). If the bulk substation is to be included within the West Jackson Highway Master Plan, the location is in close proximity of a proposed elementary school site. Furthermore, additional 69kV routes exiting the substation northerly to Jackson Road, southerly to Elder Creek Road, and easterly to Excelsior Road will be required.

- Expansion of the existing SMUD distribution substation located on the east side of Happy Lane approximately 1250-feet south of Old Placerville Road **(Loc 1)**; additional land, resulting in the expanded site totaling approximately 1.4-acres, is required to accommodate new electrical facilities. Please note that this site is adjacent to the master plan and would likely require the additional land from the adjacent E parcel.

- A new distribution substation near the southwest corner of Jackson Highway and Bradshaw Road (**Loc 2**); new distribution substations generally require a parcel that is approximately 250-feet-by-250-feet which is approximately 1.4-acres.

- A new distribution substation within FPA-A in the vicinity of Fruitridge Road and Hedge Avenue **(Loc 3)**; new distribution substations generally require a parcel that is approximately 250-feet-by-250-feet which is approximately 1.4-acres.

- A new distribution substation in the vicinity of Jackson Road and Vineyard Road/Rock Creek Parkway East **(Loc 4)**; new distribution substations generally require a parcel that is approximately 250-feet-by-250-feet which is approximately 1.4-acres.

- A new distribution substation within FPA-B in the vicinity of Elder Creek Road and Bradshaw Road **(Loc 5)**; new distribution substations generally require a parcel that is approximately 250-feet-by-250-feet which is approximately 1.4-acres.

- A new distribution substation in the vicinity of Excelsior Road south of Kiefer Road **(Loc 6)**; new distribution substations generally require a parcel that is approximately 250-feet-by-250-feet which is approximately 1.4-acres.

- A new distribution substation within FPA-C along the west side of Excelsior Road south of Elder Creek Road **(Loc 7)**; new distribution substations generally require a parcel that is approximately 250-feet-by-250-feet which is approximately 1.4-acres.

- Zone for potential bulk substation along the north side of the existing transmission line corridor **(Loc 8).**

- Installation of new sub-transmission (69 kV) electrical lines along the following existing/future roads:
  - Kiefer Rd
  - Happy Ln
  - Jackson Hwy
  - Excelsior Rd between Florin Rd and Kiefer Rd
  - Hedge Ave
  - Vineyard Rd between Florin Rd and unnamed road south of Jackson Hwy
  - Unnamed road between Vineyard Rd and Bradshaw Rd
  - Bradshaw Rd between unnamed road and Jackson Hwy

- Additional new sub-transmission (69 kV) routes may be required depending upon where the new distribution substations are sited.

- All sub-transmission electrical lines (69 kV) will be routed overhead in an easement outside the rights-of-way of on-site project streets.

- The existing dedicated substation at **Loc 9** will only be removed if the existing service is removed.

SMUD notes that the Revised NOP identifies the location for the proposed high school/middle school along Mayhew Road, where there is an existing double-circuit overhead 69kV line that must remain in place. Although existing 69kV facilities were not listed in our letter dated March 15, 2017, they were included in an attached exhibit. The attached and notated copy of the West Jackson Highway Land Use Plan identifies the following existing 69kV line routes:

- Mayhew Road, between Jackson Road and Elder Creek Road
- Kiefer Road, from Bradshaw Road easterly for approximately 700-feet
- Elder Creek Road, between Hedge Avenue and Excelsior Road
- Excelsior Road, between Elder Creek Road and Florin Road
- Knox Road, from Florin Road northerly for approximately 2,100-feet

SMUD appreciates the opportunity to be involved in the discussion of the above areas of interest as well as discussing any other potential issues. We aim to be partners in the efficient and sustainable delivery of the proposed Project. Please ensure that the information included in this response is conveyed to the Project planners and the appropriate Project proponents.

Environmental leadership is a core value of SMUD and we look forward to collaborating with you on this Project. If you have any questions regarding this letter, please contact Rob Ferrera at rob.ferrera@smud.org or (916)732-6676.

Sincerely,

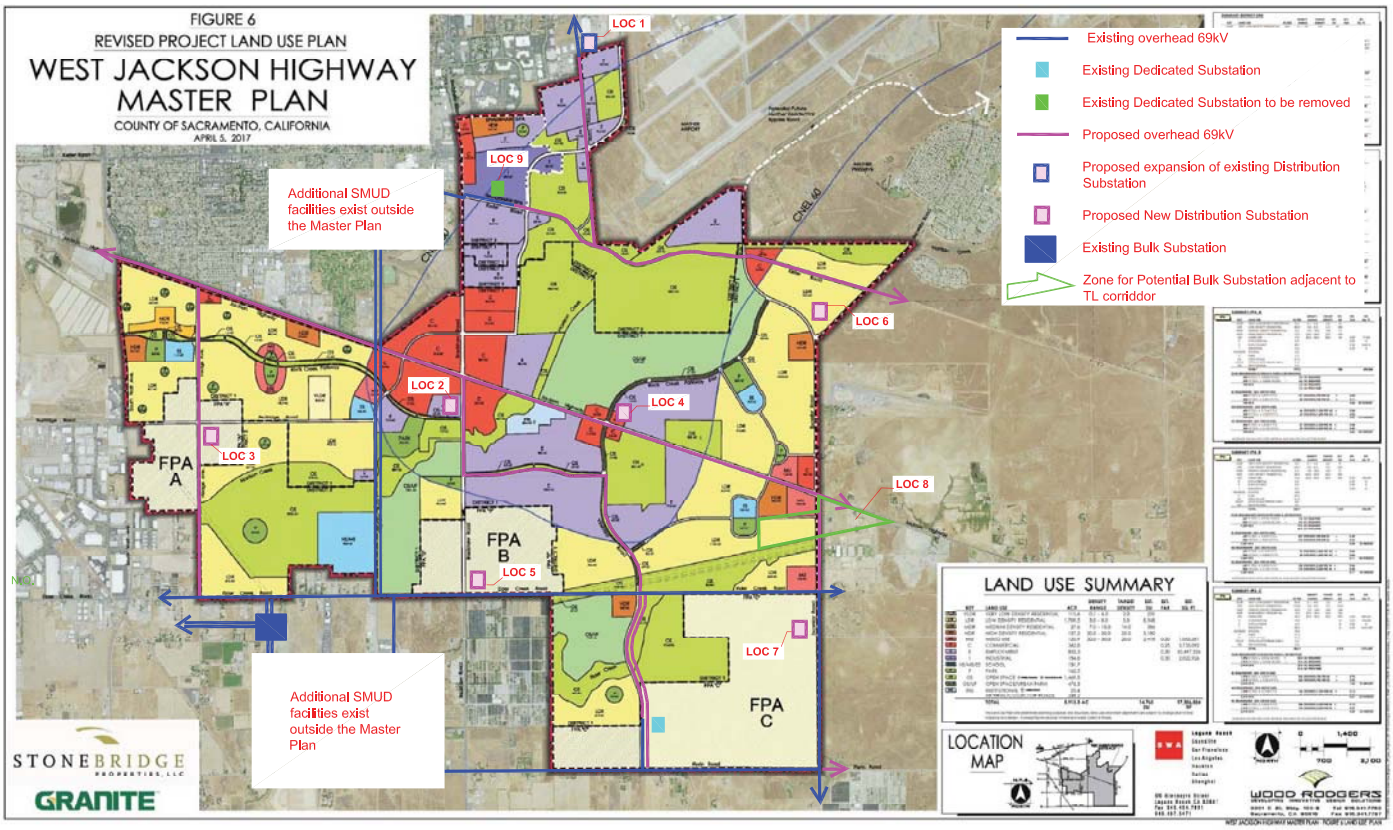
Arthur Starkovich
Regional & Local Government Affairs
Sacramento Municipal Utility District
6301 S Street, Mail Stop A313
Sacramento, CA 95817
arthur.starkovich@smud.org

Cc: Rob Ferrera, SMUD
Angela McIntire, SMUD
Malissa Ellis, SMUD
Greg Hribar, SMUD
Joanne Pascual, SMUD

Enclosure: SMUD Comments on Plate NOP-13

SMUD Comments
5-23-2017
Proposed high school location is adjacent to existing double circuit 69kV route along Mayhew Rd that will need to remain

Plate NOP-5: West Jackson Highway Master Plan Revised Project Land Use Plan (Preferred Option)



May 3, 2017

Catherine Hack, Environmental Coordinator
County of Sacramento
Planning & Community Development Department
827 – 7th Street, Rm. 225
Sacramento, CA 95814

RE: Comments on the Revised Notice of Preparation of the Draft Environmental Impact Report for West Jackson Highway Master Plan (PLNP2008-GPB-CZB-ZOB-00240)

SOUTHGATE
RECREATION & PARK DISTRICT

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Administrative Headquarters
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Dear Ms. Hack,

The Southgate Recreation and Park District (Southgate) appreciates the opportunity to comment on the revised notice of preparation (NOP) of the Draft Environmental Impact Report (DEIR) for the West Jackson Highway Master Plan issued February 15, 2017. The District previously submitted comments on an earlier iteration of this project in a letter dated October 16, 2013.

The proposed Master Plan is 5,913 acres in size and creates two district plan areas, district 1 and district 2 and three Future Planning Areas (FPA), A, B, and C. The Project is located along State Route 16 (Jackson Highway) east of the City of Sacramento. The Project boundaries are generally the City of Sacramento city limits to the west, Jackson Highway, Bradshaw Road, Keifer Boulevard, and Goethe Road to the north, Excelsior Road to the east and portions of Elder Creek and Florin Road to the south.

Approximately 3,068 acres (52%) of the West Jackson Master Plan Area are within Southgate's jurisdiction. This acreage includes residential, commercial, industrial, park, urban farm, and open space designations. The District is responsible for planning, operating, and maintaining parks, open spaces, landscape corridors, and recreational facilities within its boundaries.

The District requests that the following comments, which were approved by the Southgate Board of Directors at their May 2, 2017, meeting, be considered and included in the DEIR where applicable. Our comments are as follows:

Parks

The District would like to work with the development community, County, and regulatory agencies on identifying the most appropriate locations for all new parkland and associated recreation facilities. The number of park acres provided by the master plan should be no less than the current Quimby dedication requirement of 5 acres of parkland per 1,000 residents in the Southgate jurisdiction. The plan appears to propose more than the required Quimby dedication. A legal mechanism must be created to ensure the land will actually be dedicated as mitigation for the project.

The Summary of District One on the preferred land use plan (Figure 6) does not include the acres of parkland required in Southgate's jurisdiction. Files provided to Southgate indicate that approximately 45.88 acres of park land would be provided in the proposed preferred land use plan in District One within Southgate's area. Based on the number of proposed housing units, a minimum of 47.2 acres of parkland would be required in this area under current the Quimby factor. The preferred scenario should add at least an additional 1.32 acres of park land in District One within Southgate's jurisdiction.

Parks should be sited to encourage the greatest accessibility by residents on bike or foot and should not directly abut major thoroughfare roads. For example, the 27.6-acre park east of Mayhew Road is not located in the center of the residential land uses. Bike and pedestrian access to parks would be increased by shifting some of these park acres west to provide three neighborhood parks; one north of Elder Creek Road west of the California Central Traction Railroad and two southwest of Mayhew Road and Fruitridge road intersection. Neighborhood parks are 5-10 acres in size. Similarly, the proposed 6.6-acre park west of Bradshaw road, within the Mather noise contour, should be located in the center of the proposed housing to maximize access to the park. Lastly, the proposed 8-acre park adjacent to the elementary school should not be adjacent to a major thoroughfare road. The DEIR should analyze the potential health and safety impacts of locating parks immediately adjacent to major roadways, including exposure to poor air quality during exercise and increased hazards due to higher vehicle speeds at the park edge.

Land Use

The proposed Figure 6 identifies three FPAs without specifically indicating where the various land uses are proposed within those FPAs. Each alternative does, however, provide a very detailed summary of the specific land uses proposed within each FPA. In fact, many of the largest variations in each of the proposed land use alternatives occur within the FPA areas. If the specifics of each FPA are known, they should be identified on the map such that the full understanding and impact of the known land uses can be understood and analyzed in the DEIR. Furthermore, the FPAs border adopted community and specific plans. In order to properly plan trail and open space alignments and space parks appropriately, it is critical to understand the spatial distribution of the proposed land uses. In other words, if the DEIR makes any assumptions about specific land uses (open space, low-density residential, commercial, etc...) in the FPAs they should be identified on the map so that agencies responsible for providing services to these areas can properly plan the best means to provide services for these areas.

Open Space and Drainage

Southgate understands that this Project has designated approximately 1,368 acres as open space of which approximately 724 (53%) acres are within Southgate's boundaries. Southgate is interested in promoting park and recreational uses for open space lands wherever possible and is willing to accept

and maintain trail corridors and any associated open space preserves. Acceptance depends on the final requirements of the regulatory agencies related to these facilities and if adequate funding is available to pay for all costs associated with the repair, maintenance, and monitoring in perpetuity of trail corridors and any associated open space preserves. Southgate also supports identifying opportunities for joint use of detention basins and drainage corridors for recreation purposes.

Trails

The proposed Bicycle Master Plan Amendment exhibit (Figure 4) increases bicycle connectivity and is generally supported by Southgate. Southgate encourages a funding mechanism across the entire West Jackson Highway Master Plan area that would support trails of regional significance that span multiple jurisdictions. A regional funding mechanism could augment funding from individual local agencies in order to ensure consistency of construction and maintenance of regional trails. Southgate also supports identifying additional local connector trails that would serve to directly link parks, and provide off-street regional class 1 bike and pedestrian trail systems. The additional trail segments should be analyzed and included in the proposed bicycle master plan amendment exhibit and Southgate should be included in identifying trail alignments within our jurisdiction.

Specifically, Southgate suggests including a minimum of three additional regional trail segments in Figure 4. The Florin-Vineyard Community Plan identifies a class 1 trail along Hedge Avenue. This class 1 trail should be continued north to link to the proposed Rock Creek Parkway. This north-south connection could serve as the primary off-street connection for residents living in the broader Vineyard Community commuting downtown or accessing the American River bike trail. The plan should also provide a north-south segment linking the Elder Creek and Gerber Creek trail systems in the southeastern portion of the plan area. There is a drainage west of Excelsior Road that could serve as the logical connection. Linking the Elder and Gerber Creek trails would provide the community a 10-mile loop for running, biking, commuting, or other uses spanning four Community and Specific Plans; (Vineyard Springs Comprehensive Plan, Florin-Vineyard Community Plan, North Vineyard Station Specific Plan, and the West Jackson Highway Master Plan) in the heart of the Vineyard Community. The third link should connect to the intersection of Excelsior Road and Jackson Highway from the Elder Creek/powerline corridor trail. The proposed master plan north of Jackson Highway to the east of the West Jackson Highway Master Plan shows a drainage corridor and trail terminating on the northeastern side of Jackson Highway and Excelsior Road. A connection on the southwest side would further link regional trails. Southgate also notes that the Proposed Bicycle Master Plan may be using the incorrect line file for the Gerber Creek trail; the Existing Bicycle Master Plan exhibit appears to display the correct Gerber Creek trail.

Lastly, much of the land within the plan area has been mined. Mining often includes infrastructure such as roads, tunnels, and conveyor systems that pass underneath roadways. The bicycle plan should consider linking and using this infrastructure to avoid surface street crossings. Off-street, class 1, crossings could provide a true benefit to the trail system and encourage bicycle use as a safe means of transportation and recreation.

Southgate Recreation & Park District appreciates the County's consideration of the requests proposed in this letter. Southgate is willing to coordinate with the County and all related agencies to determine sufficient mitigation measures in order to minimize the effects of significant impacts and to maximize the availability of public services and recreational facilities throughout Southgate's jurisdiction.

Once again, the Southgate Recreation & Park District would like to thank the County for the opportunity to comment on the NOP of a DEIR for the West Jackson Highway Master Plan. Please continue to forward documentation related to this Project to Southgate. If you require additional information or assistance please do not hesitate to contact me at (916) 428-1171, ext. 21, or via e-mail at vking@southgaterecandpark.net.

Sincerely,



Vincent King

3/17/2017 VIA EMAIL

Catherine Hack, Environmental Coordinator
Department of Community Development Planning and Environmental Review Division
827 7th Street, Room 225
Sacramento, CA 95814

RE: Revised Notice of Preparation of a Draft Environmental Impact Report for West Jackson Highway Master Plan (CONTROL NUMBER: PLNP2008-GPB-CZB-ZOB-00240)

Dear Ms. Hack:

Thank you for the opportunity to comment on the Revised NOP of a DEIR for West Jackson Highway Master Plan (CONTROL NUMBER: PLNP2008-GPB-CZB-ZOB-00240).

WALKSacramento submitted comments on the original NOP on October 25, 2013, and many of the issues raised at that time are still relevant to the Revised NOP. We said in our previous letter

> *The NOP for the West Jackson Highway Master Plan indicates that "a Traffic Impact Study will be performed to examine the effects of proposed project development and facilities on area roadways." However, more than just area roadways may be affected by the proposed project - a transportation network that serves primarily car trips with wide and fast roads with few crossing opportunities increases the rates and severity of collisions for pedestrians and bicyclists.*
>
> *Further, land-use patterns can have a harmful impact on public health. Communities where daily destinations are not close to residences result in few, inconvenient or unsafe options for walking and biking, and the community members are at greater risk for inadequate physical activity, obesity and chronic diseases.*
>
> *WALKSacramento asks that the environmental impact report for the West Jackson Highway Master Plan consider the health and safety impacts to people resulting from the proposed community design, land uses, transportation facilities and circulation network.*

WALKSacramento reiterates our prior recommendations that the DEIR analyze the following:

- *Pedestrian and bicycle collision rates and severities that result from the choice of roadway widths and traffic speeds.*
- *Physical activity level, obesity and chronic diseases that result from the land-use pattern, specifically the distances to daily destinations.*
- *A "Major Roadway Downgrade and Mixed Land Use" alternative that reduces the lanes-miles of arterials and thoroughfares, incorporates a finer-grain grid of roadways having low speeds, short crossing distances and more crossing opportunities, and disperses the various land uses throughout the plan area.*

In addition the recommendations for analysis made above, WALKSacramento believes the following would improve the information provided by the DEIR and further reduce the traffic safety and health impacts of the project.

The revised project includes a new four-lane roadway that abuts the elementary school at the northwest corner of Fruitridge Toad and Mayhew Road. Larger roadways with more traffic and higher speeds do not support safe and pleasant walking and biking to schools, especially elementary schools. **We recommend the DEIR analyze pedestrian and bicycle collision rates and severity that may result from the proposed school site location.**

The revised project also relocates another elementary school and the Middle School/High School campus. **We recommend analysis of the potential for walking and biking to school comparing the locations as proposed versus locations that are more centrally located to residential densities and away from higher volume and speed roadways.**

In the Bicycle Master Plan Amendment included with the Revised NOP, a trail segment is located on east side of Bradshaw Road between the northern and southern Rock Creek Parkway intersections with Bradshaw Road. The east side of Bradshaw for that segment is designated Commercial, Open Space, and Employment, whereas the west side is designated Open Space and Open space/Urban Farm. There could be more pedestrian and bicycle points of conflicts with vehicles on the east side compared to the west side. **We recommend analyzing the impact of placing the trail on the west side of Bradshaw Road versus the east side.**

WALKSacramento is working to support increased physical activity such as walking and bicycling in local neighborhoods as well as helping to create community environments that support walking and bicycling. The benefits include improved physical fitness, less motor vehicle traffic congestion, better air quality, and a stronger sense of cohesion and safety in local neighborhoods.

Thank you for your consideration of these comments and recommendations.

Sincerely,

Chris Holm
Project Manager

From: Matthew Roberts
To: Kohaya. Tim
Subject: West Jackson Highway Master Plan - Revised NOP
Date: Wednesday, March 1, 2017 10:34:56 AM

Mr. Kohaya,

I am a 5 year resident of Independence at Mather and just had an opportunity to review the above Revised NOP and have some comments and concerns to express regarding the new NOP. The first comment concerns the proposed HDR blocks across from the Sacramento Speedway and on Excelsior in between Jackson and Elder Creek. Many residents in HDR rely on public transportation - either the bus or the light rail - and this entire section of the project lacks any proper or even potentially proper infrastructure to meet the needs of this new HDR housing. This is why nearly all of the HDR in Rosemont and Rancho Cordova (two of the communities most impacted by this new development) south of Interstate 50 is located near Folsom Blvd where many of the light rail stations are. From my house in the middle of the Independence at Mather development it takes 7-10 minutes by car just to get to the nearest light rail station. The construction of Jackson and Excelsior both would make new bus infrastructure very difficult.

Excelsior, through our development, is already used as a thoroughfare for morning and evening commutes from who knows where - I suspect a lot of the residents in Vineyard and on the east side of Interstate 99 in Elk Grove to avoid the freeway - such that we had to put in several speed tables to reduce the dangerous nature of the commute. 15,000 new housing units in this proposed area will exacerbate that issue. Our community is fairly isolated due to all the protected wetlands around and many children and residents walk our neighborhood streets.

Prior to living in Mather, I resided in Rosemont for 4 years, so for the last 9 years I have been intimately familiar with the Jackson/Bradshaw intersection that much of this project revolves around. The intersection is congested as it is with nothing around there. I think the city might still be underestimating the amount of gridlock that will occur both from the economic development and the housing development. The traffic issue is not limited to that intersection or the length of Jackson as it is. Interstate 50 in the last couple of years has become more and more heavily congested between Bradshaw Road and Zinfandel Road heading to downtown in the morning and coming from downtown in the evening. The addition of new economic development that would route traffic down Bradshaw and Mather Field and Zinfandel from I-50 and the addition of 15,000 new housing units that would route traffic up those same streets to I-50 is going to grossly exacerbate the gridlock on that section of the freeway and well as the city streets getting to the freeway.

I understand that the area looks ripe for development as it has been largely empty and devoid of any development or production for years and years, and that this project if approved will go in phases and steps, but these are very serious concerns for those of us who have made this area our permanent homes (I'm only 34) and we need the planning commission to weigh the needs of development hand in hand with the living experience of both the new residents that would come to this plan and the current residents impacted by it.

Tim, thank you for taking the time to review my comments, I hope they are shared with the whole commission. If you'd like to discuss the matter with me any further I am happy to either via this e-mail or my phone number 916-848-9530. Again, thank you for your time.

--
Matthew Roberts, J.D.
University of the Pacific, McGeorge School of Law

APPENDIX B

WEST JACKSON HIGHWAY MASTER PLAN AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

June 5, 2024

Julie Newton
Environmental Coordinator, Sacramento County
Planning and Environmental Review
827 7th street, Room 225
Sacramento, CA 95814

newtonj@saccounty.gov

Subject: **West Jackson Highway Master Plan**

Dear Mrs. Newton,

Thank you for providing the April 2024 West Jackson Highway Master Plan Air Quality and Greenhouse Gas Technical Report and the April 2024 Air Quality Mitigation Plan (AQMP) for the West Jackson Highway Master Plan.

By way of this letter, District staff are verifying that we have reviewed the West Jackson Highway Master Plan Air Quality and Greenhouse Gas Technical Report and find that it consistent with the District's CEQA guidance on greenhouse gas and air quality plans. The District also finds that the AQMP will, through on-site and off-site measures, achieve a 35 percent reduction in ozone precursors generated by mobile sources over the baseline project conditions.

Please contact me at rmuzzy@airquality.org or (279) 207-1139 if you have any questions regarding this verification of technical adequacy.

Sincerely,

Rich Muzzy

Rich Muzzy
Associate Air Quality Planner/Analyst

cc: Paul Philley, AICP, Program Supervisor

Final Draft

WEST JACKSON HIGHWAY MASTER PLAN SACRAMENTO COUNTY, CALIFORNIA

Air Quality and Greenhouse Gas Technical Report

Prepared for
Stonebridge Properties, LLC and
Granite Construction Company

April 2024

ESA

Final Draft

WEST JACKSON HIGHWAY MASTER PLAN SACRAMENTO COUNTY, CALIFORNIA

Air Quality and Greenhouse Gas Technical Report

Prepared for
Stonebridge Properties, LLC and
Granite Construction Company

April 2024

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ESA

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CHAPTER 1
Introduction

This Air Quality and Greenhouse Gas Technical Report (report) assesses the potential air quality and greenhouse gas (GHG) impacts associated with construction and operation of the West Jackson Highway Master Plan (Master Plan, or project) and identifies feasible mitigation measures where appropriate.

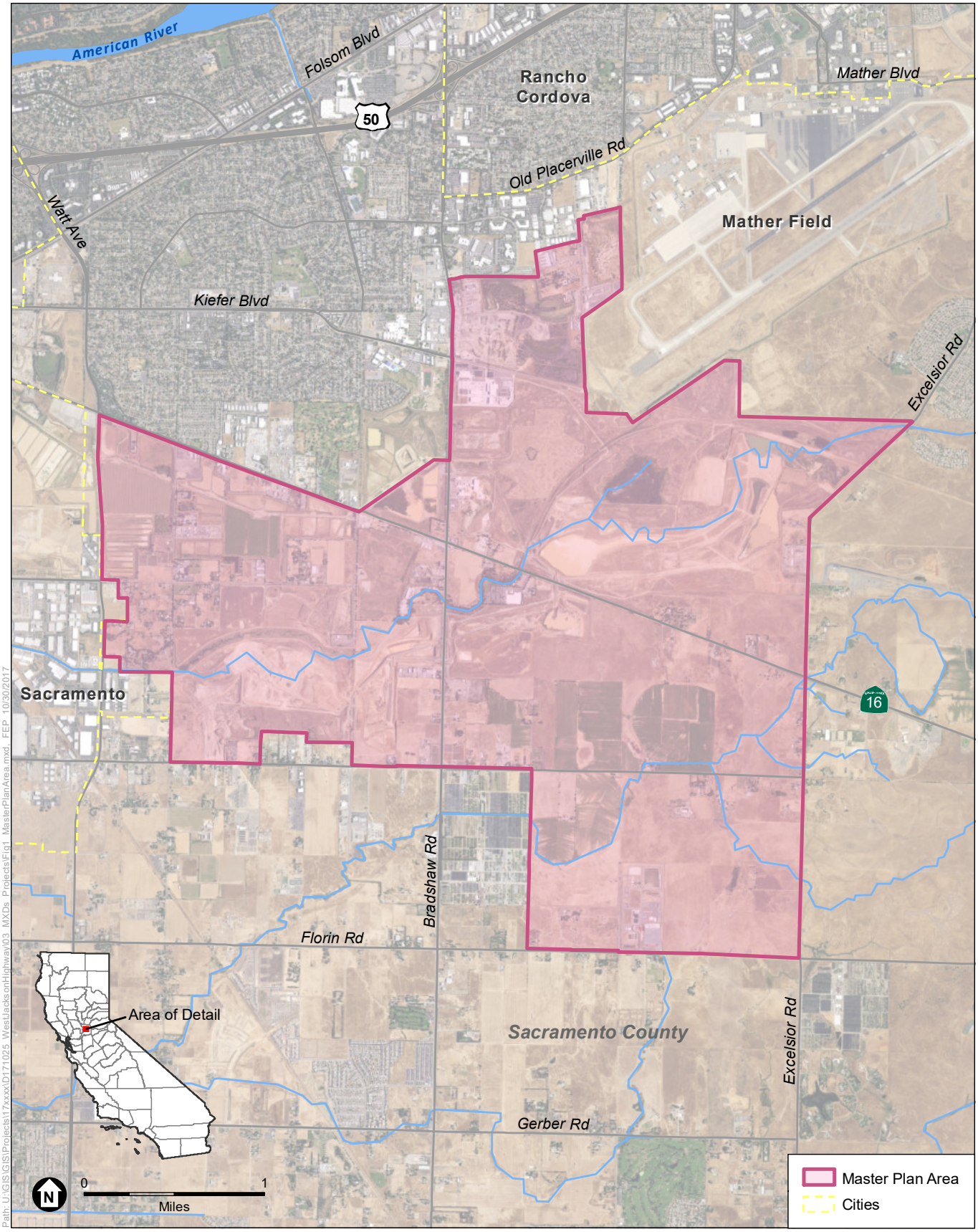
The remainder of this chapter provides a brief project description. Chapter 2 assesses the potential air quality impacts associated with the Master Plan. Chapter 3 assesses the potential GHG impacts associated with the Master Plan. All supporting data have been provided in **Appendix A**. The accompanying Air Quality Mitigation Plan (AQMP) has been provided in **Appendix B**.

1.1 Project Description

Stonebridge Properties, LLC (a subsidiary of Teichert Land Company) and Granite Construction Company have initiated the Master Plan process for all land encompassed within the proposed Master Plan Area. The Master Plan Area boundaries are generally Jackson Highway (State Route 16), Kiefer Boulevard, and Goethe Road to the north, portions of Elder Creek Road and Florin Road to the south, the City of Sacramento to the west, and Excelsior Road to the east.

The existing properties within the Master Plan Area primarily include aggregate mining sites used for sand and gravel extraction, many of which have already been reclaimed. Due to these mining activities, the Master Plan Area has largely been bypassed by development. Although most of the mining is complete, some of the Master Plan Area continues to support various mining-related activities. In addition to these mining sites, the Master Plan Area is comprised of a mixture of rural residential, institutional, agricultural, commercial, and industrial properties located along State Route 16 (Jackson Highway) in the geographic center of Sacramento County.

The Master Plan has been designed to provide a mixture of residential, commercial, industrial, recreational, and employment nodes intended to reduce vehicle miles traveled (VMT) within the Master Plan Area and support the provision and use of transit alternatives. The Master Plan establishes a framework and strategy for all future land use within the Master Plan Area, including general land use and development standards, policies, land use allocations, infrastructure, and public service planning. Within the Master Plan, two District Area Plans are established, in addition to three Future Planning Areas (FPA's). District Area Plans primarily consist of properties owned by Stonebridge Properties, LLC and Granite Construction Company, while FPAs are comprised of non-participating property owners. **Figure 1** shows the Master Plan area.



SOURCE: Esri, 2015; Teichert, 2017; ESA, 2017

West Jackson Highway Master Plan

Figure 1
Master Plan Area

ESA

The District Area Plans establish specific land uses, policies and development standards for the properties within the District Area Plans. Although future land uses for the FPAs will be established in gross by the Master Plan, specific land uses, policies, and development standards for these areas are not provided by the Master Plan. While this analysis assumes the land use assigned to the FPAs (and associated estimated air quality impacts), it is anticipated that the landowners within the FPAs will either initiate Master Plan amendments or individual Specific Plans in the future and that additional air quality analysis will be required as part of the environmental review of those plans. Such future use must be consistent with the provisions of the Master Plan unless landowners within the FPAs apply for and have approved an amendment of the assigned land uses.

The proposed land uses for the Master Plan are presented in **Table 1-1**.

TABLE 1-1
MASTER PLAN LAND USES

Master Plan Land Use Type	CalEEMod Land Use Type	Acres	Land Use Values
Very Low Density Residential	Single Family Housing	115.6	230 dwelling units
Low Density Residential	Single Family Housing	1,955.1	9,774 dwelling units
Medium Density Residential	Condo/Townhouse	58.6	820 dwelling units
High Density Residential	Apartments Mid Rise	121.2	3,636 dwelling units
Mixed Use Residential	Apartments Mid Rise	112.5	2,024 dwelling units
Mixed Use Nonresidential	Strip Mall	112.5	1,225,125 square feet
Commercial	Regional Shopping Center	290.7	3,165,723 square feet
Employment	Office Park	543.3	7,099,844 square feet
Industrial	Industrial Park	154.4	2,017,699 square feet
School	Schools	132.0	1,149,984 square feet[a]
Park, Open Space, Urban Farm	City Park	2,101.0	-
Institutional	Place of Worship	98.9	3,288,780 square feet[b]
Arterial / Collector Roads	Other Asphalt Surfaces	229.8	-
Total Residential		*2,363.0*	*16,484 dwelling units*
Total Nonresidential		*3,775.0*	*17,947,155 square feet*[c]

NOTES:
a. A floor area ratio of 0.2 was used for schools.
b. A floor area ratio of 1.0 was used for institutional.
c. Total square footage includes schools and institutional, which are not reflected on the Master Plan's current land use plan.

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CHAPTER 2
Air Quality

This section assesses the potential air quality impacts associated with construction and operation of the West Jackson Highway Master Plan and identifies feasible mitigation measures where appropriate.

2.1 Environmental Setting

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions (for example, wind speed, wind direction, and air temperature) in combination with local surface topography (for example, geographic features such as mountains and valleys), determine how air pollutant emissions affect local air quality.

The Master Plan Area is located within Sacramento County, California, which is under the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD). SMAQMD is the primary local agency with respect to air quality for all of Sacramento County. Sacramento County is within the Sacramento Valley Air Basin (SVAB), which also includes all of Butte, Colusa, Glenn, Shasta, Sutter, Tehama, Yolo, and Yuba Counties, the western portion of Placer County, and the eastern portion of Solano County.

2.1.1 Climate and Meteorology

The climate of the SVAB is Mediterranean in character, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit and the average annual rainfall is 20 inches. The topographic features giving shape to the SVAB are the Coast Range to the west, the Sierra Nevada to the east, and the Cascade Range to the north. These mountain ranges channel winds through the SVAB, but also inhibit the dispersion of pollutant emissions.

The predominant annual and summer wind pattern in the Sacramento Valley is the full sea breeze, commonly referred to as Delta breezes. These cool winds originate from the Pacific Ocean and flow through a sea-level gap in the Coast Range called the Carquinez Straits. In the winter (December to February), northerly winds predominate. Wind directions in the Sacramento Valley are influenced by the predominant wind flow pattern associated with each season. During about half the days from July through September, however, a phenomenon called the “Schultz Eddy”, which is a large isotropic vertical-axis eddy on the north side of the Carquinez Straits that prevents the Delta breezes from transporting pollutants north and out of the Sacramento Valley and causes the wind pattern to circle back south, which keeps air pollutants in the Sacramento

Valley. This phenomenon's effect exacerbates the pollution levels in the area and increases the likelihood of violating state or federal standards.

The vertical and horizontal movement of air is an important atmospheric component involved in the dispersion and subsequent dilution of air pollutants. Without movement, air pollutants can collect and concentrate in a single area, increasing the associated health hazards. For instance, in the winter, the SVAB typically experiences calm atmospheric conditions that result in stagnant air and increased air pollution. As a result, persistent inversions occur frequently in the SVAB, especially during autumn and early winter, and restrict the vertical dispersion of pollutants released near ground level.

2.1.2 Air Pollutants of Concern

Air pollutants of concern within the SVAB include certain criteria air pollutants and toxic air contaminants (TACs).

Criteria Air Pollutants

Criteria air pollutants are a group of six common air pollutants for which the United States Environmental Protection Agency (US EPA) has set ambient air quality standards. Criteria air pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) in size fractions of 10 microns or less in diameter (PM_{10}) and 2.5 microns or less in diameter ($PM_{2.5}$), and lead. Most of the criteria pollutants are directly emitted. Ozone, however, is a secondary pollutant that is formed in the atmosphere by chemical reactions between nitrogen oxides (NOx) and reactive organic gases (ROG). In addition to the criteria air pollutants identified by the US EPA, California adds four criteria air pollutants (visibility reducing particulates, sulfates, hydrogen sulfide, and vinyl chloride).

Criteria air pollutants have been recognized to cause notable health problems and consequential damage to the environment either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and regulated as part of the overall endeavor to prevent further deterioration and facilitate improvement in air quality. These pollutants are regulated by the USEPA and are subject to emissions control requirements adopted by federal, state and local regulatory agencies. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for each of the criteria air pollutants and their effects on health are summarized in the *Regulatory Setting* section below. It must be noted that the ambient air quality standards—both federal and state—are expressed as airborne concentrations of various pollutants. Compliance with the standards is on a regional basis. In the SVAB, compliance is demonstrated by ongoing measurements of pollutant concentrations at nine air quality monitoring stations operated by the SMAQMD in Sacramento County. An exceedance of an ambient air quality standard at any one of the stations counts as a regional exceedance.

NAAQS and CAAQS have been set at levels considered safe to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly with a margin of safety; and to protect public welfare, including protection against decreased visibility and damage

to animals, crops, vegetation, and buildings. As explained by the California Air Resources Board (CARB), "An air quality standard defines the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without any harmful effects on people or the environment."[1] That is, if a region is in compliance with the ambient air quality standards, its regional air quality can be considered protective of public health. The NAAQS are statutorily required to be set by the USEPA at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1).[2] As such, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

Criteria air pollutants of concern in the SVAB include O_3, CO, PM_{10}, and $PM_{2.5}$, as concentrations of these pollutants are above state and/or national ambient air quality standards. Sulfur dioxide, lead, visibility reducing particulates, sulfates, hydrogen sulfide, and vinyl chloride concentrations are well below state and/or national ambient air quality standards and are not air pollutants of concern in the SVAB. **Table 2-1** lists the health effects associated with the criteria air pollutants of concern.

Ozone

As discussed above, O_3 is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving the O_3 precursors reactive organic gases (ROG), also referred to as volatile organic compounds (VOC) by some regulating agencies, and oxides of nitrogen (NO_X). The main sources of ROG in the SVAB are the evaporation of solvents, paints, and fuels; the main sources of NO_X are combustion processes (including motor vehicle engines). Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with O_3 production through a photochemical reaction process. Ozone can cause eye irritation, airway constriction, and shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicle engines; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure of humans to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impaired central nervous system function, and angina (chest pain) in persons with serious heart disease. Very high concentrations of CO can be fatal.

1 CARB, undated. "California Ambient Air Quality Standards (CAAQS)" webpage. Available at: https://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm, last updated August 10, 2017. Accessed March 2023.

2 See: https://www.law.cornell.edu/uscode/text/42/7409

TABLE 2-1
HEALTH AND ENVIRONMENTAL EFFECTS OF CRITERIA AIR POLLUTANTS OF CONCERN

Pollutant	Adverse Effects
Ozone	• People most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. In addition, people with certain genetic characteristics, and people with reduced intake of certain nutrients, such as vitamins C and E, are at greater risk from ozone exposure. • Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and airway inflammation. It also can reduce lung function and harm lung tissue. Ozone can worsen bronchitis, emphysema, and asthma, leading to increased medical care. • Ozone affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. In particular, ozone harms sensitive vegetation during the growing season.
Carbon Monoxide	• Breathing air with a high concentration of CO reduces the amount of oxygen that can be transported in the blood stream to critical organs like the heart and brain. • At very high levels, which are possible indoors or in other enclosed environments, CO can cause dizziness, confusion, unconsciousness and death. • Very high levels of CO are not likely to occur outdoors. However, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease. These people already have a reduced ability for getting oxygenated blood to their hearts in situations where the heart needs more oxygen than usual. They are especially vulnerable to the effects of CO when exercising or under increased stress. In these situations, short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain also known as angina.
Particulate Matter	• Particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Such health effects including aggravating asthma and bronchitis, causing visits to the hospital for respiratory and cardiovascular symptoms, and contributing to heart attacks and deaths. Particles less than 10 micrometers in diameter pose the greatest problems, because they can get deep into your lungs, and some may even enter the bloodstream. • Fine particles ($PM_{2.5}$) are the main cause of reduced visibility (haze) in parts of the United States, including many national parks and wilderness areas.
Nitrogen Dioxide	• Breathing air with a high concentration of NO_2 can irritate airways in the human respiratory system. Such exposures over short periods can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO_2. • NO_2, along with other oxides of nitrogen (NO_X), reacts with other chemicals in the air to form both particulate matter and ozone. Both of these are also harmful when inhaled due to effects on the respiratory system.

SOURCES:

1. United States Environmental Protection Agency (US EPA), 2022. Ozone Basics. Available: https://www.epa.gov/ozone-pollution/ozone-basics#effects. Accessed March 2023.
2. US EPA, 2022. Basic Information about Carbon Monoxide (CO) Outdoor Air Pollution. Available: https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution#Effects. Accessed March 2023.
3. US EPA, 2022. Particulate Matter (PM) Basics. Available: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects. Accessed March 2023.
4. US EPA, 2022. Basic Information about NO_2. Available: https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects. Accessed March 2023.
5. California Air Resource Board, 2017. Inhalable Particulate Matter and Health (PM2.5 and PM10). Available: https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm, last reviewed August 10, 2017. Accessed March 2023.

Particulate Matter

Particulate matter (PM) is frequently classified by particle size, where PM_{10} consists of PM that is 10 microns or less in diameter and $PM_{2.5}$ consists of the subset of PM_{10} that is 2.5 microns or less in diameter (a micron is one-millionth of a meter). PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fine particulate matter, PM_{10} and $PM_{2.5}$, are a health concern particularly at levels above the federal and state ambient air quality standards. $PM_{2.5}$ (including diesel exhaust particles) has greater effects on health because these particles are small enough to be able to penetrate to the deepest parts of the lungs.

A large body of scientific evidence indicates that both long-term and short-term exposure to $PM_{2.5}$ can cause a wide range of health effects (e.g., aggravating asthma and bronchitis, causing visits to the hospital for respiratory and cardiovascular symptoms, and contributing to heart attacks and deaths).[3] According to CARB, both PM_{10} and $PM_{2.5}$ can be inhaled, with some depositing throughout the airways.[4] PM_{10} is more likely to deposit on the surfaces of the larger airways of the upper region of the lung while $PM_{2.5}$ is more likely to travel into and deposit on the surface of the deeper parts of the lung, which can induce tissue damage, and lung inflammation.[5] Short-term (up to 24 hours duration) exposure to PM_{10} has been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits. The effects of long-term (months or years) exposure to PM_{10} are less clear, although studies suggest a link between long-term PM_{10} exposure and respiratory mortality and the International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer at certain exposures.[6] Short-term exposure to $PM_{2.5}$ has been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days and long-term exposure to $PM_{2.5}$ has been linked to premature death, particularly in people

3 California Air Resources Board, 2017. Inhalable Particulate Matter and Health (PM2.5 and PM10). Available: https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm, last reviewed August 10, 2017. Accessed March 2023.

4 Ibid.

5 Ibid.

6 International Agency for Research on Cancer, 2015. IARC Monographs On The Evaluation Of Carcinogenic Risks To Humans, Volume 109 (2016) Outdoor Air Pollution. Available: https://monographs.iarc.fr/iarc-monographs-on-the-evaluation-of-carcinogenic-risks-to-humans-7/, Accessed December 22, 2022.

who have chronic heart or lung diseases, and reduced lung function growth in children.[7] According to CARB, populations most likely to experience adverse health effects with exposure to PM_{10} and $PM_{2.5}$ include older adults with chronic heart or lung disease, children, and asthmatics.[8] Children and infants are susceptible to harm from inhaling pollutants such as PM_{10} and $PM_{2.5}$ compared to healthy adults because they inhale more air per pound of body weight than do adults, spend more time outdoors, and have developing immune systems.[9]

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels.

According to the USEPA, NO_2 can potentially irritate airways in the human respiratory system.[10] Short-term exposures can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms and longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. According to CARB, controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics.[11] In addition, a number of epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses.[12] Infants and children are particularly at risk from exposure to NO_2 because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration while in adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease.[13] CARB states that much of the information on distribution in air, human exposure and dose, and health effects is specifically for NO_2 and there is only limited information for nitric oxide and NO_X, as well as large uncertainty in relating health effects to nitric oxide or NO_X exposure.[14]

7 California Air Resources Board, 2017. Inhalable Particulate Matter and Health (PM2.5 and PM10). Available: https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm, last reviewed August 10, 2017. Accessed March 2023.

8 Ibid.

9 Ibid.

10 United States Environmental Protection Agency, 2016. Nitrogen Dioxide (NO_2) Pollution. Available: https://www.epa.gov/no2-pollution/basic-information-about-no2, last updated August 2, 2022. Accessed December 15, 2022.

11 California Air Resources Board, 2019. Nitrogen Dioxide & Health. Available: https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health. Accessed March 2023.

12 Ibid.

13 Ibid.

14 Ibid.

Other Criteria Air Pollutants

Other criteria air pollutants include SO_2 and lead, which are not air pollutants of concern in the SVAB. SO_2 is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of particulate matter, atmospheric sulfate, and atmospheric sulfuric acid formation that could precipitate downwind as acid rain. The maximum SO_2 concentrations recorded in the project vicinity are well below federal and state standards.

Leaded gasoline (phased out in the United States beginning in 1973), lead based paint (on older houses and cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which puts children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California.

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances and may be emitted from a variety of common sources including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs of concern include diesel particulate matter (DPM) and asbestos.

Diesel Particulate Matter

The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways and rail lines with diesel locomotive operations.

CARB identified DPM as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans. It is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM. More than 90 percent of DPM is less than 1 μm in diameter, and thus is a subset of $PM_{2.5}$; therefore, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These include aggravating asthma and bronchitis, causing visits to the hospital for respiratory and cardiovascular symptoms, and contributing to heart attacks and deaths. DPM may also facilitate development of new allergies; a clinical study of human subjects has shown that diesel exhaust particles, in combination with potential allergens, may be able to produce new allergies that didn't previously exist.[15]

Regulation of diesel engines and fuels have decreased DPM levels by 68 percent since 1990. Furthermore, CARB estimates that emissions of DPM in 2035 will be less than half those in

[15] California Air Resources Board, 2019. Summary: Diesel Particulate Matter Health Impacts. Available: https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts. Accessed March 2023.

2010, even with increasing VMT.[16] Nonetheless, based on 2012 estimates of statewide exposure, DPM is estimated to increase statewide cancer risk by 520 cancers per million residents exposed over a lifetime.

Asbestos

Asbestos is a fibrous mineral and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its use as a building material. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest and abdominal cavity), and asbestosis (a non-cancerous lung disease which causes scarring of the lungs).[17] When building materials containing asbestos are disturbed, asbestos fibers may be released. Asbestos is also naturally occurring in ultramafic rock (a rock type commonly found in California), but its occurrence at the project site has a low probability.[18]

2.1.3 Existing Ambient Air Quality

Nearby ambient air quality monitoring stations that are assumed to be representative of the ambient air at the project site are located in the Del Paso Manor neighborhood and at Branch Center Road. The Del Paso Manor neighborhood monitor measures and records concentrations of CO, O_3, PM_{10}, and $PM_{2.5}$, and is located approximately 4.8 miles northwest of the project site. The Branch Center Road monitor provides the nearest representative measurement of PM_{10}, approximately 0.1 miles northwest of the Master Plan area. **Table 2-2** presents a three-year summary of air pollutant concentration data collected at these monitoring stations for CO, O_3, PM_{10}, and $PM_{2.5}$, as well as the number of days the applicable standards were exceeded during the given year.

As described in Table 2-2, O_3 levels in the Master Plan vicinity have resulted in numerous violations of ambient air quality standards between 2020-2022. Concentrations of O_3 in the project vicinity exceeded the 1-hour state standard eleven times during the three-year study period and exceeded the 8-hour national standards thirty times.

Ambient air quality monitoring data for PM_{10} in the project area suggests that the 24-hour standard was exceeded 25 times in 2021 and six times in 2022. Regarding $PM_{2.5}$, the study area was estimated to have exceeded the 24-hour national standard approximately 28 times in 2020, five times in 2021 and ten times in 2022. The PM_{10} annual average standard was exceeded in 2020, 2021 and 2022. The annual average standard for $PM_{2.5}$ was exceeded in 2020.

16 California Air Resources Board, 2016. Overview: Diesel Exhaust and Health. Available:https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed March 2023.

17 California Air Resources Board, 2019. Naturally Occurring Asbestos. Available: https://ww2.arb.ca.gov/our-work/programs/naturally-occurring-asbestos/about. Accessed December 15, 2022.

18 California Department of Conservation, 2000. A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos. August, 2000. Available: https://www.placerair.org/DocumentCenter/View/1433/General-Location-Guide-PDF. Accessed December 22, 2022.

TABLE 2-2
SUMMARY OF AIR QUALITY MONITORING DATA (2020-2022)

Pollutant	National / State Standard	2020	2021	2022
Ozone – Sacramento-Del Paso Manor Station				
Maximum 1-hour concentration, ppm	0.09 [a]	**0.120**	**0.110**	**0.092**
Number of days above State 1-Hour standard		4	7	0
Maximum 8-hour concentration, ppm	0.070 / 0.070	**0.085**	**0.091**	**0.073**
Number of days above National 8-Hour standard		10	17	3
Number of days above State 8-Hour standard		*	*	*
Respirable Particulate Matter (PM_{10}) – Branch Center Road #2 Station				
Annual average concentration, µg/m^3	20[a]	**33.2**	**24.2**	**21.8**
Maximum 24-Hour concentration (national/state), µg/m^3	150 / 50	**201.0/203.0**	57.0/**58.0**	55.0/**54.0**
Estimated number of days above National 24-Hour standard[c]		7.7	0.0	0.0
Estimated number of days above State 24-Hour standard[c]		*	25.4	6.0
Respirable Particulate Matter (PM_{10}) – Del Paso Manor Station				
Annual average concentration, µg/m^3	20[a]	*	*	**19.2**
Maximum 24-Hour concentration (national/state), µg/m^3	150 / 50	**188.0/190.0**	63.0/**63.0**	41.0/**51.5**
Estimated number of days above National 24-Hour standard[c]		**6.1**	*	2.0
Estimated number of days above State 24-Hour standard[c]		*	*	0.0
Fine Particulate Matter ($PM_{2.5}$) – Del Paso Manor Station				
Annual average concentration, µg/m^3	12.0 / 12.0	**14.6**	10.2	10.0
Maximum 24-Hour concentration, µg/m^3	35[b]	**147.3**	**90.0**	**42.3**
Estimated number of days above National 24-Hour standard[c]		28.1	5.0	10.3
Carbon Monoxide (CO) – Del Paso Manor Station				
Maximum 8-Hour concentration, ppm	9 / 9.0	2.1	1.1	*
Number of days above National or State 8-hour standard		0	0	0
Maximum 1-Hour concentration, ppm	35 / 20	2.2	1.3	*
Number of days above National or State 1-hour standard		0	0	0

NOTES:

Bold values are in excess of applicable standard.

ppm = parts per million; µg/m^3 = micrograms per cubic meter; * = insufficient data.

a. State standard, not to be exceeded.
b. National standard, not to be exceeded.
c. Particulate matter sampling schedule of one out of every six days, for a total of approximately 60 samples per year. Estimated days exceeded mathematically estimates of how many days concentrations would have been greater than the level of the standard had each day been monitored.

SOURCES:

1. California Air Resources Board, 2024. *Summaries of Air Quality Data, 2020-2022*. Available: http://www.arb.ca.gov/adam/index.html. March 2024.
2. United States Environmental Protection Agency, 2019. *Outdoor Air Quality Data – Monitor Values Report*. Available: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. March 2023.

There have been no recorded exceedances of the state and national 1-hour and annual NO_2 standards and the state and national 1-hour and 8-hour CO standards during the three-year study period.

2.1.4 Odors

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

The Master Plan includes an industrial land use category that would allow manufacturing, such as asphalt/concrete batch plants, that could contribute odors. In addition, the project could locate new receptors close to odors from existing nearby industrial uses.

2.1.5 Sensitive Receptors

Air quality does not affect individuals or groups within the population in the same way, and some groups are more sensitive to adverse health effects caused by exposure to air pollutants than others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young, those with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases.

Land uses such as schools, children's day care centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces the overall health risk associated with exposure to pollutants. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions. Workers are not considered sensitive receptors because all employers are required to follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees.

The nearest sensitive receptors to the Master Plan Area are primarily single family residences (both within and adjacent to the Master Plan Area), Rosemont High School, Sierra Enterprise

Elementary School, ABC School, Morgan Junior/Senior High School, Albert Einstein Middle School, Golden Empire Preschool, A.M. Winn Elementary School, George Washington Carver School of Arts and Science, Kitty Hawk School, Mather Youth Academy, and Mather Heights Elementary School

2.2 Regulatory Setting

Federal, state, and local agencies regulate air quality in California.

2.2.1 Federal

Criteria Air Pollutants

The United Stated Environmental Protection Agency (US EPA) is required by the federal Clean Air Act (CAA) to identify and establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The federal CAA identifies two types of NAAQS: primary and secondary. Primary standards provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The US EPA has set NAAQS for six principal pollutants, called criteria air pollutants. These criteria air pollutants include O_3, NO_2, SO_2, CO, PM, and lead. The original indicator for PM was total suspended particulates; currently the standards are in terms of PM_{10} and $PM_{2.5}$. **Table 2-3** presents the current NAAQS (and state ambient air quality standards) and provides a brief discussion of the related health effects and principal sources for each pollutant.

The US EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the NAAQS had been achieved. The classification is determined by comparing actual monitoring data with the standards. "Unclassified" is defined by the federal CAA as any area that cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant. Furthermore, an area may be designated attainment with a maintenance plan (also known as a maintenance area), which means that an area was previously nonattainment for a criteria air pollutant but has since been redesignated as attainment. These areas have demonstrated through modeling they have sufficient controls in place to meet and maintain the NAAQS.

The Sacramento region's attainment status for the criteria air pollutants are summarized in **Table 2-4** (state designations are also provided). The Sacramento region is considered a federal nonattainment area for O_3 and $PM_{2.5}$ and as an attainment-maintenance area for the federal CO and PM_{10} standards.

TABLE 2-3
STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS AND MAJOR SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	Formed when reactive organic gases (ROG) and nitrogen oxides (NO_X) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hour	0.070 ppm	0.070 ppm	
Carbon Monoxide	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hour[a]	9.0 ppm	9 ppm	
Nitrogen Dioxide	1 hour	0.18 ppm	100 ppb	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Avg.	0.030 ppm	0.053 ppm	
Sulfur Dioxide	1 hour	0.25 ppm	75 ppb	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hour	---	0.5 ppm[b]	
	24 hour	0.04 ppm	0.14 ppm	
	Annual Avg.	---	0.030 ppm	
Respirable Particulate Matter (PM_{10})	24 hour	50 ug/m^3	150 ug/m^3	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Avg.	20 ug/m^3	---	
Fine Particulate Matter ($PM_{2.5}$)	24 hour	---	35 ug/m^3	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO_X, sulfur oxides, and organics.
	Annual Avg.	12 ug/m^3	12.0 ug/m^3	
Lead	Monthly Ave.	1.5 ug/m^3	---	Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 ug/m^3	
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Geothermal power plants, petroleum production and refining
Sulfates	24 hour	25 ug/m^3	No National Standard	Produced by the reaction in the air of SO_2.
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	See $PM_{2.5}$.
Vinyl chloride	24 hour	0.01 ppm	No National Standard	Polyvinyl chloride and vinyl manufacturing.

NOTES:

ppb = parts per billion; ppm = parts per million; ug/m^3 = micrograms per cubic meter.

a. A more stringent 8-hour carbon monoxide state standard exists around Lake Tahoe (6 ppm).
b. Secondary national standard.

SOURCES:

1. California Air Resources Board, 2016. *Ambient Air Quality Standards.* Available: https://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Standards last updated May 4, 2016; Accessed December 22, 2022.
2. California Air Resources Board, 2009. *Common Air Pollutants.* Available: https://ww2.arb.ca.gov/resources/common-air-pollutants. Accessed December 22, 2022.

TABLE 2-4
SACRAMENTO COUNTY ATTAINMENT STATUS

Pollutant and Averaging Time	Designation/Classification	
	State Standards	Federal Standards
Ozone (1-hour)	Nonattainment	No Federal Standard
Ozone (8-hour)	Nonattainment/Serious	Nonattainment/Severe
Carbon Monoxide	Attainment	Attainment/Maintenance
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
Respirable Particulate Matter (PM_{10})	Nonattainment	Attainment/Maintenance*
Fine Particulate Matter ($PM_{2.5}$)	Attainment	Nonattainment/Moderate
Lead	Attainment	Attainment
Visibility Reducing Particles	Unclassified	No Federal Standard
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Unclassified	No Federal Standard
Vinyl Chloride	Unclassified	No Federal Standard

NOTES:

CARB makes area designations for ten criteria pollutants (O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, lead, visibility reducing particles, sulfates, and hydrogen sulfide. CARB does not designate areas according to the vinyl chloride standard.

* Effective October 28, 2013, the U.S. EPA formally re-designated Sacramento County as attainment for the federal PM_{10} standard.

SOURCES:

1. California Air Resources Board, 2022. *Area Designation Maps*. Available: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed December 15, 2022.

The federal CAA requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The US EPA has responsibility to review all state SIPs to determine if they conform to the mandates of the federal CAA and will achieve air quality goals when implemented.

Hazardous Air Pollutants

Federal laws use the term "Hazardous Air Pollutants" (HAPs) to refer to the same types of compounds that are referred to as TACs under State law. Currently, 187 substances are regulated as HAPs. The federal CAA requires the US EPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare.

2.2.2 State

Criteria Air Pollutants

At the state level, the California Air Resources Board (CARB) oversees California air quality policies and regulations. California had adopted its own air quality standards (California Ambient

Air Quality Standards, or CAAQS) as shown in Table 2-2. Most of the California ambient standards tend to be at least as protective as NAAQS and are often more stringent.

In 1988, California passed the California Clean Air Act (CCAA) (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards. The CCAA requires each air district in which state air quality standards are exceeded to prepare a plan that documents reasonable progress towards attainment. If an air basin (or portion thereof) exceeds the CAAQS for a particular criteria air pollutant, it is considered to be nonattainment of that criteria air pollutant until the area can demonstrate compliance. As indicated in Table 2-3, Sacramento County is classified as nonattainment and serious nonattainment for the 8-hour and 1-hour state ozone standards, respectively, and is nonattainment for the 24-hour and annual state PM_{10} standard.

Toxic Air Contaminants

The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807. A total of 243 substances have been designated TACs under California law; they include the 187 (federal) HAPs adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify, quantify, and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. Further regulations of diesel emissions by the CARB include the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Offroad Diesel Vehicle Regulation, and the New Offroad Compression Ignition Diesel Engines and Equipment Program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment.

In 2004, CARB adopted a measure to limit idling of diesel-fueled commercial motor vehicles. Heavy-duty diesel vehicles with a Gross Vehicle Weight Rating (GVWR) of 10,000 lbs. or heavier are prohibited from idling for more than 5 minutes within California's borders. Exceptions to the rule apply for certain circumstances.

Despite these reduction efforts, the CARB recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. In April 2005, the CARB published *Air Quality and Land Use Handbook: A Community Health Perspective*. This handbook is intended to give guidance to local governments in the siting of sensitive land uses near sources of air pollution. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities such as ports, rail yards and distribution centers. Specifically, the document focuses on risks from emissions of DPM, a known carcinogen, and establishes recommended siting distances of sensitive receptors. With respect to freeways, the recommendations of the report are: "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with more than 100,000 vehicles per day or rural roads with 50,000

vehicles/day."[19] The CARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones," and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary the CARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level.

2.2.3 Local

Sacramento Metropolitan Air Quality Management District

The SMAQMD is the regional agency responsible for air quality regulation within Sacramento County. The SMAQMD regulates air quality through its planning and review activities and has permit authority over most types of stationary emission sources and can require operators of stationary sources to obtain permits, can impose emission limits, set fuel or material specifications, and establish operational limits to reduce air emissions. The SMAQMD regulates new or modified stationary sources of TACs.

All areas designated as nonattainment are required to prepare plans showing how the area would meet the air quality standards by its attainment dates. The following are the most recent air quality plans applicable to the area of the proposed projects:

- Sacramento Regional 2015 8-Hour Ozone Attainment and Reasonable Further Progress Plan[20,21]
- SMAQMD's Triennial Report and Air Quality Plan Revision[22]
- PM_{10} Implementation/Maintenance Plan and Redesignation Request for Sacramento County[23]

[19] California Air Resources Board, 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005. p. 4. Available at: http://forms.cupertino.org/inc/pdf/SR85/Exhibit%20G%20-%20CARB%20Air%20Quality%20and%20Land%20Use%20Handbook%202005.pdf Accessed December 22, 2022.

[20] Sacramento Metropolitan Air Quality Management District, 2023. Sacramento Regional 2015 8-Hour Ozone Attainment and Reasonable Further Progress Plan. October 17. Available: https://www.airquality.org/ProgramCoordination/Documents/Sacramento%20Regional%202015%20NAAQS%208%20Hour%20Ozone%20Attainment%20and%20Reasonable%20Further%20Progress%20Plan.pdf. Accessed March 2024.

[21] The 2023 Sacramento Regional Plan 2015 NAAQS 8-Hour Ozone Attainment & Reasonable Further Progress Plan was published August 22, 2023. Public hearings were held in September through October 2023 to consider adoption of the plan. The Sacramento Federal Nonattainment Area air districts hosted public hearings to consider this Plan in late 2023. After the air districts adopted the Plan, it was submitted to CARB who adopted it on October 26, 2023. The Plan was submitted to EPA for final reviews and approval.

[22] Sacramento Metropolitan Air Quality Management District, 2015. Triennial Report and Air Quality Plan Revision. May 28, 2015. Available: https://www.airquality.org/ProgramCoordination/Documents/11)%20%202015TriennialReportandProgressRevision.pdf. Accessed December 22, 2022.

[23] Sacramento Metropolitan Air Quality Management District, 2010. PM_{10} Implementation/Maintenance Plan and Redesignation Request for Sacramento County. October 28, 2010. Available: https://ww2.arb.ca.gov/sites/default/files/classic/planning/sip/planarea/sacsip/sacpm10staffreport.pdf. Accessed December 22, 2022.

- $PM_{2.5}$ Maintenance Plan and Redesignation Request[24]
- 2004 Revision to the California State Implementation Plan for CO[25]

The construction phases of the project would be subject to the applicable SMAQMD regulations with regards to construction and stationary equipment, particulate matter generation, architectural coatings, and paving materials. Equipment used during construction would be subject to the applicable requirements of the SMAQMD, including Regulation 2 (Permits), Rule 201 (General Permit Requirements); and Regulation 4 (Prohibitory Rules), Rule 401 (Ringelmann Chart/ Opacity), Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Rule 404 (Particulate Matter), Rule 405 (Dust and Condensed Fumes), Rule 420 (Sulfur Content of Fuels), Rule 442 (Architectural Coatings), Rule 453 (Cutback and Emulsified Asphalt Paving Materials).

Furthermore, the demolition or renovation of any existing buildings and structures would be subject to Regulation 9, Rule 902 (Asbestos). Rule 902 is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of regulated asbestos containing material (RACM) generated or handled during these activities. This rule addresses the National Emissions Standards for Asbestos and adds requirements.

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is the Metropolitan Planning Organization (MPO) for the proposed Project site. SACOG's jurisdiction covers six counties in the Sacramento region (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties). One of the main responsibilities of SACOG is to maintain and develop comprehensive transportation planning for the region through Metropolitan Transportation Plans (MTPs) and Federal Transportation Improvement Programs (FTIPs). These transportation planning documents are intended to improve future transportation networks and options for residents. SACOG is tasked with determining conformity under the federal CAA for projects, plans, and programs. SACOG is responsible for the analysis of transportation activities to determine conformity with the federal CAA.

Metropolitan Transportation Plan/Sustainable Communities Strategy

SACOG's Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) is the long-range transportation plan for the region. The MTP/SCS designates the region using five "community types" (Center and Corridor Community, Developing Community, Established Community, Rural Residential Community, and Natural Resource Lands (Lands Not Identified for Development in the MTP/SCS Planning Period)).

[24] Sacramento Metropolitan Air Quality Management District, 2013. $PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request for Sacramento $PM_{2.5}$ Nonattainment Area. October 24, 2013. Available: https://www.airquality.org/ProgramCoordination/Documents/PM2.5%20Imp%20and%20Redesignation%202013.pdf. Accessed December 22, 2022.

[25] Sacramento Metropolitan Air Quality Management District, 2004. 2004 Revision to the California State Implementation Plan for Carbon Monoxide. July 22, 2004. Available: http://www.airquality.org/ProgramCoordination/Documents/1)%202004%20CO%20Maintenance%20Plan.pdf. Accessed December 22, 2022.

The MTP/SCS designates the footprint of the Master Plan area within a larger area designated as a Developing Community and a Transit Priority Area (TPA).[26] Developing Communities are described by SACOG as follows:

> *"Developing Communities are typically, though not always, situated on vacant land at the edge of existing urban or suburban development; they are the next increment of urban expansion. Developing Communities are identified in local plans as special plan areas, specific plans, or master plans and may be residential-only, employment-only, or a mix of residential and employment uses. Transportation options in Developing Communities often depend, to a great extent, on the timing of development. Bus service, for example, may be infrequent or unavailable today, but may be available every 30 minutes or less once a community builds out. Walking and bicycling environments vary widely, though many Developing Communities are designed with dedicated pedestrian and bicycle trails."*[27]

For TPA's in Sacramento County, such as the Master Plan area, the MTP/SCS shows a reduction in per-capita VMT compared to baseline conditions: "The proposed MTP/SCS land use and transportation changes decrease household-generated VMT in Sacramento County TPAs, relative to 2016, by 7.5 percent"[28] In addition, the MTP/SCS has the overall outcome of reducing mobile source emissions through compact growth patterns and proximity to transit:

> "*The location and pattern of the proposed MTP/SCS growth is important, because it impacts travel behavior and provides a means to determine the impact of future vehicle emissions in the proposed plan area. A compact growth pattern served by an efficient and diverse transportation system provides the foundation to reduce automotive travel and increase walking, bicycling, and transit use—all of which reduce individual vehicle trips and associated VMT. Reduced VMT and vehicle trips are directly linked to reduced regional criteria air pollutant emissions and TAC emissions from mobile sources."*[29]

The MTP/SCS is designed to identify areas within the region sufficient to house all of the forecasted population of the region. This is based on adopted local general plans, community plans, specific plans, and local policies and regulations. The MTP/SCS is not a growth-inducing document and does not regulate or control growth within the region:

> *"While the MTP/SCS is required to integrate land use and transportation planning, the plan recognizes and protects local land use authority. Under SB 375 and the MTP/ SCS, the region's cities and counties retain local land use authority over where future development occurs. The MTP/ SCS land use and transportation assumptions are built using local plans and in close coordination with planning and transportation staff*

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26 Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted November 18,2019, Figure 3.8, p. 52. Available at:https://www.sacog.org/sites/main/files/file-attachments/2020_mtp-scs.pdf?1580330993. Accessed March 2023.

27 Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted November 18, 2019, pp. 40. Available at: https://www.sacog.org/sites/main/files/file-attachments/2020_mtp-scs_final_draft_for_web.pdf?1580325999. Accessed April 2023.

28 Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy Draft Environmental Impact Report. Chapter 16: Transportation. p. 16-50. Available:https://www.sacog.org/sites/main/files/file-attachments/sacog_deir_-_optimized.pdf?1569042224. Accessed April 2023.

29 *Ibid.*

around the region. The plan does not mandate any changes to local zoning rules, general plans, or processes for reviewing projects; nor can the plan act as a cap on development in any given jurisdiction."[30] *(Emphasis added.)*

The 2020 MTP/SCS does not presently fully account for all growth anticipated within the Master Plan area.[31] However, the MTP/SCS is updated every four years to include additional amendments to County and City General Plans and take into account approved projects and new specific plans, such as the Master Plan.

Sacramento County General Plan

The *Sacramento County General Plan Air Quality Element*[32] contains the following air quality goal and policies that would apply to the Master Plan.

GOAL: Improve air quality to promote public health, safety, welfare, and environmental quality of the community.

Policies

AQ-1: New development shall be designed to promote pedestrian/bicycle access and circulation to encourage community residents to use alternative modes of transportation to conserve air quality and minimize direct and indirect emission of air contaminants.

AQ-2: Support Regional Transit's efforts to secure adequate funding so that transit is a viable transportation alternative. Development shall pay its fair share of the cost of transit facilities required to serve the project.

AQ-3: Buffers and/or other appropriate mitigation shall be established on a project-by-project basis and incorporated during review to provide for protection of sensitive receptors from sources of air pollution or odor. The California Air Resources Board's "Air Quality and Land Use Handbook: A Community Health Perspective", and the AQMD's approved Protocol (Protocol for Evaluating the Location of Sensitive Land uses Adjacent to Major Roadways) shall be utilized when establishing these buffers.

AQ-4: Developments which meet or exceed thresholds of significance for ozone precursor pollutants as adopted by the Sacramento Metropolitan Air Quality Management District (SMAQMD), shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.

AQ-5: Reduce emissions associated with vehicle miles travelled and evaporation by reducing the surface area dedicated to parking facilities; reduce vehicle emissions associated with "hunting" for on-street parking by implementing

30 Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted November 18, 2019, pp. 61. Accessed March 2023.

31 Glover, Tina. "RE: Growth Estimates Within West Jackson Highway Master Plan." Message to Dan Sloat. November 20, 2017. Email.

32 Sacramento County, 2011. Sacramento County General Plan Air Quality Element, November 9, 2011. Accessed March 2023.

innovative parking innovative parking [SIC] solutions including shared parking, elimination of minimum parking requirements, creation of maximum parking requirements, and utilize performance pricing for publicly owned parking spaces both on- and off-street, as well as creating parking benefit districts.

AQ-6: Provide incentives for the use of transportation alternatives, including a program for the provision of financial incentives for builders that construct ownership housing within a quarter mile of existing and proposed light rail stations.

AQ-8: Promote mixed-use development and provide for increased development intensity along existing and proposed transit corridors to reduce the length and frequency of vehicle trips.

AQ-9: When park-and-ride facilities are requested by transit providers, the spaces provided for the park-and-ride facility may be counted as part of the total amount of parking required by the zoning code.

AQ-10: Encourage vehicle trip reduction and improved air quality by requiring development projects that exceed the SMAQMD's significance thresholds for operational emissions to provide on-going, cost-effective mechanisms for transportation services that help reduce the demand for existing roadway infrastructure.

AQ-11: Encourage contractors operating in the county to procure and to operate low-emission vehicles, and to seek low emission fleet status for their off-road equipment.

AQ-16: Prohibit the idling of on-and off-road engines when the vehicle is not moving or when the off-road equipment is not performing work for a period of time greater than five minutes in any one-hour period.

AQ-17: Promote optimal air quality benefits through energy conservation measures in new development.

AQ-19: Require all feasible reductions in emissions for the operation of construction vehicles and equipment on major land development and roadway construction projects.

AQ-20: Promote Cool Community strategies to cool the urban heat island, reduce energy use and ozone formation, and maximize air quality benefits by encouraging four main strategies including, but not limited to: plant trees, selective use of vegetation for landscaping, install cool roofing, and install cool pavements.

AQ-21: Support SMAQMD's particulate matter control measures for residential wood burning and fugitive dust.

2.3 Analysis, Impacts, and Mitigation

2.3.1 CEQA Significance Criteria

Impacts related to air quality are considered significant if the proposed project would result in the following:

- Conflict with or obstruct implementation of an applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The SMAQMD has developed significance thresholds to help lead agencies determine whether a project may have a significant air quality impact. Projects whose emissions are expected to meet or exceed the recommended significance criteria will have a potentially significant adverse impact on air quality.

In addition, CEQA Guidelines section 15126.2(a) states that the impacts of a proposed project should include discussion of "health and safety problems caused by the physical changes" associated with the project and should "analyze any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected." This issue is discussed in the *Impacts and Mitigation Measures* section below.

Criteria Air Pollutants

The SMAQMD has established mass emissions thresholds for O_3 precursors, NO_X and ROG, PM_{10}, and $PM_{2.5}$ because the Sacramento region does not meet the state and federal ozone and state particulate matter (PM_{10} and $PM_{2.5}$) ambient air quality standards. Emissions of O_3 precursors or PM from an individual project could contribute to an existing exceedance of the ozone standards. Construction activities are not likely to generate substantial quantities of CO because most construction equipment is diesel-powered and therefore has much lower CO emissions than gasoline vehicles (CO emissions are predominantly a result of gasoline fuel combustion).[33] However, increased traffic congestion could result in CO hotspots (exceedance of the CO ambient air quality standards). **Table 2-5** presents the applicable SMAQMD thresholds of significance.

[33] Sacramento Metropolitan Air Quality Management District, 2017. Guide to Air Quality Assessment in Sacramento County. Chapter 3 Construction-Generated Criteria Air Pollutant And Precursor Emissions. Last updated April 2020. Available: http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools. Accessed March 2023.

TABLE 2-5
SMAQMD CRITERIA AIR POLLUTANT THRESHOLDS OF SIGNIFICANCE

Pollutant	Construction Phase	Operational Phase
Oxides of nitrogen (NO_X)	85 maximum ppd	65 maximum ppd
ROG (VOC)	None	65 maximum ppd
PM_{10}	0 / 80 maximum ppd /14.6 tpy [a]	0 / 80 maximum ppd / 14.6 tpy*
$PM_{2.5}$	0 / 15 maximum ppd*	0 / 82 maximum ppd / 15 tpy*
CO	20 ppm (1-hour); 9 ppm (8-hour)	20 ppm (1-hour); 9 ppm (8-hour)

NOTES:

a. If all feasible Best Achievable Control Technology/Best Management Practices (BACT/BMP) are applied, then the threshold of significance is 80 maximum ppd and 14.6 tpy for PM_{10}, and 82 maximum ppd and 15 tpy for $PM_{2.5}$ for both construction and operational phases. To date, SMAQMD has not defined any BACT/BMPs for operational emissions from transportation projects. Consequently, these thresholds are used to evaluate operational emissions.

ABBREVIATIONS:

SMAQMD = Sacramento Metropolitan Air Quality Management District
ppd = pounds per day
tpy = tons per year
NOx = nitrogen oxides
ROG = reactive organic gases
VOC = volatile organic compounds
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
CO = carbon monoxide
Ppm = parts per million

SOURCES:

1. Sacramento Metropolitan Air Quality Management District (SMAQMD), 2017. Guide to Air Quality Assessment in Sacramento County. Chapter 2 Appendix (Updated April 2020). Available: https://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf. Accessed March 2023.

Specifically, the project would have a potentially significant adverse impact on air quality if emissions:

- result in short-term (construction) emissions of NO_X above 85 maximum pounds per day (ppd);
- result in short-term (construction) emissions of PM_{10} above zero pounds per day without implementation of all best management practices (BMPs) and above 80 maximum ppd or 14.6 tons per year (tpy) after implementation of all BMPs;
- result in short-term (construction) emissions of $PM_{2.5}$ above zero ppd without implementation of all BMPs and above 82 maximum ppd or 15.0 tpy after implementation of all BMPs;
- result in long-term (operational) emissions of NO_X or ROG above 65 maximum ppd;
- result in long-term (operational) emissions of PM_{10} above zero pounds per day without implementation of all BMPs and above 80 maximum ppd or 14.6 tpy after implementation of all BMPs;
- result in long-term (operational) emissions of $PM_{2.5}$ above zero pounds per day without implementation of all BMPs and above 82 ppd or 15.0 tpy after implementation of all BMPs; or
- result in CO concentrations that exceed the 1-hour state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm).

Toxic Air Contaminants

The construction or operation of any project with the potential to expose sensitive receptors to substantial levels of TACs (such as DPM) would be deemed to have a potentially significant impact. More specifically, proposed stationary source projects that have the potential to expose the public to TACs in excess of the following SMAQMD thresholds would be considered to have a significant air quality impact:

- An incremental increase in cancer risk greater than 10 in one million at any offsite receptor; or
- Ground-level concentrations of project-generated TACs would result in a Hazard Index[34] greater than 1 at any offsite receptor.

In addition, based on the programmatic nature of the Master Plan, impacts associated with TACs will also be analyzed based on buffer zones between sensitive receptors and existing and proposed land uses that emit TACs in accordance with the recommendations provided in CARB's *Air Quality and Land Use Handbook: A Community Health Perspective*. For locating sensitive receptors (residences, schools, day care centers, and medical facilities) along a major roadway, SMAQMD has established a screening protocol whereby new residential uses located more than 500 feet from the nearest high traffic volume roadway (defined as a freeway or urban roadway with greater than 100,000 vehicles per day) would meet the CARB guidance distance and no further roadway-related air quality evaluations are recommended.[35]

A health risk assessment (HRA) is a quantitative analysis of a project's TAC emissions and the resulting health risks associated with exposure of nearby sensitive receptors to these TAC emissions. An HRA should follow the latest Air Toxics Hot Spots Program Guidance protocol from the Office of Environmental Health Hazard Assessment (OEHHA).[36] An HRA calculates health risks resulting from project construction and operations consistent with SMAQMD guidelines, using technical information from the SMAQMD, California Air Pollution Control Officer's Association (CAPCOA), CARB, Office of Environmental Health Hazard Assessment (OEHHA), and the USEPA. Consistent with guidelines and recommendations from these agencies, an HRA evaluates the estimated incremental increase in lifetime cancer risks from exposure to emissions of DPM[37] and $PM_{2.5}$ concentrations that would be emitted by project-related construction sources, including off-road construction equipment and on-road haul trucks,

34 Non-cancer adverse health risk, both for acute (short-term) and chronic (long-term) risk, is measured against a hazard index (HI), which is defined as the ratio of the predicted incremental exposure concentration from the proposed project to a published reference exposure level (REL) that could cause adverse health effects as established by Office of Environmental Health Hazard Assessment (OEHHA). The ratio (referred to as the Hazard Quotient [HQ]) of each non-carcinogenic substance that affects a certain organ system is added to produce an overall HI for that organ system.

35 Sacramento Metropolitan Air Quality Management District, 2011. *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways*. March 2011. Version 2.4, p. 7.

36 Office of Environmental Health Hazard Assessment. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments*. February. Available at http://oehha.ca.gov/air/hot_spots/hotspots2015.html. Accessed March 2023.

37 While DPM is a complex mixture of gases and fine particles that includes over 40 substances that are listed by the USEPA as hazardous air pollutants and by the ARB as toxic air, the DPM analysis will use PM10 emissions as a surrogate for DPM emissions, per OEHHA guidance.

and project-related operational sources, including diesel-powered emergency generators and vehicle traffic.

HRAs can either be screening-level analyses or refined assessment. The screening-level approach is appropriate to estimate the worst-case health risks associated with project construction and operations. If the screening-level HRA demonstrates that a significant health risk would occur from project construction and/or operations, a detailed HRA can be conducted using more refined models and methods. The HRA should consider both new onsite sensitive receptors and existing offsite sensitive receptors within the vicinity of the project (e.g. within 1,000 feet of project boundaries).

The HRA should also include an assessment of cumulative health risks by considering existing TAC sources in proximity of the project and its new onsite sensitive receptors using information provided by the SMAQMD. In the *California Building Industry Association v. Bay Area Air Quality Management District* case decided in 2015,[38] the California Supreme Court held that CEQA does not generally require lead agencies to consider how existing environmental conditions might impact a project's users or residents, except where the project would significantly exacerbate an existing environmental condition. Accordingly, exposure of sensitive receptors to substantial cumulative pollutant concentrations are applicable only to the extent that the Project significantly exacerbates existing air quality conditions. An impact is considered significant if the project would significantly exacerbate existing or future air quality conditions. However, according to the SMAQMD, the project-level threshold of significance for evaluating TACs generated by a project should also be used to determine whether a project's TAC emissions are cumulatively considerable, and the SMAQMD considers implementation of the project-level mitigation requirements to be sufficient for a finding of less than cumulatively considerable for cumulative impacts of TACs.

The SMAQMD recommends that lead agencies make an effort to obtain detailed project-specific information in order to accurately disclose all potential TAC-related impacts of a project. However, the District understands that the information needed to prepare a project-level HRA may not be available at the time of analysis, as is the case for the Master Plan.[39]

Odors

Odor impacts are addressed in a qualitative manner based on screening distances and odor complaints, as recommend in SMAQMD guidance. This includes a discussion of whether a project would result in excessive nuisance odors, or if proposed sensitive land uses would be exposed to substantial odors.

[38] *California Building Industry Association v. Bay Area Air Quality Management District,* 62 Cal.4th 369. Opinion Filed December 17, 2015.

[39] Sacramento Metropolitan Air Quality Management District, 2018. Guide to Air Quality Assessment in Sacramento County. Chapter 5: TAC Emissions. September. Available: http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools. Accessed March 2023.

2.3.2 Methods and Assumptions

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to operations. First, during construction (short-term), the Master Plan would affect local particulate concentrations primarily due to fugitive dust sources and diesel exhaust. Under operations (long-term), the Master Plan would result in an increase in emissions primarily due to motor vehicle trips and on-site stationary and area sources. Area sources include emissions from landscaping equipment, natural gas combustion exhaust from water and space heating, and the use of consumer products.[40]

Construction

Modeling construction-related emissions requires detailed information about the construction schedule, the number and type of construction equipment used, the acreage of construction, the amount of asphalt paving conducted, and other information that cannot be known at the Master Plan-level stage. Therefore, the construction air quality analysis estimates impacts based on anticipated annual construction activity for all development types and does not reflect specific project types (e.g., residential housing, strip mall, office building) or specific project locations. The impact analysis includes general mitigation that will be applicable to all future construction projects. Future project-level analyses should utilize the SMAQMD screening methods to determine the appropriate level of analysis required.

Since the Master Plan will be built out based on market demand, the exact phasing of construction is unknown. It is anticipated that the buildout period would occur over 30 years based on the MTP/SCS economic analyses showing the overall anticipated development horizon for the region. A buildout period of 30 years is a conservative estimate given the size and amount of development allowed in the Master Plan. The Master Plan covers almost 6,000 acres of land and provides 16,484 residential units and over 13 million square feet of non-residential development. Other recently approved projects in the area such as the Mather South Master Plan and the NewBridge Specific Plan are not as large, covering 848 acres with 3,522 residential units and 1,095 acres with 2,915 residential units, respectively. As noted in the text above, the MTP/SCS contains a projected level of economic growth for the SACOG region and then estimates the number of new housing units to meet the employment levels that will support that economic growth.[41] Projected growth patterns (i.e., the location of growth) are estimates, only, and growth may occur in areas identified in the MTP/SCS or in other areas approved later by local agencies.[42] In addition, the "Future Planning Areas" for the Master Plan are likely beyond the 30-year horizon.

[40] For industrial sources, emissions associated with motor vehicle trips and area sources are included in the emission estimates. Stationary source emissions produced by industrial sources are not included in the estimates because such emissions vary substantially by industrial source type, which are unknown at the master plan stage of development. The Sacramento Metropolitan Air Quality Management District requires an air permit for stationary emission sources. Emissions would be evaluated at the time of stationary source permitting.

[41] Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted November 18, 2020, pp. 80.

[42] Sacramento Area Council of Governments, 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted February 18, 2016, pp. 29 and pp. xxix.

It should be noted that actual construction activity, and associated emissions, will be driven by prevailing market conditions in any given year. Based on historical trends within Sacramento County, there are likely to be periods of intense construction in which multiple large development areas are undergoing concurrent construction, and periods of minimal construction activity in which the demand for construction abates. Consequently, it is infeasible and speculative to provide an accurate forecast of annual emissions throughout Master Plan buildout.

For this analysis, the first year of construction was modeled to approximate the worst-case construction emissions. Equipment used during the first year of construction would be equipped with engines that are expected to emit more criteria pollutant emissions than construction equipment used in later construction years. This is because construction equipment becomes cleaner over time as older, less efficient equipment is replaced through fleet turnover with newer, cleaner equipment that meets more stringent emission standards as required by CARB and the US EPA. Since the Master Plan would likely be built out over a 30-year period as discussed above, it is assumed that 1/30th of the proposed developments would be constructed in the year 2025. The following assumptions were used in CalEEMod to estimate emissions for year 1 (2025) construction activities.

- 1/30th of the total Master Plan development would be constructed in year 2025:
  - 192 total acres
  - 550 dwelling units
  - 240,000 square feet of commercial space
  - 150,000 square feet of retail space
  - 40,000 square feet of educational space
  - 70 acres of recreational space
  - 66,000 square feet of industrial space
  - 7.7 acres of parking area
- The number of default CalEEMod off-road construction equipment pieces and number of on-road haul truck trips were scaled up by a factor of 5 to account for the anticipated construction duration, equipment activity, and acreage of development within the Master Plan.

These assumptions capture the maximum amount of expected construction in any given year of buildout due to local utility and infrastructure limitations and projected market conditions. Practical limitations such as market demand for housing and office space and available contractors and pieces of construction equipment indicate that this amount of annual development is conservative. Development of the Master Plan could take much longer than 30 years. The Regional Housing Needs Allocation (RHNA) includes a maximum of 855 annually permitted

dwelling units (DUs) between 2021 and 2025;[43] 550 DUs assumed for construction year 2025 as indicated above represents nearly two-thirds (64 percent) of the total RHNA permitted units total, which is conservative given the large amount of development occurring in the County beyond that occurring for the Master Plan. SACOG's 2025 Blueprint MTP/SCS projects 278,000 new DUs from 2020 to 2050 for the entire SACOG region (six counties), or an average of 9,000 DUs per year; unincorporated Sacramento County areas are projected to develop 35,720 DUs from 2020 to 2050, or an average of 1,200 DUs per year; the Jackson West area is projected to develop 16,374 DUs from 2020 to 2050, or an average of 546 DUs per year.[44] This shows that the assumptions above for Master Plan construction in 2025 are reasonable and conservative.[45]

Using the methods contained in SMAQMD's *Guide to Air Quality Assessment in Sacramento County*, CalEEMod 2020.4.0 was used to estimate construction emissions for the Master Plan. The 2022 version of CalEEMod (v. 2022.1.0.0) was released May 27, 2022, and has several default inputs that are different from the 2020 version that would impact construction modeling results, including revised average trip lengths for worker, vendor, and haul trips, and changes to criteria pollutant emission rates for off-road construction equipment and on-road vehicles.[46] However, these changes would result in minor differences in the modeled criteria pollutant emissions and would not materially affect the air quality analysis.

However, SMAQMD currently approves the use of CalEEMod 2020.4.0 for CEQA compliance.[47] CalEEMod is an approved emissions inventory software program that allows the user to estimate criteria pollutant emissions from land use development projects. Land use input information came from the latest 2023 Master Plan land use plans. It is assumed that the Master Plan would require 500,000 cubic yards of soil import during the grading phase. This soil import assumption is based on the professional judgment of the project applicant based on review of the project conceptual grading plan and air quality experts at the time of Master Plan preparation and may be refined for project-specific evaluation of emissions for a specific development block in the future. Assuming the haul trucks used during project construction can carry 16 cubic yards of soil each and construction will be completed over a 30-year period, the first year of construction could result in 2,083 one-way haul truck trips associated with 16,667 cubic yards of soil. However, because the first few years of construction are likely to involve more grading and soil

43 In 2023 Sacramento County issued a total of 855 building permits for residential dwelling units, which is the maximum allowed annually in the County. Sacramento County, Board of Supervisors Meeting on April 10th, 2024. Appendix A, Annual Housing Element Progress Report. Available at: https://agendanet.saccounty.gov/BoardofSupervisors/Documents/ViewDocument/BOARD_OF_SUPERVISORS_-_SPECIAL_MEETING_9015_Agenda_Packet_4_10_2024_1_00_00_PM.pdf?meetingId=9015&documentType=AgendaPacket&itemId=0&publishId=0&isSection=false. Accessed April 2024.

44 Sacramento Area Council of Governments, 2023. *2025 Blueprint (MTP/SCS) Discussion Scenario*. September 4th, 2023. Available at https://www.sacog.org/home/showpublisheddocument/1412/638334168146204802. Accessed March 2024.

45 Philley, Paul. Sacramento Metropolitan Air Quality Management District. February 21, 2024 telephone correspondence with Brian Schuster, ESA.

46 ICF, Sacramento Metropolitan Air Quality Management District, Fehr & Peers, STI, and Ramboll, 2021. *Appendix H: Comparison to CalEEMod Version 2020.4.0*. Prepared for the California Air Pollution Control Officers Association. April. Available at: https://www.caleemod.com/documents/user-guide/09_Appendix%20H.pdf. Accessed April 2023

47 Philley, Paul. Sacramento Metropolitan Air Quality Management District. September 6, 2023 telephone correspondence with Brian Schuster, ESA.

import than later years, it was conservatively assumed that the first year of construction would move 1/10th of the total soil import or 50,000 cubic yards, which would result in 6,250 one-way haul truck trips. CalEEMod defaults for number of construction equipment per construction phase and daily worker and vendor trips were used. Additional information and model results for each of the analyses described above are presented in Appendix A.

Operation

The proposed developments under the Master Plan are assumed to be fully built-out in the year 2055. Since CalEEMod version 2020.4.0 only allows the user to enter operational years up to the year 2050, it was not possible to model an operational year 2055 in CalEEMod. Therefore, for this analysis, criteria pollutant emissions under the Master Plan were modeled for operational year 2050 using CalEEMod version 2020.4.0. This approach is conservative as emissions rates will likely be higher in 2050 than in 2055 due to continual improvements in vehicle technology, emission controls, and fuel efficiency. Although there are existing uses within the Master Plan area, criteria pollutant emissions for these uses were not modeled due to their limited number, and emissions from these uses would be minor. It is also conservative to assume zero emissions from existing uses because these emissions would be subtracted from Master Plan emissions to determine the net change in emissions from the Master Plan. Since construction of the Master Plan is anticipated to begin after 2024, it is assumed that all buildings will be constructed to 2022 Title 24 energy efficiency standards (which was adopted August 11, 2021). Future Title 24 requirements were not modeled because the specific requirements are not known this time. The 2022 energy efficiency standards require solar for all new single-family homes and for all multi-family buildings up to three stories.

For on-road vehicles, criteria pollutant emissions and GHG emissions were calculated using EMFAC2021 v1.0.2, which only allows the user to enter operational years up to 2050. Vehicle miles traveled (VMT) per speed bin were provided by DKS Associated (the traffic consultant) for the Master Plan.[48] On-road vehicle information was supplied in both the 2023 DKS VMT Analysis[49] and the 2023 Kimley Horn VMT Analysis[50]. Additional information and model results for each of the analyses described above are presented in Appendix A.

As noted above for construction, the 2022 version of CalEEMod was released May 27, 2022, and has several default inputs that are different from the 2020 version that would impact operational modeling results, including changes to criteria pollutant emission rates for architectural coatings, landscaping, and consumer product use for certain land uses.[51] However, these changes would result in minor differences in the modeled criteria pollutant emissions and would not materially

48 DKS Associates, 2023. *Memorandum: SB 743/ VMT Analysis – West Jackson Highway Master Plan*. September 25.

49 Ibid.

50 Kimley Horn, 2023. West Jackson Highway Master Plan Vehicle Miles Traveled Analysis. November 20.

51 ICF, Sacramento Metropolitan Air Quality Management District, Fehr & Peers, STI, and Ramboll, 2021. *Appendix H: Comparison to CalEEMod Version 2020.4.0*. Prepared for the California Air Pollution Control Officers Association. April. Available at: https://www.caleemod.com/documents/user-guide/09_Appendix%20H.pdf. Accessed April 2023

affect the air quality analysis. SMAQMD currently approves the use of CalEEMod 2020.4.0 for CEQA compliance.[52]

Air Quality Mitigation Plan (AQMP)

Sacramento County General Plan Policy AQ-4 requires that projects exceeding the SMAQMD operational threshold for ozone precursors (i.e., ROG and NO_X) prepare an Air Quality Mitigation Plan (AQMP), as recommended by SMAQMD. For projects that are included in the current State Implementation Plan (SIP), SMAQMD recommends a 15 percent reduction of ozone precursors from mobile-source emissions. For projects not included in the current SIP, SMAQMD recommends a 35 percent reduction of ozone precursors from mobile-source emissions.

For the Master Plan, only the land uses west of Bradshaw Road are included in the SACOG's MTP/SCS and therefore are included within the SIP. The land uses proposed under the Master Plan east of Bradshaw Road are not included in SMAQMD's SIP. SMAQMD's AQMP guidance does not specify a percentage reduction to use for projects partially accounted for in the SIP. By calculating the Master Plan's VMT included in the SIP, a "blended rate" mitigated reduction goal of 29 percent below an unmitigated scenario could be used to show consistency with regional air quality plans. This blended rate reduction goal was developed through coordination with County and SMAQMD staff and represents the amount of VMT for the Master Plan land uses west of Bradshaw Road compared to the total Master Plan VMT.[53] However, to provide a conservative analysis of the AQMP requirement for the Master Plan, a 35 percent reduction of ozone precursors from mobile-source emissions below an unmitigated scenario was used in the AQMP. In compliance with both the General Plan policies and SMAQMD guidance, the project has prepared an AQMP to define the processes by which emissions of ROG and NO_X would be reduced by 35 percent. The AQMP, including detail on and the derivation of the 35 percent reduction requirement, can be found in Appendix B.

2.3.3 Impacts and Mitigation Measures

Impact AQ.1: The Master Plan could conflict with or obstruct implementation of an applicable air quality plan. (*Significant and Unavoidable*)

The *Sacramento Regional 2015 8-Hour Ozone Attainment and Reasonable Further Progress Plan*,[54] which is the current ozone attainment plan for the region, addresses attainment of the

52 Philley, Paul. Sacramento Metropolitan Air Quality Management District. September 6, 2023 telephone correspondence with Brian Schuster, ESA.

53 Sacramento Metropolitan Air Quality Management District, 2014b. October 22, 2014 e-mail from Rachel Dubose, SMAQMD to Josh Leachman, Stonebridge Properties and Tim Rimpo, ESA - Regarding West Jackson Highway Master Plan – Options for Using a Blended Emission Reduction Percentage.

54 Sacramento Metropolitan Air Quality Management District, 2023. *Sacramento Regional 2015 8-Hour Ozone Attainment and Reasonable Further Progress Plan*. October 17. Available: https://www.airquality.org/ProgramCoordination/Documents/Sacramento%20Regional%202015%20NAAQS%208%20Hour%20Ozone%20Attainment%20and%20Reasonable%20Further%20Progress%20Plan.pdf. Accessed March 2024.

federal 8-hour ozone standard, while the *Triennial Report and Air Quality Plan Revision*[55] and the *2017 Annual Progress Report*[56] address attainment of the California 1-hour and 8-hour ozone standards. These are the latest plans issued by the SMAQMD, and they incorporate land use assumptions and travel demand modeling from SACOG.

According to the SMAQMD, land use development projects that exceed emissions of 85 lbs/day of NO_X during construction would have the potential to obstruct the success of the regional ozone attainment plans and would therefore be considered significant and require mitigation. Emissions of ROG and NO_X from construction are discussed below in Impact AQ.2. Both ROG and NO_X emission are expected to exceed the applicable significance thresholds as presented below; therefore, the Master Plan's construction impact would be considered significant.

For operations, land use development projects that exceed emissions of 65 lbs/day of ROG or NO_X during operational activities would have the potential to obstruct the success of the regional ozone attainment plans and would therefore be considered significant and require mitigation. In order to determine compliance with the applicable air quality plan with regard to operational emissions, the SMAQMD recommends comparing the project to the growth projections and VMT included in the MTP/SCS.[57]

According to the SMAQMD, a project should assess consistency with the SIP by asking the following question: "Would the project involve a change in a land use designation established by the applicable local land use plan and/or general plan?"[58] According to SACOG, the household population of the Master Plan's footprint within the MTP/SCS Developing Community area is expected to increase from 630 in 2012 and 720 in 2020 to 13,000 in 2036. Dwelling unit counts in the area are expected to increase from 270 in 2012 and 2020 to 5,400 in 2036. Employment counts in the area are expected to increase from 2,200 in 2012 and 2,300 in 2020 to 3,000 in 2036.[59] Assuming roughly half of the proposed development under the Master Plan is constructed by 2040, the Master Plan would result in more dwelling units than what was included in the SIP for 2040. In other words, full extent of Master Plan development is not included in SACOG's growth projections included in the current SIP. Therefore, the Master Plan would not be consistent with the growth projections of the SIP.

However, the SIP is updated every few years to incorporate new growth projections for the region. In addition, the FPAs are not likely to develop within this time horizon. However, if they

55 Sacramento Metropolitan Air Quality Management District, 2015. *Triennial Report and Air Quality Plan Revision*. May. Available: http://www.airquality.org/ProgramCoordination/Documents/2016%20Annual%20Progress%20Report%20-%20final.pdf. Accessed March 2023.

56 Sacramento Metropolitan Air Quality Management District, 2018. 2017 Annual Progress Report. October 25. Available: https://www.airquality.org/ProgramCoordination/Documents/2017%20Annual%20Progress%20Report.pdf . Accessed March 2024.

57 Sacramento Area Council of Governments, 2020. *Metropolitan Transportation Plan/Sustainable Communities Strategy*. Adopted November 18, 2019.

58 Sacramento Metropolitan Air Quality Management District, 2016. Guide to Air Quality Assessment in Sacramento County. Chapter 8 Cumulative Air Quality Impacts. June. Available: http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools. Accessed December 29, 2022.

59 Glover, Tina. "RE: Growth Estimates Within West Jackson Highway Master Plan." Message to Dan Sloat. November 20, 2017. Email.

do, additional air quality analysis will be required as part of the environmental review of those FPAs to demonstrate compliance with applicable standards at that time. As discussed in Impact AQ.3 below, after full-build-out of the Master Plan, unmitigated operational emissions would generate ozone precursor (ROG and NO_X) emissions that would exceed the significance thresholds established by the SMAQMD and would therefore be considered significant for CEQA purposes. As such, if not mitigated, the ozone precursor emissions generated during future operations of the Master Plan could conflict with or obstruct implementation of applicable air quality plans.

When operational emissions exceed significance thresholds, the SMAQMD recommends the development of an AQMP to minimize impacts, with guidance and suggested measures included in the *Recommended Guidance for Land Use Emission Reductions Version 4.0 (for Operational Emissions).*[60] As previous discussed under the *Methods and Assumptions* section above, a "blended rate" mitigated reduction goal of 35 percent was used to show consistency with regional air quality plans.

An AQMP was prepared demonstrating that the Master Plan could achieve the applied 35 percent reduction in NO_X and ROG emissions from project-related mobile sources after all proposed design features have been implemented; the AQMP can be found in Appendix B. Specific features that reduce VMT are listed below. The corresponding CAPCOA greenhouse gas mitigation measures (T-xx), SMAQMD land use emission reduction measures (LUT-xx), and Sacramento County Final Draft Community Wide Climate Action Plan (CAP) measures (GHG-xx) are noted.

- Project is located in a suburban center within approximately 10 miles of the Sacramento downtown central business district and less than 5 miles from other existing high-density commercial/job center areas (LUT-2 and LUT-3).
- Project is located adjacent to other planned developments such that single-use trips are minimized, i.e., there are more pass-by and diverted trips (LUT-3 and LUT-4).
- Project provides a compact mix of land uses in close proximity to each other with a highly connected street and trail network (LUT-3).
- Housing density is better than 7 dwelling units per acre (LUT-1).
- Project design includes locating at least four schools within the project boundaries such that most students can walk to a local school (LUT-3 and LUT-4).
- Project design includes at least eight parks within the project boundaries such that residents can walk/bike to enjoy the parks (LUT -3 and LUT-4).
- Project design includes access to high frequency bus service that connects to the Watt/Manlove light rail station (LUT-5).
- Bus routes are signalized in order to avoid traffic delays (T-27).

[60] Sacramento Metropolitan Air Quality Management District, 2017. Recommended Guidance for Land Use Emission Reductions Version 4 (for Operational Emissions). November 30, 2017.

- Project design promotes a multi-modal system that makes public transit, walking, and bicycling viable and attractive travel choices for residents and employees. Features include:
  - Adequate bike parking at non-residential locations (T-34, T-47).
  - Showers/lockers and other end of trip facilities at non-residential buildings (T-10).
  - Long-term bike parking facilities (T-34, T-47).
- Project includes an extensive pedestrian path and trail system that is convenient and accessible from homes, school, parks, employment, and shopping (LUT-8).
- Pedestrian and bike paths minimize any barriers to pedestrian/bicycle use, (e.g., fences, berms and other impediments are eliminated where possible) (LUT-8, T-18, T-20).
- Project subsidizes bus rapid transit lanes (T-27).
- Project funding and design will result in bus headways of 15 minutes or better (T-26).
- Project includes joining a Transportation Management Association (TMA) funded through assessments. Although the project will include a TMA, no VMT reduction from the TMA has been calculated or included in the Traffic Study.[61]
- Project includes assessments for regional transportation improvements (T-27).
- Mandatory Community-Wide TMA participation.
- Electric bike share and scooter share (T-22-B, T-22-C).
- Additional sidewalks within the Project (T-18).
- Carpooling/rideshare (T-8).

As shown in **Table 2-6**, by implementing the design features proposed under the Master Plan, the Master Plan would meet and substantially exceed the 35 percent reduction target for ROG and NO_X. Although the full extent of the Master Plan development is not identified in the 2020 SACOG MTP/SCS, the Master Plan would meet the reduction targets for NO_X and ROG. However, since the full extent of the Master Plan development is not presently included in SACOG's growth projections that are relied upon in the SIP, the Master Plan would be inconsistent with the SMAQMD's air quality plans. In addition, both construction and operational emissions of ROG and NO_X exceed the SMAQMD's significance thresholds, as presented below in Impacts AQ.2 and AQ.3. Therefore, the Master Plan has the potential to obstruct the success of regional ozone attainment and this impact is considered **significant and unavoidable**.

[61] Kimley Horn, 2023. West Jackson Highway Master Plan Vehicle Miles Traveled Analysis. November 20.

TABLE 2-6
PERCENT REDUCTION OF MOBILE EMISSIONS
AFTER IMPLEMENTATION OF ALL DESIGN FEATURES AND MITIGATION MEASURES IN THE YEAR 2050

Pollutant	BAU Mobile Emissions (tpy)	Percent Reduction Required	Reduction Target (tpy)	Master Plan Mobile Emissions[a] (tpy)	Actual Reduction (tpy)	Actual Reduction (%)	Meets Reduction Target?
NO_X	134	35%	47	17	117	87%	Yes
ROG	107	35%	37	21	85	80%	Yes

NOTES:

a. Operational emissions estimates made using EMFAC2021 v1.0.2. See Appendix B for details.
b. Project design features and mitigation measures included in the Master Plan mobile emissions shown in this table include MM AQ.1-2 (Electric Vehicle Charging Infrastructure), mandatory Community-Wide TMA participation, electric bike share and scooter share, additional sidewalks within the Project, and carpooling/rideshare.

ABBREVIATIONS:

BAU = business as usual
NO_X = nitrogen oxides
ROG = reactive organic gases
tpy = tons per year

SOURCE: ESA, 2023; see Appendix A.

Mitigation Measures

As discussed above, the AQMP for the Master Plan demonstrates a reduction in ozone precursors of significantly greater than 35 percent. Many key emission reduction measures suggested by the SMAQMD for inclusion in an AQMP are already included in the Master Plan design and traffic study, such as housing density, the diversity of land uses, travel time to employment centers, and accessibility to multiple modes of transportation (transit, bicycle, pedestrian). As shown in Table 2-6 above, these measures would result in an approximate 87 percent reduction on NO_X and an approximate 80 percent reduction in ROG. Thus, ozone precursor reductions as required by the recommended AQMP (29% reduction) would be met by the beneficial land use design characteristics and emission reductions associated with the Master Plan. This measure is included below.

> **Mitigation Measure AQ.1-1: Air Quality Mitigation Plan.** The applicant shall comply with AQMP Measure *TS: Traffic Study* in order to ensure a reduction in operational emissions exceeding 35 percent from unadjusted emissions of ozone precursors.
>
> **Mitigation Measure AQ.1-2: Electric Vehicle Charging Infrastructure.** Prior to the issuance of a certificate of occupancy for any project structure with parking, the project applicant shall demonstrate compliance with the most recently adopted version of the California Green Building Standards (CALGreen Code) Tier 2 voluntary electric vehicle (EV) charging requirements or the mandatory requirements of the most recently adopted version of the County of Sacramento building code, whichever is more stringent. The installation of all EV charging equipment shall be included on the project drawings submitted for the construction-related permit(s) or on other documentation submitted to the County.

The Master Plan would also be consistent with the County's General Plan, including goals and policies that apply to air quality impacts associated with the Master Plan. The Master Plan would

be consistent with all policies from the Air Quality Element, including AQ-1 (promote pedestrian/bicycle access) by improving pedestrian/bicycle access and circulation, AQ-2 (support regional transit) by developing four transit lines in the Jackson Corridor through the other regional master and specific plans, AQ-6 (incentives for the use of transportation alternatives) by incorporating higher density land uses and mixed uses along transportation corridors to help support transit use and by improving pedestrian/bicycle access and circulation, AQ-8 (promote mixed-use development) by providing mixed-use development along existing and proposed transit corridors, AQ-10 (encourage vehicle trip reduction) through all the actions identified above, AQ-11 (low-emission vehicles) by requiring construction equipment to reduce emissions through Mitigation Measures AQ.2-2 (new engine technology) and AQ.4-4 (Tier 4 construction equipment), AQ-17 (promote energy conservation measures in new development) by complying with all applicable energy efficiency code requirements including the use of solar in new residential development, and AQ-20 (promote Cool Community strategies) by implementing design guidelines that include requirements for landscaping that include tree plantings and encourage the use of cool pavement technologies. Therefore, the Master Plan would also be consistent with the County's General Plan.

Significance after Mitigation: As discussed above, the full extent of the Master Plan development is not included in SACOG's growth projections that are relied upon in the current SIP. Therefore, the Master Plan would not be consistent with the growth projections of the SIP.

For projects that are not considered in the SIP, the SMAQMD recommends determining whether the existing land use designation is part of a general plan and MTP/SCS that was adopted prior to the time that the most current SIP emissions baseline assumptions were developed. Since the entire Master Plan is not part of the MTP/SCS, which was adopted in 2020 after the current SIP was adopted in 2013, the Master Plan is not fully accounted for in the emissions budget contained in the SIP and is therefore inconsistent with the SIP. As such, the Master Plan is assumed to result in a substantial contribution to this significant air quality impact.

As discussed in the AQMP prepared for the Master Plan (see Appendix B), project design features, including housing density, housing variety, traffic and transportation, alone would reduce mobile source ROG and NOx emissions to below the applied 35 percent blended rate reduction target. Specifically, these design features would reduce mobile source NOx by 87 percent and mobile source ROG by 80 percent. This is a significant reduction in mobile source ozone precursor emissions as compared to unmitigated conditions.

The 2022 SIP shows that the air basin is on track toward meeting the ozone attainment goals; as a result of adopted State measures on projected 2032 emissions in the Sacramento Nonattainment Area, 2032 emissions are projected to be at or below the level needed to demonstrate attainment.[62]

[62] California Air Resources Board, 2023. Staff Report: CARB Review of the Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan . Available: https://ww2.arb.ca.gov/sites/default/files/2023-09/CARB%20Staff%20Report%20-%202023%20Sac%20Ozone%20SIP.pdf . Accessed March 2024.

Additionally, the Draft Environmental Impact Report for the 2020 MTP/SCS prepared a conformity analysis and determined the following:[63]

> *"The forecasted emissions for ozone, PM10 and CO associated with the proposed MTP/SCS are within the conformity budgets identified within the existing plans for each milestone year. Similarly, the forecasted emissions for PM10 and PM2.5 associated with the proposed MTP/SCS pass all interim emissions tests for all milestone years. Conformity provides the link between air quality and land use/transportation planning by linking the SIP and the proposed MTP/SCS. More prescriptively, the SIPs in the plan area provide the strategies that will be used to attain and maintain the NAAQS. Through conformity, the proposed MTP/SCS demonstrates that the region's land use and transportation system implement this strategy.*
>
> *…The proposed MTP/SCS supports continued reduction in criteria emissions from on-road mobile sources. The local air districts also report progress in implementing specific programs intended to reduce criteria emissions from on-road sources. The proposed MTP/SCS does not conflict with local air district programs, and includes programs and strategies that complement and support the local air district programs. The proposed MTP/SCS thus continues to facilitate local air quality planning efforts as part of the implementation of the applicable air quality plans."*

As discussed above, mobile source emissions associated with the Master Plan would not conflict with the SIP for the horizon year of 2040 because the traffic reduction variables built into the Master Plan design and locality result in an approximate 87 percent reduction on NO_X and an approximate 80 percent reduction in ROG, far exceeding the required ozone precursor reduction of 29% reduction. Therefore, although not presently accounted for in the MTP/SCS, the development proposed by the Master Plan and that is expected to occur through the MTP/SCS horizon of 2040, the Master Plan actually demonstrate an improvement (i.e. reduction) in the emissions budgets associated with the growth anticipated to occur and accounted for in the SIP.

Further, the Master Plan, in combination with the other regional Master Plans and Specific Plans currently in development (including Jackson Township, NewBridge, and Mather South), could reduce total VMT as well as per-capita VMT compared to conditions without implementation of these projects. The Master Plan will have a substantial number of new jobs and commercial land uses and will therefore change the regional travel dynamics as development occurs over time and jobs and commercial uses are placed in closer proximity to existing residential areas, reducing trip lengths and making regional travel patterns more efficient. When development under the Master Plan is placed into the future cumulative land use context, it is possible that trips would be shortened due to the closer proximity of retail/commercial and employment opportunities, which translates into reduced VMT as compared to the existing no-project conditions. In summary, the Master Plan, in combination with other cumulative development projects in the region, will result in a more complementary land use mix with higher densities and a better jobs/housing balance

63 Sacramento Area Council of Governments, 2019. MTP/SCS 2020 Draft Environmental Impact Report. Chapter 5 – Air Quality. Available: https://www.sacog.org/sites/main/files/file-attachments/sacog_deir_-_optimized.pdf?1569042224. Accessed April 2023. Final EIR certified November 2019. Final EIR available at: https://www.sacog.org/sites/main/files/file-attachments/feir_for_website.pdf?1573758194. Accessed April 2023.

that is anticipated to result in reduced VMT and per-capita VMT compared to the current regional average.[64]

While mobile source emissions would not conflict with the SIP, unless the full extent of the Master Plan development is accounted for in an updated MTP/SCS there remains a conflict with the adopted SIP. In addition, both construction and operational emissions of ROG and NO_X exceed the SMAQMD's significance thresholds, as presented below in Impacts AQ.2 and AQ.3. Therefore, the Master Plan has the potential to obstruct the success of regional ozone attainment plans. For these reasons, this impact would remain **significant and unavoidable**.

Impact AQ.2: Construction of the Master Plan would result in short-term emissions of NOx, PM_{10}, and $PM_{2.5}$. (*Less than Significant with Mitigation*)

Construction-related emissions arise from a variety of activities, including: (1) site preparation, grading, excavation, road building, and other earth moving activities; (2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; (3) exhaust from construction equipment; (4) architectural coatings; and (5) asphalt paving.

Emissions of ozone precursors (including NO_X) are generated primarily by mobile sources and largely vary as a function of vehicle trips per day and the type, quantity, intensity, and frequency of heavy-duty, off-road equipment used.

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt and moisture content of the soil, and the weather. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM_{10} concentrations may be adversely affected on a temporary and intermittent basis. In addition, fugitive dust generated by construction would include not only PM_{10}, but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

Estimated unmitigated and mitigated construction emissions for the worst-case day during the first year of construction for the Master Plan are presented in **Table 2-7** and **Table 2-8,** respectively, and compared to the SMAQMD thresholds. As shown in Table 2-7, unmitigated construction emissions under the Master Plan are anticipated to exceed SMQAMD thresholds. Table 2-8 presents mitigated emissions with implementation of mitigation measures AQ.2-1, AQ.2-2, and AQ.2-3. With the implementation of these mitigation measures, mitigated construction emissions are anticipated to be below the SMAQMD threshold for all criteria pollutants, as shown in Table 2-8.

64 DKS Associates, 2023. *Memorandum: SB 743/ VMT Analysis – West Jackson Highway Master Plan*. September 25.

TABLE 2-7
UNMITIGATED WORST-CASE CONSTRUCTION EMISSIONS ESTIMATES,
FIRST YEAR OF MASTER PLAN CONSTRUCTION (YEAR 2025)

Scenario	ROG (ppd)	NO_X (ppd)	PM_{10} (ppd)	$PM_{2.5}$ (ppd)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Worst-case	1,134	**166**	**23.5**	**7.8**	**4.5**	**3.2**
SMAQMD Thresholds[a]	None	85	0	0	0	0
Significant (Yes or No)?	N/A	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

NOTES: Project construction emissions were estimated using CalEEMod version 2020.4.0. See Appendix A for model outputs and more detailed assumptions.

Values in **bold** are in excess of the applicable SMAQMD significance threshold.

a. SMAQMD has established a zero emissions threshold for PM_{10} and $PM_{2.5}$ when projects do not implement their Best Management Practices (BMP).

ABBREVIATIONS:

SMAQMD = Sacramento Metropolitan Air Quality Management District
NO_X = nitrogen oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
ppd = pounds per day
tpy = tons per year

SOURCE: ESA, 2023; see Appendix A.

TABLE 2-8
MITIGATED WORST-CASE CONSTRUCTION EMISSIONS ESTIMATES
FIRST YEAR OF MASTER PLAN CONSTRUCTION (YEAR 2025)

Scenario	ROG (ppd)	NO_X (ppd)	PM_{10} (ppd)	$PM_{2.5}$ (ppd)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Worst-case	1,133	37	21	5.6	1.6	0.6
SMAQMD Thresholds[a]	None	85	80	82	14.6	15
Significant (Yes or No)?	N/A	No	No	No	No	No

NOTE: Project construction emissions were estimated using CalEEMod version 2020.4.0. See Appendix A for model outputs and more detailed assumptions.

a. According SMAQMD guidance, if all feasible Best Achievable Control Technology/Best Management Practices (BMP) are applied, then the threshold of significance is 80 maximum ppd and 14.6 tpy for PM_{10}, and 82 maximum ppd and 15 tpy for $PM_{2.5}$ for construction phases.

ABBREVIATIONS:

SMAQMD = Sacramento Metropolitan Air Quality Management District
NOx = nitrogen oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
ppd = pounds per day
tpy = tons per year

SOURCE: ESA, 2023; see Appendix A.

According to the SMAQMD CEQA guidance, project-related construction emissions that exceed zero pounds per day of PM_{10} and $PM_{2.5}$ would result in a significant impact, unless all feasible Best Achievable Control Technology/Best Management Practices (BACT/BMPs) are implemented. As shown in Table 2-7, unmitigated PM_{10} and $PM_{2.5}$ emissions associated with both the Master Plan would exceed the SMAQMD's zero emissions significance threshold. Without the implementation of the SMAQMD's Enhanced Exhaust Control Practices and Construction Emission Control Practices, construction of the Master Plan would have a **significant impact**

related to construction emissions. However, actual emission and resulting impacts could ultimately be greater or less than those reported above depending on how actual buildout occurs.

As shown in Table 2-8, implementation of Measures AQ.2-1 and AQ.2-3 would reduce the impact associated with particulate matter emissions to a less-than-significant level by requiring the project applicant to comply with the SMAQMD's basic construction emission control practices (MM AQ.2-1) and SMAQMD's enhanced fugitive particulate matter dust control practices (MM AQ.2-3). These measures represent the feasible BACT/BMPs as defined by the SMAQMD for construction emissions of PM_{10} and $PM_{2.5}$. Also shown in Table 2-8, implementation of Measures AQ.2-1 and AQ.2-2 would reduce NO_X emissions associated with construction to a less-than-significant level. These measures would require the project applicant to comply with the SMAQMD's basic construction emission control practices (MM AQ.2-1) and SMAQMD's enhanced exhaust control practices (MM AQ.2-2).

Mitigation Measures

Mitigation Measure AQ.2-1: Basic Construction Emission Control Practices. County approval of any grading or improvement plans shall include the following Sacramento Metropolitan Air Quality Management District (SMAQMD) Basic Construction Emission Control Practices:

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways shall be covered.
- Use wet power vacuum street sweepers to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- Pave all roadways, driveways, sidewalks, parking lots as soon as possible. In addition, building pads shall be laid immediately after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (as required by the state airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment shall be checked by a certified mechanic and determine to be running in proper condition before it is operated.

Mitigation Measure AQ.2-2: Enhanced Exhaust Control Practices. County approval of any grading or improvement plans shall include the following Sacramento

Metropolitan Air Quality Management District (SMAQMD) Enhanced Exhaust Control Practices, including:

- Provide a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of projects to be developed under the Master Plan to the County and the SMAQMD. The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The construction contractor shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. The inventory shall be updated and submitted monthly throughout the duration of the Master Plan construction, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.

- Provide a plan in conjunction with the equipment inventory, approved by the SMAQMD, demonstrating that the heavy-duty (50 horsepower or more) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

- Emissions from all off-road diesel-powered equipment used on the Master Plan site shall not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately, and the County and SMAQMD shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this measure shall supersede other SMAQMD or state rules or regulations.

- If at the time of granting of each building permit, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with the SMAQMD prior to construction will be necessary to make this determination.

Mitigation Measure AQ.2-3: Enhanced Fugitive Particulate Matter Dust Control Practices. County approval of any grading or improvement plans shall include the following Sacramento Metropolitan Air Quality Management District (SMAQMD) Enhanced Fugitive Particulate Matter Dust Control Practices as feasible to further reduce fugitive emissions.

Soil Disturbance Areas:

- Water exposed soil with adequate frequency for continued moist soil. However, do not overwater to the extent that sediment flows off the site.

- Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph.
- Install wind breaks (e.g., plant trees, solid fencing) on windward side(s) of construction areas.
- Plant vegetative ground cover (fast-germinating native grass seed) in disturbed areas as soon as possible. Water appropriately until vegetation is established.

Unpaved Road (Entrained Road Dust):

- Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the site.
- Treat site accesses to a distance of 100 feet from the paved road with a 6 to 12-inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the SMAQMD shall also be visible to ensure compliance.[65]

Significance after Mitigation: As shown in Table 2-8, after the implementation of the SMAQMD's Basic Construction Emission Control Practices (Measure AQ.2-1), Enhanced Exhaust Control Practices (Measure AQ.2-2), and Enhanced Fugitive Particulate Matter Dust Control Practices (Measure AQ.2-3), construction emissions of NOx, PM_{10} and $PM_{2.5}$ under the Master Plan would be reduced to below the SMAQMD's significance threshold for NOx, PM_{10} and $PM_{2.5}$. For these reasons, implementation of Measures AQ.2-1 through AQ.2-3 would reduce the impact of Master Plan construction emissions of NOx, PM_{10} and $PM_{2.5}$ to less than significant. Therefore, with implementation of mitigation measures AQ.2-1, AQ.2-2, and AQ.2-3, this impact would be **less than significant**.

Impact AQ.3: The Master Plan would result in long-term (operational) emissions of NOx, ROG, PM_{10}, or $PM_{2.5}$. (*Significant and Unavoidable*)

Over the long-term, the Master Plan would result in an increase in emissions of ozone precursors, ROG and NO_X, primarily due to project related motor vehicle trips and onsite area and energy sources (e.g., natural gas combustion for space and water heating, landscape maintenance, use of consumer products such as hairsprays, deodorants, cleaning products). The proposed developments under the Master Plan could be fully built-out in 2055. Since CalEEMod version 2020.4.0 and EMFAC2021 v1.0.2 only allows the user to enter operational years up to the year 2050 it was not possible to model an operational year 2055 in CalEEMod. Therefore, for this analysis, criteria pollutant emissions under the Master Plan were modeled for the full-buildout operational year of 2050 using CalEEMod and EMFAC2021, which are presented in **Table 2-9**

[65] Sacramento Metropolitan Air Quality Management District (SMAQMD). 2009. Enhanced Fugitive PM Dust Control Practices. Available: http://www.airquality.org/LandUseTransportation/Documents/Ch3EnhancedFugitiveDustControlFINAL12-2009.pdf. Accessed December 29, 2022.

(unmitigated emissions) and **Table 2-10** (mitigated emissions). Modeling assumptions and output files are included in Appendix A.

According to the SMAQMD CEQA guidance, project-related operational emissions that exceed zero pounds per day of PM_{10} and $PM_{2.5}$ would result in a significant impact, unless all feasible BACT/BMPs are implemented. The development proposed under the Master Plan will include BMP measures as part of its final design that is recommended by SMAQMD to reduce operational PM_{10} and $PM_{2.5}$ emissions.

These BMPs include compliance with mandatory measures in the California Building Energy Efficiency Standards and Green Building Code (Title 24, Parts 6 and 11), compliance with anti-idling regulations for diesel powered commercial motor vehicles, pedestrian infrastructure connectivity, and transit accessibility. Therefore, the SMAQMD's thresholds of 80 pounds per day and 14.6 tons per year for PM_{10} and 82 pounds per day and 15 tons per year for $PM_{2.5}$ would apply.

As shown in Table 2-9, the 2050 operational emissions of ROG, NOx, PM_{10} and $PM_{2.5}$ generated under the Master Plan would exceed the SMAQMD's significance thresholds. Therefore, operational emissions would result in a **significant impact**.

TABLE 2-9
UNMITIGATED MASTER PLAN 2050 OPERATIONAL EMISSIONS

Pollutant (unit)	SMAQMD Thresholds (unit)	Year 2050 Build-out Operation Emissions				
		Area Sources	Energy Sources	Mobile Sources	Total Emissions	Significant (Yes or No)?
ROG (ppd)	65 (ppd)	1,086	12	128	1,226	**Yes**
NO_x (ppd)	65 (ppd)	16	102	122	240	**Yes**
PM_{10} (ppd)[a]	80 (ppd)	8	8	414	429	**Yes**
$PM_{2.5}$ (ppd)[a]	82 (ppd)	8	8	105	120	**Yes**
PM_{10} (tpy)[a]	14.6 (tpy)	1	1.5	75	78	**Yes**
$PM_{2.5}$ (tpy)[a]	15 (tpy)	1	1.5	19	21	**Yes**

NOTES: Master Plan operational emissions estimates for summertime conditions were made using CalEEMod 2020.4.0. See Appendix A for details.

Several adjustments were made to the CalEEMod default assumptions that were not considered mitigation. First, mobile emissions were calculated outside of CalEEMod using EMFAC2021 and regional VMT information provided by DKS. In addition, the Title 24 electricity and natural gas energy intensity factors were updated to account for the 2021 Title 24 standards.

a. SMAQMD has established a zero emissions threshold for PM_{10} and $PM_{2.5}$ when projects do not implement their Best Available Practices. Since the Master Plan would implement all feasible Best Available Practices, the SMAQMD's mitigated thresholds are compared to the Master Plan's operational emissions.

ABBREVIATIONS:

SMAQMD = Sacramento Metropolitan Air Quality Management District
ROG = reactive organic gases
NOx = nitrogen oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
ppd = pounds per day.
tpy = tons per year

SOURCE: ESA, 2023; see Appendix A.

TABLE 2-10
MITIGATED MASTER PLAN 2050 OPERATIONAL EMISSIONS

Pollutant (unit)	SMAQMD Thresholds (unit)	Year 2050 Build-out Operation Emissions				
		Area Sources	Energy Sources	Mobile Sources	Total Emissions	Significant (Yes or No)?
ROG (ppd)	65 (ppd)	1,086	0	118	1,204	**Yes**
NO_x (ppd)	65 (ppd)	16	0	93	108	**Yes**
PM_{10} (ppd)[a]	80 (ppd)	8	0	382	390	**Yes**
$PM_{2.5}$ (ppd)[a]	82 (ppd)	8	0	96	103	**Yes**
PM_{10} (tpy)[a]	14.6 (tpy)	1	0	70	71	**Yes**
$PM_{2.5}$ (tpy)[a]	15 (tpy)	1	0	17	18	**Yes**

NOTES: Master Plan operational emissions estimates for summertime conditions were made using CalEEMod 2020.4.0. See Appendix A for details.

Several adjustments were made to the CalEEMod default assumptions that were not considered mitigation. First, mobile emissions were calculated outside of CalEEMod using EMFAC2021 and regional VMT information provided by DKS. In addition, the Title 24 electricity and natural gas energy intensity factors were updated to account for the 2021 Title 24 standards.

a. SMAQMD has established a zero emissions threshold for PM_{10} and $PM_{2.5}$ when projects do not implement their Best Available Practices. Since the Master Plan would implement all feasible Best Available Practices, the SMAQMD's mitigated thresholds are compared to the Master Plan's operational emissions.

ABBREVIATIONS:

SMAQMD = Sacramento Metropolitan Air Quality Management District
ROG = reactive organic gases
NOx = nitrogen oxides
PM_{10} = particulate matter 10 microns or less in diameter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
ppd = pounds per day.
tpy = tons per year

SOURCE: SOURCE: ESA, 2023; see Appendix A.

As is described under Impact AQ.1, when operational emissions exceed significance thresholds, the SMAQMD recommends the development of an AQMP to minimize impacts of the project. According to the SMAQMD, projects with emissions that exceed the District's thresholds of significance must incorporate all feasible mitigation in the AQMP. As described under Impact AQ.1 and presented in the AQMP in Appendix B, using the SMAQMD Recommended Guidance for Land Use Emission Reduction, the percent reduction of ROG and NO_X after mitigation for the Master Plan are presented in Table 2-6 above.

Ozone-Related Health Risks

Given that ground-level ozone formation occurs through a complex photo-chemical reaction between NO_X and ROG in the atmosphere with the presence of sunlight, the impacts of ozone are typically considered on a basin-wide or regional basis instead of a localized basis. The SMAQMD has not established a significance threshold for ozone, but there are health-based ambient air quality standards for concentrations of ozone and not as the mass weight (e.g., pounds) of their precursor pollutants (i.e., NO_X and ROG). It is not necessarily the pounds of precursor pollutants that causes human health effects, but the concentration of resulting ozone or particulate matter. Meteorology, the availability of ozone precursors, the presence of sunlight, seasonal impacts, and other complex chemical factors all combine to determine the ultimate

concentration and location of ozone.[66,67] Since Project emissions would exceed the SMAQMD threshold for ROG and NO_X emissions, it is possible that Project ROG and NO_X emissions could result in an increase in ground-level ozone concentrations in proximity to the project area or elsewhere in the air basin, and impacts would be significant. Therefore, mitigation measures would be required and are further discussed below.

The health effects associated with emissions of criteria pollutants and ozone precursors are described in Chapter 2: Air Pollutants of Concern above. The main health concern of exposure to ground-level ozone formed from ROG and NOX, the ozone precursors, is the effect on the respiratory system, especially on lung function. As discussed above, the Project would generate criteria pollutant emissions of ROG, NO_X, and particulate matter during construction and operation.

SMAQMD Guidance to Address Friant Ranch

SMAQMD's Final Guidance, adopted in October 2020, is based on extensive air quality impact and health effects modeling. The health effect modeling performed in the Final Guidance uses a photochemical grid model (PGM) that accounts for the reactions of ROG and NOX in the atmosphere to form ground-level ozone. The PGM calculates concentrations of ozone and $PM_{2.5}$, which are then input into EPA's BenMAP health effects model. The BenMAP model is used by EPA to establish the concentration-based NAAQS, which are set to protect public health and safety. BenMAP relates ozone and $PM_{2.5}$ concentrations to incremental health effects. The Final Guidance includes screening tools in the form of excel spreadsheets that use project emissions of ROG, NOX, and $PM_{2.5}$ to estimate potential health effects as a result of an individual project's contribution of criteria air pollutants and ozone precursors to the SVAB. Although the tools are limited to these three criteria pollutants and precursors, the remaining criteria pollutant emissions are accounted for through the use of surrogate pollutants. The Final Guidance contains two screening tools, one for a "Minor Project" and another for "Strategic Area Projects." Strategic Area Projects are projects that generate emissions two to eight times greater than the maximum thresholds of significance (derived from identifying the greatest thresholds from air districts operating within the SVAB). Minor Projects are projects that generate emissions below the maximum thresholds of significance. Due to its size and levels of emissions, the Project is considered a Strategic Area Project.

For projects that exceed the maximum thresholds of significance, the Final Guidance recommends that the lead agencies use the Strategic Area Project Health Screening Tool; this tool was used to estimate potential health risk associated with the Project as the estimated operational emissions of ROG, NO_X, and $PM_{2.5}$ exceed SMAQMD thresholds. Within the SMAQMD Strategic Area Project Health Screening Tool, SMAQMD provided five potential strategic area project locations (5-Air-District Region) for use in the health effects screening modeling. The highest emission threshold

66 South Coast Air Quality Management District. 2014. Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and Brief of Amicus Curiae. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno.

67 San Joaquin Valley Unified Air Pollution Control District. 2014. Application for Leave to File Brief of Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno.

rate of ROG, NO_X, and $PM_{2.5}$ from the five districts is 82 pounds per day for the three pollutants. The Strategic Area Project Screening Model models two scenarios; twice the significant level (164 pounds per day) and eight times the significance level (656 pounds per day).[68] The Project's mitigated emissions of ROG, NOX and $PM_{2.5}$ would exceed 82 pounds per day, making the Strategic Area Project Screening Model the appropriate tool for evaluating the Project's contribution to regional health effects.

Strategic Area Project Health Screening Tool Results

Peak daily emissions of NOx, ROG, and $PM_{2.5}$ for operations of the Master Plan in 2050 are shown in Table 2-9. Based on the location of the Project, the Rancho Cordova strategic area source within SMAQMD's Screening Tool has been used. Project emissions for ROG of 1,226 pounds per day exceeded the maximum input value for the Screening Tool of 656 pounds per day, but NO_X and $PM_{2.5}$ were well below the maximum input values for the tool. Since the formation of ozone is limited by the available concentration of NO_X in the SVAB,[69] the tool was run using the project specific inputs for NO_X and $PM_{2.5}$, and the maximum input value of 656 pounds per day for ROG. Ozone-related health effects estimated using the Screening Tool are summarized in **Table 2-10**, below. $PM_{2.5}$-related health effects estimated using the Screening Tool are summarized in **Table 2-11**, below. Potential health risks are considered to be conservative, as peak daily emissions were used rather than average daily emissions. As noted in the Final Guidance, "each model generates conservative estimates of health effects, for two reasons: The tool's outputs are based on the simulation of a full year of exposure at the maximum daily average of the increases in air pollution concentration… [and] [t]he health effects are calculated for emissions levels that are very high."[70] Neither SMAQMD nor the County of Sacramento have adopted thresholds of significance for the assessment of health risks related to the emission of criteria pollutants. Furthermore, an industry standard level of significance has not been adopted or proposed. Due to the lack of adopted thresholds of significance, the health risks presented in **Table 2-11** and **Table 2-12** are presented for informational purposes and do not represent an attempt to arrive at any level-of-significance conclusions.

The Master Plan-related additional health incidences from ozone and $PM_{2.5}$ are minimal when compared with the background regional health incidences. For example, the 1.7 additional annual asthma-related emergency room visits associated with the $PM_{2.5}$ emissions compares to background incidences of asthma-related emergency room visits of 17,895 per year; the Master Plan represents only a 0.0095 percent increase. As another example, the approximate 4.4 annual incidences of mortality associated with the Master Plan compares to background mortality rate of 72,131 per year; the Master Plan represents a 0.006 percent increase.

68 Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District. Available at: https://www.airquality.org/LandUseTransportation/Documents/SMAQMDFriantRanchFinalOct2020.pdf. Accessed April 2023.

69 Philly, Paul. "RE: AQMP approach for West Jackson Highway Master Plan." Message to Brian Schuster. May 10, 2023. Email.

70 Ibid

TABLE 2-11
OZONE-RELATED HEALTH RISKS ASSOCIATED WITH THE MASTER PLAN

Ozone Health Endpoint	Age Range[a]	Average Incidences (per year)[b]	Percent of Background Health Incidence[c]
Hospital Admissions (all respiratory)	65–99	0.20	0.0010%
Emergency Room Visits, Asthma	0–17	0.81	0.014%
Emergency Room Visits, Asthma	18–99	1.4	0.011%
Mortality, Non-Accidental	0–99	0.13	0.00044%

NOTES:

a. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in its health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.
b. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects and background health incidences are across Northern California model domain.
c. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, these background incidence rates cover the modeled domain. Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

SOURCES:

1. SMAQMD. 2020. Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District. April 2023.

TABLE 2-12
$PM_{2.5}$-RELATED HEALTH RISKS ASSOCIATED WITH THE MASTER PLAN

$PM_{2.5}$ Health Endpoint	Age Range[a]	Average Incidences (per year)[b]	Percent of Background Health Incidence[c]
Emergency Room Visits, Asthma	0 - 99	1.7	0.0095%
Hospital Admissions, Asthma	0 - 64	0.11	0.0061%
Hospital Admissions, All Respiratory	65 - 99	0.66	0.0033%
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.38	0.0016%
Acute Myocardial Infarction, Nonfatal	18 - 24	0.00014	0.0037%
Acute Myocardial Infarction, Nonfatal	25 - 44	0.013	0.0042%
Acute Myocardial Infarction, Nonfatal	45 - 54	0.033	0.0045%
Acute Myocardial Infarction, Nonfatal	55 - 64	0.054	0.0043%
Acute Myocardial Infarction, Nonfatal	65 - 99	0.24	0.0047%
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.38	0.0016%
Mortality, All Cause	30 - 99	4.4	0.0098%

NOTES:

a. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in its health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.
b. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects and background health incidences are across Northern California model domain.
c. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, these background incidence rates cover the modeled domain. Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

SOURCES:

1. SMAQMD. 2020. Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District. April 2023.

As shown in Table 2-6 above, the Master Plan would achieve an 80 percent reduction in mobile source ROG emissions and an 87 percent reduction in mobile source NO_X emissions by implementing the design features proposed under the Master Plan and through implementation of mitigation measure MM AQ.1-2 (Electric Vehicle Charging Infrastructure). This is significantly greater than the required 35 percent reduction. However, even with achievement of the required 35 percent reduction in operational mobile source emissions, NO_X and ROG emissions associated with the developments proposed under the Master Plan would still exceed the SMAQMD threshold of 65 pounds per day as presented in Tables 2-9. Thus, this impact would remain **significant and unavoidable**.

Mitigation Measures

As discussed above, when operational emissions exceed significance thresholds, the SMAQMD recommends the development of an AQMP to minimize impacts. The AQMP for this Master Plan is included as Appendix B and incorporates all feasible mitigation for the Master Plan. The SMAQMD notes that an AQMP is focused on feasible mitigation, provided that the AQMP reduces ozone precursors below an unmitigated BAU project by 35 percent for the Master Plan. As indicated in Measure TS (Traffic Study) of the SMAQMD guidance, many key emission reduction measures suggested by the SMAQMD for inclusion in an AQMP are already included in the Master Plan design and therefore analyzed in the traffic study. According to DKS the SACSIM traffic model used for the Master Plan accounts for trip reductions associated with factors such as housing density, the diversity of land uses, travel time to employment centers, and accessibility to multiple modes of transportation (transit, bicycle, pedestrian).[71] Additional transportation design features, including TMA participation, were incorporated into the mitigated scenario modeling to compare to the unmitigated VMT from the default BAU CalEEMod run.

As shown in Table 2-6 above, the VMT-reducing measures built into the Master Plan design and locality along with implementation of mitigation measure MM AQ.1-2 (Electric Vehicle Charging Infrastructure) result in an approximate 87 percent reduction in NO_X emissions and an approximate 80 percent reduction in ROG emissions. Thus, ozone precursor reductions as required by the recommended AQMP (29% reduction) would be met by the beneficial variables associated with the Master Plan. Additional mitigation measures required to reduce this impact are listed below.

> **Mitigation Measure GHG.1-5: Greenhouse Gas Reduction Plan.** (See Impact GHG.1).
>
> **Mitigation Measure AQ.1-1: Air Quality Mitigation Plan.** (See Impact AQ.1).
>
> **Mitigation Measure AQ.3-1: Promote Use of Green Consumer Products**. To reduce ROG emissions associated with the project, the project sponsor shall provide education for residential and commercial tenants concerning green consumer products. Prior to receipt of any certificate of occupancy, the project sponsor shall develop electronic correspondence to be distributed by email annually and upon any new lease signing to residential and/or commercial tenants of each building on the project site that encourages the purchase of consumer products that generate lower than typical VOC emissions.

[71] Long, John. DKS Associates. November 6, 2014 phone conversation with Tim Rimpo, ESA, regarding SACSIM.

Mitigation Measure AQ.3-2: Operational Truck Emissions Reduction. The project sponsor shall incorporate the following measures into the project design and construction contracts (as applicable) to reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with operational on-road trucks, along with the potential health risk caused by exposure to toxic air contaminants from operational on-road trucks. These features shall be submitted to the County for review and approval prior to the issuance of building permits and shall be included on the project drawings submitted for the construction-related permit or on other documentation submitted to the lead agency. ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions from project-related operational diesel trucks shall be reduced by implementing the following measures:

1. Equip all truck delivery bays with electrical hook-ups for diesel trucks at loading docks to accommodate plug-in electric truck transport refrigeration units (TRUs) or auxiliary power units during project operations.

2. Provide a notice on the lease to all new tenants or owners of the project or any portion thereof requiring any truck-intensive uses on the site, such as large grocery stores or distribution facilities with their own fleet of trucks, to use TRUs and auxiliary power units that are electric plug-in capable and trucks that use advanced exhaust technology (e.g., hybrid) or alternative fuels.

3. Encourage the use of trucks equipped with diesel TRUs to meet U.S. Environmental Protection Agency Tier 4 emission standards.

4. Prohibit TRUs from operating at loading docks for more than thirty minutes, and post signs at each loading dock presenting this TRU limit.

5. All newly constructed loading docks that are on a commercial or industrial property and can accommodate trucks with TRUs shall be equipped with electric vehicle (EV) charging equipment for heavy-duty trucks. This measure does not apply to temporary street parking for loading or unloading.

6. Require that all future tenants have a plan to convert their vehicle fleet(s) to zero emission vehicles (ZEVs) no later than 2050 or when commercially available. This would be a condition of all leases at the project site.

7. Prohibit trucks from idling for more than two minutes, and post “no idling” signs at the site entry point, at all loading locations, and throughout the project site.

8. A ZEV shall ordinarily be considered commercially available if the vehicle is capable of serving the intended purpose and is included in California’s Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, https://californiahvip.org/ or listed as available in the US on the Global Commercial Vehicle Drive to Zero inventory, https://globaldrivetozero.org/. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such vehicles are commercially unavailable, the operator must submit documentation from a minimum of three (3) ZEV dealers identified on the californiahvip.org website demonstrating the inability to obtain the required ZEVs or equipment needed within 6 months.

Mitigation Measure AQ.3-3: Electric Landscaping Equipment. To reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with the project, only electric landscaping

equipment shall be used at the project site. No landscaping equipment powered by gasoline, diesel, propane, or other fossil fuels shall be used. The project applicant shall incorporate this requirement into the project design and tenant contracts (as applicable).

Mitigation Measure AQ.3-4: Best Available Emissions Controls for Stationary Emergency Generators. To reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions associated with operation of any emergency generators that would be installed in the Master Plan area, the project applicant shall implement the following measures. These features shall be submitted to the County for review and approval, and shall be included on the project drawings submitted for the construction-related permit(s) or on other documentation submitted to the lead agency prior to the issuance of any building permits:

1. Permanent stationary emergency generators installed on-site shall have engines that meet or exceed CARB Tier 4 Off-Road Compression Ignition Engine Standards (California Code of Regulations Title 13, Section 2423). If the CARB adopts future emissions standards that exceed the Tier 4 requirement, the emissions standards resulting in the lowest ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions shall apply.

2. As non-diesel-fueled emergency generator technology becomes commercially available, and subject to the review and approval of the County of Sacramento fire department for safety purposes, non-diesel-fueled generators shall be installed in new buildings, provided that alternative fuels used in generators, such as biodiesel, renewable diesel, natural gas, or other biofuels or other non-diesel emergency power systems, are demonstrated to reduce ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions compared to diesel fuel.

3. For each new diesel backup generator permit submitted to air district for the proposed project, the project applicant shall submit the anticipated location and engine specifications to the lead agency for review and approval prior to issuance of a permit for the generator. Once operational, all diesel backup generators shall be maintained in good working order for the life of the equipment, and any future replacement of the diesel backup generators must be consistent with these emissions specifications. The operator of the facility at which the generator is located shall maintain records of the testing schedule and emergency operations for each diesel backup generator for the life of that diesel backup generator and shall provide this information for review to the County within three months of requesting such information.

4. A non-diesel-fueled emergency generator shall ordinarily be considered commercially available if the generator is capable of serving the intended purpose, is approved by the local fire department, and is available for commercial purchase and installation within California. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such generators are commercially unavailable, the operator must submit documentation from a minimum of three (3) non-diesel-fueled emergency generator dealers demonstrating the inability to obtain the required non-diesel-fueled emergency generators needed within 6 months.

Significance after Mitigation: The beneficial trip and daily VMT reduction measures that are built into the design and location of the Master Plan would result in substantial emission reductions of ozone precursors that would meet the requirements of an AQMP (MM AQ.1-1), which incorporates all feasible mitigation for the Master Plan. Implementation of mitigation measure MM

AQ.1-2 (Electric Vehicle Charging Infrastructure) would reduce emissions associated with passenger vehicles. Implementation of mitigation measure MM AQ.3-1 (Promote Use of Green Consumer Products) would reduce VOC and ROG emissions associated with consumer products. Implementation of mitigation measure MM AQ.3-2 (Operational Truck Emissions Reduction) would reduce emissions associated with operational trucks and transportation refrigeration units. Implementation of mitigation measure MM AQ.3-3 (Electric Landscaping Equipment) would reduce emissions associated with gasoline-powered landscaping equipment. Implementation of mitigation measure MM AQ.3-4 (Best Available Emissions Controls for Stationary Emergency Generators) would reduce emissions associated with any stationary emergency generators installed as part of the Master Plan. In addition, implementation of mitigation measure MM GHG.1-5 (Greenhouse Gas Reduction Plan) has the potential to reduce emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ as a co-benefit of reducing GHG emissions. For example, if the GHG Reduction Plan includes strategies that reduces on-road vehicle fuel combustion to reduce GHG emissions; such as by reducing VMT through improved or increased access to transit or by increasing the use of alternative-fuel and electric vehicles; then ROG, NO_X, PM_{10}, and $PM_{2.5}$ generated by project vehicles would also be reduced.

Despite these mitigation measures, operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ under the Master Plan would not be reduced to below the SMAQMD's significance thresholds. This is primarily because the Master Plan is a very large development project and merely based on its size exceeds the significance thresholds. If the Master Plan were built out as 30 individual land use projects, none of those projects would exceed the SMAQMD's significance thresholds. On a per-capita, per-dwelling unit, and per-square footage basis, the Master Plan is reasonably efficient in terms of criteria pollutant emissions.

For example, the criteria pollutant with the highest emissions is ROG at 1,204 pounds per day under mitigated conditions (see Table 2-10). If one were to conservatively assume that 100% of these ROG emissions were from residential uses, emissions would be 0.07 pounds ROG per day per DU. The Bay Area Air Quality Management District (BAAQMD) 2022 CEQA Air Quality Guidelines include screening tables for projects that are not likely to exceed the operational significance threshold of 54 pounds per day or 10 tons per year of ROG.[72]According to the BAAQMD's CEQA Guidelines, if a project meets these screening criteria, the project would not generate operational-related criteria air pollutants and/or precursors that exceed the thresholds of significance. For single family housing, a ROG efficiency metric per dwelling unit was estimated by taking the ROG threshold of significance (54 lb/day) and dividing by the screening value size. The result is an emission rate per dwelling unit for single family residential uses that could be considered less than significant. 54 pounds per day divided by 421 dwelling units equals 0.13 pounds ROG per day per dwelling unit. This is nearly double the 0.07 value for the Master Plan, which conservatively assumes 100% of ROG emissions originate from residential uses (the actual residential ROG emission rate would be much lower). This indicates that on a per-unit basis, the

[72] Bay Area Air Quality Management District. 2023. *California Environmental Quality Act Air Quality Guidelines*. Table 4-1. Updated April 2023. Available: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed January 2024.

Master Plan is more emission-efficient for ROG than those projects considered less than significant by the BAAQMD.

However, even after implementation of these mitigation measures, operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ under the Master Plan would not be reduced to below the SMAQMD's significance thresholds. Therefore, development associated with the Master Plan would result in significant operational ozone precursor emissions of ROG and NO_X which would exceed the SMAQMD thresholds of significance. In addition, development associated with the Master Plan would result in significant operational emissions of PM_{10} and $PM_{2.5}$ which would exceed the SMAQMD thresholds. Thus, operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ would be **significant and unavoidable**.

Impact AQ.4: Master Plan construction and/or operations could result in exposure of persons to substantial pollutant concentrations or result in a cumulative increase in toxic air contaminant exposure. (*Significant and Unavoidable*)

Carbon Monoxide (CO) Hotspots

CO has been a localized pollutant of concern in Sacramento although the level of concern has decreased substantially over the past decade. Concern over CO has declined due to the existing low concentrations[73] of CO throughout the greater Sacramento area, and because those concentrations are projected to further decline in the future as the vehicle fleet becomes cleaner and older vehicles are replaced. As shown in Table 2-2 above, CO levels in the Project Area are substantially below the federal and state standards. Maximum CO levels in recent years for which recorded data is available (2020-2022) are 2.4 ppm (one-hour average) and 2.1 ppm (eight-hour average) compared to the criteria of 20 ppm (one-hour average) and 9.0 ppm (eight-hour average).[74,75] Carbon monoxide decreased dramatically in the Air Basin with the introduction of the catalytic converter in 1975. No exceedances of CO have been recorded at monitoring stations in the Air Basin for some time and the Air Basin is currently designated as a CO attainment area for both the CAAQS and NAAQS, as shown in Table 2-4. For the Master Plan, the maximum hourly incremental increase in traffic volumes would be 20,000 vehicles per hour for the AM peak hour and 21,500 vehicles per hour for the PM peak hour.[76] These volumes are less than the SMAQMD CO screening level of 31,600 vehicles per hour at an affected intersection. Consequently, Master Plan operations would not result in or contribute to CO concentrations that exceed the California 1-hour or 8-hour ambient air quality standards. Thus, mobile-source emissions of CO would not result in or contribute substantially to an air quality violation; therefore, this impact is **less than significant**.

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73 See air quality setting information above that discusses the current success statewide in reducing CO levels; there have been no recorded exceedances of the state and national 1-hour and 8-hour CO standards since the early 1990s.

74 California Air Resources Board, 2023. *iADAM: Air Quality Data Statistics*, 2019-2021. Sacramento-Del Paso Manor monitoring station. Available: http://www.arb.ca.gov/adam/index.html. Accessed April 2023.

75 U.S. EPA. Outdoor Air Quality Data 2022. Available at: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. Accessed on April 2023.

76 Tokarski, David. DKS Associates. May 18, 2021 email correspondence with Brian Schuster, ESA.

Toxic Air Contaminants

Construction

Short-term construction activities would generate DPM, which is a TAC. The majority of DPM exhaust emissions that would be generated during construction would be from the use of diesel off-road equipment with a smaller amount generated by the use of heavy-duty trucks to deliver building material and equipment to the site. As discussed in the *Environmental Setting* section above, TACs are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). Exposure to DPM (the primary TAC of concern for the Master Plan) can cause cancer in humans.

The dose to which receptors are exposed is the primary factor affecting health risk from exposure to TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments should be based on a 9, 30, and/or 70-year exposure periods to determine the health risk to sensitive receptors from cancer or chronic noncancer health effects of TAC emissions (such as DPM). However, OEHHA also states that such health risk assessments should be limited to the duration of the emission-producing activities associated with the project, unless the activities occur for less than six months. Activities that would last more than two months, but less than six months, are recommended to be evaluated as if they would last for six months.[77] Since the construction of the Master Plan would be built out based on market demand, the specific duration and intensity of construction in different areas of the Master Plan is not known at this time. However, based on the size of the Master Plan and the anticipated intensity of construction, it is expected that off-road construction equipment could be operating near existing and future residences for a duration lasting longer than the two-month exposure period recommended by OEHHA. Although the basic construction emission control practices and enhanced exhaust control practices identified in Mitigation Measures AQ.2-1 and AQ.2-2 would reduce TAC emission form off-road equipment exhaust, construction of the Master Plan could expose existing and future sensitive receptors to TAC emissions that would be considered a **potentially significant impact**.

Operations

On-Site Operational Permitted Stationary Source Emissions

Long-term operation of Master Plan land uses could include the development of stationary sources that emit TACs. However, any stationary sources that may emit TACs would be subject to SMAQMD permitting and Toxics Best Available Control Technology (T-BACT) requirements. SMAQMD would assess such sources for potential health risk impacts based on their potential to emit TACs. If it is determined that the sources would emit TACs in excess of SMAQMD's applicable threshold of significance, T-BACT would be implemented to reduce emissions. If the implementation of T-BACT would not reduce the risk below the threshold, then SMAQMD would

[77] Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February 2015. Available at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf Accessed March 2023.

deny the required permit. As a result, impacts associated with exposure of sensitive receptors to substantial toxic air emissions from stationary source operations would be **less than significant**.

On-Site Operational Mobile Source Emissions

On-site mobile sources of TAC emissions would primarily be associated with the operation of diesel-fueled school buses transporting students to and from the proposed schools, transit buses, and delivery trucks associated with proposed on-site commercial activities.

Emissions from buses can vary depending on various factors, including bus type, age, and maintenance, and the amount of time spent idling. Generally, children are more vulnerable than adults to air pollutants because of their higher inhalation rates, narrower airways, and less mature immune systems. In response to this concern, CARB adopted an Airborne Toxic Control Measure (ATCM) as part of the *Particulate Matter Risk Reduction Plan* specifically to deal with diesel emissions from school buses. This measure became effective July 16, 2003. The school bus-idling ATCM includes the following requirements:

- The driver of a school bus or vehicle, transit bus, or heavy-duty vehicle (other than a bus) shall manually turn off the bus or vehicle upon arriving at a school and shall restart no more than 30 seconds before departing. A driver of a school bus or vehicle shall be subject to the same requirement when operating within 100 feet of a school and shall be prohibited from idling more than 5 minutes at each stop beyond schools, such as parking or maintenance facilities, school bus stops, or school activity destinations. A driver of a transit bus or heavy duty vehicle (other than a bus) shall be prohibited from idling more than 5 minutes at each stop within 100 feet of a school. Idling necessary for health, safety, or operational concerns shall be exempt from these restrictions.
- The motor carrier of the affected bus or vehicle shall ensure that drivers are informed of the idling requirements, track complaints and enforcement actions, and keep track of driver education and tracking activities.

According to CARB, implementation of the above requirements by the applicable school district would eliminate unnecessary idling for school buses and other heavy-duty vehicles, thus reducing localized exposure to emissions of TACs and other harmful pollutants at and near schools and protecting children from unhealthy exhaust emissions.

In addition to the school bus-idling ATCM, CARB has adopted an idling-restriction ATCM for large commercial diesel-powered vehicles. In accordance with this measure, which became effective February 1, 2005, affected vehicles are required to limit idling to no longer than 5 minutes under most circumstances. Nonetheless, given that proposed onsite commercial land uses have not yet been specifically identified and given the potential proximity of nearby sensitive receptors, exposure of nearby on-site receptors to mobile-source TACs associated with commercial activities is considered a **potentially significant impact**.

Siting of New Sensitive Receptors to Existing and Future TAC Sources

The Master Plan would include proposed residences, schools, and parks. Because of the sensitivity of such uses, an assessment of compatibility with surrounding land uses with respect to TAC emissions is provided below.

The *Air Quality and Land Use Handbook: A Community Health Perspective,*[78] which is advisory rather than regulatory, includes the following recommendations that may apply to the project:

- Avoid siting new sensitive land uses within 500 feet of urban roads carrying 100,000 vehicles per day.
- Avoid siting new sensitive land uses within 300 feet of a large gasoline station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gasoline-dispensing facilities.
- Avoid siting new sensitive land uses within 300 feet of any dry-cleaning operation using perchloroethylene. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult the local air district. Do not site new sensitive land uses in the same building with dry-cleaning operations that use perchloroethylene.
- Obtain facility-specific information where there are questions about siting a sensitive land use close to an industrial facility, including the amount of pollutant emitted and its toxicity, distance to nearby receptors, and types of emissions controls in place.

In addition to the CARB recommendations listed above, SMAQMD has developed the Mobile Sources Air Toxics Protocol (MSAT Protocol) for evaluating health risks at sensitive receptors located within 2 kilometers of major roadways and railways.[79] Sensitive receptors include residences, schools, day care centers, and medical facilities. SMAQMD's protocol requires a health risk screening analysis if sensitive receptor is within 500 feet of a roadway that has traffic volumes exceeding 100,000 average daily traffic (ADT) using the district's Health Risk Mapping Tool. At build-out (cumulative plus project), the adjacent roadways would reach a maximum of approximately 50,390 vehicles per day (Kiefer Boulevard),[80] substantially below SMAQMD's criterion of 100,000 vehicles per day.

In addition, the Health Risk Mapping Tool does not include the majority of the Master Plan site, given that there are no roadways with more than 100,000 ADT nearby. The nearest roadway with over 100,000 ADT is the EL Dorado Highway West (Highways 50), located approximately over 5,300 feet to the north of the Master Plan site. The part of the Master Plan site included in the Mapping Tool are areas east South Watt Avenue south of Jackson Road and areas north of Kiefer Boulevard and east of Bradshaw Road. The maximum health risk for receptors in the northwest part of the project site between South Watt Avenue south of Jackson Road is an incremental increase in cancer risk of zero; the maximum health risk for receptors in the east part of the project site nearest Kiefer Boulevard is an incremental increase in cancer risk 6.6.[81] These values

78 California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* April 2005. p. 4.

79 Sacramento Metropolitan Air Quality Management District, 2020. *Guidance Document for the Mobile Sources Air Toxics Protocol*. July. Version 1.3. Available at: http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mobile-Sources-Air-Toxics-Protocol. Accessed August 2023.

80 Tokarski, David. DKS Associates. September 13, 2023 email correspondence with Brian Schuster, ESA.

81 Sacramento Metropolitan Air Quality Management District, 2023. Sacramento Metropolitan Air Quality Management District Mobile Sources Air Toxics Protocol Tool. Available: http://sacramentorisk.azurewebsites.net/. Accessed August 2023.

are below the SMAQMD health risk threshold of an incremental increase in cancer risk greater than 10 in one million.

Therefore, the mobile source health risks to land uses adjacent to Jackson Highway and Keifer Boulevard would be less than significant. All other roadways within the Master Plan Area would have daily traffic volumes that are less than volumes on Kiefer Boulevard. Consequently, health risks for sensitive receptors located near all roads within the Master Plan Area road network are expected to be **less than significant**.

Mitigation Measures

Mitigation Measure AQ.2-1: Basic Construction Emission Control Practices (See Impact AQ-2)

Mitigation Measure AQ.2-2: Enhanced Exhaust Control Practices (See Impact AQ-2)

Mitigation Measure AQ.2-3: Enhanced Fugitive Particulate Matter Dust Control Practices (See Impact AQ-2)

Measure AQ.4-1: CARB Land Use Siting Standards. The specific plan design guideline and development standards of the Master Plan shall include consideration of CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* recommendations in land use siting. These include the following:

1. Avoid siting new sensitive land uses within 500 feet of urban roads carrying 100,000 vehicles per day.

2. Avoid siting new sensitive land uses within 300 feet of a large gasoline station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gasoline-dispensing facilities.

3. Avoid siting new sensitive land uses within 300 feet of any dry-cleaning operation using perchloroethylene. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult the local air district. Do not site new sensitive land uses in the same building with dry-cleaning operations that use perchloroethylene.

4. Obtain facility-specific information where there are questions about siting a sensitive land use close to an industrial facility, including the amount of pollutant emitted and its toxicity, distance to nearby receptors, and types of emissions controls in place.

Measure AQ.4-2: Project-Level Health Risk Assessment. To evaluate the potential for development in the Master Plan to expose existing and future sensitive receptors to toxic air contaminant (TAC) emissions from Master Plan construction (i.e., off-road diesel equipment), Master Plan operations (i.e. mobile sources), and existing sources (e.g. nearby stationary sources and roadways) that would result in a significant health risk, the project applicant shall prepare a health risk assessment (HRA) specific to each development under the Master Plan. The HRA shall be prepared by a qualified air quality analyst and submitted to the County of Sacramento for review and approval prior to start of construction. The HRA shall be prepared based on the latest methodology recommended by the Office of Environmental Health Hazard Assessment (OEHHA) and the Sacramento Metropolitan Air Quality Management District (SMAQMD). The HRA

shall evaluate, for each development under the Master Plan, the development's potential health risk impacts pursuant to SMAQMD CEQA guidelines and thresholds. Specifically, each HRA must evaluate the development's incremental increase in cancer risk, acute hazard index, chronic hazard index, and annual average concentrations of particulate matter in size fractions of 2.5 microns or less in diameter ($PM_{2.5}$) associated with the development's TAC emissions at all sensitive receptor locations within 1,000 feet of the development's boundaries. Impacts shall be identified by comparing health risks to the SMAQMD's current CEQA health risk thresholds (the current thresholds as of September 2023 are an incremental increase in cancer risk greater than 10 in one million or a hazard index greater than 1). The HRA must also identify all feasible mitigation measures to reduce the development's potentially significant impacts to less-than-significant levels. Any mitigation measures reported in the HRA shall be implemented by the applicant and enforced by the County of Sacramento.

Measure AQ.4-3: Clean Off-Road Construction Equipment. In order to reduce the impact of PM_{10} off-road equipment exhaust emissions during construction, the applicant shall ensure that all construction contracts stipulate the following:

1. ***Engine Requirements***.

    a. All portable engines, such as generators, shall be electric. If grid electricity is not available, propane or natural gas generators shall be used.

    b. Electric engines shall be used for all equipment that is commercially available as plug-in or battery-electric equipment, to the maximum extent feasible during each construction phase and activity. Portable equipment shall be powered by grid electricity if available. Electric equipment shall include, but is not limited to, concrete/industrial saws, sweepers/scrubbers, aerial lifts, welders, air compressors, fixed cranes, forklifts, and cement and mortar mixers, pressure washers, and pumps. To qualify for an exception, the Project applicant shall provide the County with evidence supporting its conclusion that electric equipment is not commercially available and shall use the next cleanest piece of off-road equipment in terms of DPM and $PM_{2.5}$.

    c. Engines that cannot be electrically powered must meet or exceed either U.S. EPA or CARB Tier 4 Final or cleaner engines, except for except as provided for below. Exceptions to the requirement for engines that meet Tier 4 Final emission standards shall include only select pieces of specialty equipment, such as those specified below, for which such engines may not be commercially available at the start of a construction phase requiring that equipment. Exceptions may be granted for certain pieces of equipment; examples include bore/drill rigs required for grading/shoring/excavation and for mobile cranes required for building construction. To qualify for an exception, the Project applicant shall provide the County with evidence supporting its conclusion that equipment meeting Tier 4 Final standards is not commercially available and shall use the next cleanest piece of off-road equipment in terms of DPM and $PM_{2.5}$.

    d. Engines shall be fueled with alternative fuels, including natural gas, propane, hydrogen fuel cell, and electricity, as commercially available and to the maximum extent feasible during each construction phase and activity

    e. Any other best technology available in the future may be included in the construction emissions minimization plan as substitutions for the above items a–

d, provided that the project sponsor submits documentation to the lead agency demonstrating that (1) the technology would result in comparable ROG, NOX, PM10, and PM2.5 emissions reductions and (2) it would not increase other pollutant emissions or exacerbate other impacts, such as noise. This may include new alternative fuels or engine technology for off-road equipment (such as electric or hydrogen fuel cell equipment) that is not available as of 2023.

f. Idling time for off-road equipment shall be limited to two minutes, except as provided in exceptions to the applicable state regulations regarding idling for off-road equipment. Documentation shall be provided to equipment operators in multiple languages (e.g., English, Spanish, Chinese) to remind operators of the 2-minute idling limit.

g. Construction operators shall be required to properly maintain and tune equipment in accordance with manufacturer specifications.

h. For the purpose of this mitigation measure, "not commercially available" is defined as either: (1) not being used for other large-scale projects in Sacramento County occurring at the same time; (2) cannot be obtained without significant delays to critical-path timing of construction; or (3) not available within the larger northern California region. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such equipment is commercially unavailable, the operator must submit documentation from a minimum of three (3) electric off-road equipment dealers demonstrating the inability to obtain the required electric equipment needed within 6 months.

2. ***Waivers***.

1. The electric engine requirements of above items 1.a and 1.b may be waived if electric power is infeasible at the project site. If the waiver is granted, the contractor must submit documentation that the equipment used for onsite power generation meets the requirements of items 1.c and 1.d.

2. The equipment requirements of item 1.c may be waived if: (1) the contractor does not have the required type of equipment within its current available inventory or has ordered such equipment at least 60 days in advance and has made a good faith effort to lease or rent such equipment but it is not available; (2) a particular piece of Tier 4 final off-road equipment is technically or financially infeasible; (3) the equipment would not produce desired emissions reduction due to expected operating modes; or (4) there is a compelling emergency need to use off-road equipment that is not Tier 4 Final compliant. If the waiver is granted, the contractor must use the next cleanest piece of off-road equipment that is commercially available, or another alternative that results in comparable reductions of ROG and DPM emissions.

3. The electric equipment requirements of above items 1.a and 1.b and the alternative fuel requirements of item 1.d may be waived if electricity or alternative fuels are not commercially available or the use of electricity or alternative fuels would negatively affect construction performance, void equipment warranties, or would result in additional DPM or $PM_{2.5}$ emissions compared to traditional fuels. For purposes of this mitigation measure, "not

commercially available" is defined as either: (1) not being used for other large-scale construction projects in Sacramento County occurring at the same time; (2) cannot be obtained without significant delays to critical-path timing of construction; or (3) not available within the larger northern California region. Sufficient documentation must be provided when seeking any waiver described above. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such equipment is commercially unavailable, the operator must submit documentation from a minimum of three (3) electric off-road equipment dealers demonstrating the inability to obtain the required electric equipment needed within 6 months.

Mitigation Measure AQ.4-4: Clean On-Road Construction Trucks. Heavy-duty on-road construction trucks shall comply with the following, which would reduce PM_{10} and $PM_{2.5}$ emissions:

1. ***Engine Requirements***.

   a. All on-road heavy-duty diesel trucks with a gross vehicle weight rating of 19,500 pounds or greater used at the project site (such as haul trucks, water trucks, dump trucks, concrete trucks, and vendor trucks) shall be model year 2020 or newer.

   b. Use alternative fuels as commercially available, such as natural gas, propane, hydrogen fuel cell, and electric vehicles or other fuels where the Project Applicant can provide evidence which suggests that PM_{10} and $PM_{2.5}$ emissions would be reduced compared to conventional diesel fuel.

   c. Any other best technology available in the future (i.e., not available as of 2023) may be used in lieu of or in addition to the above items 1.a and 1.b, provided that the Project sponsor submits documentation to the County demonstrating that (1) the technology would result in comparable PM_{10} and $PM_{2.5}$emissions reductions and (2) that such measures would not increase other pollutant emissions or result in other impacts, such as noise. This may include new alternative fuels for on-road trucks.

   d. Require the idling time for on-road vehicles be limited to two minutes, except as provided in exceptions to the applicable state regulations regarding idling for on-road vehicles. Documentation shall be provided to truck drivers in multiple languages (e.g., English, Spanish, Chinese) to remind operators of the 2-minute idling limit.

   e. An alternative-fueled and ZEV truck shall ordinarily be considered commercially available if the vehicle is capable of serving the intended purpose and is included in California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, https://californiahvip.org/ or listed as available in the US on the Global Commercial Vehicle Drive to Zero inventory, https://globaldrivetozero.org/. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such vehicles are commercially unavailable, the operator must submit documentation from a minimum of three (3) ZEV dealers identified on the californiahvip.org website

demonstrating the inability to obtain the required ZEVs or equipment needed within 6 months.

2. ***Waivers***. The County may waive the alternative fuel requirements of item 1.b if alternative fuels are not commercially available or the use of alternative fuels is not technologically feasible, would void truck warranties, or would result in ROG, NO_X, PM_{10} and $PM_{2.5}$ emissions compared to traditional fuels.

These mitigation measures stipulate requirements and performance standards for future development projects under the Master Plan and therefore do not defer mitigation. Mitigation measures do not need to include exact quantitative performance standards, but do need to be at least partially effective even if they don't mitigate impacts to less-than-significant levels (Laurel Heights I, supra, 47 Cal.3d at p. 404; §§ 21051, 21100; Guidelines, § 15370.). The County has the discretion to modify these mitigation measures with equally or more effective measures as technology improves in the future, as long as these measures do not change a project's impacts (See Guidelines, § 15162, subd. (a)(3).) New technology and better mitigation measures, as they become available, should be encouraged

According to the California Supreme Court in *Sierra Club v. County of Fresno*, (2018) 6 Cal.5th 502 ("Friant Ranch"):

> *"Allowing future substitutions for equal or more efficient technology to mitigate a project's acknowledged significant effects promotes CEQA's goal of environmental protection and is not an impermissible deferral of mitigation or an abuse of discretion. It is simply a recognition that substitutions of adopted mitigation measures may be implemented to further minimize the Project's environmental impacts."*

The mitigation measures above allow for some improvements in technology over time and allow future development under the Master Plan to consider equally or more effective measures as technology improves in the future, subject to review by the County, and consistent with CEQA Guidelines Section 15162(a)(3).

Significance after Mitigation: Even with the implementation of Mitigation Measures AQ.2-1 through AQ.2-3 and AQ.4-1 through AQ.4-4, off-road construction equipment would operate for a duration exceeding the two-month exposure period recommend by OEHHA. Although Mitigation Measure AQ.4-2 would require that each applicant shall prepare an HRA specific to each development under the Master Plan to determine the potential proximity of nearby sensitive receptors to future TAC emission sources, the exact location of sensitive receptors and their exposure to future TAC emissions is currently unknown. For these reasons, construction of the Master Plan would result in the exposure of nearby existing and future sensitive receptors to TAC emissions that would be considered **significant and unavoidable**.

Impact AQ.5: Implementation of the Master Plan could result in exposure of substantial persons to other emissions, such as those leading to odors. (*Significant and Unavoidable*)

With regard to operations, no common sources of substantial nuisance odors, such as wastewater treatment facilities or waste-disposal facilities are proposed as part of the project. However, the Master Plan would include an industrial land use category that would allow manufacturing, such as asphalt concrete plants, that could contribute odors. It is currently not known whether new industrial facilities that may have sources of odorous emissions would be constructed in these areas. While commercial uses could provide uses that may include sources of odorous emissions (e.g., fast-food restaurants) that could be perceived as offensive to some individuals, it is assumed that the size, location, and construction of these facilities would not create significant odor impacts. In addition, these uses may also receive additional environmental analysis in the future, and it is speculative to determine what specific commercial uses would be constructed.

Regarding land use compatibility of locating sensitive receptors in proximity to existing sources of odor in the region, there are several potential sources in the vicinity of the Master Plan Area, including the Sacramento Rendering Company plant (about 2.25 miles to the east at 11350 Kiefer Boulevard, Mather, CA. 95830), Granite hot asphalt plant (within the northern portion of the Master Plan Area at 4291 Bradshaw Rd, Sacramento, CA 95827), Teichert hot asphalt plant (about 0.7 miles to the northwest at 9760 Jackson Rd, Sacramento, CA 95827), Florin-Perkins Landfill (approximately 0.75 miles to the west at 4201 Florin Perkins Road, Sacramento, CA 95826) and L & D Landfill (about 0.15 miles to the west at 8635 Fruitridge Rd, Sacramento, CA 95826). **Figure 2** presents these nearby potential sources of odors.

The SMAQMD enforces California Health and Safety Code §41700 prohibited discharge, and District Rule 402, Nuisance, which prohibits causing a public nuisance from odor. SMAQMD determines that businesses are a public nuisance for odor if they receive public complaints and are able to verify that the source is causing the odors. Both landfills handle primarily construction and demolition debris, which is not a source of substantial odors. According to SMAQMD, in the last three years (CY 2020-2023) the Florin-Perkins Landfill, Granite hot asphalt plant, and the L And D Landfill have had no public complaints and no notice of violations (NOVs).[82]

In the same time period, the Teichert hot asphalt plant has had 2 odor complaints and no NOVs. The Sacramento Rendering Company has received 287 odor complaints between 2020-2023, however the SMAQMD is precluded from enforcing odor nuisance at the facility due to the State of California Right to Farm Act.[83] These facilities are within the SMAQMD odor screening distances (2-miles for asphalt batch plants and 4-miles for rendering plants), and depending on whether these plants are still operational as the Master Plan is developed nearby, would be a source of potential nuisance odors. As noted in the NewBridge Specific Plan, the East Sacramento Ranch, which owns the land beneath the rendering plant, plans to relocate the plant to a more compatible area.[84] In addition, the prevailing annual wind direction in the Master Plan

[82] Sacramento Metropolitan Air Quality Management District Public Records Request for Odor Complains made on 9/8/2023. Odor Complaint List received on 9/15/2023.

[83] *Ibid.*

[84] County of Sacramento. 2020. NewBridge Specific Plan. Available: http://www.per.saccounty.net/Plansand ProjectsIn-Progress/Pages/NewBridgeSpecificPlan.aspx. Accessed April 2023.

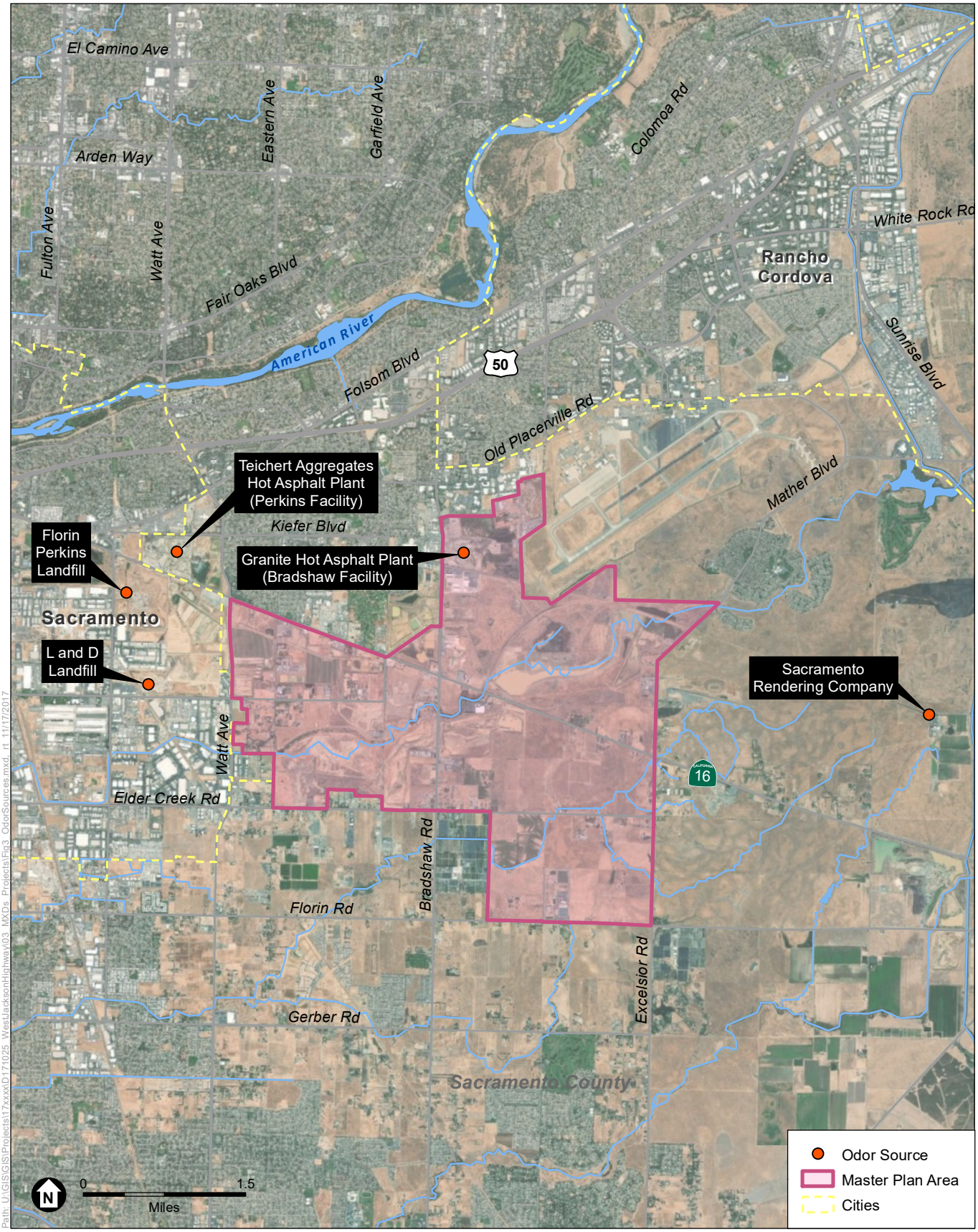
Area is from the south and therefore the majority of the Master Plan Area would not be located directly downwind from the rendering plant or asphalt plants. However, since the future operational status of these plants is unknown and there have been substantial odor complaints associated with the facilities (289 total complaints as discussed above), the Sacramento Rendering Company plant and hot asphalt plants would represent potentially significant odor sources, and siting of new sensitive receptors under the project would be a significant impact.

Mitigation Measures

Mitigation Measure AQ.5-1: Odor Control. The applicant(s) shall implement the following measures to control exposure of sensitive receptors within the project site to odors generated by the Sacramento Rendering Company plant, Granite asphalt plant, and Teichert asphalt plant:

- The deeds to all properties located within the Master Plan Area that are within four miles of the rendering plant or two miles of either the Granite or Teichert hot asphalt plants would be accompanied by a written disclosure from the transferor, in a form approved by the County, advising any transferee of the potential adverse odor impacts from nearby odoriferous operations and requiring the transferee(s) to sign an acknowledgement that odors from the Sacramento Rendering Company plant or hot asphalt plant may be detectable at their property.

Significance after Mitigation: The measure included above would notify property owners of potential odor sources in the area as informational disclosure. However, mitigation is not available to reduce actual odor generation at facilities owned and operated by entities outside of the Master Plan applicant and developer control. Due to the substantial number of odor complaints associated with the off-site rendering plant and two complaints associated with the Teichert hot asphalt plant, and the proximity of the Master Plan Area to these odor sources, the potential nuisance odors that could affect on-site sensitive receptors would be considered **significant and unavoidable**.



SOURCE: Esri, 2015; Teichert, 2017; ESA, 2017

West Jackson Highway Master Plan

Figure 2
Nearby Potential Sources of Odors

ESA

Cumulative Air Quality Impacts

Impact AQ.6: Development and operation of the Master Plan would result in a cumulative increase of criteria pollutant emissions. (*Significant and Unavoidable*)

According to the SMAQMD guidelines, a cumulative impact occurs when two or more individual effects, considered together, are considerable or would compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that a project's incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. As shown in **Table 2-4**, Sacramento County is in nonattainment for several pollutants, including ozone (state and federal), PM_{10} (state), and $PM_{2.5}$ (federal). Therefore, project-related emissions for criteria pollutants that exceed the applicable threshold would be considered to contribute considerably to a cumulative impact. In other words, a project in Sacramento County that has direct air quality impacts is considered to significantly contribute to a cumulative air quality impact.[85]

Notably, CO concentrations (Impact AQ.4) associated with build-out (cumulative plus project) would be below the SMAQMD screening levels and would be less than significant.

The developments proposed under the Master Plan would directly result in significant impacts associated with operational emissions (Impact AQ.3), exposure of persons to substantial pollutant concentrations (Impact AQ.4), and exposure of substantial persons to objectionable odors (Impact AQ.5). Although implementation of mitigation measures would reduce these impacts, even after mitigation, the impacts would be **significant and unavoidable** and therefore cumulatively considerable and significant.

Comparison of Master Plan Emissions to Regional Emissions

CARB compiles emissions inventories for air basins in the state. Based on the most recent air basin data available from CARB, the anthropogenic (i.e., man-made) sources of emissions in the SVAB are summarized in **Table 2-13**. For comparison purposes, the estimated maximum daily emissions within the SVAB from implementation of the Master Plan are provided and compared to the air-basin-wide emissions.

[85] Sacramento County is the area over which SMAQMD has jurisdiction and is therefore the geographic area for cumulative impact analysis.

TABLE 2-13
EMISSIONS INVENTORY FOR SVAB COMPARED TO THE MASTER PLAN

Air Basin	Estimated Emissions (Tons per Day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
SVAB (2020)	**149.7**	**107.4**	**555.4**	**159.7**	**44.3**
Master Plan (2050) (average daily)[a]	0.1	0.1	2.2	0.2	0.1
Percent of Air Basin Total	0.04%	0.06%	0.4%	0.1%	0.1%

NOTES:

a. See Table 2-9. Converted to units of tons per day for comparison.

SOURCES: CARB, 2023. *Alamanac Emission Project Data*. Available https://www.arb.ca.gov/app/emsinv/2021/emssumcat.php. Accessed: April 2023.

Mitigation Measures

Mitigation Measure AQ.1-1: Air Quality Mitigation Plan (See Impact AQ.1).

Mitigation Measure AQ.1-2: Electric Vehicle Charging Infrastructure (See Impact AQ.1).

Mitigation Measure AQ.2-1: Basic Construction Emission Control Practices (See Impact AQ.1).

Mitigation Measure AQ.2-2: Enhanced Exhaust Control Practices (See Impact AQ.2).

Mitigation Measure AQ.2-3: Enhanced Fugitive Particulate Matter Dust Control Practices (See Impact AQ.2).

Mitigation Measure AQ.3-1: Promote Use of Green Consumer Products (See Impact AQ.3).

Mitigation Measure AQ.3-2: Operational Truck Emissions Reduction (See Impact AQ.3).

Mitigation Measure AQ.3-3: Electric Landscaping Equipment (See Impact AQ.3).

Mitigation Measure AQ.3-4: Best Available Emissions Controls for Stationary Emergency Generators (See Impact AQ.3).

Mitigation Measure AQ.3-5: Offset Remaining ROG, NO_X, PM_{10}, and $PM_{2.5}$ Emissions (See Impact AQ.3).

Measure AQ.4-3: Clean Off-Road Construction Equipment (See Impact AQ.4).

Mitigation Measure AQ.4-4: Clean On-Road Construction Trucks (See Impact AQ.4).

Significance after Mitigation: These mitigation measures would result in substantial emission reductions of ozone precursors, including mobile source reductions that would meet the requirements of an AQMP, which together represent all feasible mitigation for the Master Plan.

However, even with these mitigation measures, operation of the developments proposed under the Master Plan would result in substantial criteria pollutant emissions, including particulate matter and ozone precursors, that would exceed the SMAQMD's thresholds of significance. Consequently, the direct criteria pollutant emissions for the Master Plan would remain **cumulatively significant and unavoidable**.

Impact AQ.7: The Master Plan would contribute to cumulative increases in toxic air contaminant exposure. (*Significant and Unavoidable*)

As discussed above in Impact AQ.4, exposure to TACs is generally a local phenomenon. The known major development projects within 1,000 feet of the Master Plan Area include the Jackson Township Master Plan (directly to the east of the project site), the Newbridge Specific Plan (to the east of the project site), the Florin-Vineyard Gap Community Plan (directly to the south of the project site), and the North Vineyard Station Specific Plan (to the south of the project site across Florin Road). The primary source of cumulative TACs (Master Plan plus other projects) would be associated with off-road construction emissions of DPM during construction activities for each of these developments and on-road vehicular traffic during long-term operations.

For construction, it is expected that off-road construction equipment would be operating near existing and future residences for a duration lasting longer than the two-month exposure period recommend by OEHHA. Consequently, construction of the Master Plan could expose existing and future sensitive receptors to TAC emissions that would be considered a potentially significant impact.

For operations, on-site mobile sources of TAC emissions would primarily be associated with the operation of school buses transporting students to and from the proposed schools, transit buses, and diesel-fueled delivery trucks associated with proposed on-site commercial activities. Given that proposed onsite commercial land uses have not yet been identified and given the potential proximity of nearby sensitive receptors, exposure of nearby on-site receptors to mobile-source TACs associated with commercial activities is considered a **potentially significant impact**.

Mitigation Measures

Mitigation Measure AQ.1-1: Air Quality Mitigation Plan (See Impact AQ.1).

Mitigation Measure AQ.2-1: Basic Construction Emission Control Practices (See Impact AQ.1).

Mitigation Measure AQ.2-2: Enhanced Exhaust Control Practices (See Impact AQ.2).

Mitigation Measure AQ.2-3: Enhanced Fugitive Particulate Matter Dust Control Practices (See Impact AQ.2).

Mitigation Measure AQ.3-2: Operational Truck Emissions Reduction (See Impact AQ.3).

Mitigation Measure AQ.3-4: Best Available Emissions Controls for Stationary Emergency Generators (See Impact AQ.3).

Mitigation Measure AQ.4-1: CARB Land Use Siting Standards (See Impact AQ-4).

Mitigation Measure AQ.4-2: Project-Level Health Risk Assessment (See Impact AQ-4).

Mitigation Measure AQ.4-3: Clean Off-Road Construction Equipment (See Impact AQ-4).

Mitigation Measure AQ.4-4: Clean On-Road Construction Trucks (See Impact AQ-4).

Significance after Mitigation: Off-road construction equipment would operate for a duration exceeding the two-month exposure period recommend by OEHHA. Although Mitigation Measure AQ.4-2 would require that each applicant shall prepare an HRA specific to each development under the Master Plan to determine the potential proximity of nearby sensitive receptors to future TAC emission sources, the exact location of sensitive receptors and their exposure to future TAC emissions is currently unknown. Implementation of Measures AQ.1-1, AQ.2-2 through AQ2.3, AQ.3-2, AQ.3-3, and AQ.4-1, AQ.4-3, and AQ.4-4, would reduce health risk impacts associated with the Master Plan, it cannot be guaranteed that such impacts would be reduced below the thresholds of significance for all developments under the Master Plan. Consequently, construction of the Master Plan would result in the exposure of nearby existing and future sensitive receptors to TAC emissions that would be considered **cumulatively significant and unavoidable**.

Impact AQ.8: Development and operation of the Master Plan would result in cumulative exposure of substantial persons to objectionable odors. (*Significant and Unavoidable*)

As described above in Impact AQ.5, implementation of the Master Plan is not expected to create additional common sources of substantial nuisance odors. However, industrial uses could include manufacturing, such as asphalt concrete plants, that could contribute significant odors; in addition, commercial uses may include sources of odorous emissions (e.g., fast-food restaurants) that could be perceived as offensive to some individuals. These uses may receive additional environmental analysis in the future and it is currently speculative to determine what specific commercial uses would be constructed. Despite the uncertainty of new odor sources, new residents could be exposed to existing odor sources. Therefore, the Master Plan may contribute to a cumulative odor impact through potential new odor sources and exposure of future receptors to both existing and new odor sources.

Mitigation Measures

Mitigation Measure AQ.5-1: Odor Control (see Impact AQ.5).

Significance after Mitigation: Mitigation measure AQ.5-1 would require that property owners be notified of potential odor sources in the area but would not eliminate the possibility of exposure to substantial nuisance odors. In addition, the Master Plan may contribute to an odor

impact through new industrial and commercial uses, such as asphalt concrete plants. In addition, the Master Plan would result in the introduction of substantial persons that could be adversely affected by existing odor sources. This impact would remain **cumulatively significant and unavoidable**.

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CHAPTER 3
Greenhouse Gases

This section assesses the potential GHG impacts associated with construction and operation of the Master Plan and identifies feasible mitigation measures where appropriate.

3.1 Environmental Setting

"Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continuation. Increases in GHG concentrations in the earth's atmosphere are thought to be the main cause of human-induced climate change. Certain gases in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected into space. This is sometimes referred to as the "greenhouse effect" and the gases that cause it are called "greenhouse gases." Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected into space, intensifying the natural greenhouse effect, and resulting in the increase of global average temperature.

Potential global warming impacts in California may include, but are not limited to, loss in snowpack, sea level rise, more extreme heat days per year, more high ozone days, more forest fires, and more drought years. Secondary effects are likely to include the displacement of thousands of coastal businesses and residences, impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity.

3.1.1 Greenhouse Gases

Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) are the principal GHGs. When concentrations of these gases exceed natural concentrations in the atmosphere, the greenhouse effect may be intensified. CO_2, CH_4, and N_2O occur naturally, and are also generated through human activity. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing[86] associated with agricultural practices and landfills. Other human-generated GHGs include fluorinated gases such as HFCs, PFCs, and SF_6, which have much higher heat-absorption potential than CO_2 and are byproducts of certain industrial processes.

CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-

[86] Off-gassing is defined as the release of chemicals under normal conditions of temperature and pressure.

for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. For example, CH_4 and N_2O are substantially more potent GHGs than CO_2, with GWPs of 25 and 298 times that of CO_2, respectively.

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons of CO_2 equivalents (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWPs than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO_2e, both from residential developments and human activity in general.

Global Emissions

Worldwide GHG emissions in 2021 were approximately 37.9 billion metric tons of CO_2e per year.[87] This includes both ongoing emissions from industrial and agricultural sources but excludes emissions from land use changes. Emissions of CO_2 from fossil fuel use and industrial processes account for 65 percent of the total, while CO_2 emissions from all sources account for 76 percent of the total GHG emissions. In 2021, the United States was the world's second largest emitter of CO_2, at 4,800 million metric tons (MMT) (China was the largest emitter of CO_2, at 12,500 MMT).

United States Emissions

GHG Emissions in the United States in 2021 were approximately 6,340 million metric tons of CO_2e, or 5,586 million metric tons of CO_2e after accounting for sequestration from the land sector.[88] Of the major sectors nationwide, transportation accounts for the highest volume of GHG emissions (approximately 29 percent), followed by electricity (approximately 25 percent), industry (approximately 24 percent), agriculture (approximately 10 percent), commercial buildings (approximately 7 percent), and residential buildings (approximately 6 percent). Between 1990 and 2021, total U.S. GHG emissions have decreased by 2.3 percent, from a high of 15.8 percent above 1990 levels in 2007.

State of California Emissions

California produced approximately 369.2 million metric tons of CO_2e in 2020.[89] Combustion of fossil fuel in the transportation sector was the single largest source of California GHG emissions in 2020, accounting for 36.8 percent of total GHG emissions in the state. This represents a

87 Crippa, M., D. Guizzardi, M. Banja, E. Solazzo, M. Muntean, E. Schaaf, F. Pagani, F. Monforti-Ferrario, J. G. J. Olivier, R. Quadrelli, A. Risquez Martin, P. Taghavi-Moharamli, G. Grassi, S. Rossi, D. Oom, A. Branco, J. San-Miguel, and E. Vignati. 2022. *CO2 Emissions of All World Countries—JRC/IEA/PBL 2022 Report*. Publications Office of the European Union, Luxembourg. Available: https://edgar.jrc.ec.europa.eu/booklet/CO2_emissions_of_all_world_countries_2022_report.pdf. Accessed September 2023.

88 Environmental Protection Agency (EPA), 2023. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021. U.S. Environmental Protection Agency, EPA 430-R-23-002. Available: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-andsinks-1990-2021. Accessed April 2023.

89 California Air Resources Board (CARB), 2022, California Greenhouse Gas Emissions for 2000 – 2020 – Trends of Emissions and Other Indicators, October 26, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf. Accessed April 2023.

decrease of 35 million $MTCO_2e$ from 2019 likely associated with economic shutdowns that year. This sector was followed by the industrial sector (19.9 percent), the electric power sector (including both in-state and out-of-state sources) (16.1 percent), residential and commercial sectors (10.5 percent), agriculture sector (8.6 percent), and other high global warming potential and waste sectors (5.8 percent).[90]

Sacramento County Emissions

Sacramento County produced approximately 4.7 million metric tons of CO_2e in 2015, the most recent community-wide emissions inventory year. Electricity and natural gas used to operate, heat, and cool commercial, industrial, and residential buildings represents the largest source of GHG emissions, accounting for 41 percent of annual CO_2e emissions. The transportation sector accounted for another 36 percent of annual CO_2e emissions. The other CO_2e emissions sectors included in the inventory (with percent contributions reported in parentheses) were solid waste (7 percent), off-road vehicles (4 percent), agriculture (5 percent), high-GWP gases (5 percent), wastewater (<1 percent), and water-related (<1 percent).[91] **Table 3-1** presents the 2015 baseline GHG inventory for Sacramento County.

TABLE 3-1
SACRAMENTO COUNTY GHG EMISSIONS

Emissions Sector	2015 Baseline GHG Emissions ($MTCO_2e$)	Percent
Residential Energy	1,086,580	23%
Commercial / Industrial Energy	843,168	18%
On-Road Vehicles	1,695,127	36%
Off-Road Vehicles	196,769	4%
Solid Waste	352,909	7%
Agriculture	254,899	5%
High-GWP Gases	251,085	5%
Wastewater	27,253	<1%
Water-Related	15,222	<1%
Total	**4,723,011**	**100%**

NOTES: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; GWP = global warming potential

SOURCES:

1. Sacramento County, 2022. *Sacramento County Climate Action Plan*. Available: https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/CAP.aspx. Accessed August 2023.

90 California Air Resources Board, 2022. *California Greenhouse Gas Emissions for 2000–2020: Trends of Emissions and Other Indicators*. Figure 20a. Available at https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf. Accessed August 2023.

91 Sacramento County, 2022. *Sacramento County Climate Action Plan*. Available: https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/CAP.aspx. Accessed August 2023

3.2 Regulatory Setting

The following sections provide federal, state, and local regulations for energy, GHGs, and global climate change. These agencies work jointly, as well as individually, to understand and regulate the effects of GHG emissions and resulting climate change through legislation, regulations, planning, policymaking, education, and a variety of programs.

3.2.1 Federal

Clean Air Act and U.S. Environmental Protection Agency "Endangerment" and "Cause or Contribute" Findings

The U.S. Supreme Court held that the United States Environmental Protection Agency (U.S. EPA) must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency* et al., twelve states and cities, including California, together with several environmental organizations sued to require the U.S. EPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- ***Endangerment Finding:*** The current and projected concentrations of the six key GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- ***Cause or Contribute Finding:*** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Corporate Average Fuel Economy

In 1975, Congress enacted the Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to this law, EPA and the National Highway Traffic Safety Administration are responsible for establishing additional vehicle standards. In August 2012, standards were adopted for model years 2017 through 2025 for passenger cars and light-duty trucks.

In August 2018, EPA and the National Highway Traffic Safety Administration proposed maintaining the 2020 corporate average fuel economy and CO_2 standards for model years 2021 through 2026. The estimated corporate average fuel economy and CO_2 standards for model year 2020 are 43.7 miles per gallon (mpg) and 204 grams of CO_2 per mile for passenger cars and 31.3 mpg and 284 grams of CO_2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012.

In September 2019, EPA finalized the Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program and announced its decision to withdraw the Clean Air Act preemption

waiver granted to the State of California in 2013.[92] In March 2022, EPA reinstated California's waiver, restoring the state's authority to set and enforce more stringent standards than the federal government, including California's GHG emission standards and zero-emission vehicle (ZEV) mandate (87 *Federal Register* 14332–14379, March 14, 2022).

3.2.2 State

California Environmental Quality Act and Climate Change

Under CEQA lead agencies are required to disclose the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to raise sea levels, alter rainfall and snowfall, and affect habitat.

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The California Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. On December 30, 2009, the Natural Resources Agency adopted amendments to the State CEQA Guidelines, as required by SB 97. These State CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

State CEQA Guidelines

The State CEQA Guidelines are embodied in the California Code of Regulations (CCR), Public Resources Code, Division 13, starting with Section 21000. The CEQA Guidelines were amended in 2018 by the Natural Resources Agency. State CEQA Guidelines section 15064.4 specifically addresses the significance of GHG emissions, requiring a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents. Section 15064.4 states that the GHG analysis should focus on the "reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change" which may be cumulatively considerable even if emissions are small relative to statewide, national, or global emission levels, and that the analysis should consider "a timeframe that is appropriate for the project" using "evolving scientific knowledge and state regulatory schemes." Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project emissions would exceed a locally applicable threshold of significance, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local

[92] U.S. Department of Transportation and U.S. Environmental Protection Agency. One National Program Rule on Federal Preemption of State Fuel Economy Standards. September 19, 2019. Available: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100XI4W.pdf. Accessed September 2023.

plan for the reduction or mitigation of GHG emissions." The CEQA Guidelines also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (State CEQA Guidelines section 15064(b)(3)). In addition, the recent revisions to the CEQA Guidelines state that significance determinations can be made based on statewide targets: "In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable." The State CEQA Guidelines do not, however, set a numerical threshold of significance for GHG emissions.

The CEQA Guidelines also include the following direction on measures to mitigate GHG emissions, when such emissions are found to be significant:

> Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:
>
> (1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;
>
> (2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;
>
> (3) Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;
>
> (4) Measures that sequester greenhouse gases; and
>
> (5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by-project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions.
>
> (State CEQA Guidelines section 15126.4(a).)

Senate Bill 350

SB 350 (Clean Energy and Pollution Reduction Act of 2015) was signed into law on October 7, 2015, establishing new goals for clean energy, clean air, and GHG reduction goals for 2030 and beyond. SB 350 requires the following:

- Increase California's renewable electricity procurement goal under the RPS from 33 percent by 2020 to 50 percent by 2030,

- Double the energy efficiency of existing buildings by 2030; and
- Facilitate the growth of renewable energy markets within the western U.S. by reorganizing the California Independent System Operator (CAISO).

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned utilities and publicly-owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350.

Senate Bill 1020

SB 1020, signed on September 16, 2022, revises SB 100 to require that renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to end-use customers by December 31, 2035; 95 percent of all retail sales to end users by December 31, 2040; 100 percent of all retail sales to end users by December 31, 2045; and 100 percent of electricity procured to serve all state agencies by December 31, 2035.

Executive Order B-55-18

On September 10, 2018, Governor Brown signed EO B-55-18, committing California to total, economy-wide carbon neutrality by 2045. EO B-55-18 directs CARB to work with relevant state agencies to develop a framework to implement an accounting to track progress toward this goal. AB 1395 would codify this carbon neutral target.

Pavley Regulations and Fuel Efficiency Standards

In 2002, Governor Gray Davis signed Assembly Bill (AB) 1493, which required the CARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by the CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the CARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less,

the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill's author, state Senator Fran Pavley) would impose stricter standards than those under the CAA, California applied to the U.S. EPA for a waiver under the CAA; this waiver was initially denied in 2008. In 2009, however, the U.S. EPA granted the waiver.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established EO S-3-05, which announced target dates by which statewide GHG emissions would be progressively reduced. These included a reduction of GHG emissions to 2000 levels by 2010; a reduction of GHG emissions to 1990 levels by 2020; and a reduction of GHG emissions to 80 percent below 1990 levels by 2050. As discussed below, the 2020 reduction target was codified in 2006 as Assembly Bill 32 (AB 32). However, the 2050 reduction target has not been codified and the California Supreme Court has ruled that CEQA lead agencies are not required to use it as a significance threshold. *Cleveland National Forest Foundation v. San Diego Association of Governments* (2017) 3 Cal.5th 497.

Assembly Bill 32

In 2006, the California Legislature adopted Assembly Bill (AB) 32 (Health and Safety Code Division 25.5), also known as the California Global Warming Solutions Act of 2006, with a focus on reducing GHG emissions in California to 1990 levels by 2020. This act defines GHGs as CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride and represents the first enforceable statewide program to limit emissions of these GHGs from all major industries with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. The California Global Warming Solutions Act assigned CARB the primary responsibility for reducing GHG emissions, by adopting rules and regulations directing state actions that would achieve GHG emissions reductions equivalent to 1990 statewide levels by 2020.

As required by the California Global Warming Solutions Act, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020, originally set at 427 $MMTCO_2e$, using the GWP values from the IPCC Second Assessment Report. CARB established the GHG emissions reduction target based on GWP values from the IPCC Fourth Assessment Report (AR4) and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 $MMTCO_2e$.

CARB approved the initial AB 32 Scoping Plan in 2008.[93] It approved the *First Update to the Climate Change Scoping Plan* (2014 Scoping Plan) in May 2014 and built upon the 2008 Scoping Plan with new strategies and recommendations.[94] In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 $MMTCO_2e$. CARB also updated the state's 2020 business-as-usual (BAU) emissions estimate to account for the impact of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that were adopted for motor vehicles and renewable energy. CARB's projected statewide 2020 emissions estimate using the GWP values from the IPCC AR4 is 509.4 $MMTCO_2e$.

Therefore, under the 2014 Scoping Plan, the emission reductions necessary to achieve the 2020 emissions target of 431 $MMTCO_2e$ would be 78.4 $MMTCO_2e$, or a reduction of GHG emissions by approximately 15.4 percent.

Senate Bill 32 and Assembly Bill 197

In 2016, the California Legislature adopted Senate Bill (SB) 32 and its companion bill AB 197. SB 32 and AB 197 amended Health and Safety Code Division 25.5, and established a new climate pollution reduction target of 40 percent below 1990 levels by 2030, with provisions included to ensure that the benefits of state climate policies reach into vulnerable communities. In response to the 2030 GHG reduction target, CARB adopted the 2017 Scoping Plan.[95] The 2017 Scoping Plan outlines the strategies the state will implement to achieve the 2030 GHG emissions reduction target, which build on the Cap-and-Trade Program; the Low Carbon Fuel Standard; improved vehicle, truck, and freight movement emissions standards; increasing renewable energy; and strategies to reduce methane emissions from agricultural and other wastes by using it to meet California's energy needs. CARB's projected statewide 2030 emissions take into account 2020 GHG reduction policies and programs. The 2017 Scoping Plan also comprehensively addresses GHG emissions from natural and working lands of California, including the agriculture and forestry sectors. The adopted 2017 Scoping Plan includes ongoing and statutorily required programs and the continuation of the Cap-and-Trade Program. This Scoping Plan Scenario was modified from the January 2017 Proposed Scoping Plan to reflect AB 398,[96] including removal of the 20 percent refinery measure.

The 2017 Scoping Plan outlines the strategies the State of California will implement to achieve the 2030 GHG emissions reduction target. The 2017 Scoping Plan includes the Scoping Plan Scenario,

93 California Air Resources Board, 2008. *Climate Change Scoping Plan: A Framework for Change*. December 2008. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed May 2022.

94 California Air Resources Board, 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework.* May 2014. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf. Accessed January 2022.

95 California Air Resources Board, 2017. *California's 2017 Climate Change Scoping Plan.* November 2017. Appendix G. Available: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf. Accessed December 2021.

96 AB 398 was enacted in 2017 to extend and clarify the role of the State's Cap-and-Trade Program through December 31, 2030. As part of AB 398, refinements were made to the Cap-and-Trade program to establish updated protocols and allocation of proceeds to reduce GHG emissions.

which CARB stated "is the best choice to achieve the state's climate and clean air goals".[97] Under the Scoping Plan Scenario, continuation of the Cap-and-Trade regulation (or carbon tax) is expected to cover approximately 34–79 $MMTCO_2$ of the 2030 reduction obligation.[98] The short-lived GHG strategy is expected to cover approximately 17–35 $MMTCO_2e$. The Renewables Portfolio Standard with 50 percent renewable electricity by 2030 is expected to cover approximately 3 $MMTCO_2$. The mobile-source strategy and sustainable freight action plan includes maintaining the existing vehicle GHG emissions standards, increasing the number of ZEVs, and improving the efficiency of the freight system, and is expected to cover approximately 11–13 $MMTCO_2$. Under the Scoping Plan Scenario, CARB expects that the doubling of the energy efficiency savings by 2030 would cover approximately 7–9 $MMTCO_2$ of the 2030 reduction obligation. The other strategies would be expected to cover the remaining 2030 reduction obligations.

The 2017 Scoping Plan also discusses the role of local governments in meeting the state's GHG reductions goals because local governments have jurisdiction and land use authority related to community-scale planning and permitting processes, local codes and actions, outreach and education programs, and municipal operations. Furthermore, local governments may have the ability to incentivize renewable energy, energy efficiency, and water efficiency measures.[99] The 2017 Scoping Plan encourages local governments to adopt climate action plans (CAPs) to address local GHG emissions sources. A summary of the GHG emissions reductions required under SB 32 is provided in **Table 3-2**, *Estimated Greenhouse Gas Emissions Reductions Required by SB 32*.

TABLE 3-2
ESTIMATED GREENHOUSE GAS EMISSIONS REDUCTIONS REQUIRED BY SB 32

Emissions Category	GHG Emissions ($MMTCO_2e$)
2017 Scoping Plan Update	
2030 No Action Taken Forecast ("Reference Scenario," which includes 2020 GHG emissions reduction policies and programs)	389
2030 Emissions Target Set by SB 32 (i.e., 40 percent below 1990 level)	260
Reduction below No Action Taken Forecast Necessary to Achieve 40 Percent below 1990 Level by 2030	129 (33.2 percent)[a]

NOTES: GHG = greenhouse gas; $MMTCO_2e$ = million metric tons of carbon dioxide equivalent; SB = Senate Bill

a. 389 – 260 = 129 / 389 = 33.2%

SOURCES:

1. California Air Resource Board, 2017. *California's 2017 Climate Change Scoping Plan*. Available: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2017-scoping-plan-documents. Accessed December 2023.

Assembly Bill 1279 and 2022 Scoping Plan

The Legislature enacted AB 1279, The California Climate Crisis Act, on September 16, 2022. AB 1279 establishes the policy of the State of California to achieve net zero GHG emissions as soon as possible but no later than 2045, and to achieve and maintain net negative GHG emissions

97 California Air Resources Board, 2017. *California's 2017 Climate Change Scoping Plan.* November 2017. Appendix G. Available: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf. Accessed December 2021.

98 Ibid.

99 Ibid.

thereafter. Additionally, AB 1279 mandates that by 2045, statewide anthropogenic GHG emissions are to be reduced at least 85 percent below 1990 levels. SB 1279 also requires CARB to ensure that the Scoping Plan identifies and recommends measures to achieve carbon neutrality, and to identify and implement policies and strategies for CO_2 removal solutions and carbon capture, utilization, and storage technologies. It also requires CARB to submit an annual report on progress in achieving the Scoping Plan's goals.

The *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), adopted by CARB in December 2022, expands on prior scoping plans. This plan responds to more recent legislation, outlining a technologically feasible, cost-effective, and equity-focused path to achieve the state's climate target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045 and achieving carbon neutrality[100] by 2045 or earlier.[101] The 2022 Scoping Plan outlines the strategies the state will implement to achieve carbon neutrality by reducing GHG emissions to meet the anthropogenic target, and by expanding actions to capture and store carbon through the state's natural and working lands and using a variety of mechanical approaches.

The major element of the 2022 Scoping Plan is the decarbonization of every sector of the economy. This effort requires the following key actions:

- Rapidly move to zero-emissions transportation for cars, buses, trains, and trucks.
- Phase out the use of fossil-fuel gas for heating.
- Clamp down on chemicals and refrigerants.
- Provide communities with sustainable options such as walking, biking, and public transit to reduce reliance on cars.
- Continue to build out solar arrays, wind turbine capacity, and other resources to provide clean, renewable energy to displace fossil-fuel–fired electrical generation.
- Scale up new options such as renewable hydrogen for hard-to-electrify end uses and biomethane where needed.

Despite these efforts, some amount of residual emissions will remain from hard-to-abate industries such as cement, internal combustion vehicles still on the road, and other GHG emissions sources, including high-GWP chemicals used as refrigerants.[102] The 2022 Scoping Plan addresses the remaining emissions by re-envisioning natural and working lands (such as forests, shrublands/chaparral, croplands, and wetlands) to ensure that they incorporate and store as much carbon as possible. However, the modeling for the 2022 Scoping Plan indicates that natural and

[100] *Carbon neutrality* means "net zero" emissions of GHGs. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of CO_2 that is stored, both in natural sinks and through mechanical sequestration. AB 1279 uses the terminology "net zero" and the 2022 Scoping Plan uses the terminology "carbon neutrality" or "carbon neutral." For purposes of the Draft 2045 CAP and this EIR, these terms mean the same thing and are used interchangeably.

[101] California Air Resources Board, 2022. *2022 Scoping Plan For Achieving Carbon Neutrality.* November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed January 2023.

[102] California Air Resources Board, 2022. *2022 Scoping Plan For Achieving Carbon Neutrality.* November 16, 2022. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed January 2023.

working lands, on their own, will not provide enough sequestration and storage to address all residual emissions. Therefore, it will be necessary to research, develop, and deploy additional methods of capturing CO2 that include pulling it from smokestacks of facilities, or drawing it out of the atmosphere itself and then safely and permanently utilizing and storing it.[103]

The 2022 Scoping Plan shows that the state must take unprecedented and substantial action to achieve its climate goals, far beyond anything CARB has considered in prior scoping plans. In CARB's own words, the 2022 Scoping Plan "is the most comprehensive and far-reaching Scoping Plan developed to date" and "[m]odeling for this Scoping Plan shows that this decade must be one of transformation on a scale never seen before to set us up for success in 2045."[104]

The 2022 Scoping Plan includes the Scoping Plan Scenario, which "builds on and integrates efforts already underway to reduce the state's GHG, criteria pollutant, and toxic air contaminant emissions by identifying the clean technologies and fuels that should be phased in as the state transitions away from combustion of fossil fuels." The 2022 Scoping Plan approaches decarbonization from two perspectives: (1) managing a phasedown of existing energy sources and technology and (2) ramping up, developing, and deploying alternative clean energy sources and technology over time. Under the Scoping Plan Scenario, the demand for liquid petroleum will decrease by 94 percent and total fossil fuels by 86 percent in 2045 relative to 2022.[105]

Additionally, carbon removal will be necessary to achieve net negative emissions to address historical GHGs already in the atmosphere. The 2022 Scoping Plan does not specify how the residual emissions will be removed, as this will require the development of new carbon capture and storage (CCS) and direct air capture (DAC) technologies, which will require governmental or other incentive support to overcome technology and market barriers.[106]

The 2022 Scoping Plan also discusses the role of local governments in meeting the state's GHG emissions reduction goals because local governments have jurisdiction and land use authority related to community-scale planning and permitting processes, local codes and actions, outreach and education programs, and municipal operations. The efforts of local governments to reduce GHG emissions within their jurisdictions are critical to achieving the state's long-term climate goals. Furthermore, local governments make critical decisions on how and when to deploy transportation infrastructure and can choose to support transit, walking, bicycling, and neighborhoods that allow people to transition away from cars; they can adopt building ordinances that exceed statewide building code requirements; and they play a critical role in facilitating the rollout of ZEV infrastructure.[107] The 2022 Scoping Plan encourages local governments to take

[103] Ibid.
[104] Ibid.
[105] Ibid.
[106] Ibid.
[107] California Air Resources Board, 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D, "Local Actions." November 16, 2022. Available at https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed January 2023.

ambitious, coordinated climate actions at the community scale—actions that are consistent with and supportive of the state's climate goals.[108] These actions could include:

- Develop local CAPs and strategies consistent with the state's GHG emissions reduction goals.
- Incorporate state-level GHG emissions priorities into local governments' processes for approving land use and individual plans and individual projects.
- Implement CEQA mitigation, as needed, to reduce GHG emissions associated with new land use development projects.
- Leverage opportunities for regional collaboration.

Executive Order S-1-07

Executive Order S-1-07, signed by Governor Arnold Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed the CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. The CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

In September 2018, CARB extended the LCFS program to 2030, making significant changes to the design and implementation of the program, including a doubling of the carbon intensity reduction to 20 percent by 2030.

Mobile Source Strategy

Implementing CARB's Mobile Source Strategy includes measures to reduce total light-duty VMT by 15 percent from the business-as-usual in 2050. The Mobile Source Strategy includes an expansion of the Advanced Clean Cars program (which further increases the stringency of GHG emissions for all light-duty vehicles, and 4.2 million zero-emission and plug-in hybrid light-duty vehicles by 2030). It also calls for more stringent GHG requirements for light-duty vehicles beyond 2025 as well as GHG reductions from medium-duty and heavy-duty vehicles and increased deployment of zero-emission trucks primarily for class 3 – 7 "last mile" delivery trucks in California. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels.

Advanced Clean Cars II

In 2022, CARB approved the Advanced Clean Cars II Program for model years 2026–2035, which requires that all new passenger cars, trucks, and SUVs sold in California be zero emissions by 2035.[109] The regulation amends the ZEV Regulation to require an increasing number of ZEVs, and relies on advanced vehicle technologies, including battery-electric, hydrogen fuel cell

[108] Ibid.

[109] California Air Resources Board, 2023. *Advanced Clean Cars II Regulations: All New Passenger Vehicles Sold in California to be Zero Emissions by 2035*. Available at https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii. Accessed April 8, 2023.

electric, and plug-in hybrid electric-vehicles, to meet air quality and climate change emissions standards, in support of Executive Order N-79-20.[110] This program also amended the Low-Emission Vehicle Regulations to include increasingly stringent standards for gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions.

Advanced Clean Trucks

On June 25, 2020, the air board adopted the Advanced Clean Trucks (ACT) rule, which requires truck manufacturers to transition from diesel vehicles to electric zero-emissions vehicles beginning in 2024, with the goal of reaching 100 percent zero-emissions vehicles by 2045.[111] The goal of the legislation is to help California meet its climate targets of a 40 percent reduction in GHG emissions and a 50 percent reduction in petroleum use by 2030, and an 80 percent reduction in GHG emissions by 2050. Truck manufacturers will be required to sell zero-emissions vehicles as an increasing percentage of their annual sales from 2024 through 2035. Companies with large distribution fleets (50 or more trucks) will be required to report information about their existing fleet operations in an effort to identify future strategies for increasing zero-emissions fleets statewide.[112]

Advanced Clean Fleets

On September 29, 2023, the Office of Administrative Law approved CARB's Advanced Clean Fleets (ACF) rule, which became state law on October 1, 2023. This regulation is part of CARB's broader strategy to accelerate the transition to zero-emissions medium- and heavy-duty vehicles. It complements the ACT regulation, focusing on reducing emissions and promoting zero-emissions vehicle adoption. The ACF regulation covers various fleet types, including drayage operations, government-owned fleets, and high-priority fleets, mandating ZEV adoption in phases. Key provisions include manufacturer sales mandates, requirements for drayage fleets to transition to ZEVs, and specific ZEV targets for high-priority and government fleets. The ACF regulation requires that manufacturers may sell only zero-emissions medium- and heavy-duty vehicles in California starting in 2036 and that high-priority fleets must purchase only ZEVs beginning 2024 and, starting January 1, 2025, must remove internal combustion engine vehicles at the end of their useful life, or that high-priority fleets must achieve 100 percent ZEVs by 2042.[113] The regulation is expected to significantly reduce emissions, benefit public health, and contribute to achieving climate goals.

Sustainable Freight Action Plan

Executive Order B-32-15 directed the State to establish targets to improve freight efficiency, transition to zero emission technologies, and increase the competitiveness of California's freight

[110] Ibid.

[111] California Air Resources Board, 2020. *California takes bold step to reduce truck pollution*. Available at https://ww2.arb.ca.gov/news/california-takes-bold-step-reduce-truck-pollution. Accessed October 2023.

[112] California Air Resources Board, 2021. *Advanced Clean Trucks Fact Sheet*. Available at https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-trucks-fact-sheet. Accessed December 2023.

[113] California Air Resources Board, 2023. *Advanced Clean Fleets Regulation Overview*. Available at https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-overview. Accessed October 2023.

transport system. The targets are not mandates, but rather aspirational measures of progress towards sustainability for the State to meet and try to exceed. The targets include:

- ***System Efficiency Target*:** Improve freight system efficiency by 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030.
- ***Transition to Zero Emission Technology Target*:** Deploy over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.
- ***Increased Competitiveness and Economic Growth Targets*:** Establish a target or targets for increased State competitiveness and future economic growth within the freight and goods movement industry based on a suite of common-sense economic competitiveness and growth metrics and models developed by a working group comprised of economists, experts, and industry. These targets and tools will support flexibility, efficiency, investment, and best business practices through State policies and programs that create a positive environment for growing freight volumes and jobs, while working with industry to mitigate potential negative economic impacts. The targets and tools will also help evaluate the strategies proposed under the Action Plan to ensure consideration of the impacts of actions on economic growth and competitiveness throughout the development and implementation process.

California Transportation Plan 2040

The California Transportation Plan (CTP) 2040 provides a long-range policy framework to meet future mobility needs and reduce GHG emissions. The CTP defines goals, performance-based policies, and strategies to achieve maximum feasible emission reductions in order to attain a statewide reduction in GHG emissions.

The CTP 2040 recognizes that the Governor is committed to reduce by one-half current petroleum use in cars and trucks; increase from one-third to one-half the electricity derived from renewable sources; double the efficiency savings of existing buildings and make heating fuels cleaner; reduce the release of methane, black carbon, and other short-lived climate pollutants; and manage farm and rangelands, forests, and wetlands to store more carbon.

Transportation GHG reduction strategies within the CTP 2040 include demand management (including telecommuting/working at home, increased carpoolers, and increase car sharing), mode shift (including transit service improvements, high-speed rail, bus rapid transit, expanded bike and pedestrian facilities, carpool land occupancy requirements, and increased HOV lanes), travel cost (implement expanded pricing policies), and operational efficiency (incident/emergency management, Caltrans' Master Plan, ITS/TSM, and eco-driving).

Renewable Electricity Standards

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In

September 2009, Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the CARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

The 33 percent by 2020 RPS goal was codified in April 2011 with SB X1-2. This new Renewable Portfolio Standard (RPS) preempts the CARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. SB 350 was signed in October 2015, and requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Most recently, SB 100, signed by Governor Brown on September 10, 2018, increases the RPS requirement to 60 percent eligible renewables by 2030 and 100 percent by 2045.

Executive Order B-16-12

This executive order indicates that all State entities under the Governor's control support and facilitate the rapid commercialization of zero-emission vehicles. The order contains a target similar to Executive Order S-3-05 but focused on the transportation sector instead of all sectors. It stipulates that by 2050, virtually all personal transportation in the state will be based on zero-emission vehicles and that GHG emissions from the transportation sector will be reduced by 80 percent below 1990 levels. The order also indicates that the CARB, the California Energy Commission, the Public Utilities Commission, and other relevant agencies are ordered to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve the following:

- By 2015: The State's major metropolitan areas able to accommodate zero-emission vehicles, each with infrastructure plans and streamlined permitting; the State's manufacturing sector expend zero-emission vehicle and component manufacturing; an increase in the private sector's investment in zero-emission vehicle infrastructure; and the State's academic and research institutions contributing to zero-emission vehicle research, innovation and education.
- By 2020: The State's zero-emission vehicle infrastructure ability to support up to one million vehicles; the costs of zero-emission vehicles competitive with conventional combustion vehicles; zero-emission vehicles accessible to mainstream consumers; widespread use of zero-emission vehicles for public transportation and freight transport; and a decrease in transportation sector GHG emissions as a result of the switch to zero-emission vehicles; electric vehicle charging integrated into the electricity grid.
- By 2025: over 1.5 million zero-emission vehicles on California roads; easy access to zero-emission vehicle infrastructure in California; the zero-emission vehicle industry strong and sustainable part of California's economy; and California's vehicles displace at least 1.5 billion gallons of petroleum fuels per year.

Senate Bill 375

Signed into law on October 1, 2008, SB 375 supplements GHG emissions reductions from new-vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation. Pursuant to SB 375, CARB approved GHG reduction targets in

February 2011 for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations. For the SACOG, CARB assigned a target of 19 percent per capita GHG reduction by 2035, compared to a 2005 baseline.

Green Building Code and Title 24

The California Energy Code (Title 24, Section 6) was created as part of the California Building Standards Code (Title 24 of the California Code of Regulations) by the California Building Standards Commission in 1978 to establish statewide building energy efficiency standards to reduce California's energy consumption. The standards were not originally intended to reduce GHG emissions, but increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. These provisions include mandatory requirements for efficiency and design of energy systems, including space conditioning (cooling and heating), water heating, and indoor and outdoor lighting systems and equipment, and appliances. California's Building Energy Efficiency Standards are updated on an approximately three-year cycle as technology and methods have evolved. On August 11, 2021, the California Building Standards Commission approved the 2022 Energy Code for inclusion in the California Building Standards Code. This update builds on California's technological innovations and supports energy-efficient approaches to encourage building decarbonization, emphasize the use of heat pumps, strengthen ventilation standards, and extend the benefits of demand-flexible energy technology with the intention to enable California buildings to be responsive to climate change.

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development in 2008. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. The CALGreen Code is reviewed and updated on a three-year cycle. The most recent update was the 2022 CALGreen Code which took effect on January 1, 2023.

3.2.3 Local

Sacramento Metropolitan Air Quality Management District

California has 35 Air Pollution Control Districts (APCD) and Air Quality Management Districts (AQMD), many of which are currently addressing climate change issues by developing significance thresholds, performance standards, and mitigation measures. At this time, there are no adopted quantitative federal or state guidelines for GHG emission impacts. The Sacramento Metropolitan Air Quality Management District (SMAQMD) is the primary agency responsible for addressing air quality concerns in all of Sacramento County. SMAQMD also recommends methods for analyzing project-generated GHGs in CEQA analyses and offers multiple potential GHG reduction measures for land use development projects. SMAQMD developed thresholds of

significance to provide a uniform scale to measure the significance of GHG emissions from land use and stationary source projects in compliance with CEQA.[114] SMAQMD's goals in developing GHG thresholds include ease of implementation; use of standard analysis tools; and emissions mitigation consistent with the statewide GHG targets mandated by AB 32 of 2006.

SMAQMD published new CEQA guidance for the evaluation of GHG emissions in September 2020. The guidance provides lead agencies with a pathway to demonstrate that a project would not result in a cumulatively considerable contribution to global climate change. As indicated in SMAQMD's most recent guidance, projects subject to CEQA that are not subject to a qualified CAP may implement SMAQMD-vetted Tier 1 best management practices (BMPs) to reduce on-site GHG emissions. These Tier 1 BMPs include (1) designing projects without natural gas infrastructure and (2) constructing projects to meet the current California Green Building Standards Code (CalGreen) Tier 2 Standards with the amendment to upgrade electric vehicle (EV) parking spaces to EV ready rather than EV capable. EV capable means that the parking space is installed with a raceway and electrical panel capable of supporting an EV charging station. In addition to the raceway and panel, EV ready spaces have dedicated branch circuits, circuit breakers, and other electrical components to support future installation of charging stations, but do not include installation of the charger itself. If, following the application of Tier 1 BMPs, a project's GHG emissions are below a 1,100 metric tons of carbon dioxide equivalent per year ($MTCO_2e$/year) threshold, its contribution to global climate change would be considered less than significant. However, as a large or "inefficient" project as defined by SMAQMD, the use of Tier 1 BMPs would not be sufficient to reduce the Project's GHG emissions to a negligible level. Thus, the Project would be required to achieve a 15 percent reduction in VMT per resident from a regional average consistent with the Governor's Office of Planning and Research (OPR) guidance pursuant to Senate Bill 743. SMAQMD recommends several mechanisms to achieve applicable VMT reductions including, but not limited to, application of California Air Pollution Control Officers Association GHG-reduction strategies, incorporation of traffic calming measures, and promotion of zero-emission infrastructure such as bike lanes and pedestrian walkways.[115]

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is the Metropolitan Planning Organization for the proposed Project site. One of the main responsibilities of SACOG is to maintain and develop comprehensive transportation planning for the region through transportation planning documents intended to improve future transportation networks and options for residents. SB 375, described above, requires MPOs to develop a Sustainable Communities Strategy (SCS) as part of their planning activities, which identifies policies and strategies to reduce GHG emissions from passenger vehicles to targets sets by the CARB.

[114] Sacramento Metropolitan Air Quality Management District, 2021. *Guide to Air Quality Assessment in Sacramento County*, Chapter 6: Greenhouse Gas Emissions. February. Available at https://www.airquality.org/LandUseTransportation/Documents/Ch6GHG2-26-2021.pdf. Accessed August 2023.

[115] Ibid.

Metropolitan Transportation Plan/Sustainable Communities Strategy

SACOG's MTP/SCS is the long-range transportation plan for the region. The MTP/SCS designates the region using five "community types" (Center and Corridor Community, Developing Community, Established Community, Rural Residential Community, and Lands Not Identified for Development in the MTP/SCS Planning Period).

The MTP/SCS designates the footprint of the Master Plan area within a larger area designated as a Developing Community and a Transit Priority Area (TPA).[116] Developing Communities are described by SACOG as follows:

> "*Developing Communities are typically, though not always, situated on vacant land at the edge of existing urban or suburban development; they are the next increment of urban expansion. Developing Communities are identified in local plans as special plan areas, specific plans, or master plans and may be residential-only, employment-only, or a mix of residential and employment uses. Transportation options in Developing Communities often depend, to a great extent, on the timing of development. Bus service, for example, may be infrequent or unavailable today, but may be available every 30 minutes or less once a community builds out. Walking and bicycling environments vary widely, though many Developing Communities are designed with dedicated pedestrian and bicycle trails*."[117]

For Developing Communities, such as the Master Plan area, the MTP/SCS shows a reduction in household-generated VMT per capita by 13 percent relative to 2016 in the year 2040[118]. This reduction is a result of land use changes, behavioral changes in choice of travel, and transportation investments. In addition, the MTP/SCS has the overall outcome of reducing mobile source emissions through compact growth patterns and proximity to transit:

> "*The location and pattern of the proposed MTP/SCS growth is important, because it impacts travel behavior and provides a means to determine the impact of future vehicle emissions in the plan area of the proposed MTP/SCS. A compact growth pattern served by an efficient and diverse transportation system provides the foundation to reduce automotive travel and increase walking, bicycling, and transit use—all of which reduce individual vehicle trips and associated VMT. Reduced VMT and vehicle trips are directly linked to reduced regional criteria air pollutant emissions and TAC emissions from mobile sources.*"[119]

[116] Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted November 18, 2019, Figure 3-5, p. 41, Figure 3-8, p. 52. Accessed August 2023.

[117] Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted November 18, 2019, pp. 40. Accessed August 2023.

[118] Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy Draft Environmental Impact Report. Chapter 16: Transportation and Traffic. p. 16-51. Available: https://www.sacog.org/sites/main/files/file-attachments/ch._16_transportation_pdeir.pdf?1569040290. Accessed August 2023.

[119] Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy Draft Environmental Impact Report. Chapter 5: Air Quality. p. 5-54. Available: https://www.sacog.org/sites/main/files/file-attachments/ch._5_air_quality_pdeir.pdf?1569039959. Accessed August 2023.

The MTP/SCS is designed to identify areas within the region sufficient to house all of the forecasted population of the region. This is based on adopted local general plans, community plans, specific plans, and local policies and regulations. The MTP/SCS is not a growth-inducing document and does not regulate or control growth within the region:

> "*While the MTP/SCS is required to integrate land use and transportation planning, the plan recognizes and protects local land use authority. Under SB 375 and the MTP/ SCS, the region's cities and counties retain local land use authority over where future development occurs. The MTP/ SCS land use and transportation assumptions are built using local plans and in close coordination with planning and transportation staff around the region. The plan does not mandate any changes to local zoning rules, general plans, or processes for reviewing projects; nor can the plan act as a cap on development in any given jurisdiction.*"[120] *(Emphasis added.)*

Currently, the 2020 MTP/SCS does not fully account for all growth anticipated within the Master Plan Area.[121] However, the MTP/SCS is updated every four years to include additional amendments to County and City General Plans and consider approved projects and new specific plans, such as the Master Plan.

Sacramento County Climate Emergency Resolution

December 16, 2020, the Sacramento County Board of Supervisors adopted a Resolution declaring a climate emergency and directing the formation of a permanent Climate Emergency Mobilization Task Force. The resolution acknowledges the severe impacts of climate change on Sacramento County, including extreme heat, rising temperatures, droughts, wildfires, air pollution, health issues, disruptions to services and the economy, property loss, and more. The resolution sets a goal for Sacramento County to achieve carbon neutrality by 2030, aiming to eliminate greenhouse gas emissions and potentially sequester more emissions than produced. The resolution establishes a Climate Emergency Mobilization Task Force composed of climate experts to oversee climate emergency response planning and implementation across county departments. The resolution also calls for the County to implement a climate and sustainability plan that identifies and integrates current and future actions necessary to achieve an equitable, sustainable, and resilient economy and transition to a countywide carbon neutrality footprint by 2030.On June 11, 2023, the Sacramento County Board of Supervisors considered a revision to the resolution that would change the goal of carbon neutrality by 2030 to the year 2045 to align with AB 1279 and the 2022 Scoping Plan. Instead of approving or rejecting the suggested update, the board asked staff to present another version of the climate emergency declaration in early 2024. The board requested revisions including adding a requirement to measure progress on reducing emissions every five years.

[120] Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted November 18, 2019, pp. 61. Accessed August 2023.

[121] Glover, Tina. "RE: Growth Estimates Within West Jackson Highway Master Plan." Message to Dan Sloat. November 20, 2017. Email.

Sacramento County Climate Action Plan

The Sacramento County Board of Supervisors adopted the Climate Action Plan – Strategy and Framework Document (Phase 1 CAP) on November 9, 2011. The Phase 1 CAP provides a framework and overall policy strategy for reducing greenhouse gas emissions and managing the County's resources in order to comply with AB 32.[122] The Phase 1 CAP includes a GHG inventory for the unincorporated areas of Sacramento County for 2005, a GHG emission reduction target, and goals and implementation measures developed to help the County reach these goals. Reduction strategies address GHG emissions associated with transportation and land use, energy, water, waste management and recycling, and agriculture and open space. The County's primary goals related to transportation and energy use include the following:

- Increase the average fuel efficiency of County-owned vehicles powered by gasoline and diesel and encourage increased fuel efficiency in community vehicles;
- Increase the use of alternative and lower carbon fuels in the County-owned vehicle fleet and facilitate their use in the community;
- Reduce total vehicle miles traveled per capita in the community and region;
- Improve energy efficiency of existing and new buildings in the unincorporated county;
- Improve energy efficiency of operating County-owned infrastructure (roads, water, waste, buildings, etc.); and
- Decrease use of fossil fuels by transitioning to renewable energy sources.

On September 11, 2012, the Phase 2A CAP (Government Operations) was adopted by the County.[123] Neither the Phase 1 CAP nor the Phase 2A CAP are "qualified" GHG reduction plans pursuant to CEQA Guidelines section 15183.5(b), through which subsequent projects may receive CEQA streamlining benefits.

In 2016, the County began updating the communitywide CAP (Phase 2B CAP), but in late 2018, it was placed on hold pending in-depth review of CAP-related litigation in other jurisdictions. General Plan Policy LU-115 and associated Implementation Measures F through J of the General Plan Land Use Element identifies the County's commitment to a Communitywide CAP. This commitment was made in part due to the County's General Plan Update process and potential expansion of the Urban Policy Area to accommodate new growth areas. General Plan Policies LU-119 and LU-120 were developed with SACOG to be consistent with smart growth policies in the SACOG Blueprint, which are intended to reduce VMT and GHG emissions. In addition to reducing GHG emissions in Sacramento County, the CAP is intended to serve as a climate change resiliency plan to ensure that the County is prepared for the physical effects of climate change. In

[122] Sacramento County, 2011. *Climate Action Plan – Strategy and Framework Document*. Available at https://planning.saccounty.net/PlansandProjectsIn-Progress/Documents/Climate%20Action%20Plan/CAP%20Strategy%20and%20Framework%20Document.PDF. Accessed August 2023.

[123] Sacramento County, 2012. *Climate Action Plan: County Government Operations*. June. Available at https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Climate%20Action%20Plan/Government%20Operations%20CAP.pdf. Accessed August 2023.

2015, the County released an updated GHG inventory (see Table 3-1 above) and a Climate Change Vulnerability Assessment, which identified extreme heat and increased flooding as the most likely adverse impacts to Sacramento County.

The Phase 2B CAP was re-initiated in early 2020. In March of 2021, the draft Phase 2B CAP was released by the County for public review. In September 7 2021, a Final Draft CAP and Addendum to the 2030 General Plan EIR was released for public review. The County revised the CAP a second time and released the Revised Final Draft CAP and Revised Addendum to the 2030 General Plan EIR on February 17, 2022. These documents were presented at a Board of Supervisors workshop on March 23, 2022. The County received more than 85 comment letters on the Revised Final Draft CAP leading up to the Board workshop on March 23, 2022. Based on input from the Board of Supervisors during the September 27, 2022 hearing on the CAP, County staff are reviewing the numerous comments received and preparing responses to those comments.[124] As a result, another revision to the CAP is expected prior to adoption.

Based on the inventory and GHG reductions identified in the Phase 2B CAP, the County has set a goal of achieving a 4.0 metric tons of carbon dioxide equivalent per capita ($MTCO_2e$/capita) for 2030, resulting in an emissions limit of 3,674,904 $MTCO_2e$ (Sacramento County, 2022b).[125] As allowed under CEQA Guidelines Section 15183(b), lead agencies may choose to analyze and mitigate significant GHG emissions in a plan for the reduction of GHG emissions or similar document.

The analysis prepared in this EIR is based on the project-specific Air Quality Green House Gas Reduction Plan (AQGHGRP) because the CAP remains in draft form and has not been formally adopted by the County. As such, the CAP is not yet qualified for use in CEQA review.

Sacramento County General Plan

The *Sacramento County General Plan Air Quality Element*[126] contains the following goals and policies that would apply to GHG emissions associated with the Master Plan.

GOAL: Improve air quality to promote public health, safety, welfare, and environmental quality of the community.

Policies

AQ-1: New development shall be designed to promote pedestrian/bicycle access and circulation to encourage community residents to use alternative modes of transportation to conserve air quality and minimize direct and indirect emission of air contaminants.

[124] Sacramento County, 2023. *Climate Action Plan*. Available at https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/CAP.aspx. August 2023.

[125] Sacramento County, 2022. *Sacramento County Climate Action Plan*. August. Available at https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Climate%20Action%20Plan/Final%20Climate%20Action%20Plan.pdf. Accessed August 2023.

[126] Sacramento County, 2011. *Sacramento County General Plan Air Quality Element*, November 9, 2011.

AQ-2: Support Regional Transit's efforts to secure adequate funding so that transit is a viable transportation alternative. Development shall pay its fair share of the cost of transit facilities required to serve the project.

AQ-4: Developments which meet or exceed thresholds of significance for ozone precursor pollutants, and/or Greenhouse Gases (GHG) as adopted by the Sacramento Metropolitan Air Quality Management District (SMAQMD), shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan and/or a Greenhouse Gas Reduction Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.

AQ-5: Reduce emissions associated with vehicle miles travelled and evaporation by reducing the surface area dedicated to parking facilities; reduce vehicle emissions associated with "hunting" for on-street parking by implementing innovative parking innovative parking solutions including shared parking, elimination of minimum parking requirements, creation of maximum parking requirements, and utilize performance pricing for publicly owned parking spaces both on- and off-street, as well as creating parking benefit districts.

AQ-6: Provide incentives for the use of transportation alternatives, including a program for the provision of financial incentives for builders that construct ownership housing within a quarter mile of existing and proposed light rail stations.

AQ-7: Implement a model trip reduction program for County employees which may include, but not be limited to, flexible and compressed work schedules, commuter matching services, telecommuting, preferential carpool/vanpool parking, carpool/vanpool and transit subsidies, and all other commute alternative incentives.

AQ-8: Promote mixed-use development and provide for increased development intensity along existing and proposed transit corridors to reduce the length and frequency of vehicle trips.

AQ-9: When park-and-ride facilities are requested by transit providers, the spaces provided for the park-and-ride facility may be counted as part of the total amount of parking required by the zoning code.

AQ-10: Encourage vehicle trip reduction and improved air quality by requiring development projects that exceed the SMAQMD's significance thresholds for operational emissions to provide on-going, cost-effective mechanisms for transportation services that help reduce the demand for existing roadway infrastructure.

AQ-11: Encourage contractors operating in the county to procure and to operate low-emission vehicles, and to seek low emission fleet status for their off-road equipment.

AQ-13: Use California State Air Resources Board (ARB) and SMAQMD guidelines for Sacramento County facilities and operations to comply with mandated measures to reduce emissions from fuel consumption, energy consumption, surface coating operations, and solvent usage.

AQ-16: Prohibit the idling of on-and off-road engines when the vehicle is not moving or when the off-road equipment is not performing work for a period of time greater than five minutes in any one-hour period.

AQ-17: Promote optimal air quality benefits through energy conservation measures in new development.

AQ-18: Require the recovery of chlorofluorocarbons (CFC's) when older air conditioning and refrigeration units are serviced or disposed.

AQ-19: Require all feasible reductions in emissions for the operation of construction vehicles and equipment on major land development and roadway construction projects.

AQ-20: Promote Cool Community strategies to cool the urban heat island, reduce energy use and ozone formation, and maximize air quality benefits by encouraging four main strategies including, but not limited to: plant trees, selective use of vegetation for landscaping, install cool roofing, and install cool pavements.

AQ-22: Reduce greenhouse gas emissions from County operations as well as private development.

The *Sacramento County General Plan Energy Element*[127] contains the following goals and policies that would apply to the Master Plan.

GOAL: It is the goal of Sacramento County to—

- **Reverse the historical trend of increasing per capita consumption of energy, and**
- **Shift toward using a greater share of renewable sources of energy, and**
- **Shift seasonal and daily peak energy demands to increase the load factor of electrical generating facilities, while**
- **Maintaining or enhancing the general standard of living, the level of employment, and the quality of the environment.**

Policies

EN-3: Encourage the conservation and rehabilitation of existing housing and the revitalization of older, more intensively developed neighborhoods in the urban area.

EN-5: Reduce travel distances and reliance on the automobile and facilitate increased use of public transit through appropriate land use plans and regulations.

EN-6: Actively support the efforts of the Regional Transit District to expand and upgrade service and attract an increasing percentage of travel.

EN-7: Expand existing programs and develop new programs which promote and encourage vanpooling and carpooling.

[127] Sacramento County, 2011. *Sacramento County General Plan Air Quality Element*, November 9, 2011.

EN-10: Continue implementation of the Bikeways Master Plan, and develop standards for neighborhood bikeways and pedestrian-ways, incorporating them into Neighborhood Planning Standards.

EN-12: Encourage industry located or locating in the Sacramento area to participate in co-generation of power.

EN-16: Promote the use of passive and active solar systems in new and existing residential, commercial, and institutional buildings as well as the installation of solar swimming pool heaters and solar water and space heating systems.

EN-17: Support the development and improvement of solar space cooling systems.

EN-19: Support the development and use of renewable sources of energy, including but not limited to biomass, solar, wind, and geothermal.

The *Sacramento County General Plan Land Use Element*[128] contains the following goals and policies that would apply to GHG emissions associated with the Master Plan.

GOAL: New development in existing communities, in new growth areas and improvements to existing buildings and housing stock that are designed and constructed to be energy efficient and incorporate renewable energy technologies where cost-effective and feasible.

Policies

LU-28: Encourage the development of energy-efficient buildings and communities.

LU-30: Whenever feasible, incorporate energy-efficient site design, such as proper orientation to benefit from passive solar heating and cooling, into master planning efforts.

GOAL: Habitat enhancement, open space protection, greenhouse gas emission reduction and cohesive urban design accomplished by Local, State, and Federal agency coordination.

Policies

LU-115: New development shall be designed to promote pedestrian/bicycle access and circulation to encourage community residents to use alternative modes of transportation to conserve air quality and minimize direct and indirect emission of air contaminants.

[128] Sacramento County, 2011. *Sacramento County General Plan Air Quality Element*, November 9, 2011.

3.3 Analysis, Impacts, and Mitigation

3.3.1 CEQA Significance Criteria

According to Appendix G of the CEQA *Guidelines*, a project would have a significant effect associated with GHGs if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The California Air Pollution Control Officers Association (CAPCOA) considers GHG impacts to be exclusively cumulative impacts;[129] therefore, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere. CEQA Guidelines Section 15064.4 gives lead agencies the discretion to determine whether to assess GHG emissions quantitatively and/or qualitatively. The guidelines do not establish a quantitative threshold of significance, but rather, lead agencies are granted discretion to establish significance thresholds for their respective jurisdictions, including looking to thresholds developed by other public agencies or suggested by other experts (such as the CAPCOA) so long as any threshold chosen is supported by substantial evidence.

According to the SMAQMD's *Guide to Air Quality Assessment in Sacramento County (CEQA GUIDE)*, GHG emissions generated during project construction that exceed 1,100 $MTCO_2e$ per year represent a cumulatively considerable contribution to a significant cumulative environmental impact.[130] Since Sacramento County has not developed GHG significance thresholds applicable to construction, SMAQMD's annual GHG construction significance threshold of 1,100 $MTCO_2e$ is used to determine whether the Master Plan would result in a significant impact on GHG emissions during project construction. Sacramento County currently does not have an established significance threshold or draft standard to demonstrate a project's consistency with AB 1279 through 2045. Thus, for project operation, the threshold of significance is net-zero GHG emissions. This threshold does not establish a precedent for use for any other project within the County.

A significant impact would occur if the proposed project would conflict with applicable regulations, plans, and policies that were adopted to reduce GHG emissions that contribute to global climate change. This analysis considers the proposed project's consistency with applicable plans, policies, and regulations to reduce GHG emissions. Since it is assumed that the proposed Master Plan would not be built-out until the year 2055, the Master Plan must demonstrate

[129] CAPCOA, 2008. *CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*.

[130] Sacramento Metropolitan Air Quality Management District (SMAQMD), 2018. Guide to Air Quality Assessment. Chapter 6: Greenhouse Gases. Available: http://www.airquality.org/LandUseTransportation/Documents/Ch6GHGFinal5-2018.pdf. Accessed August 2023.

consistency with the statewide GHG reduction target established by AB 1279 (85 percent below 1990 levels and carbon neutrality by 2045).

Since CalEEMod version 2020.4.0 only allows the user to enter operations up to 2050, it was not possible to model an operational year 2055 in CalEEMod. Therefore, GHG emissions under the Master Plan were modeled for operational year 2050. This is a more conservative approach than using 2055 because emission rates will likely be higher in 2050 than in 2055 due to continual improvements in vehicle technology, emission controls, and fuel efficiency. Although there are existing uses within the Master Plan area, GHG emissions for these uses were not modeled due to their limited number, and emissions from these uses would be minor. It is also conservative to assume zero emissions from existing uses because these emissions would be subtracted from Master Plan emissions to determine the net change in emissions from the Master Plan.

3.3.2 Methods and Assumptions

Construction

Since the Master Plan will be built-out based on market demand, the exact phasing of construction is unknown. For this analysis, the first year of construction was modeled to approximate the worst-case construction GHG emissions. Equipment used during the first year of construction would be equipped with engines that would emit more GHG emissions than construction equipment used in later construction years. This is because construction equipment becomes cleaner over time as older, less efficient equipment is replaced through fleet turnover with newer, cleaner equipment that meets more stringent emission standards as required by CARB and the U.S. EPA. It is also because the construction of backbone infrastructure and site grading is expected to occur more intensely in earlier years to make the site ready for vertical development in later years, and grading/infrastructure construction typically requires larger, more powerful off-road construction equipment (such as excavators and graders) and heavy-duty haul trucks for soil import and export, which have greater emission rates than smaller equipment used for vertical construction such as cranes and forklifts.

Since the Master Plan is anticipated to be built out over a 30-year period, it is assumed that 1/30th of the proposed developments would be constructed in the year 2025. As discussed above, this is a conservative assumption given the scale of the Master Plan compared to other large developments planned for the County, the likelihood that the Master Plan would take longer than 30 years to build out, and the large proportion of regional development anticipated for the County that the Master Plan represents. Using the methods contained in SMAQMD's *Guide to Air Quality Assessment in Sacramento County*, CalEEMod 2020.4.0 was used to estimate construction emissions for the Master Plan. CalEEMod is an approved emissions inventory software program that allows the user to estimate criteria pollutant emissions from land use development projects. It is assumed that the Master Plan would require 500,000 cubic yards of soil import during the grading phase. Assuming the haul trucks used during project construction can carry 16 cubic yards of soil each and construction will be completed over a 30-year period, the first year of construction could result in 2,083 one-way haul truck trips associated with 16,667 cubic yards of soil. However, because the first few years of construction are likely to involve more grading and soil import than later years, it was conservatively assumed that the first year of construction would move 1/10th of

the total soil import or 50,000 cubic yards, which would result in 6,250 one-way haul truck trips. CalEEMod defaults for number of construction equipment per construction phase and daily worker and vendor trips were used. Additional information and model results for each of the analyses described above are presented in Appendix A.

The 2022 version of CalEEMod was released May 27, 2022, and has several default inputs that are different from the 2020 version that would impact construction modeling results, including revised average trip lengths for worker, vendor, and haul trips, and changes to GHG emission rates for off-road construction equipment and on-road vehicles.[131] However, these changes would result in minor differences in the modeled GHG emissions and would not materially affect the air quality analysis. SMAQMD currently approves the use of CalEEMod 2020.4.0 for CEQA compliance.[132]

Operation

The proposed developments under the Master Plan are anticipated to be fully built-out in 2055. As discussed above, since CalEEMod version 2020.4.0 only allows the user to enter operational years up to 2050, it was not possible to model an operational year 2055 in CalEEMod. Therefore, for this analysis, GHG emissions under the Master Plan were modeled for the operational year of 2050 using CalEEMod version 2020.4.0.

As noted above for construction, the 2022 version of CalEEMod was released May 27, 2022, and has several default inputs that are different from the 2020 version that would impact operational modeling results, including changes to GHG emission rates for energy use, landscaping, water consumption and wastewater treatment, and solid waste disposal.[133] The newest version of CalEEMod also includes a new calculation for refrigerant emissions and updated energy consumption estimates. However, these changes would result in minor differences in the modeled GHG emissions and would not materially affect the analysis.[134] SMAQMD currently approves the use of CalEEMod 2020.4.0 for CEQA compliance.[135]

GHG Sequestration and Land Use Change

Regarding long-term operation emissions at full buildout, the implementation of the Master Plan would result in a potential net addition in carbon sequestration capacity due to land use change

[131] ICF, Sacramento Metropolitan Air Quality Management District, Fehr & Peers, STI, and Ramboll, 2021. *Appendix H: Comparison to CalEEMod Version 2020.4.0*. Prepared for the California Air Pollution Control Officers Association. April. Available at: https://www.caleemod.com/documents/user-guide/09_Appendix%20H.pdf. Accessed April 2023

[132] Philley, Paul. Sacramento Metropolitan Air Quality Management District. September 6, 2023 telephone correspondence with Brian Schuster, ESA.

[133] ICF, Sacramento Metropolitan Air Quality Management District, Fehr & Peers, STI, and Ramboll, 2021. *Appendix H: Comparison to CalEEMod Version 2020.4.0*. Prepared for the California Air Pollution Control Officers Association. April. Available at: https://www.caleemod.com/documents/user-guide/09_Appendix%20H.pdf. Accessed April 2023

[134] For example, the 2022 version of CalEEMod has updated natural gas consumption estimates, but the Master Plan will be all electric. The 2022 version of CalEEMod also uses an updated version of the EMFAC model for on-road emission rates, but mobile emissions for the Master Plan were modeled using EMFAC2021 outside of CalEEMod.

[135] Philley, Paul. Sacramento Metropolitan Air Quality Management District. September 6, 2023 telephone correspondence with Brian Schuster, ESA.

and the planting of new trees. The carbon sequestration credit from these activities was estimated using project-specific information provided by the Applicants and vegetation defaults provided by CalEEMod 2020.4.0. For the purposes of a conservative analysis of GHG sequestration, trees associated with open space parcels were excluded from the total to avoid double-counting credit from open space land use changes. **Table 3-3** shows the total number of new trees planted.

TABLE 3-3
NEW TREES PLANTED BY THE MASTER PLAN

Land Use Type	Total Acres	Trees Per Acre by Land Use Type	Percent New Trees Planted	Total New Trees Planted	New Street Trees Per Acre	Total New Street Trees Planted	Total New Trees Planted
SFR	2,071	14.5	90%	27,000	12	24,848	51,848
MFR	180	6.1	90%	990	12	2,158	3,148
COM/IND/EMPLOY	1,101	8.2	90%	8,100	12	13,211	21,311
SCH/INST	231	1.9	90%	405	12	2,771	3,176
ROADS	230	11.7	100%	2,700	0	0	2,700
Total	**3,812**			**39,195**		**42,988**	**82,183**

NOTES:

Tree planting data were provided by the Project Applicant. GHG sequestration associated with new trees were calculated using CalEEMod 2020.4.0. Additional information and model results for each of the analyses described above are presented in Appendix A.

SOURCES:

1. ESA, 2023; see Appendix A.

The Master Plan would also result in conversion of existing grasslands, wetlands, scrublands, and forest lands to new land types that sequester carbon via additional vegetation and biomass accumulation. **Table 3-4** below shows the land use change assumptions used in the analysis.

TABLE 3-4
LAND USE CHANGE FOR THE MASTER PLAN

Natural Land Type	Existing Acres	Master Plan Acres	Change in Acres
Cropland	0.0	202.3	202.3
Scrub	46.7	180.3	133.5
Trees	10.7	213.8	203.1
Grassland	900.4	368.0	-532.4
Wetlands	87.9	81.3	-6.6
Total	**1,045.7**	**1,045.7**	**0.0**

NOTES:

Land use change data were provided by the Project Applicant. GHG sequestration associated with land use change was calculated using CalEEMod 2020.4.0. Additional information and model results for each of the analyses described above are presented in Appendix A.

SOURCES:

1. ESA, 2023; see Appendix A.

Energy Sources

Regarding electricity-related GHG emissions, the Sacramento Municipal Utility District (SMUD) (the utility serving the Master Plan area) has not published their forecasted GHG intensity factors for the year 2050; thus, SMUD's published forecast of their 2045 GHG intensity factor (2 pounds CO_2 per megawatt hour) was used to model indirect GHG emissions associated with electricity.[136] Since construction of the Master Plan is anticipated to begin in 2025, it is assumed that all buildings will be constructed to 2022 Title 24 energy efficiency standards (which go into effect on January 1, 2023). Future Title 24 requirements were not modeled because the specific requirements are not known this time. The 2022 energy efficiency standards require solar for all new single-family homes and for all multi-family up to three stories. This covers all proposed residential buildings for the Master Plan.

Natural gas emissions from the Master Plan's buildings were calculated using CalEEMod defaults for the Master Plan's land uses. In addition, the Master Plan is proposed to be an all-electric development and thus does not include any natural gas infrastructure for future buildings. Therefore, direct GHG emissions associated with the Project's natural gas usage are not quantified as part of the analysis for the mitigated scenario. Using CalEEMod defaults, natural gas usage was converted to electricity usage and added to energy emissions to account for additional electricity used to replace the loss of natural gas.

Area Sources

Operational area emissions were estimated using CalEEMod defaults. Area sources include architectural coatings, consumer products, and landscape maintenance equipment. These emissions were calculated based on the square footage of all buildings and default model assumptions for reapplication rates.

Mobile Sources

For on-road vehicles, GHG emissions were calculated using EMFAC2021 emission factors for Sacramento County and VMT per speed bin data provided by DKS for the Master Plan. Additional information and model results for each of the analyses described above are presented in Appendix A.

Solid Waste

GHG emissions associated with the disposal of solid waste were calculated using CalEEMod. CalEEMod estimates GHG emissions generated from landfill gas that is not captured and not used for energy recovery (e.g., generating electricity). Default waste generation rates were used for each land use subtype. CalEEMod assumes that 94 percent of landfills recover the landfill gas; this default value was used in the modeling. CalEEMod also assumes that 75 percent of landfill gas is captured (the rest is emitted to the atmosphere). Landfill gas recovery systems can capture

[136] California Air Pollution Control Officers Association, 2021. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. Table E.4-4, pg. 685. December. Available at: https://www.caleemod.com/documents/handbook/full_handbook.pdf. Accessed August 2023.

over 90 percent, according to the U.S. EPA.[137] According to Sacramento County staff an average LFG capture efficiency of 77 percent is reasonable and conservative for the Sacramento region, based on estimates from CARB and SMAQMD.[138] As such, the CalEEMod default capture efficiency value of 75 percent was revised to 77 percent. This is estimated to reduce default landfill emissions by 1,287 $MTCO_2e$ per year.

Water and Wastewater

CalEEMod estimates the contribution of GHG emission associated with supplying and treating water and wastewater for each land use subtype. These emissions were calculated using defaults for indoor and outdoor water use and SMUD's 2045 GHG intensity factor.

3.3.3 Impacts and Mitigation Measures

Impact GHG.1: Construction and operation of the Master Plan could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. (*Less than Significant with Mitigation*)

Based on the methods described above, annual GHG emissions during the first year of construction (2025)[139] were estimated to be approximately 4,370 $MTCO_2e$ per year for the Master Plan, as shown in **Table 3-5**. This would exceed the SMAQMD GHG significance threshold of 1,100 $MTCO_2e$ per year for construction emissions, resulting in a significant impact.

Operational GHG emissions under the Master Plan are presented in Table 3-5 and **Table 3-6** for the modeled buildout year of 2050. The Master Plan would result in an increase in direct GHG emissions primarily due to onroad vehicle trips, energy use (electricity and natural gas), and solid waste generation. Mitigated operational emissions from residential land uses and non-residential land uses are presented in **Table 3-7**. The Master Plan is proposed as an all-electric development and natural gas service would not be provided to structures in the area. Therefore, there would be no direct GHG emissions from energy associated with natural gas infrastructure. However, for purposes of this impact analysis, it was assumed under unmitigated conditions that the project would result in natural gas use and combustion.

[137] U.S. EPA, 2023. Landfill Gas Energy Project Data. July. Available at https://www.epa.gov/lmop/landfill-gas-energy-project-data. Accessed September 2023.

[138] Zuber, Jeremy. County of Sacramento Department of Waste Management & Recycling. September 13, 2023 email correspondence with Brian Schuster, ESA

[139] Construction emissions during the first year of construction in 2025 represent the year with the highest equipment emission factors, and therefore likely the highest annual GHG emissions (assuming even buildout of the Master Plan over 30 years). This is because construction equipment becomes cleaner over time as less efficient equipment are replaced through fleet turnover with cleaner equipment that meets more stringent emission standards. These emissions would occur annually.

TABLE 3-5
ANNUAL CONSTRUCTION GHG EMISSIONS UNDER THE MASTER PLAN ($MTCO_2E$ PER YEAR)

Construction	Project Construction GHG Emissions	SMAQMD's Annual GHG Threshold	Exceeds Threshold (yes or no)?
Master Plan	4,370	1,100	**Yes**

NOTES:
Construction emissions were estimated using CalEEMod 2020.4.0 for the first year of construction in 2025. Additional information and model results for each of the analyses described above are presented in Appendix A.

ABBREVIATIONS:
$MTCO_2e$ = metric tons carbon dioxide equivalent

SOURCES:

1. ESA, 2023; see Appendix A.

TABLE 3-6
ANNUAL OPERATIONAL 2050 EMISSIONS

Sector	Unmitigated Emissions ($MTCO_2e$ / Year)	Mitigated Emissions ($MTCO_2e$ / Year)
Area	285	285
Energy	21,228	370
Mobile	61,897	16,096
Solid Waste	22,354	22,354
Water and Wastewater	2,027	2,027
Sequestration Credit	-26,499	-26,499
Total GHG Emissions	*81,292*	*14,633*
Threshold of Significance	0	0
Exceeds Threshold?	**Yes**	**Yes**

NOTES:
GHG emissions were calculated using the CalEEMod.2020.4.0 model. Mitigation measures modeled include all-electric buildings (no natural gas) and compliance with electric-vehicle requirements in the most recently adopted version of CALGreen Tier 2. Additional assumptions and data are included in Appendix A.

ABBREVIATIONS:
GHG = greenhouse gas
$MTCO_2e$ = metric tons carbon dioxide equivalent

SOURCES:

1. ESA, 2023; see Appendix A.

TABLE 3-7
ANNUAL OPERATIONAL 2050 EMISSIONS FOR RESIDENTIAL AND NON-RESIDENTIAL LAND USES

	Unmitigated Emissions ($MTCO_2e$ / Year) [a]		Mitigated Emissions ($MTCO_2e$ / Year) [a]	
Sector	**Residential**	**Nonresidential**	**Residential**	**Nonresidential**
Area	284	1	284	1
Energy	9,051	12,177	129	241
Mobile [b]	18,865	43,032	4,906	11,190
Solid Waste	6,032	16,322	6,032	16,322
Water and Wastewater	666	1,361	666	1,361

Sector	Unmitigated Emissions ($MTCO_2e$ / Year) [a]		Mitigated Emissions ($MTCO_2e$ / Year) [a]	
	Residential	Nonresidential	Residential	Nonresidential
Sequestration credit from planted trees	-2,094	-991	-2,094	-991
Sequestration credit from land use cover changes [c]	-13,525	-9,890	-13,525	-9,890
Total GHG emissions	*19,281*	*62,011*	*-3,601*	*18,234*

NOTES:

a. GHG emissions were calculated using the CalEEMod.2020.4.0 model. Mitigation measures modeled include all-electric buildings (no natural gas) and compliance with electric-vehicle requirements in the most recently adopted version of CALGreen Tier 2. Additional assumptions and data are included in Appendix A.
b. Mobile emissions for residential and nonresidential land uses were calculated based on a percentage split derived using project specific fleet mix by land use.
c. Sequestration credits from land use cover changes were distributed to residential and nonresidential land uses based on the portion of estimated building square footage for each land use type from total project building square footage. Residential land uses are estimated to be 24.5 million square feet and nonresidential land uses are projected to be 17.9 million square feet.

ABBREVIATIONS:

GHG = greenhouse gas
$MTCO_2e$ = metric tons carbon dioxide equivalent

SOURCES:

1. ESA, 2023; see Appendix A.

The following features that reduce operational GHG emissions would be included into the project design for the Master Plan as project design features, but are not considered mitigation measures:

- energy efficient street lighting fixtures;
- solar panel roofs;
- use of low VOC paints and products per SMAQMD rules and regulations;
- compliance with 2022 CALGreen Code, including mandatory energy efficiency measures;
- compliance with the 2022 Title 24 Energy Standards;
- restriction of wood-burning devices (i.e., only natural gas fireplaces permitted, if any); and
- water conservation measures (turf reduction [approximately 28 percent reduction from residential and 20 percent for parks] and irrigation controllers).
- conversion of existing maintained industrial supporting property to support different vegetation land use types
- planting of over 82,000 new trees

The Master Plan also includes numerous features that reduce VMT; these are listed in Chapter 2 Air Quality under Impact AQ.1.

For unmitigated conditions, a majority of the projected operational GHG emissions for the Master Plan area are from mobile sources (57 percent), followed by solid waste (21 percent) and energy (20 percent). As shown in Table 3-6 above, the Master Plan will exceed the net-zero threshold, which would be considered a **significant impact**. Therefore, mitigation is required to reduce operational GHG emissions below the net zero GHG threshold.

As shown in Table 3-7, after implementation of identified on-site mitigation measures and allowing for sequestration credit associated with land use cover changes throughout the Master Plan area, it is estimated that residential land uses would emit -3,601 $MTCO_2e$ total or -0.22 $MTCO_2e$ per DU and nonresidential land uses would emit 18,234 $MTCO_2e$ total or 1.02 $MTCO_2e$ per thousand square feet of development.

The mitigation measures below demonstrate how future development within the Master Plan area will be required to achieve a plan-wide reduction in GHG emissions to meet the net-zero GHG emissions threshold. Each future development project implemented under the Master Plan shall prepare a GHG Reduction Plan prior to the start of project construction activities. The Plan will document project-related GHG emissions, including the effect of GHG reduction measures and the net incremental emissions reductions required to achieve the County's GHG thresholds relative to the buildout year of each project. The Plan shall quantify how each future development will meet the net zero GHG emissions thresholds required at buildout. Implementation of the Plan for each future development project is intended to show how total Master Plan-wide GHG emission reductions by the year 2050 will meet the net-zero threshold.

Since the technology is not currently available to demonstrate a project's consistency with AB 1279's targets of reducing anthropogenic GHG emissions to 85 percent below 1990 levels and achieving carbon neutrality by 2045, it is not currently practical for individual development under the Master Plan to demonstrate consistency with AB 1279. However, for purposes of this analysis, the GHG reduction requirement for future development within the Master Plan area is net-zero GHG emissions by 2050.

Mitigation Measures

Mitigation Measure AQ.1-1: Air Quality Mitigation Plan (see Impact AQ.1)

Mitigation Measure AQ.1-2: Electric Vehicle Charging Infrastructure (See Impact AQ.1).

Mitigation Measure AQ.2-1: Basic Construction Emission Control Practices (See Impact AQ.1).

Mitigation Measure AQ.2-2: Enhanced Exhaust Control Practices (see Impact AQ.2)

Mitigation Measure AQ.3-2: Operational Truck Emissions Reduction (See Impact AQ.3).

Mitigation Measure AQ.3-3: Electric Landscaping Equipment (See Impact AQ.3).

Mitigation Measure AQ.3-4: Best Available Emissions Controls for Stationary Emergency Generators (See Impact AQ.3).

Mitigation Measure AQ.4-3: Clean Off-Road Construction Equipment (See Impact AQ.4).

Mitigation Measure AQ.4-4: Clean On-Road Construction Trucks (See Impact AQ.4).

Measure GHG.1-1: Construction GHG Emissions Reduction Measures. County approval of any grading or improvement plans shall include the following SMAQMD Construction GHG Emissions Reduction Measures where feasible, including:

- Improve fuel efficiency from construction equipment:
    - Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than two minutes (5-minute limit is required by the state airborne toxics control measure [Title 13, sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
    - Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
    - Train equipment operators in proper use of equipment.
- Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).
- Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power, as feasible for each construction site and development project.
- Use a CARB approved low carbon fuel for construction equipment, such as renewable diesel, if commercially available and feasible for use in construction equipment for each construction site and development project (NOx emissions from the use of low carbon fuel must be reviewed and any increases in NOx through the use of low carbon fuel must be mitigated.)
- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- Reduce electricity use in the construction office by using compact fluorescent bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones.
- Recycle or salvage non-hazardous construction and demolition debris (goal of at least 75 percent by weight).
- Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials, and based on volume for roadway, parking lot, sidewalk and curb materials). Wood products utilized should be certified through a sustainable forestry program.
- Minimize the amount of concrete for paved surfaces or utilize a low carbon concrete option.
- Produce concrete on-site if determined to be less emissive than transporting ready mix and if feasible for each construction site and development project.
- Use SmartWay certified trucks for deliveries and equipment transport.
- Develop a plan to efficiently use water for adequate dust control.

Mitigation Measure GHG.1-2: Reduce Refrigerant Emissions. The project applicant shall use low-GWP refrigerants in heat pumps installed in residential and nonresidential buildings, such as for HVAC systems, water heaters, and refrigeration.

Mitigation Measure GHG.1-3: Preferred Parking for Alternative-Fueled Vehicles and Carsharing Vehicles. The project applicant shall promote the use of clean fuel-efficient vehicles through preferential (designated and proximate to entry) parking for ZEVs beyond regulatory requirements. The applicant shall reduce the need to have a vehicle (or second vehicle) by providing preferential (designated and proximate to entry) parking for ridesharing vehicles on-site beyond regulatory requirements.

Mitigation Measure GHG.1-4: Electric Vehicle Requirement for Carsharing Programs. The project applicant shall promote the use of ZEVs by requesting that any carshare program operator with vehicles provided on the project site include EVs within its carshare program.

Mitigation Measure GHG.1-5: Greenhouse Gas Reduction Plan. Prior to the approval of improvement plans or grading permits, each future development project implemented under the Master Plan buildout shall prepare a GHG Reduction Plan. The purpose of the plan is to document GHG emissions for each future development project, including emissions after project-specific GHG reduction measures are implemented on-site (such as solar installations or green building requirements), and to determine the net incremental emission reductions required to meet the net-zero threshold relative to the buildout year of each project. After project specific GHG reduction measures are implemented for residential development, emissions are reduced to -3,602 $MTCO_2e$ per year or -0.22 $MTCO_2e$ per year per dwelling unit (DU) and therefore achieve the net zero goal and do not require any further reductions. To achieve net zero GHG emissions for the Master Plan as a whole, for each future nonresidential project (Design Review) the GHG Reduction Plan shall demonstrate a fair-share reduction towards reducing project-wide GHG emissions by 18,234 $MTCO_2e$ per year or 1.02 $MTCO_2e$ per thousand square feet of development. A fair share contribution is to be made based on the and total nonresidential square footage proposed for development in any given Tentative Map or Design Review area compared to the entire area of development proposed within the Master Plan as a whole. For the purposes of this mitigation measure, areas not anticipated for development such as parks, open spaces, and agricultural land as well as areas previously developed, such as the existing electrical facility, are not included in the total development area. Therefore, the total development area is considered to be 16,504 DUs (residential) and 17,906 thousand square feet (nonresidential). Considering the total development area, a hypothetical 100,000 square foot nonresidential project would represent 0.56 percent of the total nonresidential development area and would be required to show a GHG emissions reduction or savings of 102 $MTCO_2e$ per year, which would represent 0.56 percent of the 18,234 $MTCO_2e$ per year reduction required for the nonresidential project area as a whole.

The GHG Reduction Plan shall quantify how the individual development will achieve these performance standards at the time of buildout of the project. The GHG Reduction Plan shall be submitted to and approved by the County's Environmental Coordinator and SMAQMD. If a project is built out and fully operational before 2050, the Plan for that project must show "Substantial Progress" as described by the Association of

Environmental Professionals[140] and quantify how the project will meet these performance standards.

The GHG Reduction Plan shall include a summary of all GHG-reduction measures that would be implemented by the project and shall include a commitment by each project developer to incorporate all available feasible GHG mitigation measures and emission reduction actions. If the project developer finds that any mitigation measures will not be feasible for the project, the plan shall clearly explain why such mitigation measures are considered to be infeasible. The GHG emissions estimate for the project shall include consideration of all GHG mitigation measures and emission reduction actions that will be implemented by the project and shall describe the approximate GHG emissions reductions that will be associated with each action and mitigation measure.

The GHG Reduction Plan shall include a detailed description of the GHG emissions footprint for all operational components of the approved project based on the best available operational and energy use data at the time of project approval and the latest and most up-to-date emissions modeling and estimation protocols and methods. The plan shall, at minimum, include the following elements:

1) ***Project GHG Emissions*** – The GHG estimates presented in the GHG Reduction Plan will be based on the emission factors for electricity and transportation engines commonly used at the time the Plan is completed, along with the incorporation of existing vehicle emission standards and building energy standards. Emission factors are likely to decrease over time as more renewable sources of electricity are used as required by SB 100 and SB 1020, as the vehicle fleet shifts to more low- and zero-emissions fuel sources, and as new future technology that cannot currently be anticipated is adopted. The initial project GHG emission estimates will be based upon final design, project-specific traffic generation, actual energy use estimates, equipment to be used on-site, and other emission factors appropriate for the project prior to construction.

   Upon completion of construction, each project shall conduct further analysis to determine the actual (or better estimate of) GHG emissions during the construction phase, and these GHG emissions calculations shall submitted to and approved by the Environmental Coordinator and SMAQMD. The updated construction GHG emissions shall be compared to the County's threshold of 1,100 $MTCO_2e$ per year. The GHG emissions for project operation shall be estimated based on the final design of the project and the current applicable emission factors (updated annually thereafter). Also following completion of construction, the GHG emissions for project operation shall be updated annually using the current applicable emission factors. Annual GHG reporting requirements are described in Mitigation Measure GHG-2.

2) ***GHG Emission Reduction Measures*** – The GHG Reduction Plan shall include GHG emission reduction strategies that shall, at minimum, be sufficient to reduce or offset the project's incremental GHG emissions to meet the 2050 net-zero threshold and shall be verifiable and feasible to implement over the project life. To demonstrate that this threshold is achieved, the GHG Reduction Plan shall demonstrate a fair-share reduction towards reducing project-wide GHG emissions by 18,234 $MTCO_2e$ per year or 1.02 $MTCO_2e$ per thousand square feet of development for nonresidential

[140] Association of Environmental Professionals. 2016. *Final White Paper, Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. October 18. Available at https://www.califaep.org/climate-change. Accessed August 2023.

projects. Subject to potential review and modification by Sacramento County and SMAQMD, the plan shall include some or all of the following, depending on regulatory feasibility, technological feasibility, and availability:

a. *Compliance with Sacramento County Communitywide Climate Action Plan*: If Sacramento County has adopted a Revised Climate Action Plan (CAP), comply with the provisions of the CAP.

b. *Reduce Vehicle Miles Traveled*. Reduce VMT traveled by project residents and employees through implementation of reasonable and feasible design measures, such as:

    i. improve or increase access to transit;

    ii. increase access to common goods and services, such as groceries, schools, and daycare;

    iii. incorporate affordable housing into the project;

    iv. orient the project toward transit, bicycle and pedestrian facilities;

    v. improve pedestrian or bicycle networks, or transit service;

    vi. provide traffic calming;

    vii. provide bicycle parking;

    viii. limit or eliminate parking supply;

    ix. unbundle parking costs;

    x. provide parking cash-out programs;

    xi. implement roadway pricing;

    xii. implement or provide access to a commute reduction program;

    xiii. provide car-sharing, bike sharing, and ride-sharing programs;

    xiv. provide transit passes;

    xv. shifting single occupancy vehicle trips to carpooling or vanpooling, for example providing ride-matching services;

    xvi. providing telework options;

    xvii. providing incentives or subsidies that increase the use of modes other than single-occupancy vehicle;

    xviii. providing on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms;

    xix. providing employee transportation coordinators at employment sites; and

    xx. providing a guaranteed ride home service to users of non-auto modes.

c. *Promote Electric and Alternative-Fuel Vehicles*. Promote the use of alternative-fuel and electric vehicles through implementation of reasonable and feasible design measures, such as:

    i. develop and implement electric vehicle charging infrastructure plan;

    ii. install electric vehicle charging stations at residential and commercial buildings; and

iii. install electric vehicle charging and natural gas fueling stations at public facilities, such as at parking lots and retail centers;

d. *Minimize Energy Demand*. Construct and operate an environmentally sound project that minimizes electricity demand through implementation of reasonable and feasible design measures, such as:

i. exceed 2022 Title 24 Energy Efficiency requirements;

ii. electrify loading docks to reduce emission from engine idling of transport refrigeration units;

iii. install all-electric appliances, including water heaters and heating, ventilation, and air conditioning (HVAC) systems;

iv. implement indoor water use efficiency;

v. use energy efficient street lighting fixtures;

vi. include of electric vehicle parking infrastructure;

vii. institute a composting and recycling program in excess of local standards; and

viii. implement an Urban Forestry Management Plan to reduce the urban heat island effect.

e. *On-Site Renewable Energy Use*. During the design phase, conduct analysis to optimize on-site renewable energy use to reduce further reduce project GHG emissions, based on the site layout, environmental factors, and viable technology available. Specific actions may include:

i. On-site carbon-zero renewable energy capable of serving energy needs of any urban development within the project, including energy needed for streetlights, sewer pumps, drainage pumps, traffic signals, and water pumps.

ii. Residential photovoltaic systems designed to be scalable over time to accommodate varying energy demands.

f. *Renewable Power Purchase Agreement*. Procure renewable energy from off-site sources within California via purchases from one or more of the following, depending on regulatory feasibility and availability: (a) SMUD; (b) a community choice aggregator such as the joint SMUD agreement with Valley Clean Energy and the East Bay Community Energy; or (c) other renewable energy provider.

g. *Renewable Energy Certificates*.[141] Procure and retire Renewable Energy Certificates (also known as RECs, green tags, Renewable Energy Credits, Renewable Electricity Certificates, or Tradable Renewable Certificates) for projects or activities located in California.

[141] Renewable energy certificates, or RECs, represent one megawatt hour (MWh) of energy generated from a clean, renewable source, such as wind, solar, hydro, or certain types of renewable biomass. Since these renewable energy resources generate little to no carbon as they produce energy, they represent an indirect emission reduction, whereby a "clean" energy source "offsets" the demand for "dirty" fossil-fueled energy.

h. *Carbon Offsets*.[142] Procure and retire Carbon Offsets, in a quantity needed to achieve the appropriate threshold of significance for the project's buildout year. "Carbon Offset" means an instrument issued by an Approved Registry and shall represent the past reduction or sequestration of 1 metric ton of CO_2e achieved by a GHG emission reduction project or activity within California. "Approved Registry" means: (i) the Climate Action Reserve, the American Carbon Registry, the Verified Carbon Standard, or the Clean Development Mechanism or (ii) any other entity approved by CARB to act as an "offset project registry" under the state's Cap-and-Trade Program.

   i. Carbon offset standards: Carbon offset credits can result from activities that reduce, avoid, destroy or sequester an amount of GHG emissions in an off-site location to offset the equivalent amount of GHG emissions occurring elsewhere. For the purpose of Project mitigation, carbon offset credits shall consist of direct emission reductions or sequestration that are used to offset the Project's direct emissions. All carbon offset credits shall be purchased from a carbon offset registry approved by CARB, which at present include the following: the American Climate Registry, Climate Action Reserve, and Verra (formerly Verified Carbon Standard). The carbon offset credits shall be verifiable by the County and enforceable in accordance with the registry's applicable standards, practices, or protocols. The carbon offsets must substantively satisfy all six of the statutory "environmental integrity" requirements applicable to the CARB Cap-and-Trade Program, generally as set forth in both subdivisions (d)(1) and (d)(2) of California Health and Safety Code §38562: real, permanent, quantifiable, verifiable, enforceable, and additional. All offset credits shall be verified by an independent verifier who meets stringent levels of professional qualification (i.e., ANAB Accreditation Program for Greenhouse Gas Validation/Verification Bodies or a Greenhouse Gas Emissions Lead Verifier accredited by CARB), or an expert with equivalent qualifications to the extent necessary to assist with the verification. Without limiting the generality of the foregoing, in the event that an approved registry becomes no longer accredited by CARB and the offset credits cannot be transferred to another accredited registry, the project applicant shall comply with the rules and procedures for retiring and/or replacing offset credits in the manner specified by the applicable protocol or other applicable standards including (to the extent required) by purchasing an equivalent number of credits to recoup the loss.

   ii. Geographic location: Carbon offset credits shall be obtained from GHG reduction projects that occur in the following locations in order of priority to the extent available: (1) within proximity to the Master Plan site; (2) within Sacramento County; (3) within the Sacramento Valley Air Basin; (4) the State of California; and (5) the United States of America. Any offset credits used for mitigation are subject to the approval of the County.

[142] Carbon offsets, also known as VERs or CRTs (carbon reduction tons), represent the act of reducing, avoiding, destroying, or sequestering the equivalent of a ton of greenhouse gas (GHG) in one place to "offset" an emission taking place somewhere else. Offsets generally represent direct emission reductions or sequestration -- for example, the destruction of methane emitted from decaying manure at a dairy farm. So, they can be used to offset direct emissions, like those from Scope I in a company's footprint.

i. *Net-zero Warehouse Operations*. Incorporate measures to construct and operate net-zero warehouses within areas zoned for commercial, industrial, and employment uses by 2050 or when commercially available.

j. *Zero Emission Vehicles*. Utilize 100% zero-emission vehicle fleets for all future development within areas zoned for commercial, industrial, and employment uses by 2050 or when commercially available.

For purposes of this mitigation measure, "commercially available" is defined as either: (1) being used for other large-scale projects in Sacramento County occurring at the same time; (2) can be obtained without significant delays to critical-path timing of construction; or (3) available within the larger northern California region.

A zero emission vehicle (ZEV) shall ordinarily be considered commercially available if the vehicle is capable of serving the intended purpose and is included in California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, https://californiahvip.org/ or listed as available in the US on the Global Commercial Vehicle Drive to Zero inventory, https://globaldrivetozero.org/. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made. In order for the County to make a determination that such vehicles are commercially unavailable, the operator must submit documentation from a minimum of three (3) ZEV dealers identified on the californiahvip.org website demonstrating the inability to obtain the required ZEVs or equipment needed within 6 months.

Each development project shall implement items a. through e. and progress through the remainder (items f. through j.) based on the options' physical and economic feasibility, as reasonably determined by each project applicant and the County, with low-cost options preferred over high-cost options. In the event that options have equivalent costs, options enumerated higher in the above list shall be selected by the project applicant over options enumerated later in the above list.

3) ***Implementation, Monitoring and Enforcement*** – On an annual basis, by March 1 of each year, the project developer shall submit a letter to the County Environmental Coordinator and SMAQMD confirming implementation of the emission reduction strategies listed in the GHG Reduction Plan. The letter shall also identify any changes or additions to the plan, including any recalculation of project emissions based on new information, incorporation of additional strategies, or changes in technology. If changes or additions to the plan are proposed, these shall be subject to review and approval by the County Environmental Coordinator and SMAQMD within 30 days.

   In addition, before the County issues the final Certificate of Occupancy for the first building constructed for each future development project implemented under the Master Plan, as laid out in the project developer's plan, the developer shall provide copies of GHG offset contracts demonstrating required purchases to the County Environmental Coordinator and SMAQMD. This will serve as documentation to fully enforce the provision that the project will result in net zero GHG emissions for the life of the obligation.

   The schedule of GHG reports and verification and validation activities shall be as follows:

Year Prior to Opening

1. Finalize total construction emissions based on method described in the GHG Reduction Plan and compare emissions to the County's significance threshold of 1,100 $MTCO_2e$ per year.
2. Estimate GHG emissions for projected energy consumption for annual operations based on the final design calculated using the method described in the GHG Reduction Plan and using updated applicable emissions factors.
3. Calculate GHG emissions to be mitigated for both construction and operations.
4. Implement GHG mitigation strategy identified for each year of project operations.
5. Publish the GHG Reduction Plan and submit to the Environmental Coordinator and SMAQMD.

Year 1 of Operation and On

1. Implement GHG mitigation strategy based on estimated emissions.
2. Refine GHG mitigation strategy as needed pending new technology and future mitigation options.

Significance after Mitigation: Implementation of Mitigation Measure GHG.1-1 would reduce GHG emissions during construction of the Master Plan by requiring contractors to implement SMAQMD's Construction GHG Emissions Reduction Measures. Implementation of Mitigation Measures GHG.1-2, GHG.1-3, and GHG.1-4 would reduce GHG emissions during Master Plan operations by reducing high-GWP GHG emission used in refrigeration systems and encourage the use of zero-emission and alternative fueled vehicles.

Implementation of Mitigation Measure GHG.1-5 would reduce GHG emissions during Master Plan operations by requiring new development to prepare a GHG Reduction Plan prior to the start of project construction activities and prepare an annual report documenting GHG emissions associated with the project. The Plan will document project-related GHG emissions, including the effect of GHG reduction measures, and the net incremental emissions reductions required to achieve the net-zero GHG threshold relative to the buildout year of each project. To demonstrate that this threshold is achieved, the GHG Reduction Plan shall demonstrate a fair-share reduction towards reducing project-wide GHG emissions by 18,234 MTCO2e per year or 1.02 MTCO2e per thousand square feet of development for nonresidential projects. As development occurs within the Project area, each project would be required to demonstrate how it will meet the net-zero GHG threshold relative to its buildout year, whether by on-site mitigation measures or by purchasing off-site carbon offsets. Mitigation Measure GHG.1-5 would ensure that Master Plan would achieve the net- zero GHG emissions standard, effectively resulting in zero net additional emissions. This is defined as the project's 30-year lifetime construction plus operational net new GHG emissions, compared to emissions associated with existing land uses that would be removed with the project over the lifetime of the project. This is a clear, quantitative performance standard. Mitigation Measure GHG.1-5 requires the project applicant to meet this standard through project

features and project-specific emission reduction strategies, along with GHG offset credits purchased through a CARB-accredited carbon registry.

The project applicant must demonstrate that this performance standard is achieved by submitting an annual report to the County and by submitting copies of GHG offset credit contracts. Also, if total lifetime project emissions from operations and construction were to exceed the total estimated in the GHG reduction plan, the applicant would offset the additional emissions when the County issues the final certificate of occupancy for each building to achieve the net-zero requirement. The modeling conducted for the EIR is highly conservative and likely overestimates emissions, predominantly because of its conservative assumptions about the Master Plan's construction and operational activities that would generate emissions, and also because the models used in the analysis did not incorporate a number of regulations, laws, and technology improvements that are either already adopted or approved, are proposed for adoption, or are likely to occur in the future.[143]

In addition, pursuant to AB 1279, the State of California is legally required to achieve net zero GHG emissions by 2045 or sooner. As a component of the State's GHG emissions profile in 2045, the Master Plan must comply with all laws and regulations adopted by CARB, CEC, and other state agencies to achieve AB 1279's target. While this does not ensure that the Master Plan would, in isolation, achieve net zero GHG emissions, it means that the Master Plan development must be accounted for in the state's net zero mandate and that future laws and regulations would contribute toward achieving net zero for the Master Plan.

Consequently, after implementation of all identified mitigation measures including Mitigation Measure GHG.1-5, the Master Plan would achieve net zero GHG emissions, and the impact would be **less than significant with mitigation incorporated**.

Impact GHG.2: The Master Plan could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. (*Less than Significant with Mitigation*)

A significant impact would occur if the Master Plan would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment by conflicting with state goals and applicable regulatory plans and policies to reduce GHG emissions.

Sacramento County Climate Action Plan

The developments proposed under the Master Plan will be located within the jurisdiction of Sacramento County, which has an adopted a CAP Strategy and Framework document as discussed above in the Regulatory Setting section. The CAP Strategy and Framework document

[143] Among the specific approved regulatory requirements not accounted for in the modeling are CARB's Zero-Emission Vehicle Program (EO B-16-2012), CARB's Advanced Clean Fleets regulation, the California Department of Transportation/CARB California Sustainable Freight Action Plan, California's carbon-neutral goal by 2045 (AB 1279), and AB 630/CARB's Clean Cars 4 All program. Among the regulations and legislation proposed but not accounted for in the modeling are CARB's 2020 Mobile Source Strategy and Advanced Clean Cars II, CARB's Zero Emission TRU rule, CARB's Alternative Diesel Fuels regulation, CARB's Advanced Clean Trucks regulation, future updates to Title 24 energy efficiency standards, and CARB's Heavy-Duty Omnibus Regulation.

provides a framework and overall policy strategy for reducing greenhouse gas emissions and managing resources to comply with AB 32. It also highlights actions already taken to become more efficient and targets future mitigation and adaptation strategies. Goals in the CAP Strategy and Framework document relevant to the developments proposed under the Master Plan are focused on the transportation and land use and energy sectors and include the following goals:

- Reduce total VMT per capita in the community and the region.
- Improve energy efficiency of existing and new buildings in the unincorporated Sacramento County.

The developments proposed under the Master Plan would include energy efficient street lighting fixtures, solar panel roofs for all residential homes, and compliance with the 2022 CALGreen Code and 2022 Title 24 energy efficiency standards. Developments proposed under the Master Plan would include energy efficiency measures.

The Sacramento Area Council of Governments 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy

As discussed in Chapter 2 *Air Quality* above, assuming roughly half of the proposed development for the Master Plan is constructed by 2040, the Master Plan would result in greater dwelling units than what was included in the SACOG's 2020 MTP/SCS. Therefore, the Master Plan would not be consistent with the land use growth projections presently established in the SACOG MTP/SCS. Despite this inconsistency, GHG emissions would be reduced substantially with the AQMP through VMT reductions compared to project conditions through the many key emission reduction measures included in the Master Plan design and traffic study including housing density, the diversity of land uses, travel time to employment centers, and accessibility to multiple modes of transportation (transit, bicycle, pedestrian). In addition, as discussed above, the MTP/SCS shows a reduction in per-capita VMT compared to baseline conditions for TPA's in Sacramento County including the Master Plan area; this will result in reduced mobile source emissions: "As established in the proposed MTP/SCS, behavioral changes in choice of travel directly impacts mobile source emission generation projections and reduced VMT and trip numbers result in lower emissions."[144] The AQMP (see Mitigation Measure AQ.1-1 and Appendix B) demonstrates a 87 percent reduction on NO_X and a 80 percent reduction in ROG; a similar (i.e. 40-60 percent) reduction in mobile source GHG emissions would be expected. However, since the Master Plan development is not presently included in the 2020 MTP/SCS, the Master Plan would be inconsistent with the 2020 MTP/SCS.

Further, as discussed in Chapter 2 *Air Quality* above, the Master Plan, in combination with the other regional Master Plans and Specific Plans currently in development (including Jackson Township, NewBridge, and Mather South), could reduce total VMT as well as per-capita VMT compared to conditions without implementation of these projects. The Master Plan will have a substantial number of new jobs and commercial land uses and will therefore change the regional

[144] Sacramento Area Council of Governments, 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy Draft Environmental Impact Report. Chapter 5: Air Quality. p. 5-45. Available: https://www.sacog.org/sites/main/files/file-attachments/ch._5_air_quality_pdeir.pdf?1569039959. Accessed August 2023.

travel dynamics as development occurs over time and jobs and commercial uses are placed closer proximity to existing residential areas, reducing trip lengths and making regional travel patterns more efficient. When development under the Master Plan is placed into the future cumulative land use context, it is possible that trips would be shortened due to the closer proximity of retail/commercial and employment opportunities, which translates into reduced VMT as compared to the existing no-project conditions. In summary, the Master Plan, in combination with other cumulative development projects in the region, will result in a more complementary land use mix with higher densities and a better jobs/housing balance that is anticipated to result in reduced VMT and per-capita VMT compared to existing conditions.[145]

Sacramento County General Plan

The Master Plan would be consistent with the County's General Plan, including goals and policies that apply to GHG emissions associated with the Master Plan. The Master Plan would be consistent with all policies from the Air Quality Element, including AQ-1 by improving pedestrian/bicycle access and circulation, AQ-8 by providing mixed-use development along existing and proposed transit corridors, and AQ-11 by requiring construction equipment to reduce emissions through Mitigation Measures AQ.2-2 (new engine technology) and AQ.4-4 (Tier 4 construction equipment). The Master Plan would also be consistent with all policies from the Energy Element, including EN-5 by building higher density land uses and mixed uses along transportation corridors to help support transit use; EN-10 by building sidewalks and on-street (Class II) bike lanes on all collector, arterial and thoroughfare roadways; and EN-6 by developing four transit lines in the Jackson Corridor through the other regional master and specific plans. Therefore, the Master Plan would be consistent with the County's General Plan.

AB 1279

AB 1279, which was signed into law in September 2022, requires the State of California to achieve two things by 2045 or sooner: (1) net zero emissions and (2) a reduction in statewide anthropogenic GHG emissions of 85 percent below 1990 levels. AB 1279 requires CARB to ensure that the 2022 Scoping Plan, described further below, identifies and recommends measures to achieve carbon neutrality, and to identify and implement policies and strategies for CO2 removal and carbon capture, utilization, and storage technologies. This GHG analysis prepared for the Master Plan identified a significance threshold of net-zero emissions, which is consistent with the statewide target of net-zero emissions by 2045. In addition, as described further below, the Master Plan would be consistent with the applicable strategies included in the 2022 Scoping Plan that have been identified to help the state achieve an 85 percent reduction below 1990 levels by 2045 and carbon neutrality by 2045 as required by AB 1279. As discussed under Impact GHG-1, the Master Plan with implementation of mitigation measure GHG.1-5 would be designed to achieve net-zero GHG emissions compared to baseline levels, and the Master Plan would be consistent with AB 1279.

[145] Smith, Todd. Principal Environmental Planner, Sacramento County. Email correspondence with ESA on June 19, 2019.

CARB 2022 Scoping Plan

The 2022 Scoping Plan expands on prior scoping plans and recent legislation, such as AB 1279, by outlining a technologically feasible, cost-effective, and equity-focused path to achieve the state's climate target of reducing anthropogenic GHG emissions to 85 percent below 1990 levels and achieving carbon neutrality by 2045 or sooner.[146] To achieve carbon neutrality by 2045, the 2022 Scoping Plan contains GHG emissions reductions, technology, and clean energy mandated by statutes; reduction of short-lived climate pollutants; and mechanical CO2e capture and sequestration actions.

Elements of the Master Plan are proposed to address several relevant actions under the 2022 Scoping Plan, such as, but not limited to: increasing the use renewable energy and decreasing the use of oil and gas, expanding low-carbon technologies such as plug-in EV charging infrastructure and zero-emission vehicles, increasing carbon sequestration capacity through new open space land uses and trees, and reducing overall VMT through compliance with the TDM plan.

As discussed above under Impact GHG-1, the threshold of net- zero GHG emissions aligns with the statewide 2045 target as codified in AB 1279 and the 2022 Scoping Plan, and with implementation of mitigation measure GHG.1-5, the Master Plan would be designed to achieve net-zero GHG emissions compared to baseline levels. Therefore, the Master Plan would be consistent with the 2022 Scoping Plan.

Conclusion

Sacramento County currently does not have an adopted significance threshold to demonstrate a project's consistency with AB 1279 or the 2022 Scoping Plan, which established a statewide GHG reduction target of 85 percent below 1990 levels and carbon neutrality by 2045. Because Sacramento County currently does not have an established GHG intensity threshold for the year 2055 when the Master Plan is assumed to be built-out, a net-zero GHG emissions threshold was chosen for the purposes of this analysis. As shown in Table 6, with implementation of mitigation, operation of the Master Plan would generate GHG emissions that would exceed the net-zero threshold.

Therefore, developments proposed under the Master Plan would conflict with 2045 GHG reduction targets established by AB 1279 and the 2022 Scoping Plan. GHG emissions associated with the Master Plan would be considered a **significant impact**. Consequently, mitigation is required.

Mitigation Measures

Mitigation Measure AQ.1-1: Air Quality Mitigation Plan (see Impact AQ.1)

Mitigation Measure AQ.1-2: Electric Vehicle Charging Infrastructure (See Impact AQ.1).

[146] California Air Resources Board, 2022. *2022 Scoping Plan For Achieving Carbon Neutrality.* November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed January 2023.

Mitigation Measure AQ.2-1: Basic Construction Emission Control Practices (See Impact AQ.1).

Mitigation Measure AQ.2-2: Enhanced Exhaust Control Practices (see Impact AQ.2)

Mitigation Measure AQ.3-2: Operational Truck Emissions Reduction (See Impact AQ.3).

Mitigation Measure AQ.3-3: Electric Landscaping Equipment (See Impact AQ.3).

Mitigation Measure AQ.3-4: Best Available Emissions Controls for Stationary Emergency Generators (See Impact AQ.3).

Mitigation Measure AQ.4-3: Clean Off-Road Construction Equipment (See Impact AQ.4).

Mitigation Measure AQ.4-4: Clean On-Road Construction Trucks (See Impact AQ.4).

Mitigation Measure GHG.1-1: Construction GHG Emissions Reduction Measures (See Impact GHG.1).

Mitigation Measure GHG.1-2: Reduce Refrigerant Emissions (See Impact GHG.1).

Mitigation Measure GHG.1-3: Preferred Parking for Alternative-Fueled Vehicles and Carsharing Vehicles (See Impact GHG.1).

Mitigation Measure GHG.1-4: Electric Vehicle Requirement for Carsharing Programs (See Impact GHG.1).

Mitigation Measure GHG.1-5: Greenhouse Gas Reduction Plan (See Impact GHG.1).

Significance after Mitigation: Implementation of Mitigation Measure GHG.1-1 would reduce GHG emissions during construction of the Master Plan by requiring contractors to implement SMAQMD's Construction GHG Emissions Reduction Measures. Implementation of Mitigation Measures GHG.1-2, GHG.1-3, and GHG.1-4 would reduce GHG emissions during Master Plan operations by reducing high-GWP GHG emission used in refrigeration systems and encourage the use of zero-emission and alternative fueled vehicles. With implementation of mitigation measure GHG.1-5, the Master Plan would achieve net-zero GHG emissions compared to baseline levels. Therefore, the Master Plan would be consistent with AB 1279 and the 2022 Scoping Plan. GHG emissions associated with the Master Plan would therefore be **less than significant with mitigation**.

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Appendix A
Supporting Data

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

West Jackson Highway Master Plan (Proposed Project - First Year of Construction)

County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	236.66	1000sqft	16.41	236,661.47	0
Elementary School	17.42	1000sqft	2.00	17,424.00	0
High School	20.91	1000sqft	2.40	20,908.80	0
Place of Worship	109.63	1000sqft	2.52	109,626.00	0
Industrial Park	65.88	1000sqft	2.99	65,876.63	0
Other Asphalt Surfaces	7.66	Acre	7.66	333,669.60	0
City Park	70.04	Acre	70.04	3,050,652.00	0
Apartments Mid Rise	188.67	Dwelling Unit	6.29	188,670.00	504
Condo/Townhouse	27.33	Dwelling Unit	1.95	27,330.00	73
Single Family Housing	333.47	Dwelling Unit	69.02	600,246.00	890
Regional Shopping Center	105.52	1000sqft	9.08	105,524.10	0
Strip Mall	40.84	1000sqft	1.50	40,837.50	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2026
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	357.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project specific information

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use - Project specific information

Construction Phase - Project specific information

Off-road Equipment - Project specific information

Grading - Project specific information

Trips and VMT - Project specific information

Construction Off-road Equipment Mitigation - Project specific information

Off-road Equipment - Project specific information

Off-road Equipment - Project specific information

Off-road Equipment - Project specific information

Off-road Equipment - Project specific information

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	15.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	20.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	45.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblGrading	AcresOfGrading	1,296.00	196.00
tblGrading	AcresOfGrading	341.00	0.00
tblGrading	MaterialImported	0.00	50,000.00
tblLandUse	LandUseSquareFeet	236,660.00	236,661.47
tblLandUse	LandUseSquareFeet	17,420.00	17,424.00
tblLandUse	LandUseSquareFeet	20,910.00	20,908.80
tblLandUse	LandUseSquareFeet	109,630.00	109,626.00
tblLandUse	LandUseSquareFeet	65,880.00	65,876.63
tblLandUse	LandUseSquareFeet	3,050,942.40	3,050,652.00
tblLandUse	LandUseSquareFeet	105,520.00	105,524.10
tblLandUse	LandUseSquareFeet	40,840.00	40,837.50
tblLandUse	LotAcreage	5.43	16.41
tblLandUse	LotAcreage	0.40	2.00
tblLandUse	LotAcreage	0.48	2.40
tblLandUse	LotAcreage	1.51	2.99
tblLandUse	LotAcreage	4.96	6.29
tblLandUse	LotAcreage	1.71	1.95
tblLandUse	LotAcreage	108.27	69.02
tblLandUse	LotAcreage	2.42	9.08

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblLandUse	LotAcreage	0.94	1.50
tblProjectCharacteristics	CH4IntensityFactor	0	0.033
tblProjectCharacteristics	CO2IntensityFactor	0	357.98
tblProjectCharacteristics	N2OIntensityFactor	0	0.004
tblProjectCharacteristics	PrecipitationFrequency	0	58
tblProjectCharacteristics	TotalLotAcreage	0	191.86
tblProjectCharacteristics	TotalPopulation	0	1467
tblProjectCharacteristics	UrbanizationLevel		Rural
tblProjectCharacteristics	WindSpeed	0	3.5
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	711.00	713.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	9.6660	15.3963	16.4591	0.0481	4.4445	0.5298	4.9743	1.9161	0.4914	2.4075	0.0000	4,369.7221	4,369.7221	0.7130	0.1949	4,445.6320
Maximum	**9.6660**	**15.3963**	**16.4591**	**0.0481**	**4.4445**	**0.5298**	**4.9743**	**1.9161**	**0.4914**	**2.4075**	**0.0000**	**4,369.7221**	**4,369.7221**	**0.7130**	**0.1949**	**4,445.6320**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	8.6997	4.7057	18.8020	0.0481	2.9437	0.0643	3.0080	1.1175	0.0631	1.1806	0.0000	4,369.7195	4,369.7195	0.7130	0.1949	4,445.6293
Maximum	**8.6997**	**4.7057**	**18.8020**	**0.0481**	**2.9437**	**0.0643**	**3.0080**	**1.1175**	**0.0631**	**1.1806**	**0.0000**	**4,369.7195**	**4,369.7195**	**0.7130**	**0.1949**	**4,445.6293**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**10.00**	**69.44**	**-14.23**	**0.00**	**33.77**	**87.86**	**39.53**	**41.68**	**87.16**	**50.96**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2025	3-31-2025	5.4731	0.8180
2	4-1-2025	6-30-2025	5.1549	1.3378
3	7-1-2025	9-30-2025	3.9087	2.0564
		Highest	5.4731	2.0564

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.5319	0.0653	5.6697	3.0000e-004		0.0314	0.0314		0.0314	0.0314	0.0000	9.2729	9.2729	8.9100e-003	0.0000	9.4956
Energy	0.1081	0.9527	0.6058	5.9000e-003		0.0747	0.0747		0.0747	0.0747	0.0000	2,962.4067	2,962.4067	0.1950	0.0408	2,979.4276
Mobile	6.2506	8.0351	58.4211	0.1258	13.8837	0.0972	13.9809	3.7111	0.0908	3.8018	0.0000	11,648.8187	11,648.8187	0.7829	0.5718	11,838.7725
Waste						0.0000	0.0000		0.0000	0.0000	315.8458	0.0000	315.8458	18.6660	0.0000	782.4947
Water						0.0000	0.0000		0.0000	0.0000	38.4116	171.3217	209.7333	0.1480	0.0855	238.8966
Total	**12.8906**	**9.0531**	**64.6966**	**0.1320**	**13.8837**	**0.2033**	**14.0870**	**3.7111**	**0.1969**	**3.9080**	**354.2575**	**14,791.8200**	**15,146.0774**	**19.8008**	**0.6980**	**15,849.0869**

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.5319	0.0653	5.6697	3.0000e-004		0.0314	0.0314		0.0314	0.0314	0.0000	9.2729	9.2729	8.9100e-003	0.0000	9.4956
Energy	0.1081	0.9527	0.6058	5.9000e-003		0.0747	0.0747		0.0747	0.0747	0.0000	2,962.4067	2,962.4067	0.1950	0.0408	2,979.4276
Mobile	6.2506	8.0351	58.4211	0.1258	13.8837	0.0972	13.9809	3.7111	0.0908	3.8018	0.0000	11,648.8187	11,648.8187	0.7829	0.5718	11,838.7725
Waste						0.0000	0.0000		0.0000	0.0000	315.8458	0.0000	315.8458	18.6660	0.0000	782.4947
Water						0.0000	0.0000		0.0000	0.0000	38.4116	171.3217	209.7333	0.1480	0.0855	238.8966
Total	**12.8906**	**9.0531**	**64.6966**	**0.1320**	**13.8837**	**0.2033**	**14.0870**	**3.7111**	**0.1969**	**3.9080**	**354.2575**	**14,791.8200**	**15,146.0774**	**19.8008**	**0.6980**	**15,849.0869**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	103,763.7719
Vegetation Land Change	26,366.8192
Total	**130,130.5911**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2025	2/12/2025	5	31	
2	Grading	Grading	2/13/2025	6/5/2025	5	81	
3	Building Construction	Building Construction	6/6/2025	11/18/2025	5	118	
4	Paving	Paving	11/19/2025	12/8/2025	5	14	
5	Architectural Coating	Architectural Coating	12/9/2025	12/26/2025	5	14	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 196

Acres of Paving: 7.66

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Residential Indoor: 1,652,898; Residential Outdoor: 550,966; Non-Residential Indoor: 895,288; Non-Residential Outdoor: 298,429; Striped Parking Area: 20,020 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	7	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	15	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	20	8.00	97	0.37
Grading	Excavators	10	8.00	158	0.38
Grading	Graders	7	8.00	187	0.41
Grading	Rubber Tired Dozers	5	8.00	247	0.40
Grading	Scrapers	10	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	10	8.00	97	0.37
Building Construction	Cranes	5	7.00	231	0.29
Building Construction	Forklifts	15	8.00	89	0.20
Building Construction	Generator Sets	5	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	15	7.00	97	0.37
Building Construction	Welders	5	8.00	46	0.45
Paving	Pavers	10	8.00	130	0.42
Paving	Paving Equipment	10	8.00	132	0.36
Paving	Rollers	10	8.00	80	0.38
Architectural Coating	Air Compressors	5	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	42	105.00	2.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	42	105.00	2.00	6,250.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	45	1,909.00	713.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	30	75.00	2.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	382.00	2.00	0.00	15.00	8.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4001	0.0000	1.4001	0.7696	0.0000	0.7696	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2254	2.3307	1.5611	3.6700e-003		0.0963	0.0963		0.0886	0.0886	0.0000	322.3876	322.3876	0.1043	0.0000	324.9943
Total	**0.2254**	**2.3307**	**1.5611**	**3.6700e-003**	**1.4001**	**0.0963**	**1.4964**	**0.7696**	**0.0886**	**0.8582**	**0.0000**	**322.3876**	**322.3876**	**0.1043**	**0.0000**	**324.9943**

3.2 Site Preparation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.7700e-003	4.8000e-004	1.0000e-005	2.4000e-004	1.0000e-005	2.5000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.7081	0.7081	2.0000e-005	1.0000e-004	0.7395
Worker	5.2200e-003	3.0800e-003	0.0451	1.4000e-004	0.0179	8.0000e-005	0.0180	4.7700e-003	8.0000e-005	4.8400e-003	0.0000	13.1431	13.1431	2.9000e-004	3.2000e-004	13.2442
Total	**5.2600e-003**	**4.8500e-003**	**0.0456**	**1.5000e-004**	**0.0182**	**9.0000e-005**	**0.0183**	**4.8400e-003**	**9.0000e-005**	**4.9200e-003**	**0.0000**	**13.8511**	**13.8511**	**3.1000e-004**	**4.2000e-004**	**13.9837**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6301	0.0000	0.6301	0.3463	0.0000	0.3463	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0449	0.1945	1.9401	3.6700e-003		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	322.3873	322.3873	0.1043	0.0000	324.9939
Total	**0.0449**	**0.1945**	**1.9401**	**3.6700e-003**	**0.6301**	**5.9800e-003**	**0.6360**	**0.3463**	**5.9800e-003**	**0.3523**	**0.0000**	**322.3873**	**322.3873**	**0.1043**	**0.0000**	**324.9939**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.7700e-003	4.8000e-004	1.0000e-005	2.4000e-004	1.0000e-005	2.5000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.7081	0.7081	2.0000e-005	1.0000e-004	0.7395
Worker	5.2200e-003	3.0800e-003	0.0451	1.4000e-004	0.0179	8.0000e-005	0.0180	4.7700e-003	8.0000e-005	4.8400e-003	0.0000	13.1431	13.1431	2.9000e-004	3.2000e-004	13.2442
Total	**5.2600e-003**	**4.8500e-003**	**0.0456**	**1.5000e-004**	**0.0182**	**9.0000e-005**	**0.0183**	**4.8400e-003**	**9.0000e-005**	**4.9200e-003**	**0.0000**	**13.8511**	**13.8511**	**3.1000e-004**	**4.2000e-004**	**13.9837**

3.3 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.3286	0.0000	1.3286	0.6823	0.0000	0.6823	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6127	5.9384	5.4612	0.0131		0.2380	0.2380		0.2190	0.2190	0.0000	1,150.7969	1,150.7969	0.3722	0.0000	1,160.1016
Total	**0.6127**	**5.9384**	**5.4612**	**0.0131**	**1.3286**	**0.2380**	**1.5666**	**0.6823**	**0.2190**	**0.9013**	**0.0000**	**1,150.7969**	**1,150.7969**	**0.3722**	**0.0000**	**1,160.1016**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.9300e-003	0.4719	0.1006	1.8800e-003	0.0528	3.5100e-003	0.0563	0.0145	3.3600e-003	0.0179	0.0000	186.4365	186.4365	7.4400e-003	0.0296	195.4335
Vendor	1.1000e-004	4.6200e-003	1.2400e-003	2.0000e-005	6.2000e-004	3.0000e-005	6.5000e-004	1.8000e-004	3.0000e-005	2.0000e-004	0.0000	1.8501	1.8501	4.0000e-005	2.7000e-004	1.9323
Worker	0.0136	8.0500e-003	0.1178	3.7000e-004	0.0468	2.2000e-004	0.0470	0.0125	2.0000e-004	0.0127	0.0000	34.3415	34.3415	7.6000e-004	8.2000e-004	34.6057
Total	**0.0217**	**0.4846**	**0.2196**	**2.2700e-003**	**0.1003**	**3.7600e-003**	**0.1040**	**0.0271**	**3.5900e-003**	**0.0307**	**0.0000**	**222.6282**	**222.6282**	**8.2400e-003**	**0.0307**	**231.9716**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5979	0.0000	0.5979	0.3071	0.0000	0.3071	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1608	0.6967	6.9233	0.0131		0.0214	0.0214		0.0214	0.0214	0.0000	1,150.7955	1,150.7955	0.3722	0.0000	1,160.1003
Total	**0.1608**	**0.6967**	**6.9233**	**0.0131**	**0.5979**	**0.0214**	**0.6193**	**0.3071**	**0.0214**	**0.3285**	**0.0000**	**1,150.7955**	**1,150.7955**	**0.3722**	**0.0000**	**1,160.1003**

3.3 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.9300e-003	0.4719	0.1006	1.8800e-003	0.0528	3.5100e-003	0.0563	0.0145	3.3600e-003	0.0179	0.0000	186.4365	186.4365	7.4400e-003	0.0296	195.4335
Vendor	1.1000e-004	4.6200e-003	1.2400e-003	2.0000e-005	6.2000e-004	3.0000e-005	6.5000e-004	1.8000e-004	3.0000e-005	2.0000e-004	0.0000	1.8501	1.8501	4.0000e-005	2.7000e-004	1.9323
Worker	0.0136	8.0500e-003	0.1178	3.7000e-004	0.0468	2.2000e-004	0.0470	0.0125	2.0000e-004	0.0127	0.0000	34.3415	34.3415	7.6000e-004	8.2000e-004	34.6057
Total	**0.0217**	**0.4846**	**0.2196**	**2.2700e-003**	**0.1003**	**3.7600e-003**	**0.1040**	**0.0271**	**3.5900e-003**	**0.0307**	**0.0000**	**222.6282**	**222.6282**	**8.2400e-003**	**0.0307**	**231.9716**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4034	3.6786	4.7450	7.9500e-003		0.1556	0.1556		0.1464	0.1464	0.0000	684.1624	684.1624	0.1608	0.0000	688.1830
Total	**0.4034**	**3.6786**	**4.7450**	**7.9500e-003**		**0.1556**	**0.1556**		**0.1464**	**0.1464**	**0.0000**	**684.1624**	**684.1624**	**0.1608**	**0.0000**	**688.1830**

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3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0579	2.3979	0.6449	9.8700e-003	0.3216	0.0137	0.3353	0.0929	0.0131	0.1060	0.0000	960.8548	960.8548	0.0234	0.1413	1,003.5529
Worker	0.3610	0.2133	3.1192	9.9200e-003	1.2403	5.7400e-003	1.2460	0.3298	5.2900e-003	0.3351	0.0000	909.5639	909.5639	0.0200	0.0218	916.5618
Total	**0.4189**	**2.6111**	**3.7641**	**0.0198**	**1.5619**	**0.0194**	**1.5813**	**0.4227**	**0.0184**	**0.4411**	**0.0000**	**1,870.4187**	**1,870.4187**	**0.0434**	**0.1631**	**1,920.1146**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0967	0.6592	5.1508	7.9500e-003		0.0120	0.0120		0.0120	0.0120	0.0000	684.1616	684.1616	0.1608	0.0000	688.1822
Total	**0.0967**	**0.6592**	**5.1508**	**7.9500e-003**		**0.0120**	**0.0120**		**0.0120**	**0.0120**	**0.0000**	**684.1616**	**684.1616**	**0.1608**	**0.0000**	**688.1822**

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0579	2.3979	0.6449	9.8700e-003	0.3216	0.0137	0.3353	0.0929	0.0131	0.1060	0.0000	960.8548	960.8548	0.0234	0.1413	1,003.5529
Worker	0.3610	0.2133	3.1192	9.9200e-003	1.2403	5.7400e-003	1.2460	0.3298	5.2900e-003	0.3351	0.0000	909.5639	909.5639	0.0200	0.0218	916.5618
Total	**0.4189**	**2.6111**	**3.7641**	**0.0198**	**1.5619**	**0.0194**	**1.5813**	**0.4227**	**0.0184**	**0.4411**	**0.0000**	**1,870.4187**	**1,870.4187**	**0.0434**	**0.1631**	**1,920.1146**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0320	0.3004	0.5102	8.0000e-004		0.0147	0.0147		0.0135	0.0135	0.0000	70.0674	70.0674	0.0227	0.0000	70.6339
Paving	0.0100					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0421**	**0.3004**	**0.5102**	**8.0000e-004**		**0.0147**	**0.0147**		**0.0135**	**0.0135**	**0.0000**	**70.0674**	**70.0674**	**0.0227**	**0.0000**	**70.6339**

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3.5 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.0000e-004	2.1000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.3198	0.3198	1.0000e-005	5.0000e-005	0.3340
Worker	1.6800e-003	9.9000e-004	0.0145	5.0000e-005	5.7800e-003	3.0000e-005	5.8100e-003	1.5400e-003	2.0000e-005	1.5600e-003	0.0000	4.2397	4.2397	9.0000e-005	1.0000e-004	4.2723
Total	**1.7000e-003**	**1.7900e-003**	**0.0148**	**5.0000e-005**	**5.8900e-003**	**3.0000e-005**	**5.9200e-003**	**1.5700e-003**	**2.0000e-005**	**1.6000e-003**	**0.0000**	**4.5595**	**4.5595**	**1.0000e-004**	**1.5000e-004**	**4.6063**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.8200e-003	0.0425	0.6054	8.0000e-004		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	70.0673	70.0673	0.0227	0.0000	70.6338
Paving	0.0100					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0199**	**0.0425**	**0.6054**	**8.0000e-004**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**	**0.0000**	**70.0673**	**70.0673**	**0.0227**	**0.0000**	**70.6338**

3.5 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.0000e-004	2.1000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.3198	0.3198	1.0000e-005	5.0000e-005	0.3340
Worker	1.6800e-003	9.9000e-004	0.0145	5.0000e-005	5.7800e-003	3.0000e-005	5.8100e-003	1.5400e-003	2.0000e-005	1.5600e-003	0.0000	4.2397	4.2397	9.0000e-005	1.0000e-004	4.2723
Total	**1.7000e-003**	**1.7900e-003**	**0.0148**	**5.0000e-005**	**5.8900e-003**	**3.0000e-005**	**5.9200e-003**	**1.5700e-003**	**2.0000e-005**	**1.6000e-003**	**0.0000**	**4.5595**	**4.5595**	**1.0000e-004**	**1.5000e-004**	**4.6063**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.9203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9800e-003	0.0401	0.0633	1.0000e-004		1.8000e-003	1.8000e-003		1.8000e-003	1.8000e-003	0.0000	8.9364	8.9364	4.9000e-004	0.0000	8.9486
Total	**7.9263**	**0.0401**	**0.0633**	**1.0000e-004**		**1.8000e-003**	**1.8000e-003**		**1.8000e-003**	**1.8000e-003**	**0.0000**	**8.9364**	**8.9364**	**4.9000e-004**	**0.0000**	**8.9486**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.0000e-004	2.1000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.3198	0.3198	1.0000e-005	5.0000e-005	0.3340
Worker	8.5700e-003	5.0600e-003	0.0741	2.4000e-004	0.0295	1.4000e-004	0.0296	7.8300e-003	1.3000e-004	7.9600e-003	0.0000	21.5942	21.5942	4.8000e-004	5.2000e-004	21.7603
Total	**8.5900e-003**	**5.8600e-003**	**0.0743**	**2.4000e-004**	**0.0296**	**1.4000e-004**	**0.0297**	**7.8600e-003**	**1.3000e-004**	**8.0000e-003**	**0.0000**	**21.9140**	**21.9140**	**4.9000e-004**	**5.7000e-004**	**22.0943**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.9203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0400e-003	4.5100e-003	0.0641	1.0000e-004		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	8.9364	8.9364	4.9000e-004	0.0000	8.9486
Total	**7.9213**	**4.5100e-003**	**0.0641**	**1.0000e-004**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**8.9364**	**8.9364**	**4.9000e-004**	**0.0000**	**8.9486**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.0000e-004	2.1000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.3198	0.3198	1.0000e-005	5.0000e-005	0.3340
Worker	8.5700e-003	5.0600e-003	0.0741	2.4000e-004	0.0295	1.4000e-004	0.0296	7.8300e-003	1.3000e-004	7.9600e-003	0.0000	21.5942	21.5942	4.8000e-004	5.2000e-004	21.7603
Total	**8.5900e-003**	**5.8600e-003**	**0.0743**	**2.4000e-004**	**0.0296**	**1.4000e-004**	**0.0297**	**7.8600e-003**	**1.3000e-004**	**8.0000e-003**	**0.0000**	**21.9140**	**21.9140**	**4.9000e-004**	**5.7000e-004**	**22.0943**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	6.2506	8.0351	58.4211	0.1258	13.8837	0.0972	13.9809	3.7111	0.0908	3.8018	0.0000	11,648.8187	11,648.8187	0.7829	0.5718	11,838.7725
Unmitigated	6.2506	8.0351	58.4211	0.1258	13.8837	0.0972	13.9809	3.7111	0.0908	3.8018	0.0000	11,648.8187	11,648.8187	0.7829	0.5718	11,838.7725

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,026.36	926.37	771.66	3,593,532	3,593,532
City Park	54.63	137.28	153.39	217,734	217,734
Condo/Townhouse	200.06	222.47	171.63	733,652	733,652
Elementary School	340.04	0.00	0.00	761,768	761,768
High School	294.20	83.22	35.76	883,065	883,065
Industrial Park	222.02	167.34	81.69	713,665	713,665
Office Park	2,619.83	388.12	179.86	6,196,852	6,196,852
Other Asphalt Surfaces	0.00	0.00	0.00		
Place of Worship	761.93	656.68	3029.08	2,071,531	2,071,531
Regional Shopping Center	3,983.38	4,866.58	2226.47	7,870,346	7,870,346
Single Family Housing	3,147.96	3,181.30	2851.17	11,455,486	11,455,486
Strip Mall	1,810.03	1,716.91	834.36	2,973,687	2,973,687
Total	14,460.43	12,346.28	10,335.07	37,471,319	37,471,319

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	15.00	7.50	8.50	33.00	48.00	19.00	66	28	6
Condo/Townhouse	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3
Elementary School	15.00	7.50	8.50	65.00	30.00	5.00	63	25	12
High School	15.00	7.50	8.50	77.80	17.20	5.00	75	19	6
Industrial Park	15.00	7.50	8.50	59.00	28.00	13.00	79	19	2
Office Park	15.00	7.50	8.50	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	15.00	7.50	8.50	0.00	0.00	0.00	0	0	0
Place of Worship	15.00	7.50	8.50	0.00	95.00	5.00	64	25	11
Regional Shopping Center	15.00	7.50	8.50	16.30	64.70	19.00	54	35	11
Single Family Housing	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3
Strip Mall	15.00	7.50	8.50	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
City Park	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Condo/Townhouse	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Elementary School	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
High School	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Industrial Park	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Office Park	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Other Asphalt Surfaces	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Place of Worship	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Regional Shopping Center	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Single Family Housing	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071
Strip Mall	0.550065	0.056538	0.183073	0.126916	0.023794	0.005777	0.013314	0.009484	0.000878	0.000597	0.025554	0.000937	0.003071

5.0 Energy Detail

Historical Energy Use: N

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,892.6838	1,892.6838	0.1745	0.0212	1,903.3480
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,892.6838	1,892.6838	0.1745	0.0212	1,903.3480
NaturalGas Mitigated	0.1081	0.9527	0.6058	5.9000e-003		0.0747	0.0747		0.0747	0.0747	0.0000	1,069.7229	1,069.7229	0.0205	0.0196	1,076.0797
NaturalGas Unmitigated	0.1081	0.9527	0.6058	5.9000e-003		0.0747	0.0747		0.0747	0.0747	0.0000	1,069.7229	1,069.7229	0.0205	0.0196	1,076.0797

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.77656e+006	9.5800e-003	0.0819	0.0348	5.2000e-004		6.6200e-003	6.6200e-003		6.6200e-003	6.6200e-003	0.0000	94.8040	94.8040	1.8200e-003	1.7400e-003	95.3674
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	515772	2.7800e-003	0.0238	0.0101	1.5000e-004		1.9200e-003	1.9200e-003		1.9200e-003	1.9200e-003	0.0000	27.5236	27.5236	5.3000e-004	5.0000e-004	27.6871
Elementary School	263451	1.4200e-003	0.0129	0.0109	8.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	14.0587	14.0587	2.7000e-004	2.6000e-004	14.1423
High School	316141	1.7000e-003	0.0155	0.0130	9.0000e-005		1.1800e-003	1.1800e-003		1.1800e-003	1.1800e-003	0.0000	16.8705	16.8705	3.2000e-004	3.1000e-004	16.9707
Industrial Park	855079	4.6100e-003	0.0419	0.0352	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003	0.0000	45.6303	45.6303	8.7000e-004	8.4000e-004	45.9014
Office Park	3.74398e+006	0.0202	0.1835	0.1542	1.1000e-003		0.0140	0.0140		0.0140	0.0140	0.0000	199.7933	199.7933	3.8300e-003	3.6600e-003	200.9805
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Place of Worship	3.8994e+006	0.0210	0.1912	0.1606	1.1500e-003		0.0145	0.0145		0.0145	0.0145	0.0000	208.0867	208.0867	3.9900e-003	3.8100e-003	209.3232
Regional Shopping Center	566664	3.0600e-003	0.0278	0.0233	1.7000e-004		2.1100e-003	2.1100e-003		2.1100e-003	2.1100e-003	0.0000	30.2394	30.2394	5.8000e-004	5.5000e-004	30.4191
Single Family Housing	7.8895e+006	0.0425	0.3635	0.1547	2.3200e-003		0.0294	0.0294		0.0294	0.0294	0.0000	421.0139	421.0139	8.0700e-003	7.7200e-003	423.5158
Strip Mall	219297	1.1800e-003	0.0108	9.0300e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	11.7025	11.7025	2.2000e-004	2.1000e-004	11.7721
Total		**0.1081**	**0.9527**	**0.6058**	**5.8900e-003**		**0.0747**	**0.0747**		**0.0747**	**0.0747**	**0.0000**	**1,069.7228**	**1,069.7228**	**0.0205**	**0.0196**	**1,076.0797**

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.77656e+006	9.5800e-003	0.0819	0.0348	5.2000e-004		6.6200e-003	6.6200e-003		6.6200e-003	6.6200e-003	0.0000	94.8040	94.8040	1.8200e-003	1.7400e-003	95.3674
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	515772	2.7800e-003	0.0238	0.0101	1.5000e-004		1.9200e-003	1.9200e-003		1.9200e-003	1.9200e-003	0.0000	27.5236	27.5236	5.3000e-004	5.0000e-004	27.6871
Elementary School	263451	1.4200e-003	0.0129	0.0109	8.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	14.0587	14.0587	2.7000e-004	2.6000e-004	14.1423
High School	316141	1.7000e-003	0.0155	0.0130	9.0000e-005		1.1800e-003	1.1800e-003		1.1800e-003	1.1800e-003	0.0000	16.8705	16.8705	3.2000e-004	3.1000e-004	16.9707
Industrial Park	855079	4.6100e-003	0.0419	0.0352	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003	0.0000	45.6303	45.6303	8.7000e-004	8.4000e-004	45.9014
Office Park	3.74398e+006	0.0202	0.1835	0.1542	1.1000e-003		0.0140	0.0140		0.0140	0.0140	0.0000	199.7933	199.7933	3.8300e-003	3.6600e-003	200.9805
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Place of Worship	3.8994e+006	0.0210	0.1912	0.1606	1.1500e-003		0.0145	0.0145		0.0145	0.0145	0.0000	208.0867	208.0867	3.9900e-003	3.8100e-003	209.3232
Regional Shopping Center	566664	3.0600e-003	0.0278	0.0233	1.7000e-004		2.1100e-003	2.1100e-003		2.1100e-003	2.1100e-003	0.0000	30.2394	30.2394	5.8000e-004	5.5000e-004	30.4191
Single Family Housing	7.8895e+006	0.0425	0.3635	0.1547	2.3200e-003		0.0294	0.0294		0.0294	0.0294	0.0000	421.0139	421.0139	8.0700e-003	7.7200e-003	423.5158
Strip Mall	219297	1.1800e-003	0.0108	9.0300e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	11.7025	11.7025	2.2000e-004	2.1000e-004	11.7721
Total		**0.1081**	**0.9527**	**0.6058**	**5.8900e-003**		**0.0747**	**0.0747**		**0.0747**	**0.0747**	**0.0000**	**1,069.7228**	**1,069.7228**	**0.0205**	**0.0196**	**1,076.0797**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	734628	119.2867	0.0110	1.3300e-003	119.9588
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	133268	21.6396	1.9900e-003	2.4000e-004	21.7616
Elementary School	123710	20.0877	1.8500e-003	2.2000e-004	20.2009
High School	148452	24.1053	2.2200e-003	2.7000e-004	24.2411
Industrial Park	915685	148.6862	0.0137	1.6600e-003	149.5240
Office Park	3.69665e+006	600.2513	0.0553	6.7100e-003	603.6333
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	1.62466e+006	263.8070	0.0243	2.9500e-003	265.2934
Regional Shopping Center	1.18398e+006	192.2512	0.0177	2.1500e-003	193.3344
Single Family Housing	2.63688e+006	428.1682	0.0395	4.7800e-003	430.5807
Strip Mall	458197	74.4006	6.8600e-003	8.3000e-004	74.8198
Total		**1,892.6838**	**0.1745**	**0.0211**	**1,903.3480**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	734628	119.2867	0.0110	1.3300e-003	119.9588
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	133268	21.6396	1.9900e-003	2.4000e-004	21.7616
Elementary School	123710	20.0877	1.8500e-003	2.2000e-004	20.2009
High School	148452	24.1053	2.2200e-003	2.7000e-004	24.2411
Industrial Park	915685	148.6862	0.0137	1.6600e-003	149.5240
Office Park	3.69665e+006	600.2513	0.0553	6.7100e-003	603.6333
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	1.62466e+006	263.8070	0.0243	2.9500e-003	265.2934
Regional Shopping Center	1.18398e+006	192.2512	0.0177	2.1500e-003	193.3344
Single Family Housing	2.63688e+006	428.1682	0.0395	4.7800e-003	430.5807
Strip Mall	458197	74.4006	6.8600e-003	8.3000e-004	74.8198
Total		**1,892.6838**	**0.1745**	**0.0211**	**1,903.3480**

6.0 Area Detail

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	6.5319	0.0653	5.6697	3.0000e-004		0.0314	0.0314		0.0314	0.0314	0.0000	9.2729	9.2729	8.9100e-003	0.0000	9.4956
Unmitigated	6.5319	0.0653	5.6697	3.0000e-004		0.0314	0.0314		0.0314	0.0314	0.0000	9.2729	9.2729	8.9100e-003	0.0000	9.4956

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.7920					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1708	0.0653	5.6697	3.0000e-004		0.0314	0.0314		0.0314	0.0314	0.0000	9.2729	9.2729	8.9100e-003	0.0000	9.4956
Total	**6.5319**	**0.0653**	**5.6697**	**3.0000e-004**		**0.0314**	**0.0314**		**0.0314**	**0.0314**	**0.0000**	**9.2729**	**9.2729**	**8.9100e-003**	**0.0000**	**9.4956**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.7920					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1708	0.0653	5.6697	3.0000e-004		0.0314	0.0314		0.0314	0.0314	0.0000	9.2729	9.2729	8.9100e-003	0.0000	9.4956
Total	**6.5319**	**0.0653**	**5.6697**	**3.0000e-004**		**0.0314**	**0.0314**		**0.0314**	**0.0314**	**0.0000**	**9.2729**	**9.2729**	**8.9100e-003**	**0.0000**	**9.4956**

7.0 Water Detail

7.1 Mitigation Measures Water

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	209.7333	0.1480	0.0855	238.8966
Unmitigated	209.7333	0.1480	0.0855	238.8966

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	12.2926 / 7.74969	18.6989	0.0163	9.6200e-003	21.9725
City Park	0 / 83.4514	47.4270	4.3700e-003	5.3000e-004	47.6943
Condo/Townhouse	1.78066 / 1.12259	2.7087	2.3600e-003	1.3900e-003	3.1828
Elementary School	0.505126 / 1.2989	1.3256	7.2000e-004	4.0000e-004	1.4632
High School	0.694309 / 1.78537	1.8220	9.9000e-004	5.5000e-004	2.0113
Industrial Park	15.2348 / 0	17.7159	0.0197	0.0119	21.7422
Office Park	42.0625 / 25.7802	63.5642	0.0557	0.0329	74.7632
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	3.4302 / 5.36519	7.0380	4.7100e-003	2.7000e-003	7.9617
Regional Shopping Center	7.81613 / 4.79053	11.8116	0.0104	6.1100e-003	13.8927
Single Family Housing	21.7269 / 13.6974	33.0499	0.0288	0.0170	38.8358
Strip Mall	3.02512 / 1.85411	4.5715	4.0100e-003	2.3700e-003	5.3770
Total		**209.7333**	**0.1480**	**0.0854**	**238.8966**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	12.2926 / 7.74969	18.6989	0.0163	9.6200e-003	21.9725
City Park	0 / 83.4514	47.4270	4.3700e-003	5.3000e-004	47.6943
Condo/Townhouse	1.78066 / 1.12259	2.7087	2.3600e-003	1.3900e-003	3.1828
Elementary School	0.505126 / 1.2989	1.3256	7.2000e-004	4.0000e-004	1.4632
High School	0.694309 / 1.78537	1.8220	9.9000e-004	5.5000e-004	2.0113
Industrial Park	15.2348 / 0	17.7159	0.0197	0.0119	21.7422
Office Park	42.0625 / 25.7802	63.5642	0.0557	0.0329	74.7632
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	3.4302 / 5.36519	7.0380	4.7100e-003	2.7000e-003	7.9617
Regional Shopping Center	7.81613 / 4.79053	11.8116	0.0104	6.1100e-003	13.8927
Single Family Housing	21.7269 / 13.6974	33.0499	0.0288	0.0170	38.8358
Strip Mall	3.02512 / 1.85411	4.5715	4.0100e-003	2.3700e-003	5.3770
Total		**209.7333**	**0.1480**	**0.0854**	**238.8966**

8.0 Waste Detail

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	315.8458	18.6660	0.0000	782.4947
Unmitigated	315.8458	18.6660	0.0000	782.4947

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	86.79	17.6176	1.0412	0.0000	43.6468
City Park	6.02	1.2220	0.0722	0.0000	3.0275
Condo/Townhouse	12.57	2.5516	0.1508	0.0000	6.3215
Elementary School	22.65	4.5978	0.2717	0.0000	11.3907
High School	27.18	5.5173	0.3261	0.0000	13.6689
Industrial Park	81.69	16.5823	0.9800	0.0000	41.0820
Office Park	220.09	44.6763	2.6403	0.0000	110.6836
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	624.89	126.8470	7.4964	0.0000	314.2581
Regional Shopping Center	110.8	22.4914	1.3292	0.0000	55.7215
Single Family Housing	320.4	65.0383	3.8437	0.0000	161.1297
Strip Mall	42.88	8.7043	0.5144	0.0000	21.5644
Total		**315.8458**	**18.6660**	**0.0000**	**782.4947**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	86.79	17.6176	1.0412	0.0000	43.6468
City Park	6.02	1.2220	0.0722	0.0000	3.0275
Condo/Townhouse	12.57	2.5516	0.1508	0.0000	6.3215
Elementary School	22.65	4.5978	0.2717	0.0000	11.3907
High School	27.18	5.5173	0.3261	0.0000	13.6689
Industrial Park	81.69	16.5823	0.9800	0.0000	41.0820
Office Park	220.09	44.6763	2.6403	0.0000	110.6836
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	624.89	126.8470	7.4964	0.0000	314.2581
Regional Shopping Center	110.8	22.4914	1.3292	0.0000	55.7215
Single Family Housing	320.4	65.0383	3.8437	0.0000	161.1297
Strip Mall	42.88	8.7043	0.5144	0.0000	21.5644
Total		**315.8458**	**18.6660**	**0.0000**	**782.4947**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	130,130.5911	0.0000	0.0000	130,130.5911

11.1 Vegetation Land Change

Vegetation Type

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	0 / 110.85	687.2700	0.0000	0.0000	687.2700
Cropland	0 / 35.95	222.8900	0.0000	0.0000	222.8900
Cropland	0 / 55.5	344.1000	0.0000	0.0000	344.1000
Grassland	76.56 / 229.68	659.9472	0.0000	0.0000	659.9472
Scrub	0 / 10.36	148.1480	0.0000	0.0000	148.1480
Scrub	0 / 13.14	187.9020	0.0000	0.0000	187.9020
Scrub	0 / 13.5	193.0500	0.0000	0.0000	193.0500
Scrub	0 / 13.72	196.1960	0.0000	0.0000	196.1960
Scrub	0 / 15.72	224.7960	0.0000	0.0000	224.7960
Scrub	0 / 67.1	959.5300	0.0000	0.0000	959.5300
Trees	0 / 13.9	1,542.9000	0.0000	0.0000	1,542.9000
Trees	0 / 19.65	2,181.1500	0.0000	0.0000	2,181.1500
Trees	0 / 2.79	309.6900	0.0000	0.0000	309.6900
Trees	0 / 21.85	2,425.3500	0.0000	0.0000	2,425.3500
Trees	0 / 22.65	2,514.1500	0.0000	0.0000	2,514.1500
Trees	0 / 3.8	421.8000	0.0000	0.0000	421.8000
Trees	0 / 92.15	10,228.6500	0.0000	0.0000	10,228.6500
Trees	10.68 / 24.03	1,481.8500	0.0000	0.0000	1,481.8500
Trees	0 / 12.95	1,437.4500	0.0000	0.0000	1,437.4500

West Jackson Highway Master Plan (Proposed Project - First Year of Construction) - County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Wetlands	0 / 2.59	0.0000	0.0000	0.0000	0.0000
Wetlands	0 / 25.52	0.0000	0.0000	0.0000	0.0000
Wetlands	10.79 / 7.19	0.0000	0.0000	0.0000	0.0000
Wetlands	16.65 / 11.1	0.0000	0.0000	0.0000	0.0000
Total		**26,366.8192**	**0.0000**	**0.0000**	**26,366.8192**

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	146559	103,763.7719	0.0000	0.0000	103,763.7719
Total		**103,763.7719**	**0.0000**	**0.0000**	**103,763.7719**

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050)

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	7,100.00	1000sqft	492.00	7,099,844.00	0
Elementary School	523.00	1000sqft	60.00	522,720.00	0
High School	627.00	1000sqft	72.00	627,264.00	0
Place of Worship	3,289.00	1000sqft	76.00	3,288,780.00	0
Industrial Park	1,976.00	1000sqft	90.00	1,976,299.00	0
Other Asphalt Surfaces	230.00	Acre	230.00	10,010,088.00	0
City Park	2,101.00	Acre	2,101.00	91,519,560.00	0
Apartments Mid Rise	5,660.00	Dwelling Unit	189.00	5,660,000.00	15112
Condo/Townhouse	820.00	Dwelling Unit	59.00	820,000.00	2189
Single Family Housing	10,004.00	Dwelling Unit	2,071.00	18,007,200.00	26711
Regional Shopping Center	3,166.00	1000sqft	273.00	3,165,723.00	0
Strip Mall	1,225.00	1000sqft	45.00	1,225,125.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2050
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	2	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project specific information

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use - *Based on Land Use Maps minus existing building square footage and acres

Construction Phase - *No Construction

Off-road Equipment - *No Construction

Trips and VMT - Project specific information

Energy Use - Project specific information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10,000.00	86.00
tblEnergyUse	LightingElect	741.44	348.48
tblEnergyUse	LightingElect	1,001.10	470.52
tblEnergyUse	LightingElect	3.10	2.17
tblEnergyUse	LightingElect	3.10	2.17
tblEnergyUse	LightingElect	3.71	2.60
tblEnergyUse	LightingElect	4.00	2.80
tblEnergyUse	LightingElect	4.57	3.20
tblEnergyUse	LightingElect	5.33	3.73
tblEnergyUse	LightingElect	1,608.84	756.15
tblEnergyUse	LightingElect	5.33	3.73
tblEnergyUse	T24E	98.18	46.14
tblEnergyUse	T24E	80.14	37.67
tblEnergyUse	T24E	1.83	1.28
tblEnergyUse	T24E	1.83	1.28
tblEnergyUse	T24E	4.44	3.11
tblEnergyUse	T24E	5.15	3.61
tblEnergyUse	T24E	3.05	2.13
tblEnergyUse	T24E	2.91	2.04
tblEnergyUse	T24E	142.58	67.01
tblEnergyUse	T24E	2.91	2.04
tblEnergyUse	T24NG	6,729.23	3,162.74

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblEnergyUse	T24NG	16,185.01	7,606.95
tblEnergyUse	T24NG	14.46	10.22
tblEnergyUse	T24NG	14.46	10.22
tblEnergyUse	T24NG	12.30	8.61
tblEnergyUse	T24NG	14.84	10.39
tblEnergyUse	T24NG	23.15	16.20
tblEnergyUse	T24NG	4.44	3.11
tblEnergyUse	T24NG	20,971.81	9,856.75
tblEnergyUse	T24NG	4.44	3.11
tblLandUse	LandUseSquareFeet	7,100,000.00	7,099,844.00
tblLandUse	LandUseSquareFeet	523,000.00	522,720.00
tblLandUse	LandUseSquareFeet	627,000.00	627,264.00
tblLandUse	LandUseSquareFeet	3,289,000.00	3,288,780.00
tblLandUse	LandUseSquareFeet	1,976,000.00	1,976,299.00
tblLandUse	LandUseSquareFeet	10,018,800.00	10,010,088.00
tblLandUse	LandUseSquareFeet	3,166,000.00	3,165,723.00
tblLandUse	LandUseSquareFeet	1,225,000.00	1,225,125.00
tblLandUse	LotAcreage	162.99	492.00
tblLandUse	LotAcreage	12.01	60.00
tblLandUse	LotAcreage	14.39	72.00
tblLandUse	LotAcreage	75.51	76.00
tblLandUse	LotAcreage	45.36	90.00
tblLandUse	LotAcreage	148.95	189.00
tblLandUse	LotAcreage	51.25	59.00
tblLandUse	LotAcreage	3,248.05	2,071.00
tblLandUse	LotAcreage	72.68	273.00
tblLandUse	LotAcreage	28.12	45.00
tblProjectCharacteristics	CH4IntensityFactor	0.033	0
tblProjectCharacteristics	CO2IntensityFactor	357.98	2

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblProjectCharacteristics	N2OIntensityFactor	0.004	0
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	146,559.00
tblTripsAndVMT	VendorTripLength	8.50	6.50
tblTripsAndVMT	WorkerTripLength	15.00	10.00

2.0 Emissions Summary

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.0916	0.8264	0.8480	1.7100e-003	4.7400e-003	0.0367	0.0414	1.2600e-003	0.0341	0.0353	0.0000	149.6979	149.6979	0.0409	9.0000e-005	150.7490
Maximum	**0.0916**	**0.8264**	**0.8480**	**1.7100e-003**	**4.7400e-003**	**0.0367**	**0.0414**	**1.2600e-003**	**0.0341**	**0.0353**	**0.0000**	**149.6979**	**149.6979**	**0.0409**	**9.0000e-005**	**150.7490**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.0916	0.8264	0.8480	1.7100e-003	4.7400e-003	0.0367	0.0414	1.2600e-003	0.0341	0.0353	0.0000	149.6977	149.6977	0.0409	9.0000e-005	150.7488
Maximum	**0.0916**	**0.8264**	**0.8480**	**1.7100e-003**	**4.7400e-003**	**0.0367**	**0.0414**	**1.2600e-003**	**0.0341**	**0.0353**	**0.0000**	**149.6977**	**149.6977**	**0.0409**	**9.0000e-005**	**150.7488**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
9	1-1-2025	3-31-2025	0.6863	0.6863
10	4-1-2025	6-30-2025	0.2288	0.2288
		Highest	0.6863	0.6863

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Energy	2.1056	18.6508	12.4766	0.1149		1.4548	1.4548		1.4548	1.4548	0.0000	21,104.3683	21,104.3683	0.3994	0.3820	21,228.2012
Mobile	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357
Waste						0.0000	0.0000		0.0000	0.0000	9,476.3367	0.0000	9,476.3367	560.0355	0.0000	23,477.2232
Water						0.0000	0.0000		0.0000	0.0000	1,152.3335	28.7139	1,181.0474	3.9662	2.5060	2,026.9753
Total	**312.5162**	**163.6450**	**1,450.5293**	**2.9419**	**415.5609**	**3.6743**	**419.2352**	**110.9292**	**3.5920**	**114.5212**	**10,628.6702**	**282,983.2580**	**293,611.9281**	**582.4050**	**15.7004**	**312,850.7597**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Energy	2.1056	18.6508	12.4766	0.1149		1.4548	1.4548		1.4548	1.4548	0.0000	21,104.3683	21,104.3683	0.3994	0.3820	21,228.2012
Mobile	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357
Waste						0.0000	0.0000		0.0000	0.0000	9,476.3367	0.0000	9,476.3367	560.0355	0.0000	23,477.2232
Water						0.0000	0.0000		0.0000	0.0000	1,152.3335	28.7139	1,181.0474	3.9662	2.5060	2,026.9753
Total	**312.5162**	**163.6450**	**1,450.5293**	**2.9419**	**415.5609**	**3.6743**	**419.2352**	**110.9292**	**3.5920**	**114.5212**	**10,628.6702**	**282,983.2580**	**293,611.9281**	**582.4050**	**15.7004**	**312,850.7597**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	103,763.7719
Vegetation Land Change	23,796.1197
Total	**127,559.8916**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2025	4/30/2025	5	86	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 230

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0900	0.8255	0.8350	1.6700e-003		0.0367	0.0367		0.0341	0.0341	0.0000	146.1899	146.1899	0.0408	0.0000	147.2104
Total	**0.0900**	**0.8255**	**0.8350**	**1.6700e-003**		**0.0367**	**0.0367**		**0.0341**	**0.0341**	**0.0000**	**146.1899**	**146.1899**	**0.0408**	**0.0000**	**147.2104**

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3.2 Demolition - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6200e-003	9.1000e-004	0.0130	4.0000e-005	4.7400e-003	2.0000e-005	4.7600e-003	1.2600e-003	2.0000e-005	1.2800e-003	0.0000	3.5080	3.5080	1.0000e-004	9.0000e-005	3.5386
Total	**1.6200e-003**	**9.1000e-004**	**0.0130**	**4.0000e-005**	**4.7400e-003**	**2.0000e-005**	**4.7600e-003**	**1.2600e-003**	**2.0000e-005**	**1.2800e-003**	**0.0000**	**3.5080**	**3.5080**	**1.0000e-004**	**9.0000e-005**	**3.5386**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0900	0.8255	0.8350	1.6700e-003		0.0367	0.0367		0.0341	0.0341	0.0000	146.1897	146.1897	0.0408	0.0000	147.2102
Total	**0.0900**	**0.8255**	**0.8350**	**1.6700e-003**		**0.0367**	**0.0367**		**0.0341**	**0.0341**	**0.0000**	**146.1897**	**146.1897**	**0.0408**	**0.0000**	**147.2102**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6200e-003	9.1000e-004	0.0130	4.0000e-005	4.7400e-003	2.0000e-005	4.7600e-003	1.2600e-003	2.0000e-005	1.2800e-003	0.0000	3.5080	3.5080	1.0000e-004	9.0000e-005	3.5386
Total	**1.6200e-003**	**9.1000e-004**	**0.0130**	**4.0000e-005**	**4.7400e-003**	**2.0000e-005**	**4.7600e-003**	**1.2600e-003**	**2.0000e-005**	**1.2800e-003**	**0.0000**	**3.5080**	**3.5080**	**1.0000e-004**	**9.0000e-005**	**3.5386**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357
Unmitigated	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	30,790.40	27,790.60	23149.40	107,804,054	107,804,054
City Park	1,638.78	4,117.96	4601.19	6,531,404	6,531,404
Condo/Townhouse	6,002.40	6,674.80	5149.60	22,012,248	22,012,248
Elementary School	10,208.96	0.00	0.00	22,870,533	22,870,533
High School	8,821.89	2,495.46	1072.17	26,479,276	26,479,276
Industrial Park	6,659.12	5,019.04	2450.24	21,405,608	21,405,608
Office Park	78,597.00	11,644.00	5396.00	185,910,809	185,910,809
Other Asphalt Surfaces	0.00	0.00	0.00		
Place of Worship	22,858.55	19,701.11	90875.07	62,147,813	62,147,813
Regional Shopping Center	119,516.50	146,015.92	66802.60	236,140,221	236,140,221
Single Family Housing	94,437.76	95,438.16	85534.20	343,661,153	343,661,153
Strip Mall	54,292.00	51,499.00	25026.75	89,196,055	89,196,055
Total	433,823.36	370,396.05	310,057.22	1,124,159,173	1,124,159,173

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	15.00	7.50	8.50	33.00	48.00	19.00	66	28	6
Condo/Townhouse	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3
Elementary School	15.00	7.50	8.50	65.00	30.00	5.00	63	25	12
High School	15.00	7.50	8.50	77.80	17.20	5.00	75	19	6
Industrial Park	15.00	7.50	8.50	59.00	28.00	13.00	79	19	2
Office Park	15.00	7.50	8.50	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	15.00	7.50	8.50	0.00	0.00	0.00	0	0	0
Place of Worship	15.00	7.50	8.50	0.00	95.00	5.00	64	25	11
Regional Shopping Center	15.00	7.50	8.50	16.30	64.70	19.00	54	35	11
Single Family Housing	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3
Strip Mall	15.00	7.50	8.50	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
City Park	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Condo/Townhouse	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Elementary School	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
High School	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Industrial Park	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Office Park	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Other Asphalt Surfaces	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Place of Worship	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Regional Shopping Center	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Single Family Housing	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Strip Mall	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091

5.0 Energy Detail

Historical Energy Use: N

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5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	265.8534	265.8534	0.0000	0.0000	265.8534
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	265.8534	265.8534	0.0000	0.0000	265.8534
NaturalGas Mitigated	2.1056	18.6508	12.4766	0.1149		1.4548	1.4548		1.4548	1.4548	0.0000	20,838.5149	20,838.5149	0.3994	0.3820	20,962.3478
NaturalGas Unmitigated	2.1056	18.6508	12.4766	0.1149		1.4548	1.4548		1.4548	1.4548	0.0000	20,838.5149	20,838.5149	0.3994	0.3820	20,962.3478

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5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.31095e+007	0.1785	1.5256	0.6492	9.7400e-003		0.1234	0.1234		0.1234	0.1234	0.0000	1,766.8505	1,766.8505	0.0339	0.0324	1,777.3500
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	8.44104e+006	0.0455	0.3890	0.1655	2.4800e-003		0.0315	0.0315		0.0315	0.0315	0.0000	450.4460	450.4460	8.6300e-003	8.2600e-003	453.1228
Elementary School	5.68719e+006	0.0307	0.2788	0.2342	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.4903	303.4903	5.8200e-003	5.5600e-003	305.2938
High School	6.82463e+006	0.0368	0.3345	0.2810	2.0100e-003		0.0254	0.0254		0.0254	0.0254	0.0000	364.1884	364.1884	6.9800e-003	6.6800e-003	366.3526
Industrial Park	1.83598e+007	0.0990	0.9000	0.7560	5.4000e-003		0.0684	0.0684		0.0684	0.0684	0.0000	979.7498	979.7498	0.0188	0.0180	985.5720
Office Park	8.07252e+007	0.4353	3.9571	3.3240	0.0237		0.3007	0.3007		0.3007	0.3007	0.0000	4,307.8055	4,307.8055	0.0826	0.0790	4,333.4046
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Place of Worship	9.41249e+007	0.5075	4.6140	3.8757	0.0277		0.3507	0.3507		0.3507	0.3507	0.0000	5,022.8622	5,022.8622	0.0963	0.0921	5,052.7106
Regional Shopping Center	1.27895e+007	0.0690	0.6269	0.5266	3.7600e-003		0.0477	0.0477		0.0477	0.0477	0.0000	682.4975	682.4975	0.0131	0.0125	686.5533
Single Family Housing	1.25488e+008	0.6767	5.7823	2.4605	0.0369		0.4675	0.4675		0.4675	0.4675	0.0000	6,696.5002	6,696.5002	0.1284	0.1228	6,736.2942
Strip Mall	4.94951e+006	0.0267	0.2426	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	264.1244	264.1244	5.0600e-003	4.8400e-003	265.6940
Total		**2.1056**	**18.6508**	**12.4766**	**0.1149**		**1.4548**	**1.4548**		**1.4548**	**1.4548**	**0.0000**	**20,838.5149**	**20,838.5149**	**0.3994**	**0.3820**	**20,962.3478**

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5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.31095e+007	0.1785	1.5256	0.6492	9.7400e-003		0.1234	0.1234		0.1234	0.1234	0.0000	1,766.8505	1,766.8505	0.0339	0.0324	1,777.3500
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	8.44104e+006	0.0455	0.3890	0.1655	2.4800e-003		0.0315	0.0315		0.0315	0.0315	0.0000	450.4460	450.4460	8.6300e-003	8.2600e-003	453.1228
Elementary School	5.68719e+006	0.0307	0.2788	0.2342	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.4903	303.4903	5.8200e-003	5.5600e-003	305.2938
High School	6.82463e+006	0.0368	0.3345	0.2810	2.0100e-003		0.0254	0.0254		0.0254	0.0254	0.0000	364.1884	364.1884	6.9800e-003	6.6800e-003	366.3526
Industrial Park	1.83598e+007	0.0990	0.9000	0.7560	5.4000e-003		0.0684	0.0684		0.0684	0.0684	0.0000	979.7498	979.7498	0.0188	0.0180	985.5720
Office Park	8.07252e+007	0.4353	3.9571	3.3240	0.0237		0.3007	0.3007		0.3007	0.3007	0.0000	4,307.8055	4,307.8055	0.0826	0.0790	4,333.4046
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Place of Worship	9.41249e+007	0.5075	4.6140	3.8757	0.0277		0.3507	0.3507		0.3507	0.3507	0.0000	5,022.8622	5,022.8622	0.0963	0.0921	5,052.7106
Regional Shopping Center	1.27895e+007	0.0690	0.6269	0.5266	3.7600e-003		0.0477	0.0477		0.0477	0.0477	0.0000	682.4975	682.4975	0.0131	0.0125	686.5533
Single Family Housing	1.25488e+008	0.6767	5.7823	2.4605	0.0369		0.4675	0.4675		0.4675	0.4675	0.0000	6,696.5002	6,696.5002	0.1284	0.1228	6,736.2942
Strip Mall	4.94951e+006	0.0267	0.2426	0.2038	1.4600e-003		0.0184	0.0184		0.0184	0.0184	0.0000	264.1244	264.1244	5.0600e-003	4.8400e-003	265.6940
Total		**2.1056**	**18.6508**	**12.4766**	**0.1149**		**1.4548**	**1.4548**		**1.4548**	**1.4548**	**0.0000**	**20,838.5149**	**20,838.5149**	**0.3994**	**0.3820**	**20,962.3478**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.95198e+007	17.7080	0.0000	0.0000	17.7080
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	3.52862e+006	3.2011	0.0000	0.0000	3.2011
Elementary School	2.93769e+006	2.6650	0.0000	0.0000	2.6650
High School	3.52522e+006	3.1980	0.0000	0.0000	3.1980
Industrial Park	2.26484e+007	20.5463	0.0000	0.0000	20.5463
Office Park	9.1446e+007	82.9584	0.0000	0.0000	82.9584
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	4.12084e+007	37.3836	0.0000	0.0000	37.3836
Regional Shopping Center	2.77001e+007	25.1291	0.0000	0.0000	25.1291
Single Family Housing	6.98192e+007	63.3389	0.0000	0.0000	63.3389
Strip Mall	1.07198e+007	9.7249	0.0000	0.0000	9.7249
Total		**265.8534**	**0.0000**	**0.0000**	**265.8534**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.95198e+007	17.7080	0.0000	0.0000	17.7080
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	3.52862e+006	3.2011	0.0000	0.0000	3.2011
Elementary School	2.93769e+006	2.6650	0.0000	0.0000	2.6650
High School	3.52522e+006	3.1980	0.0000	0.0000	3.1980
Industrial Park	2.26484e+007	20.5463	0.0000	0.0000	20.5463
Office Park	9.1446e+007	82.9584	0.0000	0.0000	82.9584
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	4.12084e+007	37.3836	0.0000	0.0000	37.3836
Regional Shopping Center	2.77001e+007	25.1291	0.0000	0.0000	25.1291
Single Family Housing	6.98192e+007	63.3389	0.0000	0.0000	63.3389
Strip Mall	1.07198e+007	9.7249	0.0000	0.0000	9.7249
Total		**265.8534**	**0.0000**	**0.0000**	**265.8534**

6.0 Area Detail

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Unmitigated	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	23.7608					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	167.0733					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0855	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Total	**195.9195**	**1.9559**	**169.5037**	**9.0000e-003**		**0.9436**	**0.9436**		**0.9436**	**0.9436**	**0.0000**	**278.1842**	**278.1842**	**0.2656**	**0.0000**	**284.8243**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	23.7608					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	167.0733					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0855	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Total	**195.9195**	**1.9559**	**169.5037**	**9.0000e-003**		**0.9436**	**0.9436**		**0.9436**	**0.9436**	**0.0000**	**278.1842**	**278.1842**	**0.2656**	**0.0000**	**284.8243**

7.0 Water Detail

7.1 Mitigation Measures Water

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1,181.0474	3.9662	2.5060	2,026.9753
Unmitigated	1,181.0474	3.9662	2.5060	2,026.9753

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	368.772 / 232.487	132.8771	0.4491	0.2837	228.6566
City Park	0 / 2503.3	7.9484	0.0000	0.0000	7.9484
Condo/Townhouse	53.4263 / 33.6818	19.2508	0.0651	0.0411	33.1269
Elementary School	15.1654 / 38.9967	5.5579	0.0185	0.0117	9.4968
High School	20.8193 / 53.5354	7.6300	0.0254	0.0160	13.0373
Industrial Park	456.95 / 0	163.7351	0.5565	0.3516	282.4168
Office Park	1261.91 / 773.428	454.6254	1.5367	0.9709	782.3758
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	102.909 / 160.961	37.3857	0.1253	0.0792	64.1139
Regional Shopping Center	234.514 / 143.734	84.4877	0.2856	0.1804	145.3969
Single Family Housing	651.801 / 410.918	234.8591	0.7937	0.5015	404.1486
Strip Mall	90.7388 / 55.6141	32.6903	0.1105	0.0698	56.2575
Total		**1,181.0473**	**3.9662**	**2.5060**	**2,026.9753**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	368.772 / 232.487	132.8771	0.4491	0.2837	228.6566
City Park	0 / 2503.3	7.9484	0.0000	0.0000	7.9484
Condo/Townhouse	53.4263 / 33.6818	19.2508	0.0651	0.0411	33.1269
Elementary School	15.1654 / 38.9967	5.5579	0.0185	0.0117	9.4968
High School	20.8193 / 53.5354	7.6300	0.0254	0.0160	13.0373
Industrial Park	456.95 / 0	163.7351	0.5565	0.3516	282.4168
Office Park	1261.91 / 773.428	454.6254	1.5367	0.9709	782.3758
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	102.909 / 160.961	37.3857	0.1253	0.0792	64.1139
Regional Shopping Center	234.514 / 143.734	84.4877	0.2856	0.1804	145.3969
Single Family Housing	651.801 / 410.918	234.8591	0.7937	0.5015	404.1486
Strip Mall	90.7388 / 55.6141	32.6903	0.1105	0.0698	56.2575
Total		**1,181.0473**	**3.9662**	**2.5060**	**2,026.9753**

8.0 Waste Detail

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9,476.3367	560.0355	0.0000	23,477.2232
Unmitigated	9,476.3367	560.0355	0.0000	23,477.2232

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	2603.6	528.5073	31.2339	0.0000	1,309.3544
City Park	180.69	36.6784	2.1676	0.0000	90.8693
Condo/Townhouse	377.2	76.5682	4.5251	0.0000	189.6945
Elementary School	679.9	138.0136	8.1564	0.0000	341.9227
High School	815.1	165.4579	9.7783	0.0000	409.9150
Industrial Park	2450.24	497.3766	29.3941	0.0000	1,232.2294
Office Park	6603	1,340.3493	79.2124	0.0000	3,320.6587
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	18747.3	3,805.5325	224.9005	0.0000	9,428.0456
Regional Shopping Center	3324.3	674.8029	39.8797	0.0000	1,671.7955
Single Family Housing	9615.96	1,951.9530	115.3571	0.0000	4,835.8809
Strip Mall	1286.25	261.0971	15.4304	0.0000	646.8571
Total		**9,476.3368**	**560.0355**	**0.0000**	**23,477.2232**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	2603.6	528.5073	31.2339	0.0000	1,309.3544
City Park	180.69	36.6784	2.1676	0.0000	90.8693
Condo/Townhouse	377.2	76.5682	4.5251	0.0000	189.6945
Elementary School	679.9	138.0136	8.1564	0.0000	341.9227
High School	815.1	165.4579	9.7783	0.0000	409.9150
Industrial Park	2450.24	497.3766	29.3941	0.0000	1,232.2294
Office Park	6603	1,340.3493	79.2124	0.0000	3,320.6587
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	18747.3	3,805.5325	224.9005	0.0000	9,428.0456
Regional Shopping Center	3324.3	674.8029	39.8797	0.0000	1,671.7955
Single Family Housing	9615.96	1,951.9530	115.3571	0.0000	4,835.8809
Strip Mall	1286.25	261.0971	15.4304	0.0000	646.8571
Total		**9,476.3368**	**560.0355**	**0.0000**	**23,477.2232**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	127,559.8916	0.0000	0.0000	127,559.8916

11.1 Vegetation Land Change

Vegetation Type

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	0 / 110.85	687.2700	0.0000	0.0000	687.2700
Cropland	0 / 35.95	222.8900	0.0000	0.0000	222.8900
Cropland	0 / 55.5	344.1000	0.0000	0.0000	344.1000
Grassland	21.85 / 0	-94.1735	0.0000	0.0000	-94.1735
Grassland	22.65 / 4.53	-78.0972	0.0000	0.0000	-78.0972
Grassland	25.9 / 0	-111.6290	0.0000	0.0000	-111.6290
Grassland	3.8 / 0	-16.3780	0.0000	0.0000	-16.3780
Grassland	35.37 / 0	-152.4447	0.0000	0.0000	-152.4447
Grassland	61.12 / 28.76	-139.4716	0.0000	0.0000	-139.4716
Grassland	74.46 / 61.32	-56.6334	0.0000	0.0000	-56.6334
Grassland	76.56 / 229.68	659.9472	0.0000	0.0000	659.9472
Grassland	91.5 / 77.78	-59.1332	0.0000	0.0000	-59.1332
Grassland	92.15 / 0	-397.1665	0.0000	0.0000	-397.1665
Grassland	94.35 / 44.4	-215.2845	0.0000	0.0000	-215.2845
Grassland	13.35 / 0	-57.5385	0.0000	0.0000	-57.5385
Grassland	13.9 / 0	-59.9090	0.0000	0.0000	-59.9090
Grassland	134.2 / 0	-578.4020	0.0000	0.0000	-578.4020
Grassland	15 / 0	-64.6500	0.0000	0.0000	-64.6500
Grassland	199.53 / 88.68	-477.7635	0.0000	0.0000	-477.7635

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	2.79 / 0	-12.0249	0.0000	0.0000	-12.0249
Scrub	0 / 10.36	148.1480	0.0000	0.0000	148.1480
Scrub	0 / 13.14	187.9020	0.0000	0.0000	187.9020
Scrub	0 / 13.5	193.0500	0.0000	0.0000	193.0500
Scrub	0 / 13.72	196.1960	0.0000	0.0000	196.1960
Scrub	0 / 15.72	224.7960	0.0000	0.0000	224.7960
Scrub	0 / 67.1	959.5300	0.0000	0.0000	959.5300
Trees	0 / 12.95	1,437.4500	0.0000	0.0000	1,437.4500
Trees	0 / 13.9	1,542.9000	0.0000	0.0000	1,542.9000
Trees	0 / 19.65	2,181.1500	0.0000	0.0000	2,181.1500
Trees	0 / 2.79	309.6900	0.0000	0.0000	309.6900
Trees	0 / 21.85	2,425.3500	0.0000	0.0000	2,425.3500
Trees	0 / 22.65	2,514.1500	0.0000	0.0000	2,514.1500
Trees	0 / 3.8	421.8000	0.0000	0.0000	421.8000
Trees	0 / 92.15	10,228.6500	0.0000	0.0000	10,228.6500
Trees	10.68 / 24.03	1,481.8500	0.0000	0.0000	1,481.8500
Wetlands	0 / 2.59	0.0000	0.0000	0.0000	0.0000
Wetlands	0 / 25.52	0.0000	0.0000	0.0000	0.0000
Wetlands	10.79 / 7.19	0.0000	0.0000	0.0000	0.0000

West Jackson Highway Master Plan (Proposed Project - Unmitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Wetlands	16.65 / 11.1	0.0000	0.0000	0.0000	0.0000
Total		**23,796.1197**	**0.0000**	**0.0000**	**23,796.1197**

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	146559	103,763.7719	0.0000	0.0000	103,763.7719
Total		**103,763.7719**	**0.0000**	**0.0000**	**103,763.7719**

West Jackson Highway Master Plan (Proposed Project - Mitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

West Jackson Highway Master Plan (Proposed Project - Mitigated Operational 2050)

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	7,100.00	1000sqft	492.00	7,099,844.00	0
Elementary School	523.00	1000sqft	60.00	522,720.00	0
High School	627.00	1000sqft	72.00	627,264.00	0
Place of Worship	3,289.00	1000sqft	76.00	3,288,780.00	0
Industrial Park	1,976.00	1000sqft	90.00	1,976,299.00	0
Other Asphalt Surfaces	230.00	Acre	230.00	10,010,088.00	0
City Park	2,101.00	Acre	2,101.00	91,519,560.00	0
Apartments Mid Rise	5,660.00	Dwelling Unit	189.00	5,660,000.00	15112
Condo/Townhouse	820.00	Dwelling Unit	59.00	820,000.00	2189
Single Family Housing	10,004.00	Dwelling Unit	2,071.00	18,007,200.00	26711
Regional Shopping Center	3,166.00	1000sqft	273.00	3,165,723.00	0
Strip Mall	1,225.00	1000sqft	45.00	1,225,125.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2050
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	2	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2045 GHG Intensity factor taken from CAPCOA Handbook

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use - Based on Land Use Maps minus existing building square footage and acres

Construction Phase -

Off-road Equipment - No construction

Road Dust - Inputs from Operation_Draft5

Consumer Products - Operation_Draft5

Area Coating - Project specific information

Landscape Equipment - Project specific information

Energy Use - Project specific information

Construction Off-road Equipment Mitigation - Project specific information

Mobile Commute Mitigation - Project specific information

Area Mitigation - Project specific information

Water Mitigation - Project specific information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDaysWeek	5.00	0.00
tblEnergyUse	LightingElect	741.44	348.48
tblEnergyUse	LightingElect	1,001.10	470.52
tblEnergyUse	LightingElect	3.10	2.17
tblEnergyUse	LightingElect	3.10	2.17
tblEnergyUse	LightingElect	3.71	2.60
tblEnergyUse	LightingElect	4.00	2.80
tblEnergyUse	LightingElect	4.57	3.20
tblEnergyUse	LightingElect	5.33	3.73
tblEnergyUse	LightingElect	1,608.84	756.15
tblEnergyUse	LightingElect	5.33	3.73
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	0.66	0.00
tblEnergyUse	NT24NG	0.66	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblEnergyUse	NT24NG	0.68	0.00
tblEnergyUse	NT24NG	0.98	0.00
tblEnergyUse	NT24NG	12.42	0.00
tblEnergyUse	NT24NG	0.93	0.00
tblEnergyUse	NT24NG	2,687.00	0.00
tblEnergyUse	NT24NG	0.93	0.00
tblEnergyUse	T24E	98.18	46.14
tblEnergyUse	T24E	80.14	37.67
tblEnergyUse	T24E	1.83	1.28
tblEnergyUse	T24E	1.83	1.28
tblEnergyUse	T24E	4.44	3.11
tblEnergyUse	T24E	5.15	3.61
tblEnergyUse	T24E	3.05	2.13
tblEnergyUse	T24E	2.91	2.04
tblEnergyUse	T24E	142.58	67.01
tblEnergyUse	T24E	2.91	2.04
tblEnergyUse	T24NG	6,729.23	0.00
tblEnergyUse	T24NG	16,185.01	0.00
tblEnergyUse	T24NG	14.46	0.00
tblEnergyUse	T24NG	14.46	0.00
tblEnergyUse	T24NG	12.30	0.00
tblEnergyUse	T24NG	14.84	0.00
tblEnergyUse	T24NG	23.15	0.00
tblEnergyUse	T24NG	4.44	0.00
tblEnergyUse	T24NG	20,971.81	0.00
tblEnergyUse	T24NG	4.44	0.00
tblLandUse	LandUseSquareFeet	7,100,000.00	7,099,844.00
tblLandUse	LandUseSquareFeet	523,000.00	522,720.00
tblLandUse	LandUseSquareFeet	627,000.00	627,264.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblLandUse	LandUseSquareFeet	3,289,000.00	3,288,780.00
tblLandUse	LandUseSquareFeet	1,976,000.00	1,976,299.00
tblLandUse	LandUseSquareFeet	10,018,800.00	10,010,088.00
tblLandUse	LandUseSquareFeet	3,166,000.00	3,165,723.00
tblLandUse	LandUseSquareFeet	1,225,000.00	1,225,125.00
tblLandUse	LotAcreage	162.99	492.00
tblLandUse	LotAcreage	12.01	60.00
tblLandUse	LotAcreage	14.39	72.00
tblLandUse	LotAcreage	75.51	76.00
tblLandUse	LotAcreage	45.36	90.00
tblLandUse	LotAcreage	148.95	189.00
tblLandUse	LotAcreage	51.25	59.00
tblLandUse	LotAcreage	3,248.05	2,071.00
tblLandUse	LotAcreage	72.68	273.00
tblLandUse	LotAcreage	28.12	45.00
tblProjectCharacteristics	CH4IntensityFactor	0.033	0
tblProjectCharacteristics	CO2IntensityFactor	357.98	2
tblProjectCharacteristics	N2OIntensityFactor	0.004	0
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	87,154.00
tblTripsAndVMT	VendorTripLength	8.50	6.50
tblTripsAndVMT	WorkerTripLength	15.00	10.00

2.0 Emissions Summary

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2025	3-31-2025	0.0000	0.0000
2	4-1-2025	6-30-2025	0.0000	0.0000
3	7-1-2025	9-30-2025	0.0000	0.0000
		Highest	0.0000	0.0000

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	265.8534	265.8534	0.0000	0.0000	265.8534
Mobile	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357
Waste						0.0000	0.0000		0.0000	0.0000	9,476.3367	0.0000	9,476.3367	560.0355	0.0000	23,477.2232
Water						0.0000	0.0000		0.0000	0.0000	1,152.3335	28.7139	1,181.0474	3.9662	2.5060	2,026.9753
Total	**310.4106**	**144.9942**	**1,438.0527**	**2.8271**	**415.5609**	**2.2195**	**417.7804**	**110.9292**	**2.1372**	**113.0664**	**10,628.6702**	**262,144.7431**	**272,773.4132**	**582.0056**	**15.3183**	**291,888.4119**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	265.8534	265.8534	0.0000	0.0000	265.8534
Mobile	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357
Waste						0.0000	0.0000		0.0000	0.0000	9,476.3367	0.0000	9,476.3367	560.0355	0.0000	23,477.2232
Water						0.0000	0.0000		0.0000	0.0000	1,152.3335	28.7139	1,181.0474	3.9662	2.5060	2,026.9753
Total	**310.4106**	**144.9942**	**1,438.0527**	**2.8271**	**415.5609**	**2.2195**	**417.7804**	**110.9292**	**2.1372**	**113.0664**	**10,628.6702**	**262,144.7431**	**272,773.4132**	**582.0056**	**15.3183**	**291,888.4119**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	61,705.0320
Vegetation Land Change	23,414.1960
Total	**85,119.2279**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2025	12/31/2025	0	10000	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 230

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357
Unmitigated	114.4911	143.0383	1,268.5490	2.8181	415.5609	1.2759	416.8368	110.9292	1.1936	112.1228	0.0000	261,571.9915	261,571.9915	17.7383	12.8124	265,833.5357

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	30,790.40	27,790.60	23149.40	107,804,054	107,804,054
City Park	1,638.78	4,117.96	4601.19	6,531,404	6,531,404
Condo/Townhouse	6,002.40	6,674.80	5149.60	22,012,248	22,012,248
Elementary School	10,208.96	0.00	0.00	22,870,533	22,870,533
High School	8,821.89	2,495.46	1072.17	26,479,276	26,479,276
Industrial Park	6,659.12	5,019.04	2450.24	21,405,608	21,405,608
Office Park	78,597.00	11,644.00	5396.00	185,910,809	185,910,809
Other Asphalt Surfaces	0.00	0.00	0.00		
Place of Worship	22,858.55	19,701.11	90875.07	62,147,813	62,147,813
Regional Shopping Center	119,516.50	146,015.92	66802.60	236,140,221	236,140,221
Single Family Housing	94,437.76	95,438.16	85534.20	343,661,153	343,661,153
Strip Mall	54,292.00	51,499.00	25026.75	89,196,055	89,196,055
Total	433,823.36	370,396.05	310,057.22	1,124,159,173	1,124,159,173

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	15.00	7.50	8.50	33.00	48.00	19.00	66	28	6
Condo/Townhouse	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3
Elementary School	15.00	7.50	8.50	65.00	30.00	5.00	63	25	12
High School	15.00	7.50	8.50	77.80	17.20	5.00	75	19	6
Industrial Park	15.00	7.50	8.50	59.00	28.00	13.00	79	19	2
Office Park	15.00	7.50	8.50	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	15.00	7.50	8.50	0.00	0.00	0.00	0	0	0
Place of Worship	15.00	7.50	8.50	0.00	95.00	5.00	64	25	11
Regional Shopping Center	15.00	7.50	8.50	16.30	64.70	19.00	54	35	11
Single Family Housing	15.00	7.50	8.50	46.50	12.50	41.00	86	11	3
Strip Mall	15.00	7.50	8.50	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
City Park	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Condo/Townhouse	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Elementary School	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
High School	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Industrial Park	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Office Park	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Other Asphalt Surfaces	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Place of Worship	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Regional Shopping Center	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Single Family Housing	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091
Strip Mall	0.575251	0.056352	0.181743	0.116249	0.016967	0.004916	0.012153	0.008974	0.000580	0.000864	0.023283	0.000577	0.002091

5.0 Energy Detail

Historical Energy Use: N

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	265.8534	265.8534	0.0000	0.0000	265.8534
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	265.8534	265.8534	0.0000	0.0000	265.8534
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Elementary School	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
High School	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industrial Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Office Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Place of Worship	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Elementary School	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
High School	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industrial Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Office Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Place of Worship	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.95198e+007	17.7080	0.0000	0.0000	17.7080
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	3.52862e+006	3.2011	0.0000	0.0000	3.2011
Elementary School	2.93769e+006	2.6650	0.0000	0.0000	2.6650
High School	3.52522e+006	3.1980	0.0000	0.0000	3.1980
Industrial Park	2.26484e+007	20.5463	0.0000	0.0000	20.5463
Office Park	9.1446e+007	82.9584	0.0000	0.0000	82.9584
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	4.12084e+007	37.3836	0.0000	0.0000	37.3836
Regional Shopping Center	2.77001e+007	25.1291	0.0000	0.0000	25.1291
Single Family Housing	6.98192e+007	63.3389	0.0000	0.0000	63.3389
Strip Mall	1.07198e+007	9.7249	0.0000	0.0000	9.7249
Total		**265.8534**	**0.0000**	**0.0000**	**265.8534**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.95198e+007	17.7080	0.0000	0.0000	17.7080
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	3.52862e+006	3.2011	0.0000	0.0000	3.2011
Elementary School	2.93769e+006	2.6650	0.0000	0.0000	2.6650
High School	3.52522e+006	3.1980	0.0000	0.0000	3.1980
Industrial Park	2.26484e+007	20.5463	0.0000	0.0000	20.5463
Office Park	9.1446e+007	82.9584	0.0000	0.0000	82.9584
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	4.12084e+007	37.3836	0.0000	0.0000	37.3836
Regional Shopping Center	2.77001e+007	25.1291	0.0000	0.0000	25.1291
Single Family Housing	6.98192e+007	63.3389	0.0000	0.0000	63.3389
Strip Mall	1.07198e+007	9.7249	0.0000	0.0000	9.7249
Total		**265.8534**	**0.0000**	**0.0000**	**265.8534**

6.0 Area Detail

West Jackson Highway Master Plan (Proposed Project - Mitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Unmitigated	195.9195	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243

West Jackson Highway Master Plan (Proposed Project - Mitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	23.7608					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	167.0733					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0855	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Total	**195.9195**	**1.9559**	**169.5037**	**9.0000e-003**		**0.9436**	**0.9436**		**0.9436**	**0.9436**	**0.0000**	**278.1842**	**278.1842**	**0.2656**	**0.0000**	**284.8243**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	23.7608					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	167.0733					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0855	1.9559	169.5037	9.0000e-003		0.9436	0.9436		0.9436	0.9436	0.0000	278.1842	278.1842	0.2656	0.0000	284.8243
Total	**195.9195**	**1.9559**	**169.5037**	**9.0000e-003**		**0.9436**	**0.9436**		**0.9436**	**0.9436**	**0.0000**	**278.1842**	**278.1842**	**0.2656**	**0.0000**	**284.8243**

7.0 Water Detail

7.1 Mitigation Measures Water

West Jackson Highway Master Plan (Proposed Project - Mitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1,181.0474	3.9662	2.5060	2,026.9753
Unmitigated	1,181.0474	3.9662	2.5060	2,026.9753

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	368.772 / 232.487	132.8771	0.4491	0.2837	228.6566
City Park	0 / 2503.3	7.9484	0.0000	0.0000	7.9484
Condo/Townhouse	53.4263 / 33.6818	19.2508	0.0651	0.0411	33.1269
Elementary School	15.1654 / 38.9967	5.5579	0.0185	0.0117	9.4968
High School	20.8193 / 53.5354	7.6300	0.0254	0.0160	13.0373
Industrial Park	456.95 / 0	163.7351	0.5565	0.3516	282.4168
Office Park	1261.91 / 773.428	454.6254	1.5367	0.9709	782.3758
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	102.909 / 160.961	37.3857	0.1253	0.0792	64.1139
Regional Shopping Center	234.514 / 143.734	84.4877	0.2856	0.1804	145.3969
Single Family Housing	651.801 / 410.918	234.8591	0.7937	0.5015	404.1486
Strip Mall	90.7388 / 55.6141	32.6903	0.1105	0.0698	56.2575
Total		**1,181.0473**	**3.9662**	**2.5060**	**2,026.9753**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	368.772 / 232.487	132.8771	0.4491	0.2837	228.6566
City Park	0 / 2503.3	7.9484	0.0000	0.0000	7.9484
Condo/Townhouse	53.4263 / 33.6818	19.2508	0.0651	0.0411	33.1269
Elementary School	15.1654 / 38.9967	5.5579	0.0185	0.0117	9.4968
High School	20.8193 / 53.5354	7.6300	0.0254	0.0160	13.0373
Industrial Park	456.95 / 0	163.7351	0.5565	0.3516	282.4168
Office Park	1261.91 / 773.428	454.6254	1.5367	0.9709	782.3758
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	102.909 / 160.961	37.3857	0.1253	0.0792	64.1139
Regional Shopping Center	234.514 / 143.734	84.4877	0.2856	0.1804	145.3969
Single Family Housing	651.801 / 410.918	234.8591	0.7937	0.5015	404.1486
Strip Mall	90.7388 / 55.6141	32.6903	0.1105	0.0698	56.2575
Total		**1,181.0473**	**3.9662**	**2.5060**	**2,026.9753**

8.0 Waste Detail

West Jackson Highway Master Plan (Proposed Project - Mitigated Operational 2050) - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9,476.3367	560.0355	0.0000	23,477.2232
Unmitigated	9,476.3367	560.0355	0.0000	23,477.2232

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	2603.6	528.5073	31.2339	0.0000	1,309.3544
City Park	180.69	36.6784	2.1676	0.0000	90.8693
Condo/Townhouse	377.2	76.5682	4.5251	0.0000	189.6945
Elementary School	679.9	138.0136	8.1564	0.0000	341.9227
High School	815.1	165.4579	9.7783	0.0000	409.9150
Industrial Park	2450.24	497.3766	29.3941	0.0000	1,232.2294
Office Park	6603	1,340.3493	79.2124	0.0000	3,320.6587
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	18747.3	3,805.5325	224.9005	0.0000	9,428.0456
Regional Shopping Center	3324.3	674.8029	39.8797	0.0000	1,671.7955
Single Family Housing	9615.96	1,951.9530	115.3571	0.0000	4,835.8809
Strip Mall	1286.25	261.0971	15.4304	0.0000	646.8571
Total		**9,476.3368**	**560.0355**	**0.0000**	**23,477.2232**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	2603.6	528.5073	31.2339	0.0000	1,309.3544
City Park	180.69	36.6784	2.1676	0.0000	90.8693
Condo/Townhouse	377.2	76.5682	4.5251	0.0000	189.6945
Elementary School	679.9	138.0136	8.1564	0.0000	341.9227
High School	815.1	165.4579	9.7783	0.0000	409.9150
Industrial Park	2450.24	497.3766	29.3941	0.0000	1,232.2294
Office Park	6603	1,340.3493	79.2124	0.0000	3,320.6587
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	18747.3	3,805.5325	224.9005	0.0000	9,428.0456
Regional Shopping Center	3324.3	674.8029	39.8797	0.0000	1,671.7955
Single Family Housing	9615.96	1,951.9530	115.3571	0.0000	4,835.8809
Strip Mall	1286.25	261.0971	15.4304	0.0000	646.8571
Total		**9,476.3368**	**560.0355**	**0.0000**	**23,477.2232**

9.0 Operational Offroad

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	85,119.2279	0.0000	0.0000	85,119.2279

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	0 / 202.3	1,254.2600	0.0000	0.0000	1,254.2600
Grassland	900.4 / 368	-2,294.6440	0.0000	0.0000	-2,294.6440
Scrub	46.7 / 180.3	1,910.4800	0.0000	0.0000	1,910.4800
Trees	10.7 / 213.8	22,544.1000	0.0000	0.0000	22,544.1000
Wetlands	87.9 / 81.3	0.0000	0.0000	0.0000	0.0000
Total		**23,414.1960**	**0.0000**	**0.0000**	**23,414.1960**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	87154	61,705.0320	0.0000	0.0000	61,705.0320
Total		**61,705.0320**	**0.0000**	**0.0000**	**61,705.0320**

Unmitigated Mobile Emissions

GWP from AR4	
CO2	1
CH4	25
N2O	298

	Project VMT Data				
	With build		Without build		
Speed Bin	Daily VMT	Annual VMT	Daily VMT	Annual VMT	Change
0 to 5mph	51,299.57	16,415,862.40	50,798.7	16,255,571.2	160,291
5 to 10mph	201,139.30	64,364,576.00	200,934.0	64,298,880.0	65,696
10-15mph	468,995.73	150,078,633.60	456,720.9	146,150,694.4	3,927,939
15-20mph	5,763,427.14	1,844,296,684.80	5,728,177.1	1,833,016,668.8	11,280,016
20-25mph	2,410,511.46	771,363,667.20	2,460,630.9	787,401,884.8	(16,038,218)
25-30mph	3,582,703.33	1,146,465,065.60	3,491,579.9	1,117,305,574.4	29,159,491
30-35mph	7,627,674.26	2,440,855,763.20	7,185,026.6	2,299,208,518.4	141,647,245
35-40mph	7,113,934.41	2,276,459,011.20	6,866,786.8	2,197,371,766.4	79,087,245
40-45mph	5,465,703.04	1,749,024,972.80	5,504,646.2	1,761,486,777.6	(12,461,805)
45-50mph	3,873,360.14	1,239,475,244.80	3,879,665.4	1,241,492,940.8	(2,017,696)
50-55mph	7,316,359.86	2,341,235,155.20	7,268,117.8	2,325,797,708.8	15,437,446
55-60mph	11,252,005.44	3,600,641,740.80	11,253,035.0	3,600,971,184.0	(329,443)
60-65mph	2,761,278.61	883,609,155.20	2,788,264.8	892,244,745.6	(8,635,590)
65+mph	1,284,101.38	410,912,441.60	1,260,402.7	403,328,857.6	7,583,584
Total	***59,172,494***	***18,935,197,974***	***58,394,787***	***18,686,331,773***	***248,866,202***
Change	***777,707***	***248,866,202***			

	Emissions = MT/year for GHGs and tons/year for CPs							
	With build							
	CO2	CH4	N2O	CO2e	Nox	ROG	PM10	PM2.5
5	5,032	0.3	0.4	5,172	3.9	0.3	5.0	1.3
10	24,768	1.1	2.2	25,445	18.0	1.2	19.9	5.2
15	44,439	1.0	3.0	45,364	21.8	2.0	45.7	11.8
20	579,333	6.5	15.4	584,076	109.3	23.7	542.2	137.7
25	190,898	2.1	7.1	193,057	41.0	7.0	228.5	58.1
30	269,295	2.6	9.4	272,163	49.1	8.5	338.6	85.9
35	560,767	4.6	16.0	565,662	81.9	15.3	716.9	181.1
40	509,750	4.0	15.2	514,386	73.1	12.2	665.1	167.6
45	395,530	3.2	13.3	399,558	58.2	8.6	507.0	127.4
50	298,819	2.0	9.6	301,722	41.3	6.7	358.8	90.3
55	605,536	3.4	14.6	609,977	73.9	12.6	665.4	166.1
60	1,035,848	5.8	36.9	1,046,982	191.7	20.5	1,025.8	257.7
65	497,266	3.0	58.5	514,780	347.5	6.6	282.2	78.9
70	223,480	0.97	27.01	231,553	170.39	3.1	122.0	34.6
75	29,191	0.11	4.60	30,564	29.13	0.3	10.9	3.5
80	2,410	0.02	0.38	2,524	2.00	0.0	1.1	0.3
85	233	0.00	0.04	244	0.20	0.0	0.1	0.0
90	0	0.00	0.00	0	0.00	0.0	0.0	0.0
Aggregate Processes	*204,572*	*91*	*74*	229,029	*987*	1,662.2	192.6	49.6
	5,477,167	**132**	**308**	**5,572,258**	**2,299.4**	**1,790.7**	**5,727.7**	**1,457.3**

Emissions = MT/year for GHGs and tons/year for CPs								Emissions = MT/year for GHGs and tons/year for CPs				
Without build								NET NEW PROJECT				
CO2	CH4	N2O	CO2e	Nox	ROG	PM10	PM2.5	CO2e	Nox	ROG	PM10	PM2.5
4,983	0.3	0.4	5,121	3.9	0.3	4.9	1.3	50	0.0	0.0	0.0	0.0
24,743	1.1	2.2	25,419	18.0	1.2	19.9	5.2	26	0.0	0.0	0.0	0.0
43,276	1.0	2.9	44,177	21.2	1.9	44.5	11.5	1,187	0.6	0.1	1.2	0.3
575,789	6.4	15.3	580,503	108.6	23.6	538.9	136.9	3,572	0.7	0.1	3.3	0.8
194,867	2.2	7.2	197,071	41.8	7.2	233.2	59.3	-4,014	-0.9	-0.1	-4.8	-1.2
262,446	2.5	9.2	265,241	47.9	8.2	330.0	83.7	6,922	1.2	0.2	8.6	2.2
528,225	4.4	15.1	532,836	77.1	14.4	675.3	170.6	32,826	4.8	0.9	41.6	10.5
492,041	3.9	14.7	496,516	70.5	11.8	642.0	161.8	17,870	2.5	0.4	23.1	5.8
398,348	3.2	13.3	402,404	58.6	8.7	510.6	128.4	-2,847	-0.4	-0.1	-3.6	-0.9
299,306	2.0	9.6	302,213	41.4	6.7	359.4	90.5	-491	-0.1	0.0	-0.6	-0.1
601,543	3.4	14.5	605,955	73.4	12.5	661.0	165.0	4,022	0.5	0.1	4.4	1.1
1,035,943	5.8	36.9	1,047,078	191.7	20.5	1,025.9	257.7	-96	0.0	0.0	-0.1	0.0
502,126	3.0	59.1	519,811	350.9	6.6	284.9	79.7	-5,031	-3.4	-0.1	-2.8	-0.8
219,356	1.0	26.5	227,280	167.2	3.1	119.7	33.9	4,273	3.1	0.1	2.3	0.6
28,652	0.1	4.5	30,000	28.6	0.3	10.7	3.4	564	0.5	0.0	0.2	0.1
2,366	0.0	0.4	2,478	2.0	0.0	1.0	0.3	47	0.0	0.0	0.0	0.0
229	0.0	0.0	239	0.2	0.0	0.1	0.0	5	0.0	0.0	0.0	0.0
0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
201,883	90.2	73.4	226,019	974.1	1,640.4	190.1	48.9	3,010	13.0	21.8	2.5	0.7
5,416,120	**131**	**305**	**5,510,361**	**2,277.1**	**1,767.3**	**5,652.2**	**1,438.2**	**61,897**	**22.3**	**23.4**	**75.5**	**19.1**

		pounds per ton	2000	
		days/year	365	
		grams/pound	453.592	
		grams/MT	1000000	
			5.3%	<- total percent reduction in project-wide VMT from mitigation

		Summary Emissions - Net New Project		
		Pollutant (unit)	**Unmitigate**	**Mitigated**
4.54	4.50	ROG (ppd)	128.4	121.6
17.81	17.79	NOx (ppd)	122.0	115.6
41.52	40.43	PM10 (ppd)	413.7	391.8
510.23	507.11	PM2.5 (ppd)	104.6	99.0
213.40	217.84	PM10 (tpy)	75.5	71.5
317.18	309.11	PM2.5 (tpy)	19.1	18.1
675.28	636.09	MTCO2e (mtpy)	61,897.1	58,616.5
629.79	607.91			
483.88	487.32	**Total average emissions per mile (g/mi)**		
342.91	343.47	ROG	0.07	
647.71	643.44	NOx	0.07	
996.14	996.23	PM10	0.24	
244.46	246.84	PM2.5	0.06	
113.68	111.58	MTCO2e	248.72	

Mitgated Mobile Emissions

GWP from AR4	
CO2	1
CH4	25
N2O	298

	Project VMT Data				
	With build		Without build		
Speed Bin	Daily VMT	Annual VMT	Daily VMT	Annual VMT	Change
0 to 5mph	51,299.57	16,415,862.40	50,798.7	16,255,571.2	160,291
5 to 10mph	201,139.30	64,364,576.00	200,934.0	64,298,880.0	65,696
10-15mph	468,995.73	150,078,633.60	456,720.9	146,150,694.4	3,927,939
15-20mph	5,763,427.14	1,844,296,684.80	5,728,177.1	1,833,016,668.8	11,280,016
20-25mph	2,410,511.46	771,363,667.20	2,460,630.9	787,401,884.8	(16,038,218)
25-30mph	3,582,703.33	1,146,465,065.60	3,491,579.9	1,117,305,574.4	29,159,491
30-35mph	7,627,674.26	2,440,855,763.20	7,185,026.6	2,299,208,518.4	141,647,245
35-40mph	7,113,934.41	2,276,459,011.20	6,866,786.8	2,197,371,766.4	79,087,245
40-45mph	5,465,703.04	1,749,024,972.80	5,504,646.2	1,761,486,777.6	(12,461,805)
45-50mph	3,873,360.14	1,239,475,244.80	3,879,665.4	1,241,492,940.8	(2,017,696)
50-55mph	7,316,359.86	2,341,235,155.20	7,268,117.8	2,325,797,708.8	15,437,446
55-60mph	11,252,005.44	3,600,641,740.80	11,253,035.0	3,600,971,184.0	(329,443)
60-65mph	2,761,278.61	883,609,155.20	2,788,264.8	892,244,745.6	(8,635,590)
65+mph	1,284,101.38	410,912,441.60	1,260,402.7	403,328,857.6	7,583,584
Total	***59,172,494***	***18,935,197,974***	***58,394,787***	***18,686,331,773***	
Change	***777,707***	***248,866,202***			

	Emissions = MT/year for GHGs and tons/year for CPs							
	With build							
	CO2	CH4	N2O	CO2e	Nox	ROG	PM10	PM2.5
5	4,861	0.3	0.4	5,000	3.9	0.3	5.0	1.3
10	19,487	1.0	2.1	20,145	17.6	1.0	19.8	5.1
15	28,809	0.9	2.8	29,675	20.5	1.6	45.3	11.7
20	130,444	3.3	9.6	133,382	70.2	13.4	529.2	132.3
25	56,988	1.3	5.3	58,586	28.7	4.4	223.9	56.3
30	72,580	1.6	6.6	74,587	30.1	5.0	331.0	82.9
35	124,870	2.6	9.6	127,791	38.1	8.5	698.1	174.0
40	117,989	2.4	9.4	120,847	33.5	6.8	649.5	161.7
45	101,579	2.0	9.0	104,317	29.4	4.9	498.5	124.2
50	83,530	1.2	6.6	85,535	21.3	4.1	355.0	88.8
55	136,882	1.7	8.4	139,425	31.6	7.1	660.2	163.9
60	298,683	3.1	26.9	306,764	123.9	11.6	1,019.2	254.7
65	388,106	2.5	57.0	405,169	337.6	5.1	281.4	78.5
70	174,615	0.76	26.34	182,483	165.89	2.4	121.6	34.4
75	29,191	0.11	4.60	30,564	29.13	0.3	10.9	3.5
80	2,410	0.02	0.38	2,524	2.00	0.0	1.1	0.3
85	233	0.00	0.04	244	0.20	0.0	0.1	0.0
90	0	0.00	0.00	0	0.00	0.0	0.0	0.0
Aggregate Processes	*204,572*	*91*	*74*	229,029	*987*	1,662.2	192.6	49.6
	1,975,829	**116**	**259**	**2,056,067**	**1,970.6**	**1,738.6**	**5,642.4**	**1,423.1**

Emissions = MT/year for GHGs and tons/year for CPs								Emissions = MT/year for GHGs and tons/year for CPs				
Without build								NET NEW PROJECT				
CO2	CH4	N2O	CO2e	Nox	ROG	PM10	PM2.5	CO2e	Nox	ROG	PM10	PM2.5
4,813	0.3	0.4	4,951	3.9	0.3	4.9	1.3	49	0.0	0.0	0.0	0.0
19,467	1.0	2.1	20,125	17.6	1.0	19.8	5.1	21	0.0	0.0	0.0	0.0
28,055	0.9	2.8	28,898	20.0	1.5	44.1	11.4	777	0.5	0.0	1.2	0.3
129,646	3.3	9.5	132,566	69.7	13.3	526.0	131.5	816	0.4	0.1	3.2	0.8
58,173	1.3	5.4	59,804	29.3	4.5	228.6	57.5	-1,218	-0.6	-0.1	-4.7	-1.2
70,734	1.5	6.4	72,690	29.3	4.9	322.6	80.8	1,897	0.8	0.1	8.4	2.1
117,624	2.4	9.0	120,375	35.9	8.0	657.6	163.9	7,416	2.2	0.5	40.5	10.1
113,890	2.3	9.1	116,649	32.3	6.5	627.0	156.1	4,198	1.2	0.2	22.6	5.6
102,303	2.0	9.1	105,060	29.6	4.9	502.0	125.1	-743	-0.2	0.0	-3.6	-0.9
83,666	1.2	6.6	85,674	21.3	4.1	355.6	88.9	-139	0.0	0.0	-0.6	-0.1
135,980	1.7	8.3	138,506	31.4	7.1	655.8	162.8	919	0.2	0.0	4.4	1.1
298,711	3.1	26.9	306,792	123.9	11.6	1,019.3	254.7	-28	0.0	0.0	-0.1	0.0
391,899	2.6	57.6	409,129	340.9	5.1	284.2	79.3	-3,960	-3.3	0.0	-2.8	-0.8
171,392	0.7	25.9	179,115	162.8	2.4	119.4	33.7	3,368	3.1	0.0	2.2	0.6
28,652	0.1	4.5	30,000	28.6	0.3	10.7	3.4	564	0.5	0.0	0.2	0.1
2,366	0.0	0.4	2,478	2.0	0.0	1.0	0.3	47	0.0	0.0	0.0	0.0
229	0.0	0.0	239	0.2	0.0	0.1	0.0	5	0.0	0.0	0.0	0.0
0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
201,883	90.2	73.4	226,019	974.1	1,640.4	190.1	48.9	3,010	13.0	21.8	2.5	0.7
1,959,482	**115**	**257**	**2,039,070**	**1,952.8**	**1,715.8**	**5,568.7**	**1,404.7**	**16,997**	**17.8**	**22.7**	**73.7**	**18.4**

pounds per ton	2000
days/year	365
grams/pound	453.592
grams/MT	1000000

5.3% **<- total percent reduction in project-wide VMT from mitigation**

Summary Emissions - Net New Project		
Pollutant (unit)	**Unmitigate**	**Mitigated**
ROG (ppd)	124.6	118.0
NOx (ppd)	97.7	92.5
PM10 (ppd)	403.9	382.5
PM2.5 (ppd)	100.8	95.5
PM10 (tpy)	73.7	69.8
PM2.5 (tpy)	18.4	17.4
MTCO2e (mtpy)	16,997.2	16,096.4

Tons/Year	
Unmitigate	**Mitigated**
22.7	21.5
17.8	16.9
73.7	69.8
18.4	17.4

Total average emissions per mile (g/mi)	
ROG	0.07
NOx	0.06
PM10	0.24
PM2.5	0.06
MTCO2e	68.30

CalEEMod Output

DEFAULT = 96% capture
8.2 Waste by Land Use
Unmitigated

Land Use	Waste Disposed tons	Total CO2	CH4 MT/yr	N2O	CO2e
Apartmen	2,604	529	31	0	1,309
City Park	181	37	2	0	91
Condo/To	377	77	5	0	190
Elementar	680	138	8	0	342
High Scho	815	165	10	0	410
Industrial	2,450	497	29	0	1,232
Office Parl	6,603	1,340	79	0	3,321
Other Asp	0	0	0	0	0
Place of W	18,747	3,806	225	0	9,428
Regional S	3,324	675	40	0	1,672
Single Fam	9,616	1,952	115	0	4,836
Strip Mall	1,286	261	15	0	647
Total	**46,684**	**9,476**	**560**	**0**	**23,477**
					9,391

REVISED = 100% capture
8.2 Waste by Land Use
Unmitigated

Land Use	sste Dispos tons	Total CO2	CH4 MT/yr	N2O	CO2e
Apartmen	2,604	541	27	0	1,211
City Park	181	38	2	0	84
Condo/To	377	78	4	0	175
Elementar	680	141	7	0	316
High Scho	815	169	8	0	379
Industrial	2,450	509	25	0	1,140
Office Parl	6,603	1,371	68	0	3,071
Other Asp	0	0	0	0	0
Place of W	18,747	3,893	193	0	8,719
Regional S	3,324	690	34	0	1,546
Single Fam	9,616	1,997	99	0	4,472
Strip Mall	1,286	267	13	0	598
Total	**46,684**	**9,694**	**481**		**21,712**
					8,685

Recreating CalEEMod Calcs

Type	CA % (2008)	DOC	Tons	Gen - CO2	Gen - CH4
Paper	17.3%	44%	8,076	888	888
Textiles	2.2%	30%	1,027	77	77
Food	15.5%	38%	7,236	687	687
Wood	14.5%	50%	6,769	846	846
Garden	7.1%	49%	3,315	406	406
Nappies	2.2%	60%	1,004	151	151
Rubber	2.2%	47%	1,004	118	118
Plastics	9.6%	0%	4,482	0	0
Metal	4.6%	0%	2,147	0	0
Glass	1.4%	0%	654	0	0
Other	23.4%	0%	10,924	0	0
Total	**99.9%**				

DANF 0.5
Split 0.5

	Default	Revised	
LFG no ca	4%	4%	
LFG captu	96%	96%	*Added this to the CalEEMod equation; default = 96%*
Collect	75%	77%	Based on 9/3/23 email from Jeremy Zuber, Department of Waste Management & Recycling, Sacramento County
Destruct	98%	98%	
Ox	10%	10%	

Emissions from LFG Capture?

Type	Default Emit - CO2	Emit - CH4	CO2e	Revised Emit - CO2	Emit - CH4	CO2e
Paper	1,501	205	6,618	1,516	190	6,258
Textiles	130	18	574	131	16	543
Food	1,161	158	5,121	1,173	147	4,842
Wood	1,430	195	6,303	1,444	181	5,960
Garden	686	94	3,025	693	87	2,860
Nappies	254	35	1,122	257	32	1,061
Rubber	199	27	879	201	25	831
Plastics	0	0	0	0	0	0
Metal	0	0	0	0	0	0
Glass	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	**5,362**	**731**	**23,641**	**5,416**	**678**	**22,354**
			1%			1,287 <- redux

9 Solid Waste

Municipal solid waste (MSW) is the amount of material that is disposed of by land filling, recycling, or composting. CalEEMod calculates the indirect GHG emissions associated with waste that is disposed of at a landfill. The program uses annual waste disposal rates from the California Department of Resources Recycling and Recovery (CalRecycle) data for individual land uses. If waste disposal information was not available, waste generation data was used. CalEEMod uses the overall California Waste Stream composition to generate the necessary types of different waste disposed into landfills. The program quantifies the GHG emissions associated with the decomposition of the waste which generates methane based on the total amount of degradable organic carbon.[49] The program will also quantify the CO_2 generated by the combustion of methane, if applicable. Default landfill gas concentrations were used as reported in Section 2.4 of AP-42. The IPCC has a similar method to calculate GHG emissions from MSW in its 2006 Guidelines for National Greenhouse Gas Inventories.

The amount of methane and CO_2 generated is calculated as:

$$Gen = DOC \cdot DANF \cdot 0.5$$

Where:

Gen = Amount of CO_2 or methane generated
DOC = Degradable organic carbon
DANF = Degradable anaerobic fraction (0.5)
0.5 = Assumes half anaerobic carbon is methane and other half is CO_2.

IPCC lists default values for the DOC in its 2006 Guidelines in Table 2.4.

The amount of methane and CO_2 emitted is calculated by assuming collection and destruction efficiencies. The user will be able to select if the landfill the waste is sent to has a landfill gas collection system. The collection efficiency will be assumed to be 75% if this is selected otherwise it will be 0%. The destruction efficiency is assumed to be 98%. The calculations take into account the oxidation of methane to CO_2 as it rises through the landfill. The methane and CO_2 emitted are described as:

$$Emit_{methane} = Gen \cdot [Collect \cdot (1 - destruct) + (1 - Collect) \cdot (1 - ox)]$$

$$Emit_{CO2} = Gen \cdot [Collect \cdot destruct + (1 - Collect) \cdot (ox) + 1]$$

[49] Landfill gas generation is dependent upon the amount, type, age and moisture content of the disposed waste. The USEPA has developed emission factors for landfill gas as specified in Section 2.4 of AP-42 which are incorporated in the LANDGEM model. This model uses a first order decay equation that will vary with time. However, there is no need to use a time-varying emissions model, as we are interested in total emissions of gases that could be emitted from a ton of waste. Therefore, instead of using the LANDGEM model, the volume of landfill gas from solid waste will be based on the total amount of degradable organic carbon.

Where:

$Emit_{methane}$ = Methane emitted per ton of green waste
$Emit_{CO2}$ = Carbon dioxide emitted per ton of green waste
Gen = Amount of CO_2 or methane generated
Collect = Collection efficiency of landfill gas (75%)
Destruct = Destruction efficiency of landfill gas (98%)
Ox = Oxidation efficiency of methane (10%)

The CO_2 emissions will be classified as biogenic emissions. The amount of methane emitted will be multiplied by its GWP to convert to CO_2e.

TABLE 2.4
DEFAULT DRY MATTER CONTENT, DOC CONTENT, TOTAL CARBON CONTENT AND FOSSIL CARBON FRACTION OF DIFFERENT MSW COMPONENTS

MSW component	Dry matter content in % of wet weight [1]	DOC content in % of wet waste		DOC content in % of dry waste		Total carbon content in % of dry weight		Fossil carbon fraction in % of total carbon	
	Default	Default	Range	Default	Range [2]	Default	Range	Default	Range
Paper/cardboard	90	40	36 - 45	44	40 - 50	46	42 - 50	1	0 - 5
Textiles [3]	80	24	20 - 40	30	25 - 50	50	25 - 50	20	0 - 50
Food waste	40	15	8 - 20	38	20 - 50	38	20 - 50	-	-
Wood	85 [4]	43	39 - 46	50	46 - 54	50	46 - 54	-	-
Garden and Park waste	40	20	18 - 22	49	45 - 55	49	45 - 55	0	0
Nappies	40	24	18 - 32	60	44 - 80	70	54 - 90	10	10
Rubber and Leather	84	(39) [5]	(39) [5]	(47) [5]	(47) [5]	67	67	20	20
Plastics	100	-	-	-	-	75	67 - 85	100	95 - 100
Metal [6]	100	-	-	-	-	NA	NA	NA	NA
Glass [6]	100	-	-	-	-	NA	NA	NA	NA
Other, inert waste	90	-	-	-	-	3	0 - 5	100	50 - 100

[1] The moisture content given here applies to the specific waste types before they enter the collection and treatment. In samples taken from collected waste or from e.g., SWDS the moisture content of each waste type will vary by moisture of co-existing waste and weather during handling.

[2] The range refers to the minimum and maximum data reported by Dehoust *et al.*, 2002; Gangdonggu, 1997; Guendehou, 2004; JESC, 2001; Jager and Blok, 1993; Würdinger *et al.*, 1997; and Zeschmar-Lahl, 2002.

[3] 40 percent of textile are assumed to be synthetic (default). Expert judgement by the authors.

[4] This value is for wood products at the end of life. Typical dry matter content of wood at the time of harvest (that is for garden and park waste) is 40 percent. Expert judgement by the authors.

[5] Natural rubbers would likely not degrade under anaerobic condition at SWDS (Tsuchii et al., 1985; Rose and Steinbüchel, 2005).

[6] Metal and glass contain some carbon of fossil origin. Combustion of significant amounts of glass or metal is not common.

https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_2_Ch2_Waste_Data.pdf

Table ES-3: Composition of California's Overall Disposed Waste Stream by Material Type

Material	Est. Percent	+/-	Est. Tons	Material	Est. Percent	+/-	Est. Tons
Paper	**17.3%**		**6,859,121**	**Other Organic**	**32.4%**		**12,888,039**
Uncoated Corrugated Cardboard	4.8%	0.9%	1,905,897	Food	15.5%	1.9%	6,158,120
Paper Bags	0.4%	0.1%	155,848	Leaves and Grass	3.8%	0.7%	1,512,832
Newspaper	1.3%	0.3%	499,960	Prunings and Trimmings	2.7%	1.5%	1,058,854
White Ledger Paper	0.7%	0.3%	259,151	Branches and Stumps	0.6%	0.4%	245,830
Other Office Paper	1.2%	0.6%	472,147	Manures	0.1%	0.1%	20,373
Magazines and Catalogs	0.7%	0.2%	283,069	Textiles	2.2%	0.3%	886,814
Phone Books and Directories	0.1%	0.0%	24,149	Carpet	3.2%	2.0%	1,285,473
Other Miscellaneous Paper	3.0%	0.4%	1,202,354	Remainder/Composite Organic	4.3%	0.5%	1,719,743
Remainder/Composite Paper	5.2%	0.7%	2,056,546				
				Inerts and Other	**29.1%**		**11,577,768**
Glass	**1.4%**		**565,844**	Concrete	1.2%	0.4%	483,367
Clear Glass Bottles and Containers	0.5%	0.1%	196,093	Asphalt Paving	0.3%	0.4%	129,834
Green Glass Bottles and Containers	0.2%	0.1%	79,491	Asphalt Roofing	2.8%	1.5%	1,121,945
Brown Glass Bottles and Containers	0.3%	0.1%	108,953	Lumber	14.5%	2.2%	5,765,482
Other Colored Glass Bottles and Containers	0.1%	0.0%	40,570	Gypsum Board	1.6%	0.7%	642,511
Flat Glass	0.1%	0.1%	33,899	Rock, Soil and Fines	3.2%	1.1%	1,259,308
Remainder/Composite Glass	0.3%	0.1%	106,838	Remainder/Composite Inerts and Other	5.5%	1.3%	2,175,322
Metal	**4.6%**		**1,809,684**	**Household Hazardous Waste (HHW)**	**0.3%**		**120,752**
Tin/Steel Cans	0.6%	0.1%	236,405	Paint	0.1%	0.1%	48,025
Major Appliances	0.0%	0.1%	17,120	Vehicle and Equipment Fluids	0.0%	0.0%	6,424
Used Oil Filters	0.0%	0.0%	3,610	Used Oil	0.0%	0.0%	3,348
Other Ferrous	2.0%	0.4%	801,704	Batteries	0.0%	0.0%	19,082
Aluminum Cans	0.1%	0.0%	47,829	Remainder/Composite Household Hazardous	0.1%	0.1%	43,873
Other Non-Ferrous	0.2%	0.1%	84,268				
Remainder/Composite Metal	1.6%	0.5%	618,747	**Special Waste**	**3.9%**		**1,546,470**
				Ash	0.1%	0.1%	40,736
Electronics	**0.5%**		**216,297**	Treated Medical Waste	0.0%	0.0%	0
Brown Goods	0.2%	0.1%	76,725	Bulky Items	3.5%	1.2%	1,393,091
Computer-related Electronics	0.1%	0.1%	32,932	Tires	0.2%	0.1%	60,180
Other Small Consumer Electronics	0.1%	0.0%	34,588	Remainder/Composite Special Waste	0.1%	0.1%	52,463
Video Display Devices	0.2%	0.1%	72,053				
				Mixed Residue	**0.8%**		**330,891**
Plastic	**9.6%**		**3,807,952**	Mixed Residue	0.8%	0.2%	330,891
PETE Containers	0.5%	0.1%	199,644				
HDPE Containers	0.4%	0.1%	157,779				
Miscellaneous Plastic Containers	0.4%	0.1%	163,008				
Plastic Trash Bags	0.9%	0.1%	361,997				
Plastic Grocery and Other Merchandise Bags	0.3%	0.0%	123,405				
Non-Bag Commercial and Industrial Packaging Film	0.5%	0.2%	194,863				
Film Products	0.3%	0.2%	113,566				
Other Film	1.4%	0.3%	554,002				
Durable Plastic Items	2.1%	0.4%	834,970	**Totals**	**100.0%**		**39,722,818**
Remainder/Composite Plastic	2.8%	0.7%	1,104,719	**Sample Count**	**751**		

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.
More detailed composition tables can be found in Appendix D: Expanded Statewide Waste Characterization Tables

https://www2.calrecycle.ca.gov/Publications/Details/1346

West Jackson - Operational Energy Consumption

Land Use	Electricity Use from CalEEMod (kWh/yr)	Electricity Use from CalEEMod (kWh/yr)	CalEEMod GHG Intensity Factor (lb CO2e/MWh)	CO_2e (MT/yr)
Apartments Mid Rise	1.95E+07	19519.8	2	17.7
City Park	0	0.0	2	0.0
Condo/Townhouse	3.53E+06	3528.6	2	3.2
Elementary School	2.94E+06	2937.7	2	2.7
High School	3.53E+06	3525.2	2	3.2
Industrial Park	2.26E+07	22648.4	2	20.5
Office Park	9.14E+07	91446.0	2	83.0
Other Asphalt Surfaces	0	0.0	2	0.0
Place of Worship	4.12E+07	41208.4	2	37.4
Regional Shopping Center	2.77E+07	27700.1	2	25.1
Single Family Housing	6.98E+07	69819.2	2	63.3
Strip Mall	1.07E+07	10719.8	2	9.7
Total				265.9

Additional Electricity Use from no NG

Land Use	Natural Gas Use from CalEEMod (kBTU/yr)	NG Converted to kWh/yr	CalEEMod GHG Intensity Factor (lb CO_2e/MWh)	CO_2e (MT/yr)
Apartments Mid Rise	3.31095E+07	9703.4	2	8.8
City Park	0	0.0	2	0.0
Condo/Townhouse	8.44104E+06	2473.8	2	2.2
Elementary School	5.68719E+06	1666.8	2	1.5
High School	6.82463E+06	2000.1	2	1.8
Industrial Park	1.83598E+07	5380.7	2	4.9
Office Park	8.07252E+07	23658.2	2	21.5
Other Asphalt Surfaces	0	0.0	2	0.0
Place of Worship	9.41249E+07	27585.3	2	25.0
Regional Shopping Center	1.27895E+07	3748.2	2	3.4
Single Family Housing	1.25488E+08	36776.9	2	33.4
Strip Mall	4.94951E+06	1450.6	2	1.3
Total				103.8

PROJECT TOTAL	369.7	MT/yr

Appendix B
Air Quality Mitigation Plan

Final Draft

WEST JACKSON HIGHWAY MASTER PLAN
SACRAMENTO COUNTY, CALIFORNIA

Air Quality Mitigation Plan

For submittal to
Sacramento Metropolitan Air Quality Management District

April 2024

ESA

Final Draft

WEST JACKSON HIGHWAY MASTER PLAN
SACRAMENTO COUNTY, CALIFORNIA

Air Quality Mitigation Plan

For submittal to
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April 2024

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ESA

Atlanta	Palm Beach County	San Diego
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Orlando	Sacramento	Thousand Oaks

OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations.

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Introduction

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has developed guidance to mitigate operational emissions for projects subject to the California Environmental Quality Act (CEQA).[1] SMAQMD's guidance recommends that project applicants prepare an Air Quality Mitigation Plan (AQMP) for all projects that exceed SMAQMD's operational significance thresholds of 65 pounds per day for oxides of nitrogen (NO_X), 65 pounds per day for reactive organic gases (ROG), 80 pounds per day for particulate matter less than or equal to 10 microns (PM_{10}), and 82 pounds per day for $PM_{2.5}$.

In addition, Sacramento County General Plan Policy AQ-4 requires that:

> Developments which meet or exceed thresholds of significance for ozone precursor pollutants as adopted by the Sacramento Metropolitan Air Quality Management District (SMAQMD), shall be deemed to have a significant environmental impact. An Air Quality Mitigation Plan shall be submitted to the County of Sacramento prior to project approval, subject to review and recommendation as to technical adequacy by the Sacramento Metropolitan Air Quality Management District.

Operational emissions of NO_X, ROG, PM_{10}, and $PM_{2.5}$ from the West Jackson Highway Master Plan (Master Plan) are greater than the applicable SMAQMD significance thresholds identified above. Therefore, an AQMP has been prepared for the Master Plan.

Methodology

A reduction target is calculated based on the Master Plan's inclusion in the current State Implementation Plan (SIP). For projects included in the current SIP, the SMAQMD recommends a 15 percent reduction of NO_X and ROG mobile source emissions. For projects not considered in the SIP, the SMAQMD recommends a 35 percent reduction of NO_X and ROG mobile source emissions. For the Master Plan, only the land uses west of Bradshaw Road are included in the Sacramento Area Council of Government's (SACOG) Regional Transportation Plan (RTP) and are therefore included within the SIP. SMAQMD's AQMP guidance does not specify a percentage reduction to use for projects partially accounted for in the SIP. By calculating the Master Plan's vehicle miles traveled (VMT) included in the SIP, a "blended rate" mitigated reduction goal of 29 percent below an unmitigated scenario could be used to show consistency with regional air quality plans. However, to provide a conservative analysis of the AQMP requirement for the Master Plan, a 35 percent reduction of ozone precursors from mobile-source emissions below an unmitigated scenario was used in the AQMP. Therefore, a 35 percent reduction of NO_X and ROG mobile source emissions applies to the Master Plan. The SMAQMD has determined that this reduction in emissions will satisfy the "all feasible measures" mitigation requirement under CEQA. The reduction target is in tons per year.

[1] Sacramento Metropolitan Air Quality Management District (SMAQMD), 2020. *Recommended Guidance for Land Use Emission Reductions*, Version 4.2 (for Operational Emissions). Available at: https://www.airquality.org/LandUseTransportation/Documents/LandUseEmissionReductions4.2Final.pdf. Accessed April 2023.

An AQMP is considered to meet the reduction target when both of the following equations are true:

$$NO_X \text{ Reduction Target} \leq \text{Unmitigated Project } NO_X - \text{Mitigated Project } NO_X$$

$$\text{ROG Reduction Target} \leq \text{Unmitigated Project ROG} - \text{Mitigated Project ROG}$$

The SMAQMD guidance recognizes that site-specific traffic information is more relevant than information generated from a statewide model (identified as prerequisite *TS: Traffic Study* in the SMAQMD guidance). Traffic studies typically include calculation of internal trip capture, mix of uses, distance to job centers, and sometimes walking and cycling information. Information in the traffic study is used to create a mitigated project run. The quantity of mitigated emissions is compared to the reduction target, as described above.

Reduction Target

Mobile source emissions are traditionally the largest emissions component of land use development projects and plans. SB 743 is a policy aimed at reducing mobile emissions and uses VMT to evaluate a project's transportation impact. In response to the implementation of SB 743, Sacramento County has identified VMT significance criteria and set VMT efficiency thresholds categorized by land use type. VMT estimates provided in the traffic analysis conducted by DKS Associates account for all of the Master Plan's land uses, including for educational and institutional land uses even though trips to and from these land uses are mostly incorporated into the VMT for other land uses as pass-by trips, and these represent a small portion of total VMT and are largely internal trips.[2] Project specific VMT reductions are provided in both VMT analyses by DKS Associates and Kimley Horn.[3]

The VMT analysis conducted by DKS Associates shows that the Master Plan would meet the County VMT efficiency threshold for residential land uses and for industrial land uses but would not meet the thresholds for office/business land uses. However, as discussed below, the Master Plan would incorporate a Transportation Management Association (TMA) feature that would further reduce VMT per employee by 12.3 percent as shown in **Table B-1**, which would reduce the Master Plans overall VMT to be below the County threshold. The County's efficiency thresholds per land use type and the Master Plan's VMT are shown in **Table B-2** below.

California Air Pollution Control Officers Association (CAPCOA) Measure T-6, Mandatory Trip Reduction Program, is normally applied as a Project/Site-scale measure and thus is not combinable with the Plan/Community-scale measures T-18 and T-22.[4] However, in the case of the Master Plan, the TMA has been created that is allowed at the Plan/Community scale level and consists of a community-wide mandatory trip reduction program that will be required of all employers within the Master Plan. Under this program, non-residential property will be subject to

2 DKS Associates, 2023. *Memorandum: SB 743/ VMT Analysis – West Jackson Highway Master Plan.* September 25.

3 Kimley Horn, 2023. West Jackson Highway Master Plan Vehicle Miles Traveled Analysis. November 20.

4 California Air Pollution Control Officers Association, 2021. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. December. Available at: https://www.caleemod.com/documents/handbook/full_handbook.pdf. Accessed August 2023.

an annual County Service Area (CSA) fee that will be used for the TMA services and programs. Rideshare and carpool programs will be included. Because the TMA is considered a Plan/Community measure it can be combined with T-18 and T-22. The VMT reductions for these measures were provided by Kimley Horn.[5]

TABLE B-1
ADDITIONAL TRANSPORTATION MITIGATION

Measure	VMT Per Capita Percent Reduction	VMT Per Employee Percent Reduction
Mandatory Community-Wide TMA Participation	NA	-12.3%
Electric Bike Share (T-22-B)	-0.05%	NA
Electric Scooter Share (T-22-C)	-0.06%	NA
Adding Sidewalks (T-18)	-1.0%	NA
Total Percent Reduction	**-2.1%**	**-12.3%**
Total Percent Reduction for Combined Measures T-8 through 22-C	-1.1%	NA

NOTES:
Reported total reduction may not sum to table entries due to rounding.
ABBREVIATIONS:
VMT = vehicle miles traveled; NA = not applicable
SOURCE: CAPCOA, 2022; Kimley Horn, 2023; ESA, 2023

TABLE B-2
VMT BY LAND USE THRESHOLDS

Land Use Type	Significance Criteria	County Thresholds	Master Plan VMT	Exceeds Threshold?
Residential	Project VMT per capita exceeds 85 percent of the regional average VMT per capita	>17.17 VMT per Capita	14.29 VMT per capita	No
Office/Business Professional	Project VMT per employee exceeds 85 percent of the regional average VMT per employee	>13.64 VMT per employee	**16.23 VMT per employee**	**Yes**
Industrial	Project VMT per employee exceeds the regional average VMT per employee	>16.4 VMT per employee	14.63 VMT per employee	No

ABBREVIATIONS:
VMT = vehicle miles traveled.
SOURCE: DKS 2023; Kimley Horn, 2023.

Although specific land uses would exceed the County VMT thresholds shown in Table B-2, the reduction in overall VMT would not exceed the County's net VMT threshold.[6] The percent reductions shown in Table B-1 above were applied to residential and nonresidential (office and

[5] Kimley Horn, 2023, *West Jackson Highway Master Plan Vehicle Miles Traveled Reductions*, November 20, 2023.
[6] Kimley Horn, 2023, *West Jackson Highway Master Plan Vehicle Miles Traveled Analysis*, November 20, 2023.

industrial) VMT based on the per-capita VMT metrics included in the Traffic Study to calculate a weighted average VMT reduction for total Master Plan VMT. The calculation is presented in **Table B-3** below. The Master Plan would result in an overall net VMT reduction when compared to the County's regional average VMT thresholds and would be consistent with SB 743.

CAPCOA establishes emission reduction caps on measures for which CAPCOA establishes a percent reduction (i.e., the T-xx measures) calculation. The cap for measures T-5 through T-13 is 45 percent and the cap for measures T-18 through 22-C is 10 percent. As shown in Table B-3, the caps are not exceeded.

TABLE B-3
CALCULATION OF VMT REDUCTIONS IMPLEMENTATION OF TRANSPORTATION MANAGEMENT ASSOCIATION (TMA)

Land Use Type	VMT Metric (daily)	Percent Reduction in VMT	Project VMT Reduction	Net VMT Compared to Threshold	Exceeds Threshold?
Residential	14.29	2.1%	-11,737	N/A	N/A
Office	16.23	12.3%	-31,587	N/A	N/A
Industrial	14.63	12.3%	-6,093	N/A	N/A
Total	**NA**	**5.3%**	**-49,417**	**-43,003**	No

NOTES:
Reported total reduction may not sum to table entries due to rounding.
ABBREVIATIONS:
VMT = vehicle miles traveled; NA = not applicable.
SOURCE: DKS, 2023; Kimley Horn, 2023; ESA, 2023

Informational Quantitative Analysis

For informational purposes, emissions of NO_X and ROG for the Master Plan under the unmitigated baseline scenario were modeled using CalEEMod 2020.4.0 and EMFAC2021 following SMAQMD guidance.[7] While this is the SMAQMD's recommended method to determine a project's ability to meet mobile emissions reduction targets, it has limitations when applied to the size and scale of a development project such as the Master Plan. This is because the Master Plan has a regional effect on VMT through its influence on the entire County's land use balance and regional transportation network, among other things. Following the SMAQMD's traditional "business-as-usual" modeling approach using CalEEMod default values does not provide a reliable estimate of a master plan-level project's effect on mobile NO_X and ROG emissions.[8]

[7] Sacramento Metropolitan Air Quality Management District, 2021. *Recommended Guidance for Land Use Emission Reductions*, Version 4.3 (for Operational Emissions). February. Available at https://www.airquality.org/LandUseTransportation/Documents/LandUseEmissionReductions4.3Final.pdf. Accessed August 2023.

[8] Philley, Paul. Sacramento Metropolitan Air Quality Management District. February 21, 2024 and March 21, 2024 telephone correspondence with Brian Schuster, ESA.

For this informational analysis, a reduction target of 35 percent below the unmitigated scenario was used to determine compliance with SCAQMD's mobile source emission reduction requirement for projects. This reduction target is then applied to both NO_X and ROG unmitigated emissions to determine the reduction target in tons per year. The unmitigated baseline Master Plan emissions, target reduction percentage, reduction target, and mitigated emissions are presented in **Table B-4**.

As shown in this table, the Master Plan would result in a reduction of 117 tons per year of NO_X and 85 tons per year of ROG emissions after mitigation, which compares to the reduction target of 47 tons per year of NO_X and 37 tons per year of ROG. This represents an 87 percent decrease in NO_X and an 80 percent decrease in ROG. This reduction is due to much lower vehicle trips and total annual VMT for the Master Plan compared with default trips and VMT.

TABLE B-4
AIR QUALITY MITIGATION PLAN EFFECTIVENESS

Condition	ROG, tons/year	NO_X, tons/year
Unmitigated Baseline Emissions	107	134
Mitigated Emissions	21	17
Reduction, Unmitigated minus Mitigated	85	117
Target Reduction Percentage from Baseline	**35%**	**35%**
Reduction Target	**37**	**47**
Meet Reduction Target?	Yes	Yes

ABBREVIATIONS:
NO_X = oxides of nitrogen
ROG = reactive organic gases

SOURCE: ESA, 2023

Mitigation

The trip and VMT estimates for the Master Plan were modeled using the SACOG SACSIM19 Activity Based Travel Demand Model. SACSIM accounts for several factors that reduce Master Plan VMT. These include:

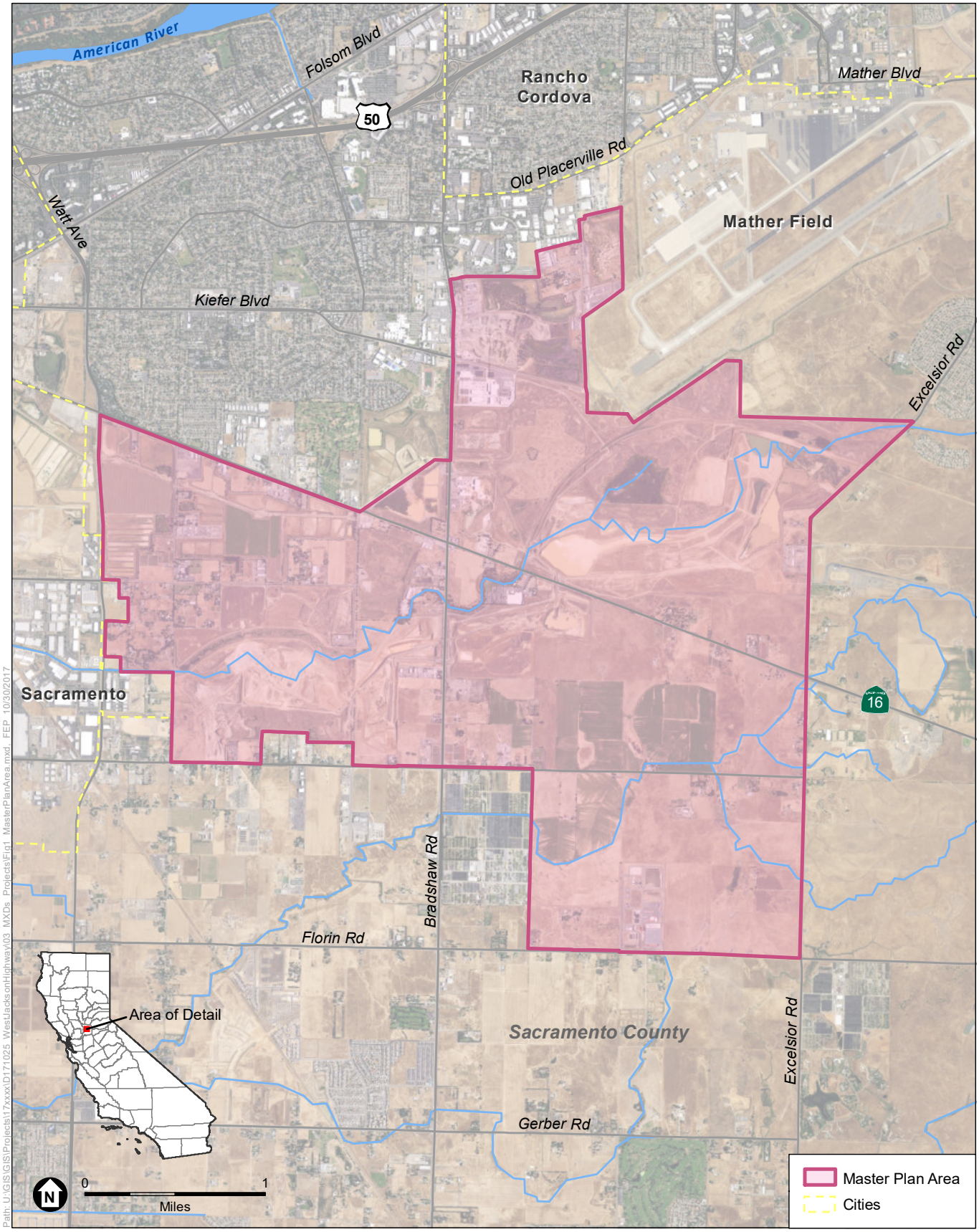
- job accessibility (within a 30-minute drive or transit travel time);
- proximity to transit (distance to nearest light rail or bus station, in miles);
- availability of Class 1 and 2 bike lanes within and adjacent to the Master Plan;
- parameters that effect walking, including sidewalks and pedestrian paths and distances to transit, commercial, and related destinations;
- job and housing density (dwelling units and jobs per acre); and
- jobs and housing mix.

The reduction in vehicle travel and emissions of NOx and ROG are accomplished through many Master Plan project design features (PDFs) proposed by the Applicant. The Master Plan includes a transit subsidy as well as funding through CSA 10 for Trip Reduction Services (TRS) as a way to support these PDFs. The transit subsidy was arrived at through discussions with Sacramento Regional Transit (SacRT) staff and is included in the project's Urban Services Plan (USP). The subsidy supports the expense of a transit line from the Man Love Light Rail Station through the Master Plan Area and back (**see Figure 1**). The subsidy will be an annual fee to both residential and non-residential properties. The fee will be used by SacRT as the area is built out to provide appropriate transit services based upon density and funds. Services will increase over time until buildout which is planned to have 15-minute headways during the work week peak hours and 30-minute headways otherwise. The area will also be served in the cumulative by transit services planned for adjacent areas, such as the Florin Vineyard Area, Jackson Township, and Mather South and Newbridge.

The Transportation Reduction Services are also included as part of the Master Plan. They will be implemented through the USP as a mandatory CSA 10 assessment applied to both residential and non-residential development. These funds will be used by the County to contract for TRS services which will be available for both residents and employees in the plan area. TRS will be phased as development occurs and supported by transit funds generated from the Master Plan as it builds out, such that services are available to establish trip reduction behavior within Master Plan phases. TRS may include, but shall not be limited to, membership in a transportation management association (TMA), commute trip reduction, transit services, transit improvements, rideshare matching and vanpool coordination, commuter financial incentives, telework and/or flextime support, guaranteed ride home programs, parking management, shared parking coordination, special event transportation management, transportation access guides, wayfinding, and multimodal navigation tools.

The Master Plan also provides for an extensive Trail System that interlinks residents with schools, recreation, open space, retail services and adjacent communities (**see Figure 2**). The funding of the construction and maintenance of such facilities is included in the Plan's PFFP and the USP, respectively.

As noted above, these measures are potential components that could be included in the larger TRS but are not meant to serve as a required or complete list of such measures. Alternatives to these TRS may be considered by the County if it can be demonstrated that an equivalent reduction in VMT or transportation mode split, as documented in the project Transportation Report, can be achieved. The final TRS shall be developed in coordination with, and approved by, the County.

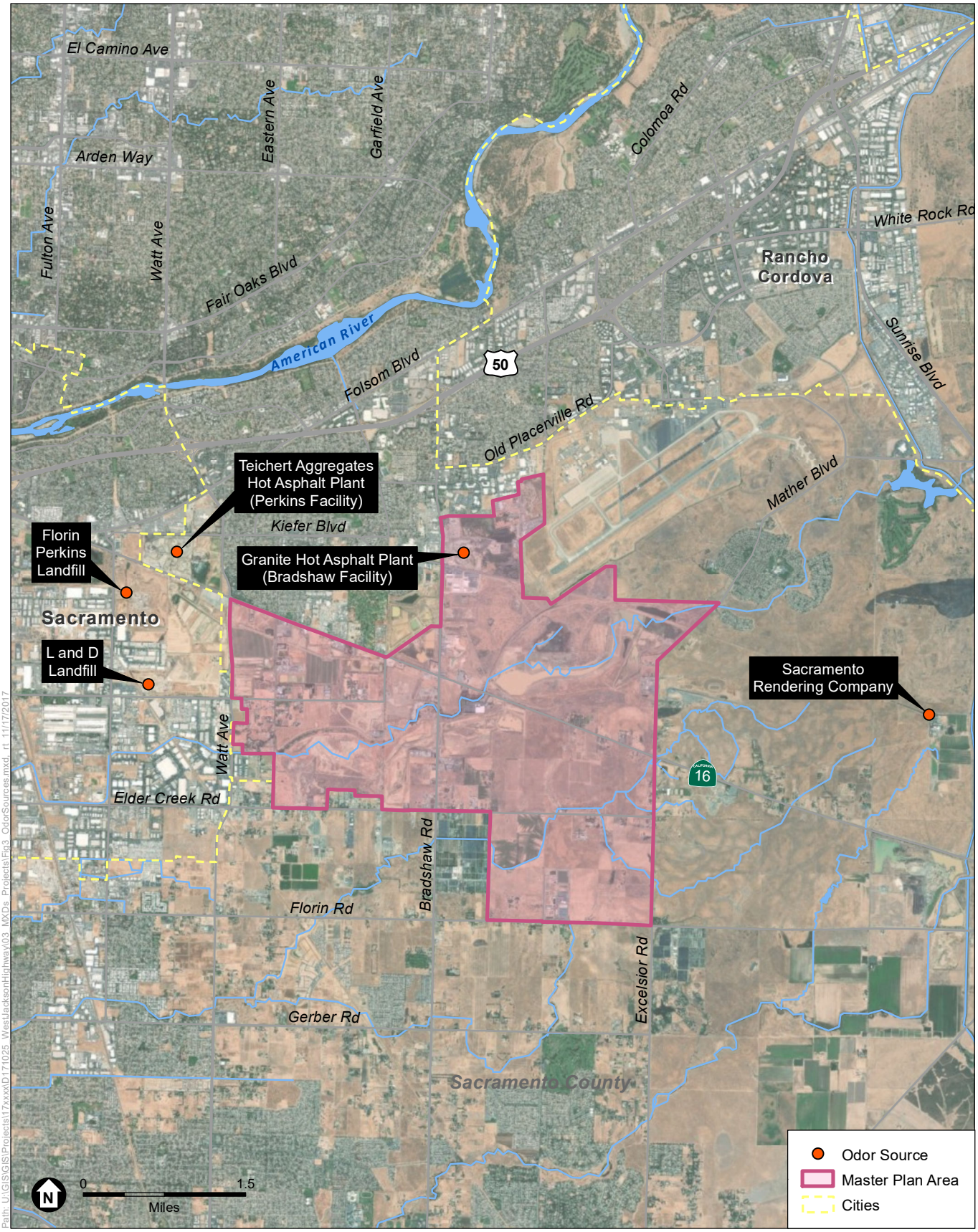


SOURCE: Esri, 2015; Teichert, 2017; ESA, 2017

West Jackson Highway Master Plan

Figure 1
Master Plan Area

ESA



SOURCE: Esri, 2015; Teichert, 2017; ESA, 2017

West Jackson Highway Master Plan

Figure 2
Nearby Potential Sources of Odors

ESA

The features that reduce emissions include, but are not limited to, those listed below. Where applicable, the related CAPCOA greenhouse gas mitigation measures (T-xx), the SMAQMD land use emission reduction measures (LUT-xx), and the Sacramento County Final Draft Community Wide Climate Action Plan (CAP) measures (GHG-xx) are noted.[9,10,11] However, the CAPCOA, SMAQMD, and Sacramento County emission reduction percentages for the noted measures were not used; rather the Traffic Study VMT was used to calculate emissions. Note that the Traffic Study is SMAQMD pre-requisite measure TS – Traffic Study.

Location (T-1, T-2, GHG-22):

- Project is located in a suburban center within approximately 10 miles of the Sacramento downtown central business district and less than 5 miles from other existing high-density commercial/job center areas (LUT-2 and LUT-3).
- Project is located adjacent to other planned developments such that single-use trips are minimized, i.e., there are more pass-by and diverted trips (LUT-3 and LUT-4).

Density/Mix (T-1, T-2, T-3, T-4, GHG-22):

- Project provides a compact mix of land uses in close proximity to each other with a highly connected street and trail network (LUT-3).
- Housing density is better than 7 dwelling units per acre (LUT-1).

Internal Proximity (T-31-A, GHG-15, GHG-22):

- Project design includes locating at least four schools within the project boundaries such that most students can walk to a local school (LUT-3 and LUT-4).
- Project design includes at least eight parks within the project boundaries such that residents can walk/bike to enjoy the parks (LUT -3 and LUT-4).

Multi- Modal Efficiency (T-10, T-17, T-18, T-29, T-25, T-26, T-32, T-37, T-47, GHG-14, GHG-17):

- Project design includes access to high frequency bus service that connects to the Watt/Manlove light rail station (LUT-5).
- Bus routes are signalized in order to avoid traffic delays (T-27).
- Project design promotes a multi-modal system that makes public transit, walking, and bicycling viable and attractive travel choices for residents and employees. Features include:

9 California Air Pollution Control Officer's Association, 2021. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, December 2021. Available at https://www.caleemod.com/handbook/index.html. Accessed August 2023.

10 Sacramento Metropolitan Air Quality Management District, 2021. *Recommended Guidance for Land Use Emission Reductions*, Version 4.3 (for Operational Emissions). February. Available at https://www.airquality.org/LandUseTransportation/Documents/LandUseEmissionReductions4.3Final.pdf. Accessed August 2023.

11 Sacramento County, 2022. *Final Draft Community Wide Climate Action Plan*, August 2022. Available at https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/CAP.aspx. Accessed August 2023.

  - Adequate bike parking at non-residential locations (T-34, T-47).
  - Showers/lockers and other end of trip facilities at non-residential buildings (T-10).
  - Long-term bike parking facilities (T-34, T-47).
- Project includes an extensive pedestrian path and trail system that is convenient and accessible from homes, school, parks, employment, and shopping (LUT-8).
- Pedestrian and bike paths minimize any barriers to pedestrian/bicycle use, (e.g., fences, berms and other impediments are eliminated where possible) (LUT-8, T-18, T-20).

Transit Supportive (T-3, T-5, T-6, T-9, T-25, T-27, T-28, T-32, T-38; GHG-14, GHG-22):

- Project subsidizes bus rapid transit lanes on Jackson Highway (T-27).
- Project funding and design will result in bus headways of 15 minutes or better (T-26).
- Project includes joining a TMA funded through assessments. Although the project will include a TMA, no VMT reduction from the TMA has been calculated or included in the Traffic Study.
- Project includes assessments for regional transportation improvements (T-27).

Unmitigated ROG and NOx emissions from mobile sources were calculated using EMFAC2021 and VMT from the Master Plan VMT Analysis and Traffic Study. There are additional transportation related mitigation measures that are incorporated into the project design and operation and for which emission reductions have been quantified. These measures include the following (where applicable the CAPCOA mitigation measure has been cited, T-xx):

- Electric bike share and scooter share (T-22-B, T-22-C).
- Additional sidewalks within the Project (T-18).
- For Employees:
  - Mandatory Community-Wide TMA participation that was not included in the VMT Analysis (TBD).
  - Carpooling/rideshare (T-8).

The measures are separated by those that benefit residential-related transportation (VMT per capita) and those that benefit employee-related transportation (VMT per employee). Where applicable, the CAPCOA mitigation measure (T-xx) is also noted in the Table.

The following mitigation measures will also reduce ROG and NO_X emissions from operational mobile sources:

- **Mitigation Measure AQ.1-2: Electric Vehicle Charging Infrastructure (**see Air Quality and Greenhouse Gas Technical Report, Impact AQ.1**).**
- **Mitigation Measure AQ.3-2: Operational Truck Emissions Reduction (**see Air Quality and Greenhouse Gas Technical Report, Impact AQ.3).

- **Mitigation Measure GHG.1-4: Electric Vehicle Requirement for Carsharing Programs (**see Air Quality and Greenhouse Gas Technical Report, Impact GHG.1)**.**
- **Mitigation Measure GHG.1-5: Greenhouse Gas Reduction Plan (**see Air Quality and Greenhouse Gas Technical Report, Impact GHG.1)**.**

The following mitigation measures will reduce ROG and NO_X emissions from operational non-mobile sources:

- **Mitigation Measure AQ.3-1: Promote Use of Green Consumer Products (**see Air Quality and Greenhouse Gas Technical Report, Impact AQ.3).
- **Mitigation Measure AQ.3-3: Electric Landscaping Equipment (**see Air Quality and Greenhouse Gas Technical Report, Impact AQ.3).
- **Mitigation Measure AQ.3-4: Best Available Emissions Controls for Stationary Emergency Generators (**see Air Quality and Greenhouse Gas Technical Report , Impact AQ.3)**.**
- **Mitigation Measure GHG.1-4: Electric Vehicle Requirement for Carsharing Programs (**see Air Quality and Greenhouse Gas Technical Report, Impact GHG.1)**.**
- **Mitigation Measure GHG.1-5: Greenhouse Gas Reduction Plan (**see Air Quality and Greenhouse Gas Technical Report, Impact GHG.1)**.**

The Master Plan would achieve the County's VMT efficiency threshold per SB 743 for residential, office, and industrial targets with the incorporation of the project design features (PDFs) and mitigation measures listed above.

The above PDFs and mitigation measures represent all feasible measures to reduce ROG and NO_X emissions for a programmatic master plan development. Other large scale development projects within the County such as Jackson Township, Mather South, and NewBridge incorporated the same and/or similar measures to successfully achieve the ROG and NO_X percent reduction targets that were determined in their respective AQMPs. Because the Master Plan will incorporate the above PDFs and mitigation measures that are comparable to the PDFs and mitigation measures that were successfully incorporated to achieve AQMP targets for other large scale Sacramento County development projects, these PDFs and mitigation measures will ensure that the Master Plan will achieve its 35 percent reduction target.[12]

Air Quality Mitigation Plan Effectiveness

The Master Plan would meet the County's VMT efficiency thresholds and therefore be consistent with SB 743. The Master Plan would incorporate many design features and mitigation measures that would reduce both mobile non-mobile sources of ROG and NO_X, such as the mandatory community-wide TMA, no natural gas use, and electric vehicle charging infrastructure. In addition, the success of other large scale development projects in Sacramento County in achieving ROG and NO_X reduction targets through the implementation of similar project design

[12] Philley, Paul. Sacramento Metropolitan Air Quality Management District. February 21, 2024 and March 21, 2024 telephone correspondence with Brian Schuster, ESA.

features and mitigation measures ensure that the Master Plan will be able to achieve its 35 percent reduction target. Further, the traditional BAU modeling approach (presented for informational purposes) quantitatively shows that the 35 percent reduction target can be met with the implementation of project design features and mitigation measures (87 percent decrease in NO_X and 80 percent decrease in ROG). Therefore, the Master Plan's operational emissions would achieve the 35 percent emission reduction target for NO_X and ROG.

APPENDIX C

AIRPORT COMPATIBILITY REPORTS

June 29, 2022

Mr. Jim Wiley
Taylor & Wiley
500 Capitol Mall, Suite 115
Sacramento, CA. 95814

Transmitted Via email to: jwiley@taylor-wiley.com

Subject: Residential construction and testing requirements for West Jackson Master Plan residences constructed between the Mather Airport 60 and 65 dB CNEL Contours.

Dear Mr. Wiley,

Pursuant to your request, Bollard Acoustical Consultants, Inc. (BAC) has worked with HMMH to develop appropriate construction requirements for residences constructed between the 60 and 65 dB CNEL Contours. The intent of these requirements is to implement a process whereby the building plans for a specific floorplan are determined to achieve required noise level reductions, and once such determination is made, homes conforming to such building plans are deemed to comply with noise level reduction requirements. Through the collaboration between BAC and HMMH, the following specific measures are recommended for homes constructed between the 60 and 65 dB CNEL contours:

1. The master permit plan set for each floorplan type to be built between the 60 and 65 dB CNEL contours shall include the following:

    a. All exterior door and window assemblies of each residence shall provide a minimum STC rating of 32 ***and*** a minimum OITC rating of 28, respectively

    b. The exterior structural façade elements shall satisfy an OITC rating of at least 28. For example, exterior walls should achieve OITC 28 via an insulated 2x4 construction with gypsum board on the interior and siding over sheathing on the exterior.

    c. All structural façade elements should be properly installed to prevent any noise leakage. Construction plans shall include notes stating that exterior doors shall compress the seals when fully closed and locked with a deadbolt.

    d. Residential structures shall include positive flow ventilation systems designed to provide adequate fresh air circulation to allow all of the exterior windows and doors to remain closed to achieve the noise level reduction from aircraft operations.

2. The master permit plan set for each floorplan type to be built between the 60 and 65 dB CNEL contours, shall be reviewed by an acoustical consultant to ensure the designs will provide a minimum OITC rating of 25 for the exterior facades of habitable spaces of the residence. The findings of this review shall be provided to the County of Sacramento as a condition to issuance of building permits for homes conforming to a master permit set for a floorplan type.

3. In order to verify that homes are constructed in substantial conformance to a particular master permit plan set for a floorplan type and satisfy the design goal of achieving 25 dB Noise Level Reduction (NLR), post-construction acoustical testing shall be conducted in conformance with the methodology prescribed in the Acoustical Testing Plan for Mather Airport prepared by HMMH July 2022 (See Attachment 1).

4. Appropriate solar power capacity shall be provided to ensure compliance with the Title 24 to account for the need to keep windows closed for acoustic isolation.

Please contact BAC at (530) 537-2328 or paulb@bacnoise.com with any questions or comments regarding these recommendations.

Sincerely,

Bollard Acoustical Consultants, Inc.



Paul Bollard
President

Attachment 1

Acoustical Testing Plan for Mather Airport

Residential Sound Insulation Program
ALUC Exception for Units in the 60-65 dB CNEL Contour

HMMH Report No. 311390.002

July 2022

Prepared for:
Sacramento County Department of Airports

Prepared by:
Gene Reindel

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1 Introduction

The Sacramento County's Airport Land Use Compatibility Plan and General Plan (Noise Element, NO-3) prohibits residential development inside the Community Noise Equivalent Level (CNEL) 60 dB contour as determined through a theoretical capacity analysis, which the Sacramento County Department of Airports (SCDA) updates periodically. With the recent update to the Mather Airport theoretical capacity analysis, the proposed West Jackson Master Plan Alternative 1C development would include residential properties within the CNEL 60 to 65 dB contour.

For federally funded airport residential sound insulation programs, the Federal Aviation Administration (FAA) guidelines suggest assigning an exterior level of CNEL 65 dB to all parcels within the CNEL 60 to 65 dB contour. To ensure that the interior CNEL is below 45 dB, with an appropriate margin of error, we would specify a design goal of 25 dB noise level reduction (NLR), which can be achieved with all structural façade elements having a minimum rating of Outdoor-Indoor Transmission Class (OITC) 25.

In accordance with Appendix R "Noise Compatibility Planning/Projects" of FAA Order 5100.38D Airport Improvement Program Handbook[1] (AIP Handbook), SCDA requires an Acoustical Testing Plan (ATP) and testing in accordance with the ATP to ensure the residential properties constructed within the CNEL 60 to 65 dB contour have a minimum average NLR of 25 dB.

The ATP conforms to "best-practices" utilized by industry professionals for over thirty years in sound insulation programs across the nation and includes acoustical testing methods for determining interior noise levels that are outlined in the FAA's adopted guidance[2] per Advisory Circular 150/5000-9A, *Announcement of Availability – Report No. DOT/FAA/PP/92-5, Guidelines for the Sound Insulation of Residents Exposed to Aircraft Noise*, issued in 1992[3]. The various steps outlined in the ATP also comply with requirements set forth in Table R-4 "Pre- and Post-Testing Criteria for Noise Insulation Projects" of Appendix R in the AIP Handbook.

The following sections provide detailed descriptions of the key components in implementing the ATP.

[1] FAA Order 5100.38D "Airport Improvement Program Handbook", Appendix R "Noise Compatibility Planning/Projects", effective date September 30, 2014.

[2] "Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations", which is attached to FAA Advisory Circular AC150/5000-9a

[3] FAA released an update in June 2022 for which there are modified testing requirements not included in this ATP.

2 Acoustical Testing

The acoustical testing program is to validate that the residential units constructed within the 60 to 65 dB CNEL contour achieves a minimum of 25 dB NLR to provide for appropriate interior habitable spaces from aircraft noise levels.

2.1 Measurement Methodology

Sound insulation measurements have historically been conducted using either an artificial noise source or actual aircraft noise events. An artificial noise source allows measurements to be made at the properties during a brief measurement period, independent from the reliance on aircraft over flights and without the need for multiple sound level meters to simultaneously measure aircraft noise in all habitable rooms.[4] The testing procedure described herein has been developed to accurately measure outdoor-to-indoor noise level reduction (NLR) of rooms.

The equipment required to complete the sound insulation measurements includes:

- Integrating sound level meter (with spectrum logging capability)[5]
- Loudspeaker (active or passive)
- Power amplifier (may be integrated with speaker)
- Signal generator (pink noise or simulated via graphic equalizer)
- Monopod for microphone
- Speaker tripod
- Power cables
- Digital camera
- Measuring tape

The testing procedures generally follow those outlined in the American Society for Testing and Materials (ASTM) Standard E966[6]. The methodology also conforms to good practice in sound insulation programs and the efficiency and flexibility of the testing procedures are enhanced using methods and theories from other sources such as Leo Beranek's "Noise and Vibration Control", which are applied in supplement to the ASTM standard to achieve the same level of overall accuracy in the testing process.

2.2 Measurement Procedures

The acoustical consultant shall use a field kit that includes a signal generator and public announcement (PA) type loudspeaker to produce a noise source of equal energy in each octave band or one-third octave band (referred to in the acoustics field as "pink noise") at an approximate overall sound level of 90 to 100 dB as measured at the exterior building façade under test.

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[4] Defined in the AIP Handbook as living, sleeping, eating or cooking areas. Additional discussion is provided in Section **Error! Reference source not found.**

[5] Either octave band or one-third octave band capability is acceptable. This ATP provides methodology for either instrumentation.

[6] ASTM E966-10$^{\varepsilon 1}$ "Standard Guide for Field Measurements of Airborne Sound Attenuation of Building Facades and Façade Elements", with editorial changes in April 2011.

The loudspeaker will be positioned either on a tripod or placed on the ground unless there is compelling evidence that the roof/ceiling element of the room under test has the potential to contribute significantly to the interior sound level from aircraft operations. Examples of compelling reasons include: existence of weak elements within the roof/ceiling structure, such as sky lights; relatively light weight materials to make up the roof structure; limited airspace between the roof and ceiling; and limited or no use of insulation in the space between the roof and ceiling. In these instances, the speaker will be lifted above the roofline of the home to obtain both exterior façade and roof exposure through the use of an industrial grade hoisting device, such as a bucket truck, scissors lift or mobile crane.

The loudspeaker is directed at the room under test as required in the ASTM Standard E966, typically at a 45-degree incidence angle to minimize the application of adjustments to the data. The goal is to obtain a uniform sound field exposure of the entire exterior surface (façade) of interest, whether a single room or multiple rooms along the same facade. To obtain a uniform sound field along a wider area (testing of multiple rooms along the same façade) requires the speaker to be a greater distance from the façade at an increased volume as compared to the measurement of a single room.

The loudspeaker must be positioned such that the sound field at the façade of the room under test is as uniform as possible (± 2 dB along the façade of measurement) at a 45-degree angle of incidence. Corner rooms with two exterior facades should have both facades exposed simultaneously, with the direction of the speaker aimed at the center of only one of the facades. If only one façade is tested, it must be the least performing façade in terms of potential noise reduction. From the center of the façade, the perpendicular and the parallel distance to the speaker must be roughly equal.

At times the consultant may request that the roof/ceiling structure be tested to determine whether it is a major sound transmission path into a particular room. When measuring the acoustical performance of the roof/ceiling structure, the loudspeaker is placed over the roof such that the other structural elements (i.e., doors, windows, walls, etc.) are shielded from the sound field as much as possible. This often requires the use of a longer hoisting device than is necessary when the loudspeaker is placed over the yard.

With the loudspeaker placed to provide sufficiently uniform sound across the primary façade, octave band or one-third octave band sound level measurements are made both on the exterior and in the interior of the structure using both time and spatial averaging of sound levels. Additional measurements are conducted without the loudspeaker in operation to provide background or ambient sound levels.

2.2.1 Interior measurement method

Interior measurements occur to calculate the NLR for each room tested.

For interior room measurements, the microphone is swept in an elliptical or figure-8 pattern throughout the room volume for a minimum period of 20 seconds to measure the spatial average sound level (Leq) of the room. The microphone should, at all times, be at least 12 inches from sound transmitting elements (window, door, wall, vent, etc.) and from any hard reflective surfaces (e.g., walls, floor, and ceiling).

The interior room Leq is measured by sweeping the microphone as described above with the loudspeaker system turned on. The interior background Leq is measured by repeating the interior room Leq process, but with the loudspeaker system turned off. To ensure no contamination of the interior measurements conducted with the loudspeaker on, the background Leq measured with the speaker off must be at least 10 dB below the noise levels measured in each octave band or one-third octave band with the speaker turned on. To obtain this environment, household noise sources may need to be reduced or eliminated including pet noise, talking, and/or movements within the home and specific appliances or electronic devices may also need to be turned down, turned off or muted such as televisions, radios, phones,

ventilation (fan) systems, refrigerators and fish tanks. All household noise sources will be returned to their original conditions once the measurements are completed.

2.2.2 Exterior measurements methods

For exterior building façade measurements, the microphone is swept in a repeated "S" pattern for a minimum period of 20 seconds to measure the average exterior sound level (Leq) for the room or element of interest.

The exterior room façade Leq is measured by sweeping the microphone as described above with the loudspeaker system turned on. The exterior background Leq is measured by repeating the exterior facade Leq process, but with the loudspeaker system turned off. To ensure no contamination of the exterior measurements conducted with the loudspeaker on, the background Leq measured with the speaker off must be at least 10 dB below the noise levels measured in each octave band or one-third octave band with the speaker on.

There are three measurement methods which may be utilized to determine exterior sound levels. Any of the three methods may be used to determine the sound pressure level at the exterior building façade and these methods, when conducted as prescribed in the ASTM standard, will provide the same outdoor sound pressure level at the exterior facade of the structure under ideal conditions. The variety of methods for determining the outdoor sound pressure levels exist to provide flexibility since no one method can be used in all situations encountered in the field.

Each of the three methods are outlined below, in the preferred order of use.

(1) Flush method:

The flush outdoor measurement procedure[7] is outlined in the ASTM E966 standard. This method requires the microphone to be "very close" to the façade surface, but not so close that it is likely to touch the surface. The ASTM standard indicates that this measurement position requires a subtraction of 5 dB to account for the approximate doubling of the sound pressure (+6 dB) at the façade surface. The flush method is the most common and ideal method because of the ease to accomplish, applicability in most circumstances, assurance of the ability to measure similarly for pre- and post-construction conditions and repeatability of the measurement technique in the field.

(2) Nearby method:

ASTM E966 provides a second method for determining the outdoor sound pressure level: the nearby microphone method[8] with a 2 dB subtraction to the measured level to account for the reflection of sound energy from the façade and back to the microphone. This method requires the microphone to be 4 to 8 feet from the surface. This method also requires that the loudspeaker be positioned far away from the building façade (at least 40 feet) to minimize the increase in sound level associated with the measurement position being 4 to 8 feet closer to the speaker than is the façade. An additional adjustment factor of 1 dB should be subtracted from the measured exterior level to account for this effect.

[7] ASTM E966 Section 8.3.3 describes how to conduct the measurements and Section 8.5.3 provides required adjustments.

[8] ASTM E966 Section 8.3.2 describes how to conduct the measurement and Section 8.5.2 provides required adjustments.

(3) Free-field method:

The third technique, known as the free-field or calibration method[9], requires no adjustment as the measurement is conducted in an environment relatively free of reflective surfaces. The free-field method usually requires a separate speaker set up and measurement. To use the free field method, first measure the distance from the speaker to the façade during the interior room measurement. Then position the loudspeaker in a free-field environment over soft ground and measure the sound level at that same distance from the speaker by sweeping the microphone at the distance determined."

2.2.3 Measurement documentation

Digital photographs must be taken of the following:

- Exterior of each home to aid in identifying the property
- Loudspeaker positions and associated exterior façade areas under test
- Exterior elements that have noticeable product and/or installation defects
- Room interiors to document conditions in case noise modeling is undertaken or retesting is required

The digital camera must be set to the same date and time as the integrating sound level meter and all photographs must have a date and time stamp for reference. Data log sheets must also be completed (digital format is acceptable) that include, at a minimum, the following information:

- Airport code/identifier
- Address of property tested
- Resident last name or site name
- Site or parcel number (if known and applicable)
- Building number and unit number (multi-family only)
- Building floor number and unit type (multi-family only)
- Date and time of the measurements
- Initials of person(s) conducting the testing
- Description of rooms and elements tested
- Speaker set up (ground, tripod, or elevated)
- Noise-exposed room surfaces (façade, roof, or both)
- Exterior measurement method (flush, nearby, or free-field)
- A-weighted Leq noise levels, in dB, and corresponding SLM data file numbers (for interior background, interior test, exterior background, and exterior test)
- Sketch of floorplan, including all eligible rooms and noting all exterior elements
- Documentation on sketch of all loudspeaker positions, including reference distances

2.3 Calculation of Outdoor/Indoor Noise Reduction (OINR)

The Outdoor/Indoor Noise Reduction (OINR) of tested rooms and building elements are calculated from the measured exterior and interior sound levels in each octave band or one-third octave band, as outlined in ASTM E966. The OINR values are used to compute the outdoor-to-indoor Noise Level Reduction (NLR) of aircraft noise as measured in A-weighted decibels, denoted dB.

[9] ASTM E966 Section 8.3.1 describes how to conduct the measurement and Section 8.5.1 provides required adjustments.

The OINR values are computed for each tested eligible room by subtracting the interior noise level measured in each octave band or one-third octave band from the corresponding exterior sound level measurement. The exterior sound level data are first adjusted to account for the acoustic energy reflected from the building façade under evaluation, as outlined previously in report Section 2.2.2. The exterior and interior sound level data collected with the artificial noise source operating are likewise adjusted to account for the ambient acoustical energy measured with the noise source turned off. These are shown in the following equations.

The adjusted exterior level in each octave band or one-third octave band is:

$$L_{Ext\ Adj} = 10\log\left(10^{\frac{L_{Ext\ Measured}}{10}} - 10^{\frac{L_{Ext\ Background}}{10}}\right) - Adj_{Ref\ Energy}$$

The adjusted interior level in each octave band or one-third octave band is:

$$L_{Int\ Adj} = 10\log\left(10^{\frac{L_{Int\ Measured}}{10}} - 10^{\frac{L_{Int\ Background}}{10}}\right)$$

The OINR level in each octave band or one-third octave band is then determined by:

$$OINR = L_{Ext\ Adj} - L_{Int\ Adj}$$

The measurements may also be adjusted per ASTM E966 based on the angle of incidence of the noise source. The acoustical consultant typically attempts to position the loudspeaker to obtain an incident angle of 45 degrees for consistency, repeatability and efficiency as it requires no correction in the calculations. If a different angle-of-incidence is required, the consultant must apply the appropriate correction to the calculations as provided in ASTM E966.

2.4 Calculation of Noise Level Reduction (NLR)

NLR is a single number rating used for the comparison of the difference in outdoor-to-indoor noise levels. This number is typically used to judge the overall effectiveness of airport sound insulation programs.

The NLR of a room is dependent on the frequency (sound spectrum) content of the exterior noise source. For aviation sound insulation programs, the computed NLR values are determined using an appropriate aircraft noise source. The exterior aircraft source spectrum is also A-weighted to resemble human perception and to be consistent with FAA guidelines for assessing aircraft noise in communities.

The exterior aircraft noise spectrum was determined using the theoretical capacity analysis. The T-38A was estimated to be the greatest overall contributor to CNEL sound levels for departures from runways 22 L/R. Figure 1 and Table 1 present the octave band aircraft noise spectrum, normalized to an overall A-weighted sound level of 65 dB. Table 2 provides the corresponding one-third octave band sound levels.

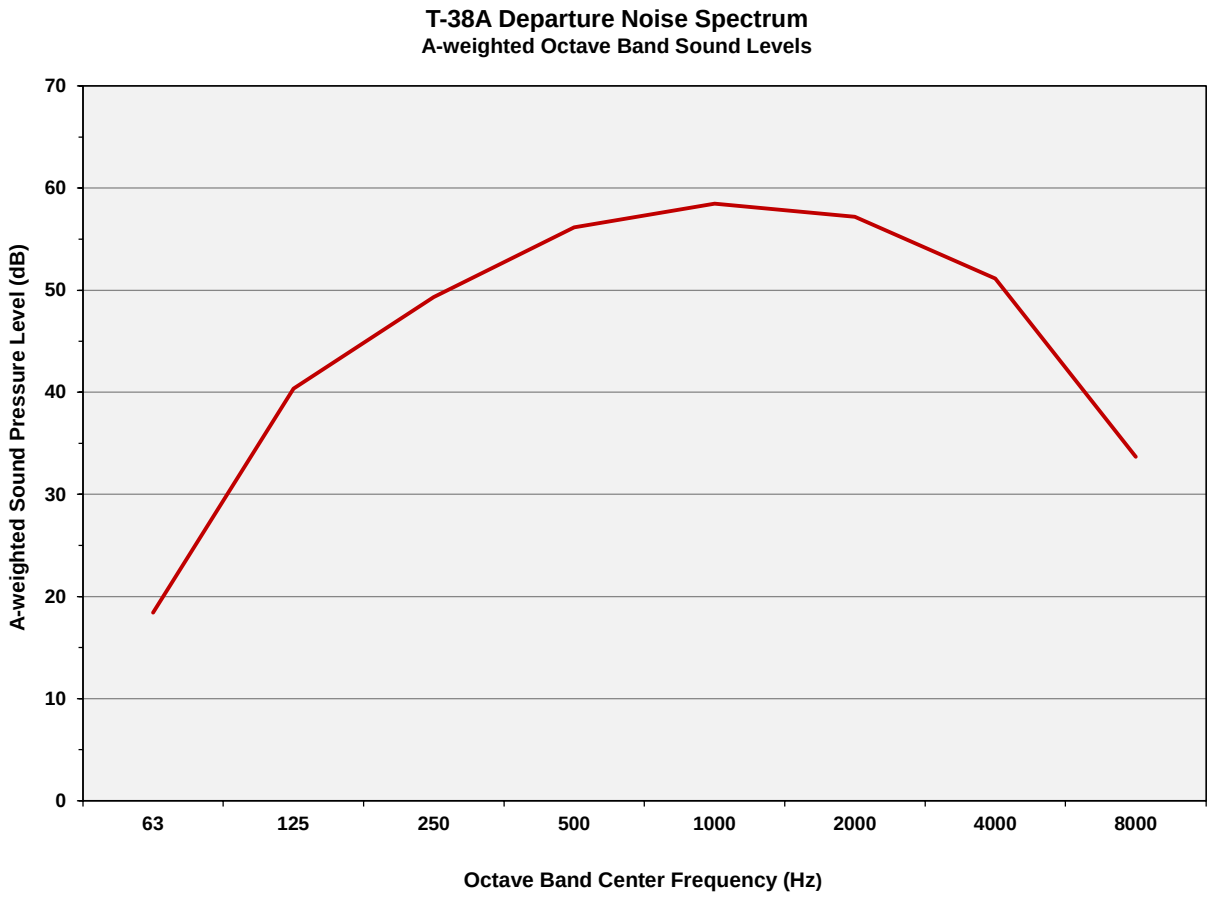

Figure 1. A-weighted Octave Band Aircraft Noise Spectrum

Table 1. A-weighted Octave Band Aircraft Noise Spectrum

Hz	63	125	250	500	1000	2000	4000	8000
dB	20.7	42.6	51.6	58.4	60.8	59.5	53.4	36.0

Table 2. A-weighted One-third Octave Band Aircraft Noise Spectrum

Hz	50	63	80	100	125	160	200	250	315	400	500	630	Hz
dB	11.4	14.7	21.0	30.9	38.2	42.4	42.3	47.3	49.9	52.4	52.4	54.9	dB
Hz	800	1000	1250	1500	2000	2500	3150	4000	5000	6300	8000	10000	Hz
dB	55.8	56.1	55.8	55.3	54.7	53.8	51.6	47.8	42.5	35.2	29.4	24.9	dB

The indoor A-weighted noise source spectrum for each tested eligible room in a structure is obtained by subtracting the measured OINR values from each corresponding octave band or one-third octave band of the exterior A-weighted aircraft source spectrum.

The overall A-weighted interior noise level is then obtained by summing the individual energies calculated for each octave band. The A-weighted NLR value for each tested room, based on the exterior aircraft spectrum, is computed from the difference between the overall outdoor and indoor A-weighted aircraft noise levels. This is shown in the following equations.

The exterior A-weighted total level is:

$$L_{Ext\ Total} = 10log \sum_{i=1}^{k} 10^{\frac{L_{Ext\ Noise\ Source\ Spectrum,i}}{10}}$$

The interior A-weighted total level is:

$$L_{Int\ Total} = 10log \sum_{i=1}^{k} 10^{\frac{L_{Ext\ Noise\ Source\ Spectrum,i} - OINR_i}{10}}$$

where "k" is the total number of octave or one-third octave bands used.

The NLR is then determined by:

$$NLR = L_{Ext\ Total} - L_{Int\ Total}$$

Table 3 presents an example of an octave band measurement calculation.

Table 3. Example Octave Band Measurement Calculation

	Octave Band Center Frequency								A-weighted Total
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Unweighted Measurement Data									
Exterior Background	67.3	66.2	58.4	50.2	48.5	45.6	39.8	34.2	**56.0**
Exterior Measurement (flush)	93.1	93.3	88.3	87.9	88.4	86.8	88.1	89.5	**95.1**
Exterior Adjusted	88.1	88.3	83.3	82.9	83.4	81.8	83.1	84.5	**90.1**
Interior Background	49.1	46.4	37.2	28.1	29.0	23.7	21.4	20.7	**35.6**
Interior Measurement	70.4	70.0	61.4	61.8	60.2	56.8	57.8	54.1	**65.8**
Interior Adjusted	70.4	70.0	61.4	61.8	60.2	56.8	57.8	54.1	**65.8**
Outdoor-Indoor Noise Reduction (OINR)	**17.7**	**18.3**	**21.9**	**21.1**	**23.2**	**25.0**	**25.3**	**30.4**	
A-weighted Aircraft Sound Levels									
Exterior Noise Level	20.7	42.6	51.6	58.4	60.8	59.5	53.4	36.0	**65.0**
Interior Noise Level	3.0	24.3	29.7	37.3	37.6	34.5	28.1	5.6	**42.0**
								Noise Level Reduction (NLR):	***23.0 dB***

Under the "Unweighted Measured Data" section, the *Interior Background* shows the measured interior background octave band levels with the loudspeaker turned off and the A-weighted total. The *Interior Measurement* presents the measured interior octave band levels with the loudspeaker turned on and the A-weighted total. The *Interior Adjusted* provides the interior octave band levels with the measured background sound level contribution removed and the A-weighted total. The *Exterior Background* shows the measured exterior background octave band levels with the loudspeaker off and the A-weighted total. The *Exterior Measurement* shows the measured exterior façade octave band levels with the loudspeaker on and the A-weighted total. The *Exterior Adjusted* provides the exterior octave band levels with the measured background sound level and the façade reflected energy contributions removed and the A-weighted total. In this example, note that the octave band levels and the A-weighted totals both show the measurements with the speaker turned on being more than 10 dB louder than the background levels with the speaker turned off.

The OINR is then developed by subtracting the *Interior Adjusted* level from the *Exterior Adjusted* level for each octave band, as outlined in Section 2.3. Under "A-Weighted Aircraft Noise Source Spectrum" the OINR is subtracted from the *Exterior Spectrum* to obtain the *Interior Spectrum*. The A-weighted acoustical

energy totals of the *Exterior Spectrum* and the *Interior Spectrum* are subtracted to obtain the NLR value, shown on the last line of the example table.

2.5 Extent of Acoustical Testing

According to Appendix R of the AIP Handbook, FAA recommends testing between 10% and 30% of the potentially eligible parcels[10]. In order to verify that homes are constructed in substantial conformance to a particular master permit plan set for a floorplan type and satisfy the design goal of achieving 25 dB Noise Level Reduction (NLR), post-construction acoustical testing of the first home conforming to the master permit plan set for a floorplan type (typically the model home) and at least one additional home for each floorplan type randomly selected during each construction phase to ensure the homes all meet the acoustical goal.

[10] FAA Order 5100.38D Appendix R, Table R-4 "Pre- and Post-Testing Criteria for Noise Insulation Projects", c. "First Step – Initial Testing" Paragraph (3): "Once the sponsor has characterized the diversity of the residences in the noise contour, it will select a representative sample of each type of similarly-constructed residences for testing, which based on industry review is typically 10% to 30%."

3 Compliance Determination

SCDA will determine compliance based on the testing reports provided during each phase of construction. Residential structures with an average NLR of 25 dB or greater will be considered to have met the SCDA requirements for those within the 60 to 65 dB CNEL contour.

Noise and Vibration Analysis

West Jackson Highway Master Plan Area

Sacramento County, California

BAC Job # 2022-151

Prepared For:

Stonebridge Properties, LLC

Granite Construction Company

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Introduction

The West Jackson Highway Master Plan was initiated by the Sacramento County Board of Supervisors on April 17, 2012. In accordance with the requirements of General Plan Land Use Element Policy LU-119, Stonebridge Properties, LLC (Stonebridge Properties), a subsidiary of Teichert Land Co., and Granite Construction Company (Granite), a California corporation (Participating Properties) have initiated the Master Plan process for all land encompassed within the proposed Master Plan Area (referred to herein as the "Plan Area"). Stonebridge Properties and Granite have retained Bollard Acoustical Consultants, Inc. (BAC) to prepare this noise study report identifying existing noise sources within or affecting the Plan Area, quantifying baseline ambient noise and vibration conditions within the Plan Area, and identifying noise impacts and mitigation measures associated with development within the Plan Area. It is intended that information contained in this report will be utilized in the development of the Noise Section of the Environmental Impact Report (EIR) to be prepared for the Master Plan.

Of the entire 5,913± acres of the Plan Area, the Participating Properties collectively own 4,079± acres – Teichert owns 3,016± acres and Granite owns 1,063± acres (See Figure 1). Thus, Participating Properties represent 69% of the total Plan Area acreage. These properties primarily include aggregate mining sites used for sand and gravel extraction, many of which have already been mined and reclaimed. Although most of the mining is complete, some of the Participating Properties continue to support various mining related activities.

In addition to mining areas, the Plan Area is comprised of a mixture of rural residential, institutional, agricultural and industrial properties located along State Route 16 (Jackson Highway) in the geographic center of Sacramento County. The Plan Area boundaries are generally Jackson Highway, Kiefer Boulevard and Goethe Road to the north, portions of Elder Creek Road and Florin Road to the south, the City of Sacramento to the west and Excelsior Road to the east. As a result of the mining activities across the landscape since the 1930's, the Plan Area has largely been bypassed by development. Just over 80% of the Plan Area boundary abuts the existing Sacramento County Urban Policy Area and the Sacramento City Limits.

The Master Plan has been designed to provide a mixture of residential, commercial, recreational, farming, and employment nodes intended to reduce vehicle miles traveled (VMT) within the Plan Area and support the provision and use of transit alternatives. Some of the proposed land uses designations have components which could be noise-generating (industrial, active recreation areas parks and school playgrounds, commercial uses, etc.), whereas other uses have noise-sensitive components (residences, school classrooms and office interiors, etc.).

The project environmental document will consider the effects of noise generated by the project as well as noise impacting the project from sources unrelated to the Master Plan development. The Master Plan establishes a framework and strategy for all future land use within the Plan Area, including general land use and development standards, policies, land use allocations, infrastructure, and public service planning. Within the Master Plan, two District Area Plans (labeled as District 1 and District 2), are established, in addition to three Future Planning Areas (FPA's) (labeled as FPA A, B and C) (See Figure 2). District Area Plans primarily consist of

Participating Properties, while Future Planning Areas are comprised of non-participating property owners. Teichert's acreage is fully within District 1. Granite's acreage is fully within District 2.

The District Plans establish specific land uses, policies, design guidelines and development standards for the properties within the District Areas. Although future land uses for the FPAs will be established in gross by the Master Plan, specific land uses, policies, design guidelines and development standards for these areas are not provided by the Master Plan. It is anticipated that the landowners within the FPAs will initiate District Plans or Specific Plans in the future. Should the landowners in those areas contemplate changing existing land uses within the FPA, such future use must be consistent with the provisions of the Master Plan and undergo further analysis, including environmental review, when an entitlement application is submitted to the County.

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Figure 1

West Jackson Highway Master Plan - Sacramento County, California
Master Plan Area

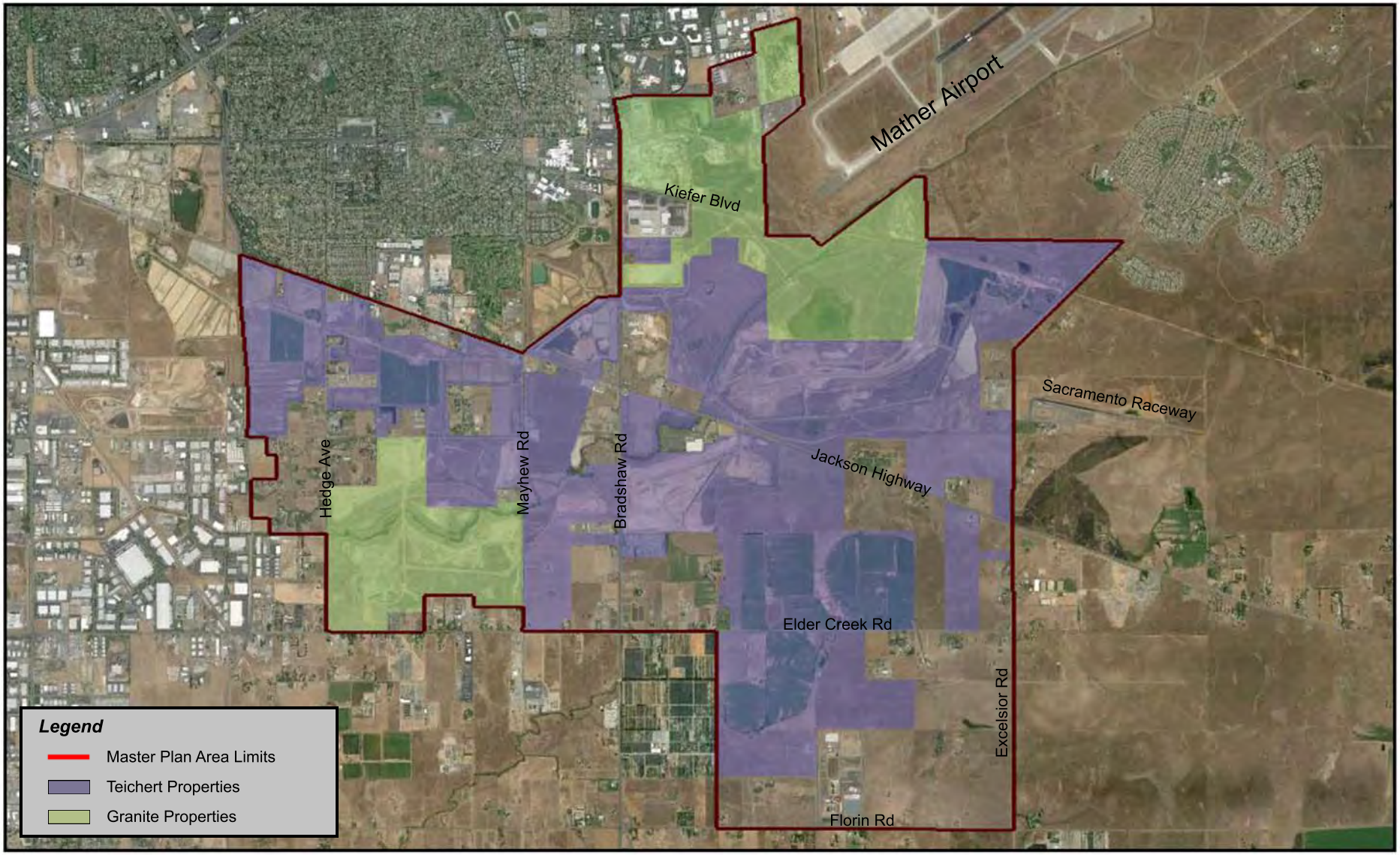

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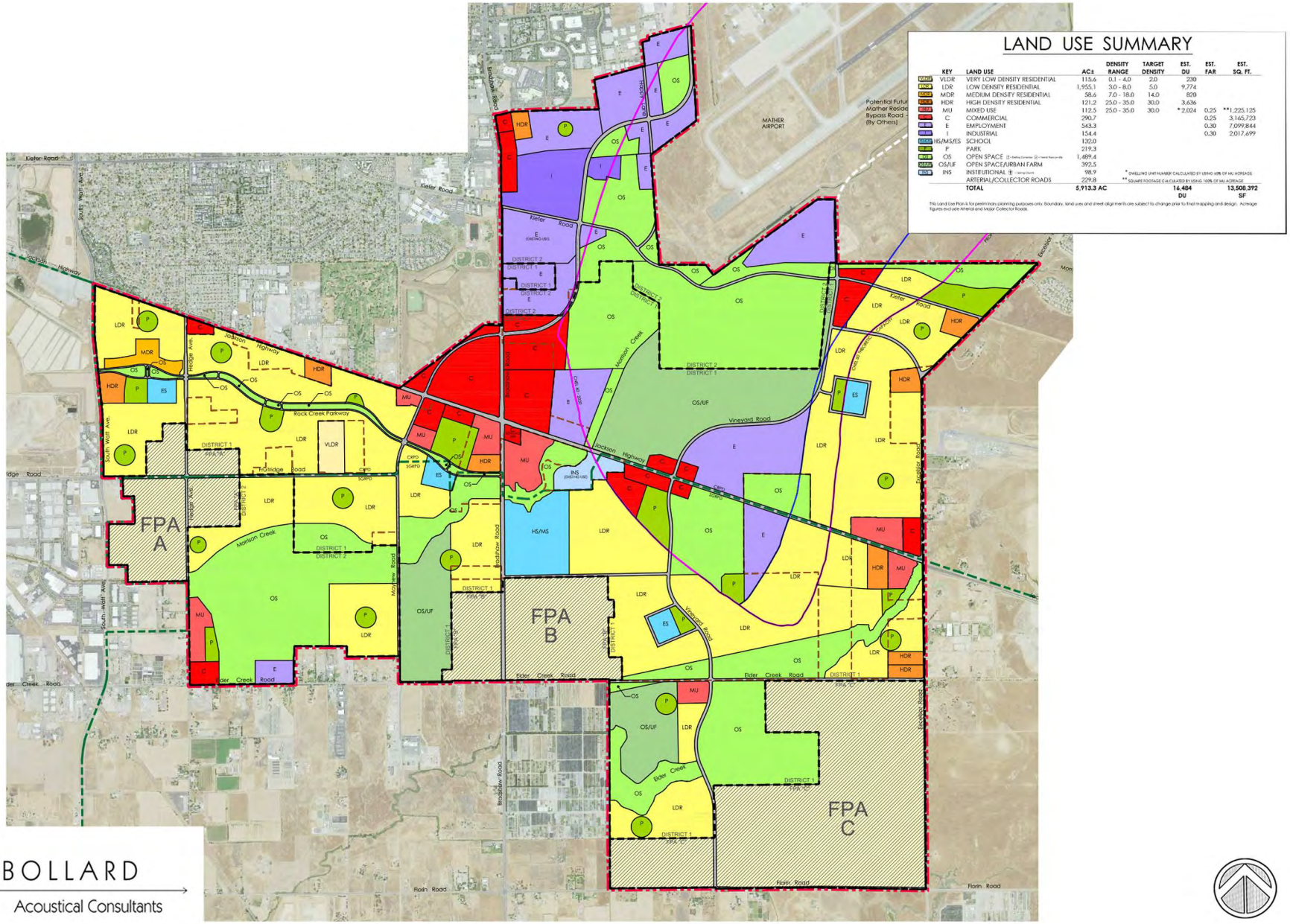
Figure 2

West Jackson Highway Master Plan - Sacramento County, California
Revised Project Land Use Map



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Fundamentals and Terminology

Noise

Noise is simply described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Discussing sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are compared to the reference pressure and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. There is a strong correlation between the way humans perceive sound and A-weighted sound levels. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment for community exposures. All sound levels expressed in this section are A-weighted sound levels, unless noted otherwise. Definitions of acoustical terminology are provided in Appendix A.

Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), over a given time period (usually one hour). The L_{eq} is the foundation of the day-night average noise descriptor, and shows very good correlation with community response to noise for the average person.

The L_{dn} is based upon the average noise level over a 24-hour day, with a +10 dB weighting applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Where short-term noise sources are an issue, noise impacts may be assessed in terms of maximum noise levels, hourly averages, or other statistical descriptors.

The perceived loudness of sounds and corresponding reactions to noise are dependent upon many factors, including sound pressure level, duration of intrusive sound, frequency of occurrence, time of occurrence, and frequency content. As mentioned above; however, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. Table 1 shows examples of noise levels for several common noise sources and environments.

Table 1
Typical A-Weighted Sound Levels of Common Noise Sources

Loudness Ratio*	dBA	Description
128	130	Threshold of pain
64	120	Jet aircraft take-off at 100 feet
32	110	Riveting machine at operators' position
16	100	Shotgun at 200 feet
8	90	Bulldozer at 50 feet
4	80	Diesel locomotive at 300 feet
2	70	Commercial jet aircraft interior during flight
1	60	Normal conversation speech at 5-10 feet
1/2	50	Open office background level
1/4	40	Background level within a residence
1/8	30	Soft whisper at 2 feet
1/16	20	Interior of recording studio

* Each 10 dBA increase in sound pressure level equates to a doubling of loudness. For example, 70 dBA is twice as loud as 60 dB and 80 dBA is four times as loud as 60 dBA, etc.

Perception of Changes in Noise Levels

Table 2 is based upon recommendations made in August 1992 by Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these criteria have been applied to other sources of noise similarly described in terms of cumulative noise exposure metrics such as the L_{dn}.

Table 2
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project, Ldn	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON)

According to Table 2, an increase in noise from similar sources of 5 dB or more would be noticeable where the ambient level is less than 60 dB. Where the ambient level is between 60 and 65 dB, an increase in noise of 3 dB or more would be noticeable, and an increase of 1.5 dB or more would be noticeable where the ambient noise level exceeds 65 dB L_{dn}. The rationale for the Table 2 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

Single-Event Noise & Sleep Disturbance

A single event is an individual distinct loud activity, such as an aircraft overflight, a train or truck passage, or any other brief and discrete noise-generating activity. Because most noise policies applicable to transportation noise sources are typically specified in terms of 24-hour-averaged descriptors, such as Ldn or Community Noise Equivalent Level (CNEL), the potential for annoyance or sleep disturbance associated with individual loud events can be masked by representing the data as an average. A discussion of Single-Event noise effects relative to Sacramento County Noise Policy is included in the Criteria section of the report.

Berkeley Keep Jets Over the Bay

The analysis of single event noise effects under CEQA can be traced to a 2001 court case (*Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners of the City of Oakland* (2001) 91 Cal.App.4th 1344), which concerned a challenge to the proposed expansion of the Oakland Airport. The court required, in that context (i.e. an airport expansion), that the EIR address single-event noise and sleep disturbance effects on existing residents in the City of Berkeley. However, the court did not recommend an appropriate single event noise level standard to be employed.

Extensive studies have been conducted regarding the effects of single-event noise on sleep disturbance, with the Sound Exposure Level (SEL) metric being a common metric used for such assessments. SEL represents the entire sound energy of a given single-event normalized into a one-second period regardless of event duration. As a result, the single-number SEL metric contains information pertaining to both event duration and intensity. Another descriptor utilized to assess single-event noise is the maximum, or Lmax, noise level associated with the event. A problem with utilizing Lmax to assess single events is that the duration of the event is not considered.

There are currently on-going discussions regarding the appropriateness of using the SEL metric as a supplement or replacement for cumulative noise level metrics such as Ldn and CNEL, 24-hour noise descriptors. Nonetheless, because SEL describes a receiver's total noise exposure from a single impulsive event, SEL is often used to characterize noise from individual brief loud events.

Industry Guidance on Single Event Noise and Sleep Disturbance

The Federal Interagency Committee on Aviation Noise (FICAN) has provided estimates of the percentage of people expected to be awakened when exposed to specific SELs inside a home (FICAN 1997). However, FICAN did not recommend a threshold of significance based on the percent of people awakened. According to the FICAN study, 10% of the population is estimated to be awakened when the SEL interior noise level reaches 81 dBA. An estimated 5 to 10 percent of the population is affected when the SEL interior noise level is between 65 and 81 dBA, and few sleep awakenings (less than 5 percent) are predicted if the interior SEL is less than 65 dBA. The FICAN results focused on individual single-event sound levels but did not take into consideration how exposure to multiple single events affected sleep disturbance.

ANSI and the Acoustical Society of America (ASA) released a voluntary methodology to predict sleep disturbance in terms of the probability of awakening. ANSI's *Quantities and Procedures for Description and Measurement of Environmental Sound -Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes*, July 2008, provides a method to predict sleep disturbance associated with noise levels in terms of indoor A-weighted sound exposure level (ASEL). The methodology was developed from about 10,000 subject-nights of observations primarily in homes near areas of routine jet aircraft takeoff and landings, railroads, roads, and highways. The methodology assumes that the individuals have no sleep disorders, normal hearing, and only applies to individuals over 18 years of age. The methodology also defines "disturbance" as being restricted to a behaviorally confirmed awakening.

While the FICAN has a recommended means of predicting awakenings from a single aircraft event, the new ANSI methodology further refines this approach by taking into account the time since the person fell asleep and the ability to identify the probability of being awakened from multiple aircraft events over the course of the entire night. However, research performed by BAC questions the accuracy of the ANSI methodology.

Although the FICAN and ANSI methodologies provide a means by which the potential for awakenings due to single events can be predicted, neither methodology provides a recommended target level for acceptable single-event noise or percentage of awakening. Further, there is no industry consensus establishing recommended target levels for acceptable single-event noise or percentage of awakening.

Sound Propagation

It is commonly understood that sound decreases with distance. But the propagation of sound is dependent on considerably more variables than distance alone. Those variables include the type of noise source (point, moving point, or line sources), the directionality of the noise source, the frequency content of the source (low frequency sound is absorbed in the atmosphere at a slower

rate than high-frequency sound and therefore "carries" farther), atmospheric conditions (wind, temperature, humidity, gradients), ground type (dirt, grass fields, concrete, etc.), shielding (structures, noise barriers, topography), and vegetation.

In the generally urban setting of the Plan Area, noise-sensitive receptors are located within fairly close proximity to noise sources. At short distances between the source and receptor, the effects of the atmosphere on sound propagation are diminished, as those effects become more pronounced at distances in excess of 300 feet.

For the purposes of assessing noise sources within the project area, traffic on public roadways are considered "moving point" sources. The sound level decay rate for this type of source is 4.5 dB per doubling of distance from the source. Stationary noise sources, such as the Granite Bradshaw aggregate plant, are treated as "point" sources. The sound level decay rate for point sources is 6 dB per each doubling of distance from the source.

Several of the Teichert and Granite parcels located within the Plan Area are former aggregate excavation sites, and are therefore depressed relative to surrounding ground elevation in many cases. This is important in that the nearby noise sources, such as adjacent roadways, are typically not visible from the depressed positions within these parcels. Because the former excavation embankments provide topographic shielding of adjacent traffic noise sources from the depressed positions, ambient noise levels within the depressed areas are considerably lower than locations at or near even grade with adjacent roadways.

Noise Mitigation Fundamentals

Any noise problem may be considered as being composed of three basic elements: the noise source, a transmission path, and a receiver. The appropriate acoustical treatment for a given project should consider the nature of the noise source and the sensitivity of the receiver. The problem should be defined in terms of appropriate criteria (Ldn, L_{50}, or Lmax), the location of the sensitive receiver (inside or outside), and when the problem occurs (daytime, nighttime, or 24-hour average). Noise control techniques should then be selected to provide an acceptable noise environment for the receiving property while remaining consistent with local aesthetic standards and practical structural and economic limits. Fundamental noise control techniques include the following:

Use of Setbacks

Noise exposure may be reduced by increasing the distance between the noise source and receiving use. The available noise attenuation from this technique is limited by the characteristics of the noise source, but is generally about 4 to 6 dB per doubling of distance from the source.

Use of Barriers

Shielding by barriers can be obtained by placing walls, berms or other structures, such as buildings, between the noise source and the receiver. The effectiveness of a barrier depends upon blocking line-of-sight between the source and receiver, and is improved with increasing the distance the sound must travel to pass over the barrier as compared

to a straight line from source to receiver. The difference between the distance over a barrier and a straight line between source and receiver is called the "path length difference," and is the basis for calculating barrier noise reduction.

Barrier effectiveness depends upon the relative heights of the source, barrier and receiver. In general, barriers are most effective when placed close to either the receiver or the source. An intermediate barrier location yields a smaller path-length-difference for a given increase in barrier height than does a location closer to either source or receiver.

For maximum effectiveness, barriers must be continuous and relatively airtight along their length and height. To ensure that sound transmission through the barrier is insignificant, barrier mass should be about 3-4 lbs. /square foot, although a lesser mass may be acceptable if the barrier material provides sufficient transmission loss. Satisfaction of the above criteria requires substantial and well-fitted barrier materials, placed to intercept line of sight to all significant noise sources.

Earth, in the form of berms, or the face of a depressed area, is also an effective barrier material. This project design makes extensive use of topography and site grading to serve as both visual and acoustic barriers to nearby traffic and some on-site noise sources associated with the Teichert Perkins facility.

There are practical limits to the noise reduction provided by barriers. For traffic noise, a 5 to 10 dB noise reduction may often be reasonably attained. A 15 dB noise reduction is usually difficult but sometimes possible to attain, but a 20 dB noise reduction is extremely difficult to achieve. Barriers usually are provided in the form of walls, berms, or berm/wall combinations. The use of an earth berm in lieu of a solid wall may provide additional attenuation over that attained by a solid wall alone due to the absorption provided by the earth. Berm/wall combinations offer slightly better acoustical performance than solid walls, and are often preferred for aesthetic reasons over solid barrier walls alone.

Site Design

Buildings can be placed on a project site to shield other structures or areas, to remove them from noise-impacted areas, and to prevent an increase in noise level caused by reflections. The use of one building to shield another can significantly reduce overall project noise control costs, particularly if the shielding structure is insensitive to noise. As an example, carports or garages can be used to form or complement a barrier shielding adjacent dwellings or an outdoor activity area. Similarly, one residential unit can be placed to shield another so that noise reduction measures are needed for only the building closest to the noise source. Placement of outdoor activity areas within the shielded portion of a building complex, such as a central courtyard, can be an effective method of providing a quiet retreat in an otherwise noisy environment. Patios or balconies should be placed on the side of a building opposite the noise source, and "wing walls" can be added to buildings or patios to help shield sensitive uses.

Another useful option in site design is the placement of relatively insensitive land uses, such as commercial uses, between the noise source and a more sensitive portion of the

project. Examples include development of a commercial strip along a busy arterial to block noise affecting a residential area. If existing topography or development adjacent to the project site provides some shielding, as in the case of an existing berm, knoll or building, sensitive structures or activity areas may be placed behind those features to reduce noise control requirements.

Building Design

When structures have been located to provide maximum noise reduction by site design or shielding, noise reduction measures may still be required to achieve an acceptable interior noise environment. The cost of such measures may be reduced by placement of interior dwelling unit features. For example, bedrooms, living rooms, family rooms and other noise-sensitive portions of a dwelling can be located on the side of the unit farthest from the noise source.

Bathrooms, closets, stairwells and food preparation areas are relatively insensitive to exterior noise sources, and can be placed on the noisy side of a unit. When such techniques are employed, noise reduction requirements for the building facade can be significantly reduced, although the architect must take care to isolate the noise impacted areas by the use of partitions or doors.

Noise Reduction by Building Facades

When interior noise levels are of concern in a noisy environment, noise reduction may be obtained through acoustical design of building facades. Standard residential construction practices provide 10 to 15 dB noise reduction for building facades with open windows, and approximately 25-30 dB noise reduction when windows are closed. Thus a 25 dB exterior-to-interior noise reduction can be obtained by the requirement that building design include adequate ventilation systems, allowing windows on a noise-impacted facade to remain closed under any weather condition.

Where greater noise reduction is required, acoustical treatment of the building facade is necessary. The greatest improvement in building façade noise reduction can typically be realized through specification of upgraded windows with higher Sound Transmission Class (STC) ratings.

Noise transmitted through walls can be reduced by increasing wall mass (using stucco or brick in lieu of wood siding), isolating wall members by the use of double- or staggered-stud walls, or mounting interior walls on resilient channels. Noise control for exterior doorways is provided by reducing door area, using solid-core doors, and by acoustically sealing door perimeters with suitable gaskets. Roof treatments may include the use of plywood sheathing under roofing materials.

Whichever noise control techniques are employed, it is essential that attention be given to installation of weather-stripping and caulking of joints. Openings for attic or subfloor ventilation may also require acoustical treatment; tight-fitting fireplace dampers and glass doors may be needed in aircraft noise-impacted areas.

Use of Vegetation

Trees and other vegetation are often thought to provide significant noise attenuation. However, approximately 100 feet of dense foliage (so that no visual path extends through the foliage) is required to achieve a 5 dB attenuation of traffic noise. Thus the use of vegetation as a noise barrier should not be considered a practical method of noise control unless large tracts of dense foliage are part of the existing landscape.

Vegetation can be used to acoustically "soften" intervening ground between a noise source and receiver, increasing ground absorption of sound and thus increasing the attenuation of sound with distance. Planting of trees and shrubs is also of aesthetic and psychological value, and may reduce adverse public reaction to a noise source by removing the source from view, even though noise levels will be largely unaffected.

In summary, the effects of vegetation upon noise transmission are minor, and are primarily limited to increased absorption of high frequency sounds and to reducing adverse public reaction to the noise by providing aesthetic benefits.

Noise-Reducing Paving Materials (Rubberized Asphalt)

Studies conducted for the Sacramento County Planning and Environmental Review Department and Transportation Department to determine the noise reduction provided by rubberized asphalt have been completed in recent years. Those studies indicate that the use of rubberized asphalt on two County roadways appears to have resulted in an average traffic noise level reduction of approximately 4 dB over that provided by conventional asphalt.

Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities (inches/second). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. The maximum rate, or velocity of particle movement, is the commonly accepted descriptor of the vibration "strength".

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, June 2004), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage (e.g., crack plaster). Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, including heavy trucks traveling on a highway, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Criteria for Acceptable Noise and Vibration Levels

Sacramento County

Sacramento County General Plan

The Noise Element of the Sacramento County General Plan contains policies pertaining to acceptable noise generation and exposure levels within the County. The policies contained within the County Noise Element which are pertinent to the evaluation of noise impacts due to and upon development within the Plan Area are reproduced below.

Traffic and Railroad Noise Sources

NO-1 The noise level standards for noise-sensitive areas of new uses affected by traffic or railroad noise sources in Sacramento County are shown in Table 3. Where the noise level standards of Table 3 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 3 standards.

Aircraft Noise Sources

NO-2 Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to the Land Use Compatibility for Aircraft Noise table contained in the County General Plan Noise Element. Development proposals which may be affected by aircraft noise from Mather Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, as well as applicable footnotes in Table 4 of the General Plan Noise Element.

NO-3 New residential development within the 60 CNEL noise contours adopted by the County for planning purposes at any airport or Helipad within Sacramento County shall be prohibited unless exceptions set forth in General Plan Noise Element

Table 4 are found to be applicable. This policy is not applicable to Executive Airport.

Footnotes 2, 6 and 7 of General Plan Noise Element Table 4 state the following with respect to development of noise-sensitive uses within the Mather Airport noise contours:

2. Single family detached residential units within the 60-65 dB CNEL noise contours of the Mather Airport Policy Area may be considered a compatible use if: (a) approved by the Board of Supervisors upon completion of Sacramento County's master plan process, including demonstration of compliance with LU-119 and LU-120; (b) an evaluation of potential noise and safety impacts pursuant to CEQA has occurred and appropriate noise mitigation measures to reduce interior noise levels to 45 dB have been included in the environmental document and adopted as conditions of approval; and (c) all of the requirements in Footnote 8 below are met. Second residential units are a compatible use within all CNEL ranges, subject to the condition that the proposed second unit be consistent with the provisions of Section 65852.1 and 65852.2 of the California Government Code.

6. Compatible at Sacramento International Airport and Franklin Field only if the residential use is directly related to agricultural uses, such as dwelling units for the land owner, the owner's immediate family, or for employees. May be compatible at Mather Airport if approved by the Board of Supervisors as a component of a master plan and all criteria set forth in Footnote 2 above are satisfied. All residential units shall be designed to limit intruding noise such that interior noise levels do not exceed 45 CNEL, with windows closed, in any habitable room.

7. New residential uses within 60 CNEL are not compatible, with the exception of accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural or single family dwellings as set forth in Footnote 2 above. Except as provided in Footnotes 2 and 6 above, new residential development within the Mather Airport Policy Area boundaries but outside the 60 CNEL shall be subject to the following conditions:

    A. Provide minimum noise insulation to provide 45dB within new residential dwellings, including detached single family dwellings, with windows closed, in any habitable room.

    B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within the Mather Airport Policy Area.

    C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento and recorded with the Sacramento County Recorder and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within the Mather Airport Policy

Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of Mather Airport.

New residential development within the Mather Airport Policy Area outside the 65 dB CNEL but inside the 60 dB CNEL shall be subject to Conditions A through C above and a County-approved noise analysis and mitigation to reduce interior noise impacts to 45 dB with windows closed, in any habitable room.

NO-4 New residential development within adopted Airport Policy Area boundaries*, but outside the 60 CNEL**, shall be subject to the following conditions:

A. Provide minimum noise insulation to 45 dB CNEL within new residential dwellings, including detached single family dwellings, with windows closed in any habitable room.

B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within an Airport Policy Area.

C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento, recorded with the Sacramento County Recorder, and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within an Airport Planning Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of the subject Airport.

Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural and between the 60 and 65 CNEL contours, shall be permitted within adopted Airport Policy Area boundaries, but would be subject to the conditions listed above.

** The relationship of the Mather Airport Policy Area to the West Jackson Highway Master Plan Area is illustrated on Figure 3. That figure indicates that the majority of the master plan area is located within the Mather Airport Policy Area. As a result, all new residential development within the WJHMP area east of Hedge Avenue would be subject to this General Plan Policy.*

*** The 60 CNEL contour adopted by the County for planning purposes are the "theoretical capacity" contours shown on Figure 4A. Figure 4B shows the portion of the WJMP area which is located within the 60 CNEL contours.*

Sacramento County Guidance on Single Event Noise Methodology

The Sacramento County General Plan Noise Element policies do not provide a noise standard specific to single-events. However, the County has determined that single-event aircraft noise exposure and associated sleep disturbance impacts are to be assessed in accordance with the Sacramento County General Plan Noise Element Policies NO-2 through NO-4 on aircraft noise. Those policies restrict new residential development to areas outside the 60 dB CNEL airport noise contours,

require noise insulation to ensure interior noise levels do not exceed 45 dB CNEL within residences, require notification that prospective buyers are located within an Airport Policy Area, and require that an avigation easement be recorded acknowledging the property is located within an Airport Planning Policy Area.

Non-Transportation Noise Sources

NO-5 The interior and exterior noise level standards for noise-sensitive areas of new uses affected by existing non-transportation noise sources in Sacramento County are shown by Table 4. Where the noise level standards of Table 4 are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 4 standards within sensitive areas.

NO-6 Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not to exceed the interior and exterior noise level standards of Table 4 at existing noise-sensitive areas in the project vicinity.

NO-7 The "last use there" shall be responsible for noise mitigation. However, if a noise-generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 4 standards at the property line of the generating use in anticipation of the future neighboring development.

Construction Noise

NO-8 Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

Transportation Projects

NO-9 For capacity enhancing roadway or rail projects, or the construction of new Roadways or railways, a noise analysis shall be prepared in accordance with the Table 3 requirements. If projected post-project traffic noise levels at existing uses exceed the noise standards of Table 3, then feasible methods of reducing noise to levels consistent with the Table 3 standards shall be analyzed as part of the noise analysis. In the case of existing residential uses, sensitive outdoor areas shall be mitigated to 60 dB, when possible, through the application of feasible methods to reduce noise. If 60 dB cannot be achieved after the application of all feasible methods of reducing noise, then noise levels up to 65 dB are allowed.

If pre-project traffic noise levels for existing uses already exceed the noise standards of Table 3 and the increase is significant as defined below, feasible methods of reducing noise to levels consistent with the Table 3 standards should

be applied. In no case shall the long-term noise exposure for non-industrial uses be greater than 75 dB; long-term noise exposure above this level has the potential to result in hearing loss. A significant increase is defined as follows:

Pre-Project Noise Environment (Ldn)	Significant Increase
Less than 60 dB	5+ dB
60 - 65 dB	3+ dB
Greater than 65 dB	1.5+ dB

NO-10 For interim capacity enhancing roadway or rail projects, or the construction of new interim roadways or railways, it may not be practical or feasible to provide mitigation if the ultimate roadway or railway design would render the interim improvements ineffective or obsolete. An example would be a noise barrier constructed for an interim project which would need to be removed to accommodate the ultimate project. The following factors should be considered in determining whether or not noise mitigation will be implemented for interim projects, but in general, noise mitigation for interim projects would not be provided:

a. The severity of the impact

b. The cost and effectiveness of the mitigation.

c. The number of properties which would benefit from the mitigation.

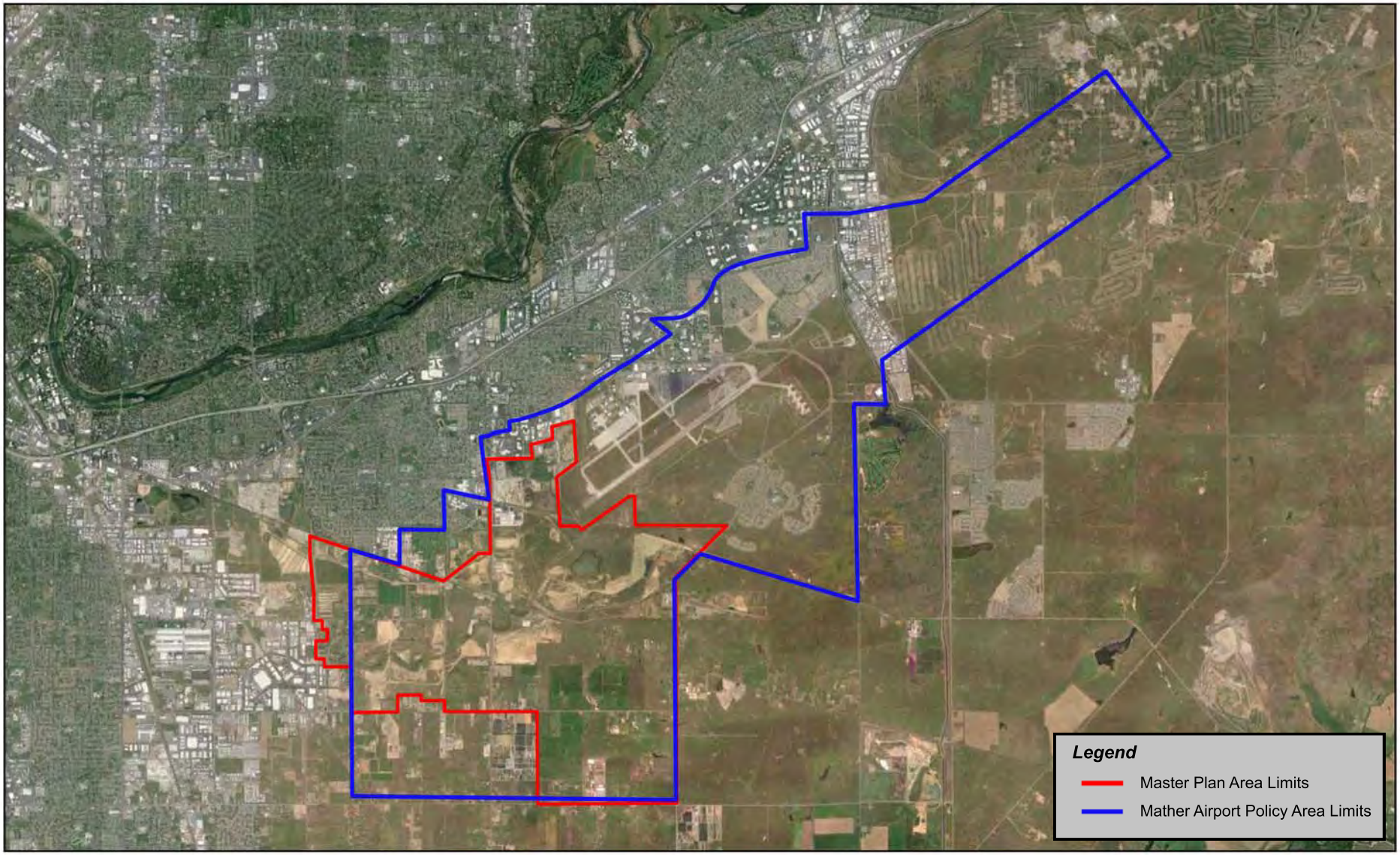
d. The foreseeable duration between interim and ultimate improvements.

e. Aesthetic, safety and engineering considerations.

NO-11 If noise-reducing pavement is to be utilized in conjunction with a roadway improvement project, or if such paving existing adjacent to a proposed new noise-sensitive land use, the acoustical benefits of such pavement shall be included in the noise analysis prepared for the project.

Figure 3

West Jackson Highway Master Plan - Sacramento County, California
Mather Airport Policy Area and Master Plan Area



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General Noise Policy

NO-12 All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with Table 3.

NO-13 Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.

NO-14 Noise analyses prepared for multi-family residential projects, town homes, mixed-use, condominiums, or other residential projects where floor ceiling assemblies or party-walls shall be common to different owners/occupants shall be consistent with the State of California Noise Insulation standards.

NO-15 The County shall have the flexibility to consider the application of 5 dB less restrictive exterior noise standards than those prescribed in Tables 3 and 4 in cases where it is impractical or infeasible to reduce exterior noise levels within infill projects to a state of compliance with the Table 3 or 4 standards. In such cases, the rational for such consideration shall be clearly presented and disclosure statements and noise easements should be included as conditions of project approval. The interior noise level standards of Tables 3 and 4 would still apply. The maximum allowable long-term noise exposure permissible for non-industrial uses is 75 dB.

Exemptions

NO-16 The following sources of noise shall be exempt from the provisions of this Noise Element:

a. Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during daytime hours.

b. Activities associated with events for which a permit has been obtained from the County.

Table 3
Noise Standards for New Uses Affected by Traffic and Railroad Noise
Sacramento County Noise Element

Land Use	Sensitive Outdoor Areas[a] dBA, L_{dn}/CNEL	Sensitive Interior Areas[b] dBA, L_{dn}/CNEL
Residential	65[e]	45
Transient lodging	65[c,e]	45
Hospitals, nursing homes	65[c,d,e]	45
Theaters, auditoriums, music halls	--	35[c]
Churches, meeting halls	65[c]	40
Office buildings	65[c]	45
School, libraries, museums	65[c]	40
Commercial Buildings	--	50[c]
Playgrounds, neighborhood parks	70	--
Industry	65[c]	50

Source: Sacramento County General Plan (2011)

Notes:

[a] Sensitive areas are defined in acoustic terminology section of the Noise Element.

[b] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

[c] Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.

[d] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

[e] If this use is affected by railroad noise, a maximum (Lmax) noise level standard of 70 dB shall be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

Table 4
Non-Transportation Noise Standards
Median (L50) / Maximum (Lmax)[a]
Sacramento County Noise Element

	Outdoor Area[b]		Interior[c]
Land Use	**Daytime**	**Nighttime**	**Day & Night**
All Residential	55 / 75	50 / 70	35 / 55
Transient lodging[d]	55 / 75	--	35 / 55
Hospitals, nursing homes[e,f]	55 / 75	--	35 / 55
Theaters, auditoriums, music halls[f]	--	--	30 / 50
Churches, meeting halls[f]	55 / 75	--	35 / 60
Office buildings[f]	60 / 75	--	45 / 65
Commercial Buildings[f]	--	--	45 / 65
Playgrounds, neighborhood parks[f]	65 / 75	--	--
Industry[f]	60 / 80	--	50 / 70

Source: Sacramento County General Plan (2011)

Notes:

[a] The Table 4 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table 4, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

[b] Sensitive areas are defined in the acoustic terminology section of the Noise Element.

[c] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

[d] Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

[e] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

[f] The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.

[g] Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.

Sacramento County Code

Chapter 6.68 of the Sacramento County Code pertains to Noise Control and is referred to in this study as the Noise Ordinance. The purpose of the Noise Ordinance is to assess complaints of noises alleged to exceed the ambient noise levels. Further, it is declared to be the policy of the County of Sacramento to contain sound levels at their present levels with the ultimate goal of reducing such levels, when and where feasible and without causing undue burdens, to meet the noise standards set forth below. The following section provides the pertinent sections of the County Noise Ordinance.

6.68.070 Exterior Noise Standards

a. The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all properties within a designated noise area.

Noise Area	County Zoning Districts	Time Period	Exterior Noise Standard
1	RE-1, RD-1, RE-2, RD-2, RE-3, RD-3, RD-4, R-1-A, RD-5, R-2, RD-10, R-2A, RD-20, R-3, R-D-30, RD-40, RM-1, RM-2, A-1-B, AR-1, A-2, AR-2, A-5, AR-5	7 a.m.--10 p.m. 10 p.m.--7 a.m.	55 dBA 50 dBA

b. It is unlawful for any person at any location within the County of Sacramento to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

Cumulative Duration of the Intrusive Sound	Allowance Decibels
1. Cumulative period of 30 minutes per hour	0
2. Cumulative period of 15 minutes per hour	+ 5
3. Cumulative period of 5 minutes per hour	+10
4. Cumulative period of 1 minute per hour	+15
5. Level not to be exceeded for any time per hour	+20

c. Each of the noise limits specified in subdivision (b) of this section shall be reduced by five dBA for impulsive* or simple tone** noises, or for noises consisting of speech or music.

* "Impulsive noise" means a noise characterized by brief excursions of sound pressures whose peak levels are very much greater than the ambient noise level, such as might be produced by the impact of a pile driver, punch press or a drop hammer, typically with one second or less duration.

** "Simple tone noise" or "pure tone noise" means a noise characterized by the presence of a predominant frequency or frequencies such as might be produced by whistle or hum.

d. If the ambient noise level exceeds that permitted by any of the first four noise-limit categories specified in subdivision (b), the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

6.68.080 Interior Noise Standards

a. In any apartment, condominium, townhouse, duplex or multiple dwelling unit it is unlawful for any person to create any noise from inside his unit that causes the noise level when measured in a neighboring unit during the periods ten p.m. to seven a.m. to exceed:

1. Forty-five dBA for a cumulative period of more than 5 minutes in any hour;
2. Fifty dBA for a cumulative period of more than 1 minute in any hour;
3. Fifty-five dBA for any period of time.

b. If the ambient noise level exceeds that permitted by any of the noise level categories specified in subdivision (a) of this section, the allowable noise limit shall be increased in five-dBA increments in each category to encompass the ambient noise level.

6.68.090 Exemptions

The following activities shall be exempted from the provisions of this chapter:

a. School bands, school athletic and school entertainment events;

b. Outdoor gatherings, public dances, shows and sporting and entertainment events, provided said events are conducted pursuant to a license or permit by the County;

c. Activities conducted on parks, public playgrounds and school grounds, provided such parks, playgrounds and school grounds are owned and operated by a public entity or private school;

d. Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work;

e. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight

p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;

f. Noise sources associated with agricultural operations, provided such operations do not take place between the hours of eight p.m. and six a.m.;

g. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of adverse weather conditions or when the use of mobile noise sources is necessary for pest control;

h. Noise sources associated with maintenance of residential area property, provided said activities take place between the hours of six a.m. and eight p.m. on any day except Saturday or Sunday, or between the hours of seven a.m. and eight p.m. on Saturday or Sunday;

i. Any activity, to the extent provisions of Chapter 65 of Title 42 of the United States Code, and Articles 3 and 3.5 of Chapter 4 of Division 9 of the Public Utilities Code of the State of California preempt local control of noise regulations and land use regulations related to noise control of airports and their surrounding geographical areas, any noise source associated with the construction, development, manufacture, maintenance, testing or operation of any aircraft engine, or of any weapons system or subsystems which are owned, operated or under the jurisdiction of the United States, or any other activity to the extent regulation thereof has been preempted by state or federal law or regulation;

j. Any noise sources associated with the maintenance and operation of aircraft or airports which are owned or operated by the United States.

6.68.100 Pre-Existing Industrial or Commercial Facilities – Transition Period

a. Any industrial or commercial facility in existence prior to July 1, 1976 shall be allowed a one-year period commencing on said date within which to comply with this chapter.

b. During said one-year period, all such facilities shall make reasonable efforts to be in compliance and to reduce noise which exceeds the standards specified in this chapter. Commencing at the end of one year after July 1, 1976, any such facility shall be subject to all applicable requirements of this chapter.

c. If any facility which is not in compliance by the end of said one-year period applies for a variance pursuant to Section 6.68.200, in deciding whether to grant a variance the hearing board shall take into account the extent to which the applicant has endeavored to reduce noise during said one-year period to meet the standards specified in this chapter.

d. This section applies only to a commercial or industrial facility already in existence or for which the work of improvement has commenced prior to July 1, 1976.

e. As used in this section “industrial facility” means any building, structure, factory, plant, premises or portion thereof used for manufacturing or industrial purposes, and “commercial facility” means any building, structure, premise or portion thereof used for wholesale or retail commercial purposes.

6.68.110 Schools, Hospitals and Churches

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church, while the same is in use, to exceed the noise standards specified in Section 6.68.070 or to create any noise which unreasonably interferes with the use of such institution or unreasonably disturbs or annoys patients in the hospital. In any disputed case, interfering noise which is ten dBA or more, greater than the ambient noise level at the building, shall be deemed excessive and unlawful.

6.68.120 Machinery, Equipment, Fans and Air Conditioning

a. It is unlawful for any person to operate any mechanical equipment, pump, fan, air conditioning apparatus, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical devices, or any combination thereof installed after July 1, 1976 in any manner so as to create any noise which would cause the maximum noise level to exceed:

   1. Sixty dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level;

   2. Fifty-five dBA in the center of a neighboring patio three to five feet above ground level;

   3. Fifty-five dBA outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

b. Equipment installed five years after July 1, 1976 must comply with a maximum limit of fifty-five dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

c. Equipment installed before December 17, 1970 must comply with a limit of sixty-five dBA maximum in sound level at any point at least one foot inside the affected property line and three to five feet above ground level by January 1, 1977. Equipment installed between December 16, 1970 and July 1, 1976 must comply with a limit of sixty-five dBA maximum sound level at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

6.68.130 Off-Road Vehicles

It is unlawful for any person to operate any motorcycle or recreational off-road vehicle within the County in such a manner that the noise level exceeds the exterior noise standards specified in Section 6.68.070.

6.68.140 Waste Disposal Vehicles

It is unlawful for any person authorized to engage in waste disposal service or garbage collection to operate any truck-mounted waste or garbage loading and/or composting equipment or similar mechanical device in any manner so as to create any noise exceeding the following level, when measured at a distance of fifty feet from the equipment in an open area.

a. New equipment purchased or leased on or after a date six months from July 1, 1976 shall not exceed a noise level of eighty dBA.
b. New equipment purchased or leased on or after forty-two months from July 1, 1976 shall not exceed a noise level of seventy-five dBA.
c. Present equipment shall not exceed a noise level of eighty dBA on or after five years from July 1, 1976.

The provisions of this section shall not abridge or conflict with the powers of the state over motor vehicle control.

A6.68.150 General Noise Regulations

Notwithstanding any other provisions of this chapter and in addition thereto, it is unlawful for any person to willfully make or continue or cause to be made or continued any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standards which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

a. The sound level of the objectionable noise;
b. The sound level of the ambient noise;
c. The proximity of the noise to residential sleeping facilities;
d. The nature and zoning of the area within which the noise emanates;
e. The density of the inhabitation of the area within which the noise emanates;
f. The time of day or night the noise occurs;
g. The duration of the noise and its tonal informational or musical content;
h. Whether the noise is continuous, recurrent or intermittent;
i. Whether the noise is produced by a commercial or noncommercial activity.

Noise Standards of Neighboring Jurisdictions

The West Jackson Highway Master Plan area is located entirely within Sacramento County. As a result, noise impacts upon development within the Plan Area are evaluated relative to the Sacramento County noise standards cited above. However, development within the Plan Area would result in increases in off-site traffic noise along roadways located in the Cities of Rancho Cordova, Folsom, Sacramento and Elk Grove. As a result, the transportation noise standards of those jurisdictions are included in this section for use in evaluating off-site traffic noise impacts associated with the project.

It should be noted that the standards of the neighboring jurisdictions are very similar, both in terms of absolute noise standards for residential land uses (60 dB Ldn) and criteria for assessing impacts relative to traffic noise increases. Each neighboring jurisdiction with the exception of the City of Rancho Cordova utilizes the FICON criteria for assessing significance of project-related noise level increases. The pertinent noise standards of the neighboring jurisdictions are provided below.

City of Rancho Cordova General Plan

Policy N.1.5 - Mitigate noise created by the construction of new transportation noise sources (such as new roadways or new light rail service) to the maximum extent feasible to comply with the City's standards. The City's standards are found in Table N-2 of the Noise Element and are reproduced below as Table 5.

Policy N.2.2 Ensure that operational noise levels of new roadway projects will not result in significant noise impacts.

Action N.2.2.1 Assess the significance of the noise increase of all roadway improvement projects in existing areas according to the following criteria:

A. Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

B. Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

C. Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +1.5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant.

Table 5
Maximum Transportation Noise Exposure
City of Rancho Cordova Noise Element of the General Plan

	Outdoor Activity Areas[1]	Interior Spaces	
Land Use	**L_{dn}/CNEL, dB**	**L_{dn}/CNEL, dB**	**L_{eq}, dB[2]**
Residential	60[3]	45	_
Residential subject to noise from railroad tracks, aircraft overflights, or similar noise sources which produce clearly identifiable, discrete noise events (e.g., the passing of a single train)	60[3]	40[5]	_
Transient Lodging	60[4]	45	_
Hospitals, Nursing Homes	60[3]	45	_
Theaters, Auditoriums, Music Halls	_	_	35
Churches, Meeting Halls	60[3]	_	40
Office Buildings	_	_	45
Schools, Libraries, Museums	_	_	45
Playgrounds, Neighborhood Parks	70	_	_

1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
4. In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.
5. The intent of this noise standard is to provide increased protection against sleep disturbance for residences located near railroad tracks.

City of Folsom General Plan

The City of Folsom General Plan Noise Element establishes an exterior noise level standard of 60 dB L_{dn} at outdoor activity areas of residential land uses exposed to transportation noise sources (i.e., traffic). The intent of this standard is to provide an acceptable exterior noise environment for outdoor activities. The City of Folsom also utilizes an interior noise level standard of 45 dB L_{dn} or less within the interior spaces of habitable residential spaces. The intent of this interior noise limit is to provide a suitable environment for indoor communication and sleep.

City of Sacramento General Plan

The City of Sacramento General Plan Noise Standards are provided in Table 6 (Table EC 1 of the General Plan).

EC 3.1.1 Exterior Noise Standards

The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table 6 (Table EC 1 of the General Plan), to the extent feasible.

Table 6
Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type	Highest Level of Noise Exposure that is Regarded as "Normally Acceptable"[a] (L_{dn}[b] or CNEL[c])
Residential–Low Density Single Family, Duplex, Mobile Homes	60 dBA[d,e]
Residential–Multi-family	65 dBA
Urban Residential Infill[f] and Mixed-Use Projects[g]	70 dBA
Transient Lodging–Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site–specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site–specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings–Business, Commercial, and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

Source: Governor's Office of Planning and Research, State of California General Plan Guidelines 2003, October 2003
a. As defined in the Guidelines, "Normally Acceptable" means that the "specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements."
b. L_{dn} or Day Night Average Level is an average 24-hour noise measurement that factors in day and night noise levels.
c. CNEL or Community Noise Equivalent Level measurements are a weighted average of sound levels gathered throughout a 24-hour period.
d. dBA or A-weighted decibel scale is a measurement of noise levels.
e. The exterior noise standard for the residential area west of McClellan Airport known as McClellan Heights/Parker Homes is 65 dBA
f. With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).
g. All mixed-use projects located anywhere in the City of Sacramento.

EC 3.1.2 Exterior Incremental Noise Standards. The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table 7 (Table EC 2), to the extent feasible.

Table 7
Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dBA)
(Table EC 2 of City of Sacramento General Plan)

Residences and buildings where people normally sleep [a]		Institutional land uses with primarily daytime and evening uses [b]	
Existing L_{dn}	**Allowable Noise Increment**	**Existing Peak Hour L_{eq}**	**Allowable Noise Increment**
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

SOURCE: Federal Transit Administration, *Transit Noise Impact and Vibration Assessment*, May 2006

a. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

b. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

EC 3.1.3 Interior Noise Standards

The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dBA L_{dn} for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dBA L_{eq} (peak hour) for office buildings and similar uses.

City of Elk Grove General Plan

The City of Elk Grove General Plan (adopted October 2022) establishes maximum allowable noise exposure for residential uses affected by transportation noise sources of 60 dB Ldn exterior and 45 dB Ldn interior. For non-transportation noise sources the City's General Plan establishes hourly average performance standards of 55 dBA during daytime hours and 45 dBA during nighttime hours for typical noise sources not containing tonal, impulsive, repetitive, speech or music components. The City's standards for sources containing those components are 5 dB lower.

In addition, the City's General Plan Policy N-2-2 establishes the following CEQA thresholds for evaluating the significance of project-related noise level increases:

- Where existing ambient noise levels are less than 60 dB Ldn at the outdoor activity areas of noise sensitive uses, a +5 dB Ldn increase in noise levels shall be considered significant; and

- Where existing ambient noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels shall be considered significant; and

- Where existing ambient noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +1.5 dB Ldn increase in noise levels shall be considered significant.

  Public roadway improvements to alleviate traffic congestion and safety hazards shall utilize FHWA noise standards to allow a reasonable dollar threshold per dwelling to be used in the evaluation and abatement of impacts.

Vibration Criteria

Sacramento County has no adopted vibration standards. As a result, Caltrans-recommended criteria are applied for this project, as described below. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. The Caltrans publication, *Transportation-and Construction-Induced Vibration Guidance Manual*, written for Caltrans by Jones & Stokes in June 2004, provides guidelines for acceptable vibration limits for transportation and construction projects in terms of the induced peak particle velocity (PPV). Those standards are reproduced below in Table 8.

Table 8
Vibration Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources[1]	Continuous or Frequent Intermittent Sources[2]
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old building	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial building	2.00	0.50

Notes:
1. Transient sources create a single isolated vibration event.
2. Continuous/frequent intermittent sources include repetitive single events.

Current Caltrans research illustrates that there are different thresholds of perception for different types of vibration sources. Section XI(b) of Appendix G of the CEQA guidelines requires that a project result in exposure of persons to, or generation of, *excessive* groundborne vibration levels or groundborne noise levels, for the finding of a significant impact. The CEQA guidelines specifically mention “excessive” vibration, rather than just perceptible vibration. The general

range at which vibration from continuous or frequent intermittent sources exceeds acceptable levels for older structures is noted in Table 8 as being 0.3 – 0.5 in/sec ppv.

Existing (Baseline) Noise Environment

Master Plan Area

Overview of Existing Noise and Vibration Environment within the Master Plan Area

The existing noise environment within the overall Plan Area varies by location and is defined by a combination of noise sources. The most pervasive noise source affecting the Plan Area is surface traffic on Jackson Highway and major arterial roadways. The Plan Area is also affected by aircraft operations associated with Mather Airport and, to a lesser extent, activities at the Sacramento Raceway on Excelsior Road and construction materials facilities on Bradshaw Road. Aggregate excavation and reclamation activities on the Teichert and Granite properties also contribute to the ambient noise environment within the Plan Area, but in a considerably more localized fashion.

The existing vibration environment in the Plan Area is generally below the threshold of perception with the exception of locations very close (within 100 feet) to existing aggregate excavation and processing equipment and activities.

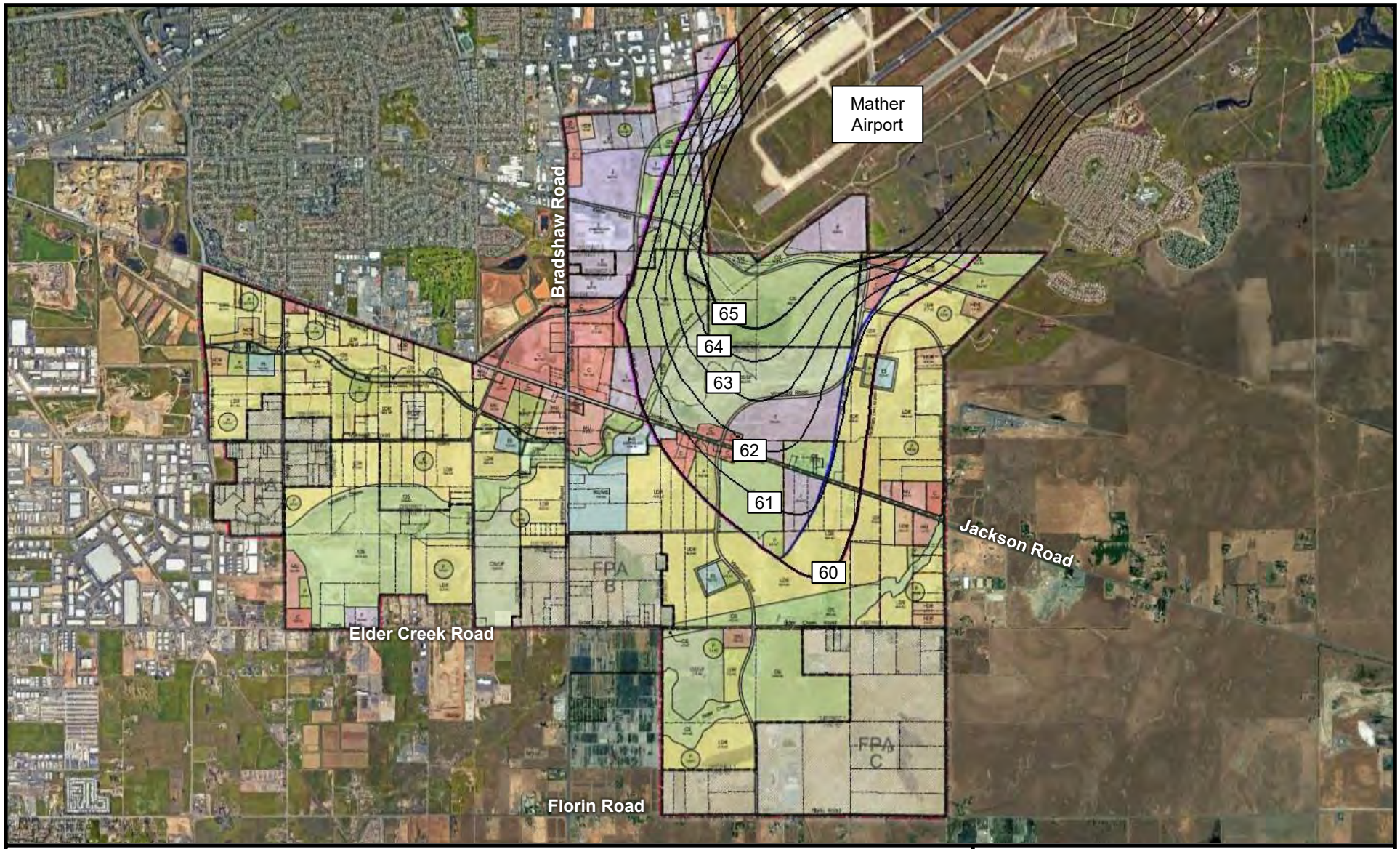
Methodology for Assessing Baseline Noise Environment within the Master Plan Area

At the Master Plan Level, aircraft noise exposure was quantified using published noise contour maps and traffic noise was modeled using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108).

Because noise generated by the Sacramento Raceway, Granite Bradshaw aggregates facility, and both Teichert and Granite excavation and reclamation activities primarily affects the District Area Plans within the larger Plan Area, those sources are evaluated later in this report at a more detailed District Plan Level.

Aircraft Noise Environment within the Master Plan Area

Mather Airport is located immediately adjacent to the northeastern boundary of the Plan Area, as indicated in Figure 1. To quantify the noise generation of the airport in terms of CNEL, the noise contours contained within the Airport Master Plan (Approved August 2022) were utilized, as well as the theoretical capacity noise contours developed for the Airport. The Mather Airport theoretical capacity noise contours are reproduced below in Figure 4A. Figure 4B shows the portion of the West Jackson Highway Master Plan area which is proposed for noise-sensitive (residential) development within the 60 CNEL Mather Airport contours.



Legend

[##] Theoretical Capacity Noise Contour, dBA CNEL

N

Scale (Mile)

0 0.5 1.0

West Jackson Highway Master Plan
Sacramento County, California

Mather Airport Noise Contours

Figure 4A

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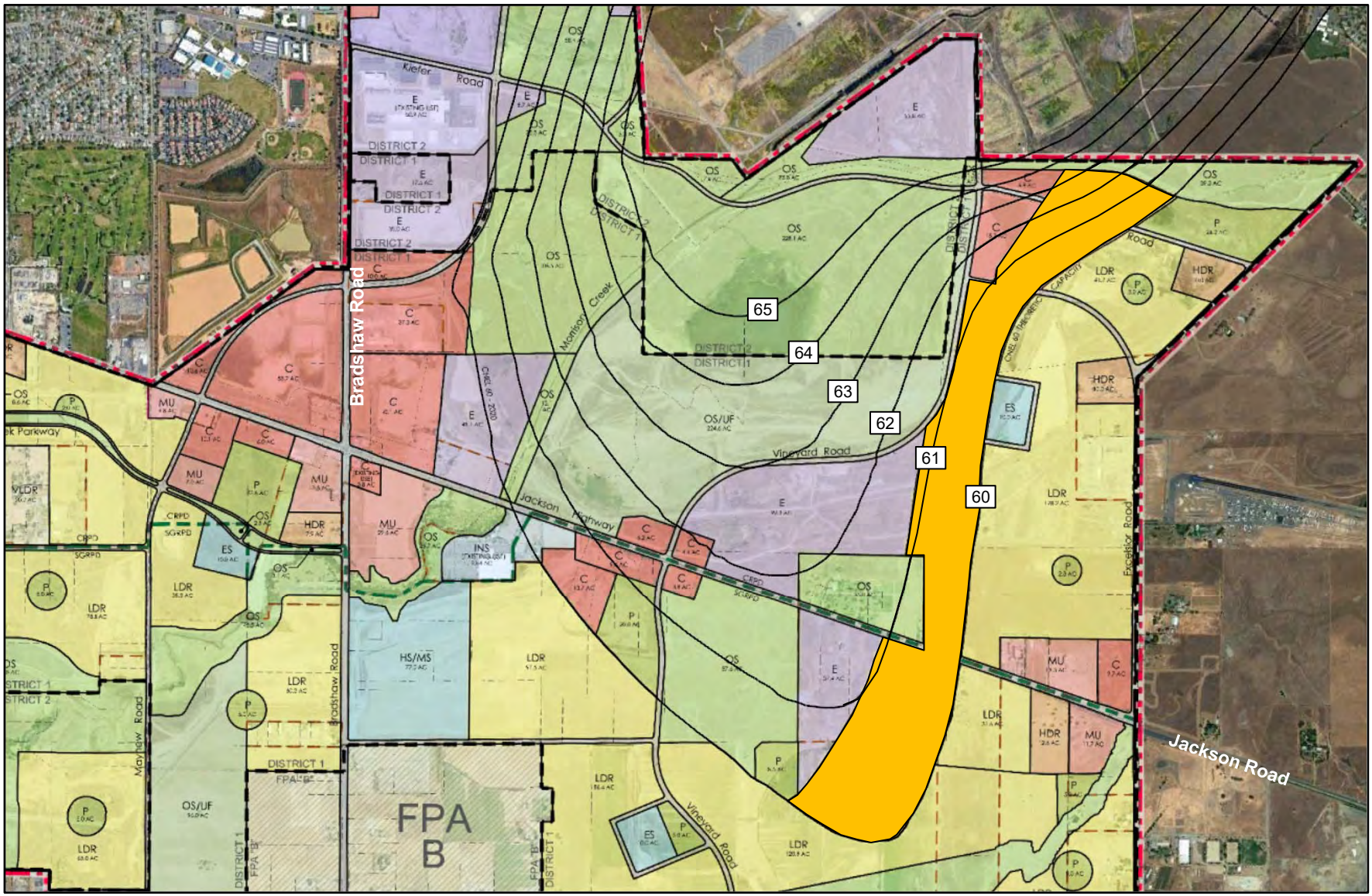
Figure 4B
West Jackson Master Plan Project Residential Uses Located within Proposed Theoretical Capacity 60 dB CNEL Contour



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: Proposed Theoretical Capacity Noise Contour, CNEL

: Proposed Residential Uses within 60 dBA CNEL Contour

Single Event Environment within the Master Plan Area

Although the County has determined that single event noise exposure and associated sleep disturbance effects are appropriately addressed through application of General Plan Noise Element policies NO-2 through NO-4 regarding aircraft noise, the following information pertaining to aircraft single event noise is provided for disclosure purposes. Aircraft single events associated with individual aircraft arrivals or departures at Mather Airport currently occur over the Master Plan Area. The noise generation of such events are a function of several variables, including aircraft type, aircraft weight, and flight track. Consideration of aircraft single event noise is most relevant to the assessment of sleep disturbance impacts at residential areas proposed within the Master Plan Area.

In recognition of the fact that aircraft single events do occur in the area, a Mather Airport Nighttime Awakening Analysis was prepared by ESA in December 2013 (revised April 2014) as part of the Mather Airport Master Plan Update. This analysis utilized the ANSI methodology for prediction of sleep disturbance using the Integrated Noise Model (INM) files used to develop CNEL contours for the Mather Airport Master Plan. The awakenings analysis utilized an assumed 26 nighttime aircraft operations for the year 2035 proposed master plan project condition. Figures 5 and 6 show the predicted percent of population potentially awakened by nighttime single-event aircraft operations.

Figure 5

West Jackson Highway Master Plan - Sacramento County, California
Mather Noise Issues

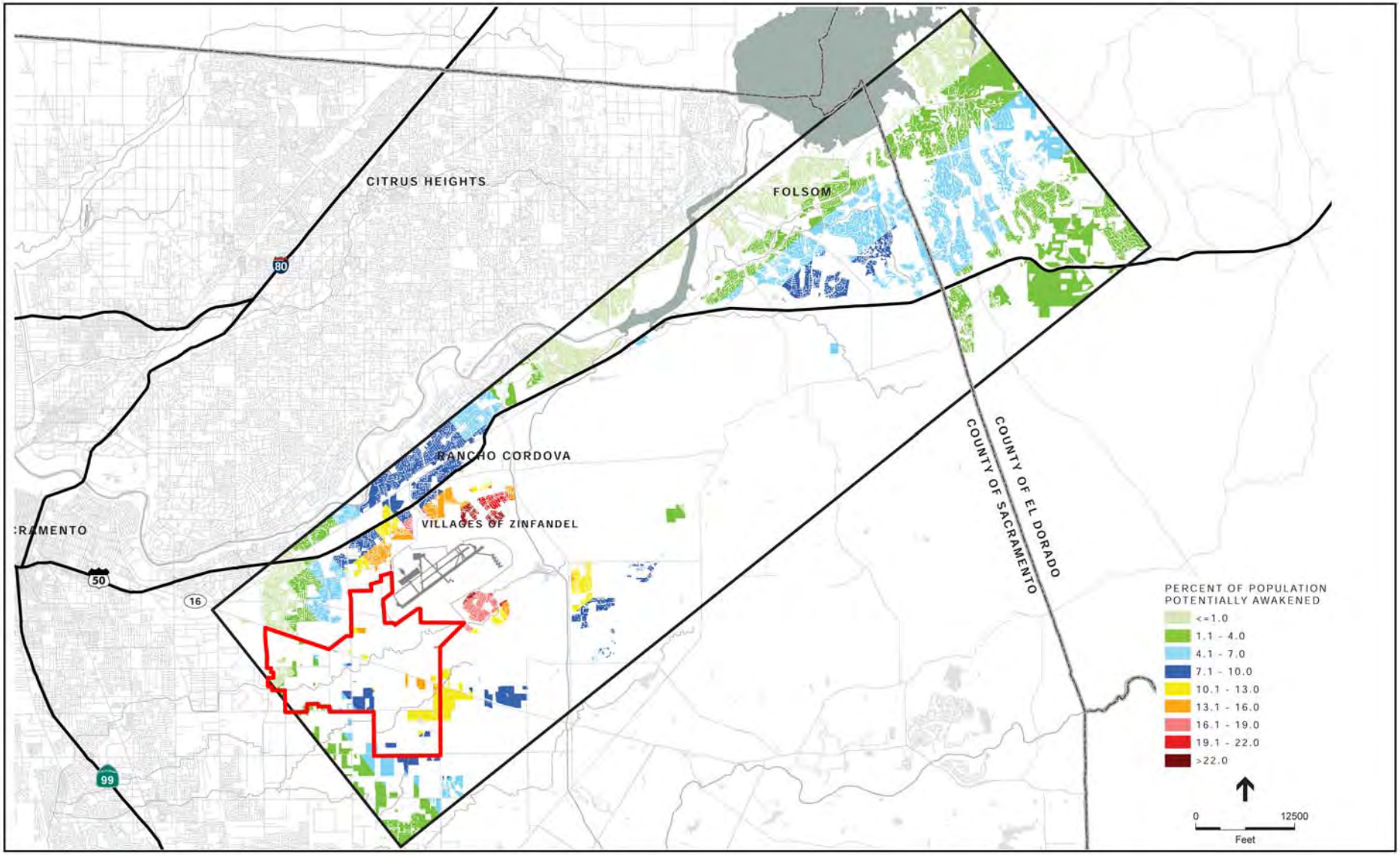

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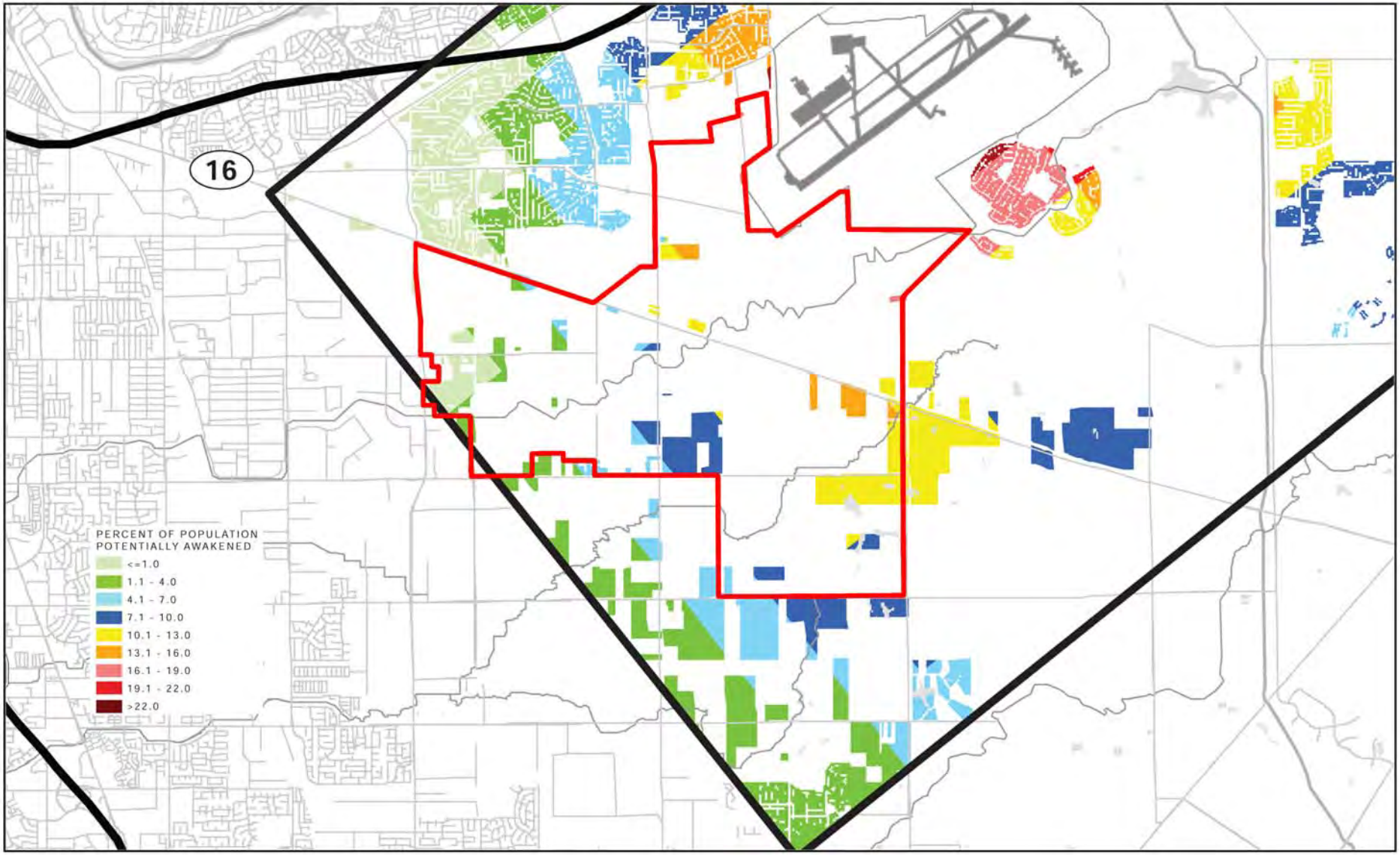
Figure 6

West Jackson Highway Master Plan - Sacramento County, California

Mather Noise Issues



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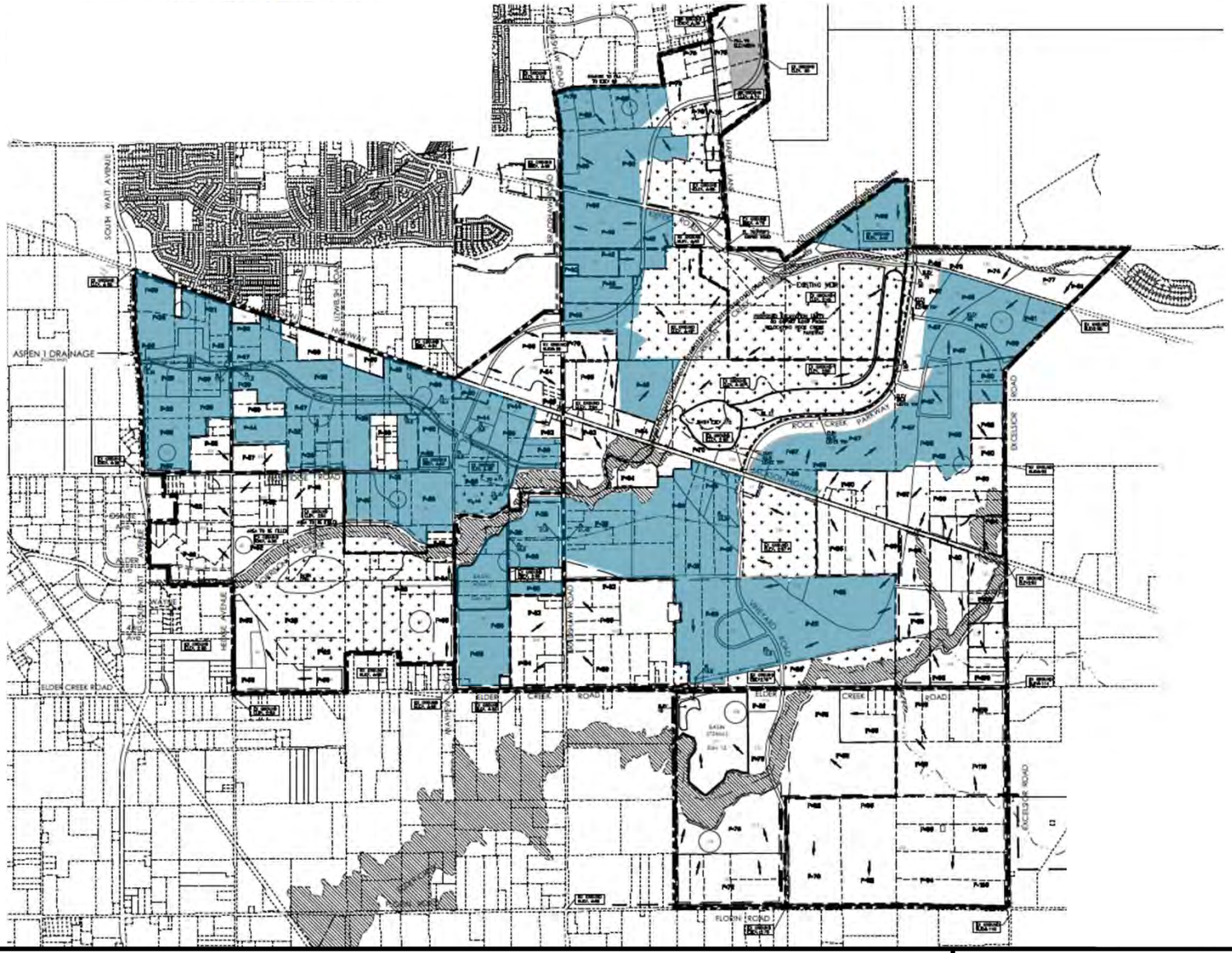
Existing General Traffic Noise Environment within the Master Plan Area

To describe noise levels because of traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The FHWA model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

Baseline FHWA Model inputs and results were provided by Sacramento County. Table 9 shows the predicted existing traffic noise levels at a reference distance of 100 feet from the roadway centerlines, as well as the distances to the unshielded L_{dn} contours. It should be noted that the Table 9 data are provided at the Master Plan level without adjustment for shielding by intervening topography or structures. As such, the Table 9 data should be considered conservative. The FHWA Model Inputs for baseline conditions are provided in Appendix D.

It should be noted that many portions of the Plan Area are former aggregate mining sites. As a result, these sites are substantially depressed relative to the local roadway network. That depression results in screening of roadway traffic at the future development sites, resulting in a substantial decrease in traffic noise exposure at the depressed locations. Figure 7 shows the depressed areas of the Plan Area based on preliminary site grading plans. Figure 7 is based on an overall site grading plan prepared by Wood Rodgers in January 2014 indicating mined areas which are below grade. It should be noted that Figure 7 is intended to generally identify locations within the Plan Area which were identified as being “below grade”, but that there may be considerable differences in the degree of depression of these areas relative to local roadways and Figure 7 does not account for future grading of specific project site within the Master Plan Area. In general, noise-sensitive land uses developed within substantially depressed areas can expect traffic noise levels on the order of 10-15 dB lower than the levels shown in Table 9.



Legend

Depressed Areas

N

Scale (Feet)

0 500 1,000

West Jackson Highway Master Plan
Sacramento County, California

Grading: Depressed Areas

Figure 7

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Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	**Roadway Name**	**From**	**To**	**Ldn**	**70**	**65**	**60**
1	Bradshaw	Folsom	US 50	68	69	149	321
2	Bradshaw	US 50	Lincoln Village	71	111	239	515
3	Bradshaw	Lincoln Village	Old Placerville	70	97	208	449
4	Bradshaw	Old Placerville	Goethe	69	91	196	422
5.1	Bradshaw	Goethe	Collector WJ-8	68	74	160	344
5.2	Bradshaw	Collector WJ-8	Kiefer	68	74	160	344
6.1	Bradshaw	Kiefer	Collector WJ-9	68	78	167	360
6.2	Bradshaw	Collector WJ-9	Mayhew	68	78	167	360
6.3	Bradshaw	Mayhew	Jackson	68	78	167	360
7.1	Bradshaw	Jackson	Rock Creek	68	75	162	349
7.2	Bradshaw	Rock Creek	Collector WJ-10	68	75	162	349
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	68	75	162	349
7.4	Bradshaw	Collector WJ-11	Elder Creek	68	75	162	349
8	Bradshaw	Elder Creek	Florin	68	74	159	343
9	Bradshaw	Florin	Gerber	68	75	162	349
10	Bradshaw	Gerber	Calvine	68	70	151	326
11	Calvine	Waterman	Bradshaw	67	59	126	272
12	Calvine	Bradshaw	Vineyard	66	57	123	264
13	Calvine	Vineyard	Excelsior	63	35	76	163
14	Chrysanthy	Sunrise	Rancho Cordova	59	18	39	83
15	Douglas	Mather	Zinfandel	62	28	60	130
16	Douglas	Zinfandel	Sunrise	63	33	70	152
17	Douglas	Sunrise	Rancho Cordova	63	32	70	150
18.1	Douglas	Rancho Cordova	Americanos	63	32	70	150
18.2	Douglas	Americanos	Grant Line	63	32	70	150
19.1	Eagles Nest	Kiefer	N Bridgewater	55	10	21	46
19.2	Eagles Nest	N Bridgewater	S Bridgewater	55	10	21	46
19.3	Eagles Nest	S Bridgewater	Jackson	55	10	21	46
20	Eagles Nest	Jackson	Florin	54	9	19	41
21	Eagles Nest	Florin	Grant Line	50	4	10	21
22	Elder Creek	65th St	Power Inn	66	54	117	252
23	Elder Creek	Power Inn	Florin-Perkins	65	50	107	231
24	Elder Creek	Florin Perkins	South Watt	64	39	85	183
25	Elder Creek	South Watt	Hedge	62	29	63	136
26	Elder Creek	Hedge	Mayhew	62	30	65	140

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
27	Elder Creek	Mayhew	Bradshaw	62	29	61	132
28.1	Elder Creek	Bradshaw	Vineyard	58	16	34	72
28.2	Elder Creek	Vineyard	Excelsior	58	16	34	72
29	Elk Grove-Florin	Florin	Gerber	67	64	138	298
30.1	Excelsior	Kiefer	Douglas	58	15	33	70
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	59	19	41	88
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59	19	41	88
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59	19	41	88
31.1	Excelsior	Jackson	Collector WJ-6	61	23	50	109
31.2	Excelsior	Collector WJ-6	Elder Creek	61	23	50	109
32	Excelsior	Elder Creek	Florin	60	21	45	96
33	Excelsior	Florin	Gerber	61	24	53	114
34	Excelsior	Gerber	Jackson	60	21	45	96
37	Florin	Power Inn	Florin-Perkins	67	61	132	285
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	66	54	116	250
39	Florin	South Watt	Hedge	64	41	89	193
40	Florin	Hedge	Mayhew	63	36	78	168
41	Florin	Mayhew	Bradshaw	63	36	78	169
42.1	Florin	Bradshaw	Vineyard	62	29	62	133
42.2	Florin	Vineyard	Excelsior	62	29	62	133
43	Florin	Excelsior	Sunrise	64	37	80	173
44	Folsom	Howe	Jackson	69	89	191	411
45	Fruitridge	65th St	Power Inn	66	52	111	240
46	Fruitridge	Power Inn	Florin Perkins	66	57	123	266
47	Fruitridge	Florin Perkins	South Watt	65	44	95	205
48	Fruitridge	South Watt	Hedge	57	14	29	63
49.1	Fruitridge	Hedge	Collector WJ-12	55	10	21	46
49.2	Fruitridge	Collector WJ-12	Mayhew	55	10	21	46
50	Grant Line	White Rock	Douglas	64	42	90	194
51.1	Grant Line	Douglas	Chrysanthy	66	53	113	244
51.2	Grant Line	Chrysanthy	Kiefer	66	53	113	244
52.1	Grant Line	Kiefer	Rancho Cordova	65	46	100	215
52.2	Grant Line	Rancho Cordova	Jackson	65	46	100	215
53	Grant Line	Jackson	Sunrise	69	87	187	403
54	Grant Line	Sunrise	Calvine	70	95	204	439

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
55.1	Grant Line	Calvine	Elk Grove City Limit	67	61	132	284
55.2	Grant Line	Elk Grove City Limit	Sheldon	67	61	132	284
56	Grant Line	Sheldon	Wilton	68	74	159	343
57	Grant Line	Wilton	Bond	68	70	150	324
58.1	Happy Lane	Old Placerville	Routier Ext	57	15	31	67
58.2	Happy Lane	Routier Ext	Kiefer	57	15	31	67
59.1	Hedge	Jackson	Rock Creek	57	14	30	65
59.2	Hedge	Rock Creek	Fruitridge	57	14	30	65
60	Hedge	Fruitridge	Elder Creek	58	16	35	75
61	Hedge	Elder Creek	Florin	57	13	28	60
62	Howe	US 50	Folsom	71	113	243	524
63	International	Mather Field	Zinfandel	66	53	115	248
64	International	Zinfandel	Sunrise	63	34	73	157
65	Jackson	Folsom	Florin Perkins	67	59	126	272
66.1	Jackson	Florin Perkins	14th	66	52	113	243
66.2	Jackson	14th	Rock Creek	65	46	99	212
66.3	Jackson	Rock Creek	Aspen 1 Dwy	65	46	99	212
66.4	Jackson	Aspen 1 Dwy	South Watt	65	46	99	212
67	Jackson	South Watt	Hedge	68	73	157	337
68.1	Jackson	Hedge	Collector WJ-3	67	59	128	276
68.2	Jackson	Collector WJ-3	Mayhew	67	59	128	276
69	Jackson	Mayhew	Bradshaw	67	67	144	310
70.1	Jackson	Bradshaw	Collector WJ-4	68	69	148	320
70.2	Jackson	Collector WJ-4	Happy Ln	68	69	148	320
70.3	Jackson	Happy Ln	Rock Creek	68	69	148	320
70.4	Jackson	Rock Creek	Collector WJ-5	68	69	148	320
70.5	Jackson	Collector WJ-5	Collector WJ-6	68	69	148	320
70.6	Jackson	Collector WJ-6	Excelsior	68	69	148	320
71.1	Jackson	Excelsior	Collector JT-3	67	60	128	276
71.2	Jackson	Collector JT-3	Tree View Ln	67	60	128	276
71.3	Jackson	Tree View Ln	Collector JT-4	67	60	128	276
71.4	Jackson	Collector JT-4	Eagles Nest	67	60	128	276
72.1	Jackson	Eagles Nest	Rockbridge	66	58	124	268
72.2	Jackson	Rockbridge	Sunrise	66	58	124	268
73	Jackson	Sunrise	Grant Line	69	88	190	409
74	Kiefer	Florin Perkins	South Watt	60	22	47	101

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
75	Kiefer	South Watt	Mayhew	66	56	120	259
76	Kiefer	Mayhew	Bradshaw	63	35	75	163
77.1	Kiefer	Bradshaw Road	Collector WJ-14	61	26	56	120
77.2	Kiefer	Collector WJ-14	Routier Ext	61	26	56	120
77.3	Kiefer	Routier Ext	Happy Lane	61	26	56	120
78.1	Kiefer	Eagles Nest	W Collector MS-1	55	10	22	48
78.2	Kiefer	W Collector MS-1	Northbridge	55	10	22	48
78.3	Kiefer	Northbridge	E Collector MS-1	55	10	22	48
78.4	Kiefer	E Collector MS-1	Sunrise	55	10	22	48
79	Kiefer	Sunrise	Rancho Cordova	57	13	28	61
80	Mather / Norden	Von Karman St	Bleckely St	59	18	38	83
81	Mather	Bleckely St	Femoyer St	59	18	38	83
82	Mather	Femoyer St	Douglas	59	18	38	83
83	Mather-Excelsior	Douglas	Kiefer	60	23	48	104
84	Mather Field	US 50	Rockingham	71	120	258	555
85	Mather Field	Rockingham	International	71	119	257	553
86	Mather Field	International	Peter A McCuen	66	56	120	258
87	Mayhew	Folsom	Goethe	62	29	62	135
88	Mayhew	Goethe	Kiefer	62	28	60	130
89.1	Mayhew	Jackson	Rock Creek	56	11	24	51
89.2	Mayhew	Rock Creek	Fruitridge	56	11	24	51
90	Old Placerville	Bradshaw	Granby	63	33	71	153
91	Old Placerville	Granby	Happy Ln	62	30	64	138
92	Old Placerville	Happy Ln	Routier	62	31	66	142
93	Old Placerville	Routier	Rockingham	63	32	70	151
94	Power Inn	Folsom	14th	69	87	186	402
95	Rockingham	Old Placerville	Mather Field	66	58	125	269
96	South Watt	Folsom	Kiefer	71	109	236	508
97	South Watt	Kiefer	Jackson	70	94	202	435
98.1	South Watt	Jackson	Rock Creek	69	80	173	374
98.2	South Watt	Rock Creek	Fruitridge	69	80	173	374
99	South Watt	Fruitridge	Elder Creek	68	71	154	331
100	South Watt	Elder Creek	Florin	68	76	163	352
101	Sunrise	US 50	Folsom	71	114	245	528
102	Sunrise	Folsom	Trade Center	70	107	230	495
103	Sunrise	Trade Center	White Rock	69	84	181	390

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
104.1	Sunrise	White Rock	International	68	69	149	321
104.2	Sunrise	International	Rio Del Oro	68	74	159	342
104.3	Sunrise	Rio Del Oro	Douglas	70	93	200	431
105	Sunrise	Douglas	Kiefer	68	72	155	334
106	Sunrise	Kiefer	Jackson	69	80	172	372
107	Sunrise	Jackson	Florin	67	61	131	282
108	Sunrise	Florin	Grant Line	65	48	103	221
109	Vineyard	Gerber	Calvine	59	20	42	91
110	Watt	US 50	Folsom	74	172	371	799
111	White Rock	International	Quality	58	17	36	78
112	White Rock	Quality	Zinfandel	63	33	72	155
113	White Rock	Zinfandel	Kilgore	64	40	87	186
114	White Rock	Kilgore	Sunrise	64	40	87	186
115	White Rock	Sunrise	Fitzgerald	66	57	123	265
116.1	White Rock	Fitzgerald	Rancho Cordova	59	20	42	91
116.2	White Rock	Rancho Cordova	Americanos	59	20	42	91
116.3	White Rock	Americanos	Grant Line	58	17	36	79
117	White Rock	Grant Line	Prairie City	66	54	116	249
118	Zinfandel	US 50	White Rock	69	85	183	393
119	Zinfandel	White Rock	International	65	46	99	212
120	Zinfandel	International	Baroque	62	31	66	142
121	Zinfandel	Baroque	City Limit	62	31	66	142
122	Zinfandel	City Limit	Douglas	62	31	66	142
123.1	Zinfandel	Douglas	Collector MS-2	58	16	34	74
123.2	Zinfandel	Collector MS-2	Collector MS-3	58	16	34	74
123.3	Zinfandel	Collector MS-3	Collector MS-4	58	16	34	74
123.4	Zinfandel	Collector MS-4	Kiefer	58	16	34	74

Source: FHWA-RD-77-108 with inputs from Sacramento County

District Area Plans

Overview of Existing Noise and Vibration Environment within the District Area Plans

Like the overall Master Plan Area, the existing noise environment within the two District Area Plans (District 1: mostly Teichert and District 2: mostly Granite) also varies by location and is defined by a combination of noise sources. In addition to the traffic and aircraft noise environment previously described in the Master Plan section of this report, the District Area Plans are also affected by a variety of localized noise sources. Such sources include the Sacramento Raceway, the Granite Bradshaw Aggregates facility, aggregate excavation and reclamation equipment, and small commercial/industrial activities on adjacent non-participating properties within the Plan Area.

As with the Plan Area, the existing vibration environment in the District Area Plans is also generally below the threshold of perception with the exception of locations very close (within 100 feet) to existing aggregate excavation and processing equipment and activities.

Methodology for Assessing Baseline Noise and Vibration Environments within the District Plan Areas

At the District Plan Levels, aircraft noise exposure was quantified using published noise contour maps and traffic noise was modeled using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108).

Noise generated by the Sacramento Raceway, Granite Bradshaw Aggregates facility, and both Teichert and Granite excavation and reclamation activities was quantified through a combination of noise level measurements and application of accepted noise prediction models. In addition, an extensive ambient noise survey, consisting of both long-term and short-term noise level measurements, was conducted within the District Area Plans to more specifically characterize the existing baseline noise environment in those areas.

In addition to the extensive ambient noise measurement surveys, baseline vibration measurements were also conducted at several locations within the District Area Plans to quantify baseline vibration environments.

Existing General Ambient Noise Environment within the District Area Plans

To quantify the existing ambient noise environment with the District Area Plans, long-term (continuous) ambient noise level measurements were conducted at 31 locations within the District Area Plan Boundaries in 2013. Supplemental ambient noise monitoring was conducted at 6 of the long-term noise monitoring locations in 2017 and again in 2022 to verify that the 2013 data is still reasonably representative of current baseline ambient noise conditions within the District Areas.

The locations of the continuous noise monitoring sites are shown on Figure 8. In addition to the long-term noise monitoring program, short-term ambient noise level measurements were also conducted at several locations within the District Area Plan. The short-term monitoring sites were

selected to either supplement the long-term sites or because long-term monitoring was not possible at some locations. The short-term noise monitoring sites are identified on Figure 9.

Larson Davis Laboratories (LDL) Model 820, LXT and 831 precision integrating sound level meters were used for the long and short-term ambient noise level measurement surveys. The meters were calibrated before use with LDL Model CAL200 acoustical calibrators prior to use to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute.

The results of the long-term ambient noise measurement surveys are summarized in Table 10, with the short-term monitoring results provided in Table 11. Appendix B provides a graphical representation of the measured average and maximum noise levels measured at each long-term site for the 2013 surveys, Appendix C shows the ambient noise survey results for the 2017 surveys, and Appendix D shows the ambient noise survey results for the 2022 surveys.

The Table 10 and 11 data indicate that existing noise levels within the Plan Area vary, depending on location of the noise monitoring site relative to the major project area noise sources, and whether or not the monitoring sites are depressed in former aggregate mining areas. Inspection of the data for the depressed and non-depressed locations indicates that topographic shielding provided by the existing elevation differences results in traffic noise level reductions generally ranging from 10-15 dBA. This level of shielding is significant because it will greatly reduce the degree of traffic noise attenuation required at future noise-sensitive land uses proposed within the District Area Plan, or eliminate the need for additional noise mitigation measures altogether.

Figure 8

West Jackson Highway Master Plan - Sacramento County, California
Long-Term Ambient Noise Level Measurement Locations

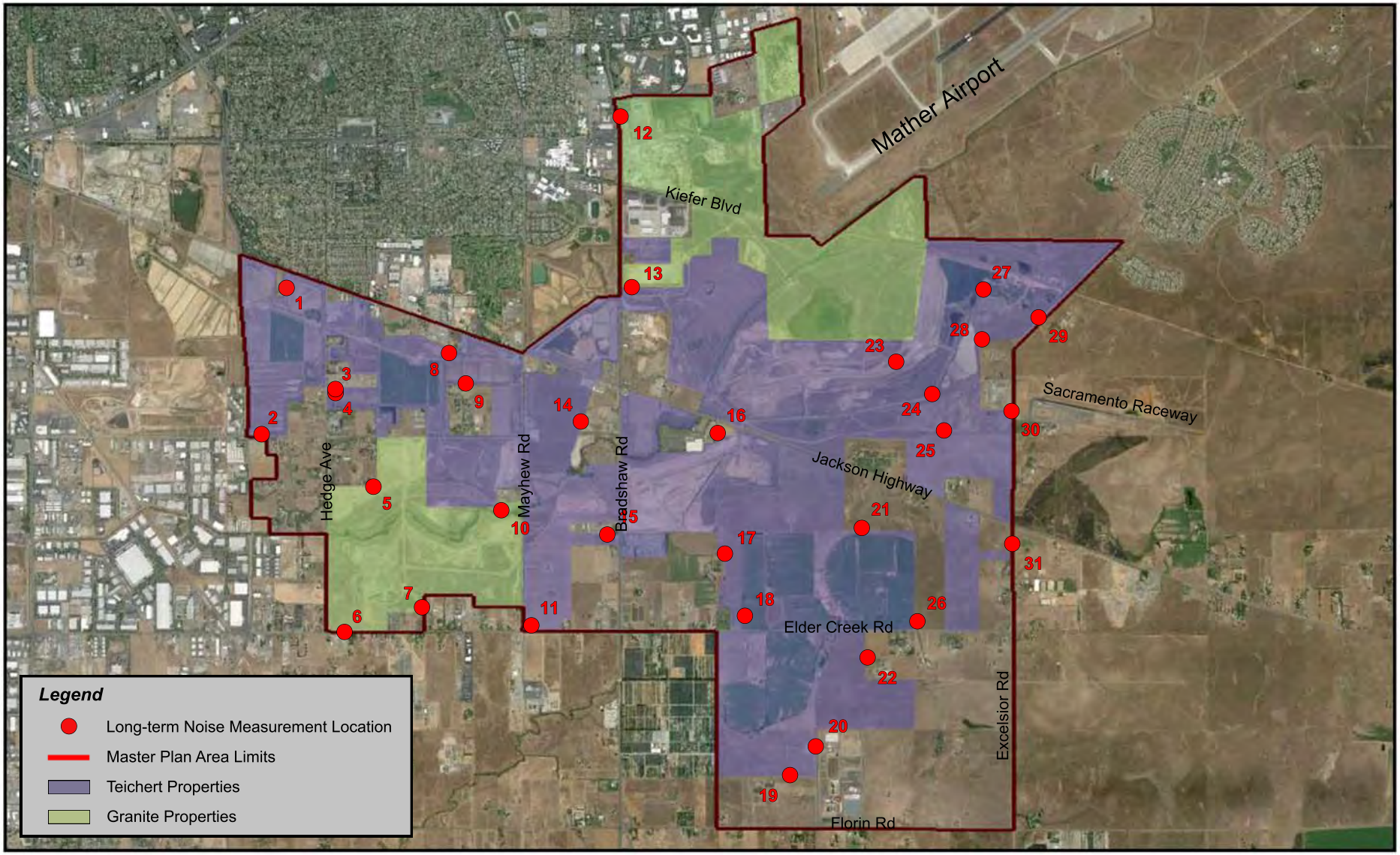

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Figure 9

West Jackson Highway Master Plan - Sacramento County, California
Short-Term Ambient Noise Level Measurement Locations within Specific Plan Areas

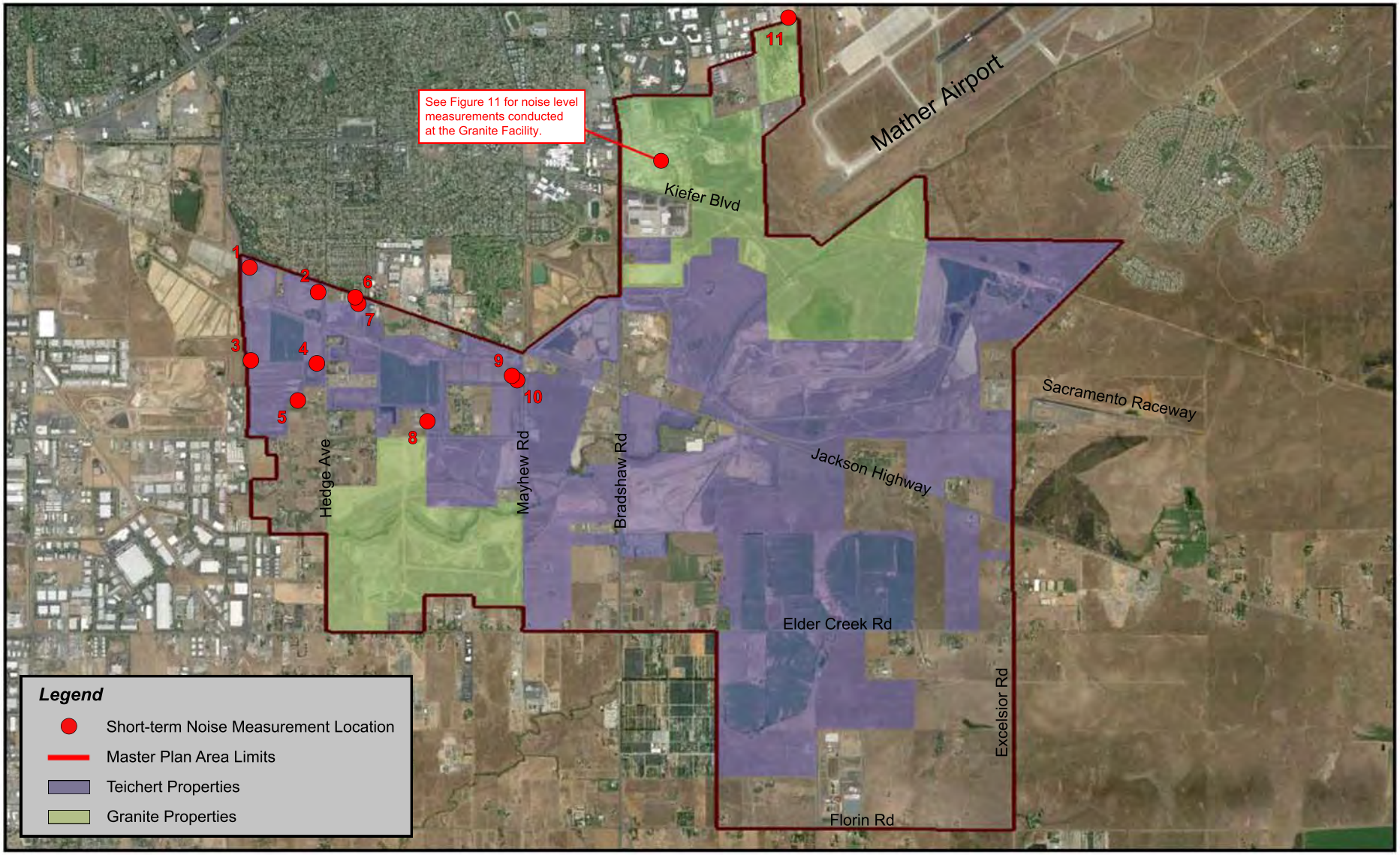

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Table 10
Measured Baseline Noise Levels (Ldn) at Long-Term Monitoring Sites
West Jackson Highway District Area Plans – Sacramento County

Site[1]	Ldn	Monitoring Site Depressed?	Notes/Source
1	56-59	Yes	Jackson Highway is dominant noise source
2	49-53	Yes	South Watt & Fruitridge
3	63-65	No	Hedge Avenue & adjacent industry
4	46-50	Yes	Near Site 3
5	47-52	No	Quiet location at end of Osage Avenue
6	61-67	No	50 feet from Elder Creek C/L
7	51-58	No	700 feet from Elder Creek C/L
8	48-51	Yes	Depressed area behind Jcksn. Hwy commercial/industrial uses.
9	53-56	No	Background Jackson Highway source.
10	48-54	No	Low Mayhew Road noise
11	60-64	No	Corner of Mayhew & Elder Creek – appx 150 feet from C/L's
12	60-68	No	Granite Parking Lot – Bradshaw Road dominant source
13	58-66	No	Mather aircraft & Bradshaw Road
14	50-59	Yes	Adjacent Bradshaw Road industrial operations.
15	55-61	No	350 ft from Bradshaw, adjacent Cmrcl/industrial ops.
16	65	No	Jackson Highway – 2009 monitoring for Aspen 5 South
17	56-58	No	Next to cemetery – distant Elder Creek & Bradshaw noise
18	59	No	2007 Site monitored for Aspen 8 & 9 – Elder Creek Noise
19	54	No	2007 Site monitored for Aspen 8 & 9 – Florin Road Noise
20	48-59	No	Near Sac County Water Agency Facility – Low ambient!
21	60	No	2007 site - distant Jackson Highway Noise (1,500 feet to C/L)
22	57	No	2007 Site - Distant Elder Creek noise (700 feet to C/L)
23	58	No	Aircraft Noise & distant Jackson Hwy Noise
24	57	Yes	Aircraft Noise & distant Jackson Hwy Noise
25	70	Yes	Aircraft, Traffic & Local Activity
26	53-59	No	Elder Creek Road
27	55-53	Yes	Remote location – some aircraft noise.
28	55-59	No	Excelsior Road & some
29	63	No	Next to Excelsior & some aircraft noise
30	64-68	No	Jackson Highway and Excelsior noise
31	59-63	No	Excelsior Road & Jackson Highway

Source: Bollard Acoustical Consultants, Inc. (BAC)

Table 11
Measured Baseline Noise Levels (Ldn) at Short-Term Monitoring Sites
West Jackson Highway District Area Plans – Sacramento County

Short-Term Site[1]	Time of Day	L_{50}	L_{max}	Monitoring Site Depressed?	Notes/Source
1	2:39 PM	46	61	Yes	Jackson Highway dominant source
2	3:06 PM	47	56	Yes	Jackson Highway dominant source
3	1:43 PM	61	68	No	South Watt Ave dominant source
4	1:23 PM	48	57	Yes	Hedge Ave dominant source
5	2:05 PM	47	65	Yes	Distant Traffic/Aircraft Overflight
6	12:17 PM	63	74	No	Jackson Highway dominant source
7	12:17 PM	45	61	Yes	Jackson Highway dominant source
8	2:22 PM	39	67	Yes	Fruitridge Rd dominant source
9	3:01 PM	43	79	Yes	Conveyor Belt & Aircraft Overflight
10	3:01 PM	51	80	Yes	Mayhew Road & Aircraft Overflight
11	10:49 AM	42	57	No	Distant Traffic

Source: Bollard Acoustical Consultants, Inc. (BAC)

Aircraft Noise Environment within the District Area Plans

Mather Airport is located immediately adjacent to the northeastern boundary of the Plan Area, as indicated in Figure 4. To quantify the noise generation of the airport in terms of CNEL, the noise contours contained within the previous and recently adopted Airport Master Plans were utilized, as well as the theoretical capacity noise contours developed for the Airport. The Mather Airport noise contours are shown in Figures 4A and 4B.

The Mather Airport noise contours shown in Figures 4A and 4B indicate that the 60 dB CNEL contours extend well into both the Teichert and Granite District Area Plans.

Single Event Environment within the District Plan Areas

Although the County has determined that single event noise exposure and associated sleep disturbance effects are appropriately addressed through application of General Plan Noise Element policies NO-2 through NO-4 regarding aircraft noise, the following information pertaining to aircraft single event noise is provided for disclosure purposes. In addition to the 24-hour average aircraft noise contours shown on Figures 4A and 4B, which are presented in terms of Community Noise Equivalent Level (CNEL), noise from individual aircraft arrivals and departures will be audible within the District Plan Areas. Figure 6 illustrates the potential for awakenings based on a study prepared by ESA using the ANSI methodology.

Existing Traffic Noise Environment within the District Area Plans

To describe noise levels caused by traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The FHWA model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

Baseline FHWA Model inputs and results were provided by Sacramento County. Table 9 shows the predicted existing traffic noise levels at a reference distance of 100 feet from the roadway centerlines, as well as the distances to the unshielded L_{dn} contours. It should be noted that the Table 9 data are provided at the Plan Area level without adjustment for shielding by intervening topography or structures. As such, the Table 9 data should be considered worst-case.

As noted previously in this analysis, many locations within the District Area Plans are former aggregate excavation areas and are, therefore, depressed relative to the surrounding roadways. Those areas subject to substantial depressions result in topographic shielding which was found to reduce traffic noise levels by approximately 10-15 dB.

Existing Sacramento Raceway Noise Environment within the District Area Plans

Sacramento Raceway is located on Excelsior Road, immediately east of the Plan Area as indicated in Figure 1. The Raceway facilities include a quarter mile drag strip, and a midget car and motocross dirt oval track. Racing typically takes place on Wednesday and Friday nights with occasional large events on weekends. It should be noted that the raceway is a non-conforming use which may not continue to operate through the buildout horizon of the Plan Area. In fact, raceway representatives have indicated that the raceway will likely be permanently closing in 2023.

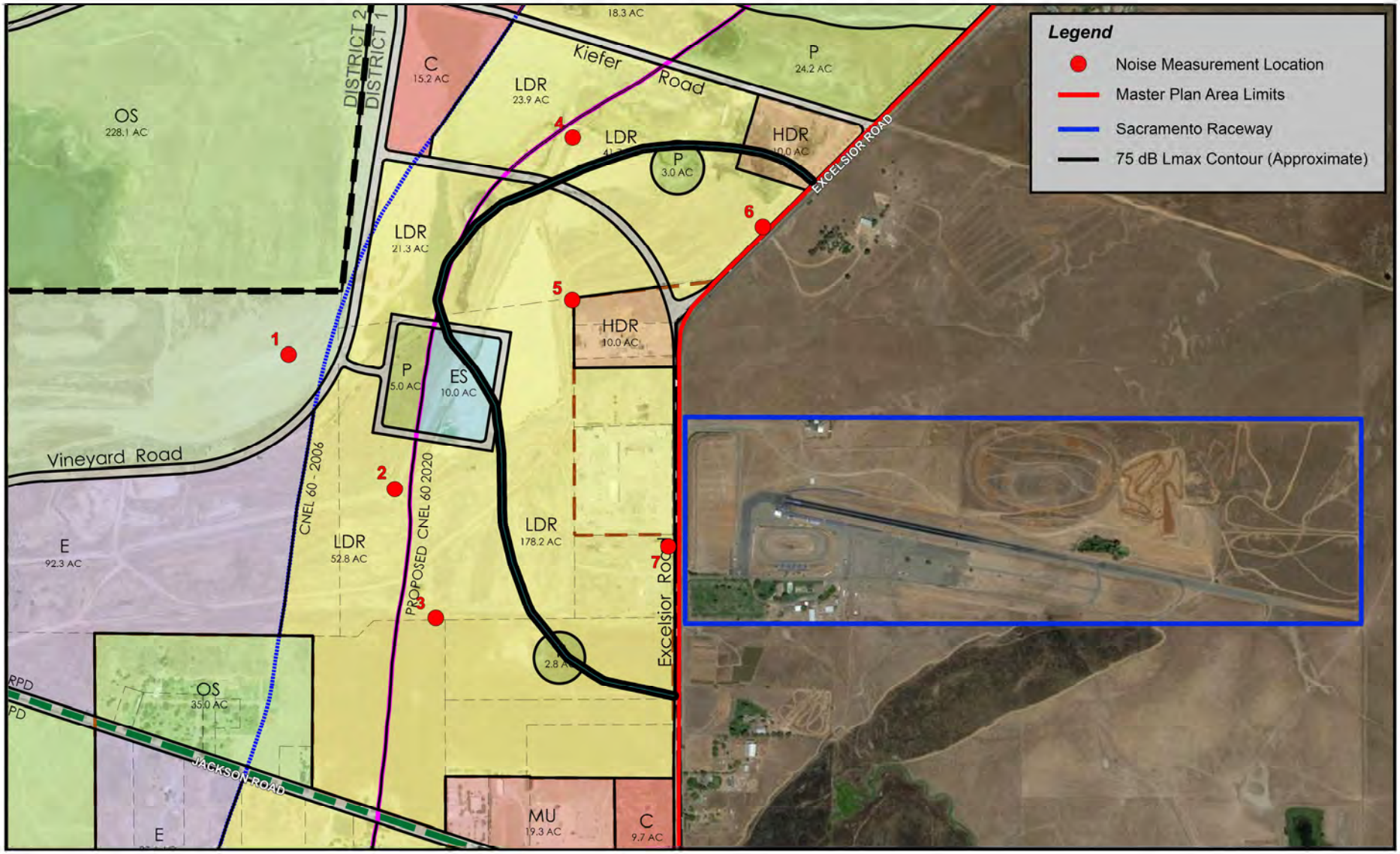
During Governor's Cup races, maximum noise levels of 130 dBA were measured at a distance of 100 feet from the drag strip during Top Fuel Funny Car races. Maximum noise levels measured during Pro- Gas, Door-Slammer and Alcohol Dragster races registered between 100 and 120 dBA at the same location.

To quantify race-related noise levels during a typical race event, noise level measurements were conducted during the night of April 25, 2009 at the seven (7) locations shown on Figure 10. Measured noise levels varied depending on the class of vehicles being raced and by location. The results of the raceway noise monitoring were used to identify the approximate location of the 75 dB Lmax noise contour for the louder classes of vehicles raced that evening. That noise contour is provided on Figure 10.

The Figure 10 noise contour indicates that, if racing activities are to continue to occur in the future, a portion of the Teichert District Area Plan would be adversely affected by maximum raceway noise levels and development of noise mitigation measures would be required.

Figure 10

West Jackson Highway Master Plan - Sacramento County, California
Sacramento Raceway Noise Measurement Locations & Noise Contour



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Scale (feet)
0 600 1,200

Existing Granite Bradshaw Aggregates Facility Noise Environment within the District Area Plans

Granite operates an aggregate processing facility at the northeast quadrant of the intersection of Bradshaw Road and Kiefer Boulevard. The permitted facility consists of an aggregate processing plant (crushing, screening, washing, etc.), a smaller recycle plant, and an asphalt plant. A ready-mix plant previously operated at this location but has since been decommissioned. It may, however, be replaced in the future with another ready-mix plant.

To quantify the noise emissions of the Granite facilities, short-term noise level measurements were conducted at 13 locations on the Granite site on the morning of August 15, 2013. The noise measurement locations are identified on Figure 11A.

The noise measurement results were used to quantify reference noise levels in relatively close proximity to the various components of the facility for use in the subsequent evaluation of overall facility noise contour locations. Because the facility is substantially shielded in all directions by intervening topography (primarily tall aggregate stockpiles) and landscaping, the critical noise contour for the facility (50 dB median noise contour) is generally contained within the facility boundaries, as indicated on Figure 11B. The 50 dB median noise contour is considered the critical contour as it relates to the most restrictive nighttime noise level standard contained within the Sacramento County Noise Ordinance (6.68.070 Exterior Noise Standards).

The effects of the Granite facility on future development within the District Area Plan will be discussed in the impacts and mitigation measures section of this report.

Noise Generated by Ongoing Operation of Aggregate Conveyor Belt Operations within the District Area Plans

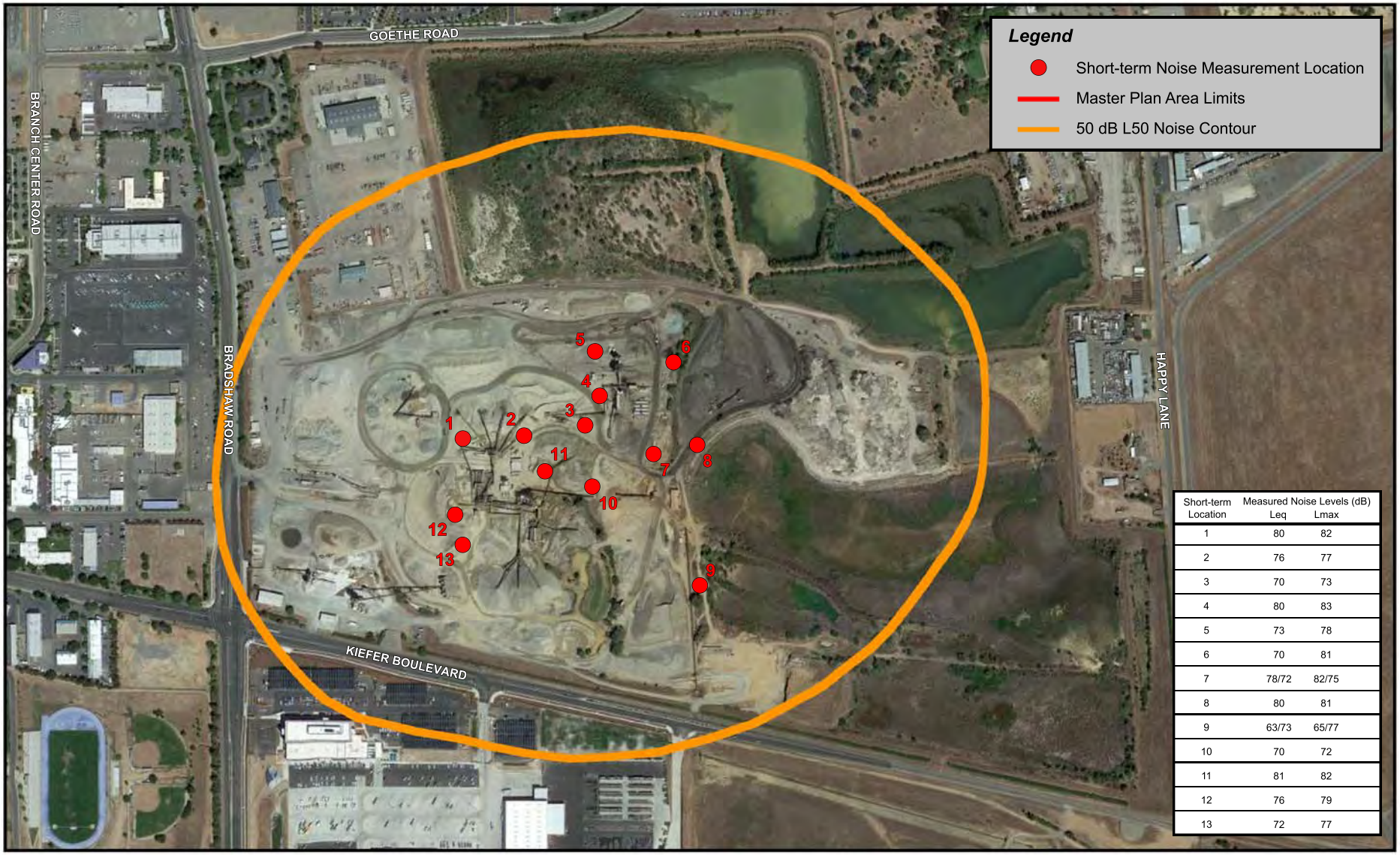
Ongoing aggregate excavation and conveyance of materials to the Teichert and Granite processing plants may continue to occur during development within the District Area Plans. The conveyors typically operate at the same times as the Teichert and Granite plants.

To quantify the noise emissions of the conveyor belt, BAC conducted noise level measurements at locations near the operating Teichert conveyor on April 29, 2009. The conveyor measurement results were used to identify the approximate locations of the 50 and 55 dB L50 noise contours for that equipment. The 55 and 50 dB L50 values represent the County of Sacramento Noise Ordinance daytime and nighttime noise level standards applicable to noise-sensitive receptors, respectively. Because the same conveyors are in operation as those tested in 2009, the above-described data remains applicable to the evaluation of conveyor noise levels for this project.

The noise measurements indicate that the 55 dB L50 noise contour is located approximately 350 feet from the operating conveyor, with slightly higher noise levels near conveyor transfer locations. The 50 dB L50 conveyor noise contour was calculated to be approximately 700 feet from the belt. Given these distances to the critical noise contours, consideration of noise mitigation measures for these sources will be necessary at such a time as project development encroaches within the 55 and 50 dB L50 noise contours. A discussion of noise mitigation recommendations will be provided in the Impacts and Mitigation measures section of this report.

Figure 11A

West Jackson Highway Master Plan - Sacramento County, California
Granite Facility Short-Term Ambient Noise Level Measurement Locations



Short-term Location	Measured Noise Levels (dB) Leq	Lmax
1	80	82
2	76	77
3	70	73
4	80	83
5	73	78
6	70	81
7	78/72	82/75
8	80	81
9	63/73	65/77
10	70	72
11	81	82
12	76	79
13	72	77

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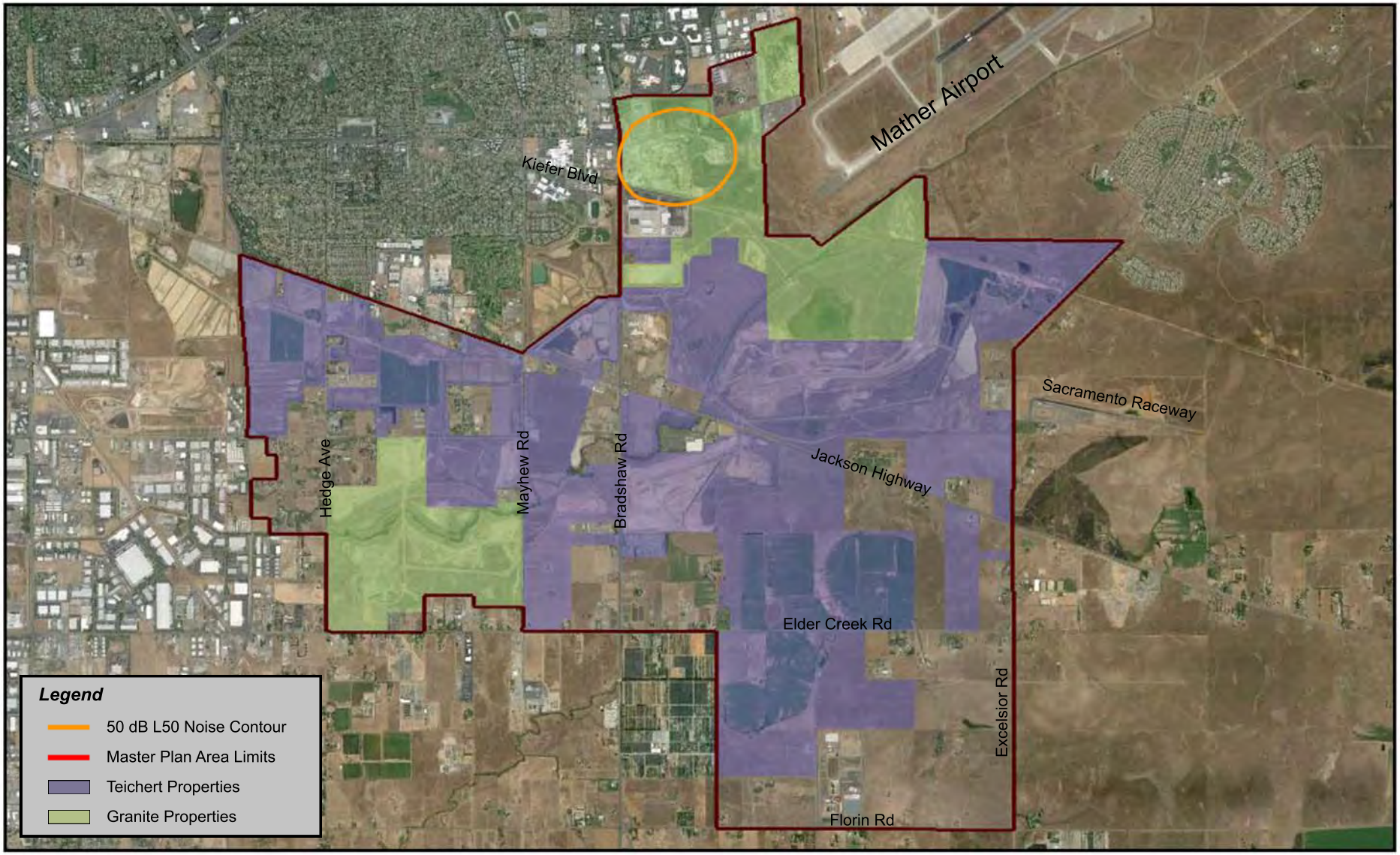
Scale (feet)
0 300 600

Figure 11B

West Jackson Highway Master Plan - Sacramento County, California
Granite Facility 50 dB L50 Contour



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Existing (Baseline) Vibration Environment

No appreciable sources of vibration were identified during BAC field surveys of the Plan Area and existing ambient vibration levels were subjectively evaluated as being below the threshold of perception. Nonetheless, to quantify baseline vibration levels in the Plan Area, a series of baseline vibration measurements were conducted at various locations within the Plan Area in 2013 as shown on Figure 12. Supplemental vibration surveys were conducted in 2017 to verify that the 2013 vibration data remain representative of current baseline vibration conditions within the Plan Area. The vibration measurement sites were selected to be generally representative of a variety of locations within the Plan Area. Due to the very low measured vibration levels at the 15 monitoring locations, it was determined that baseline vibration monitoring at additional sites was not warranted.

The vibration measurements were conducted using a Larson-Davis Laboratories Model HVM-100 Vibration Analyzer with a PCB Electronics Model 353B51 ICP Vibration Transducer. The test system is a Type I instrument designed for use in assessing vibration as perceived by humans, and meets the full requirements of ISO 8041:1990(E). Atmospheric conditions present during the tests were within the operating parameters of the instrument. A summary of the baseline vibration measurement results is provided in Table 12. The Table 12 data indicate that all measured existing vibration levels within the District Area Plans were well below the threshold of perception.

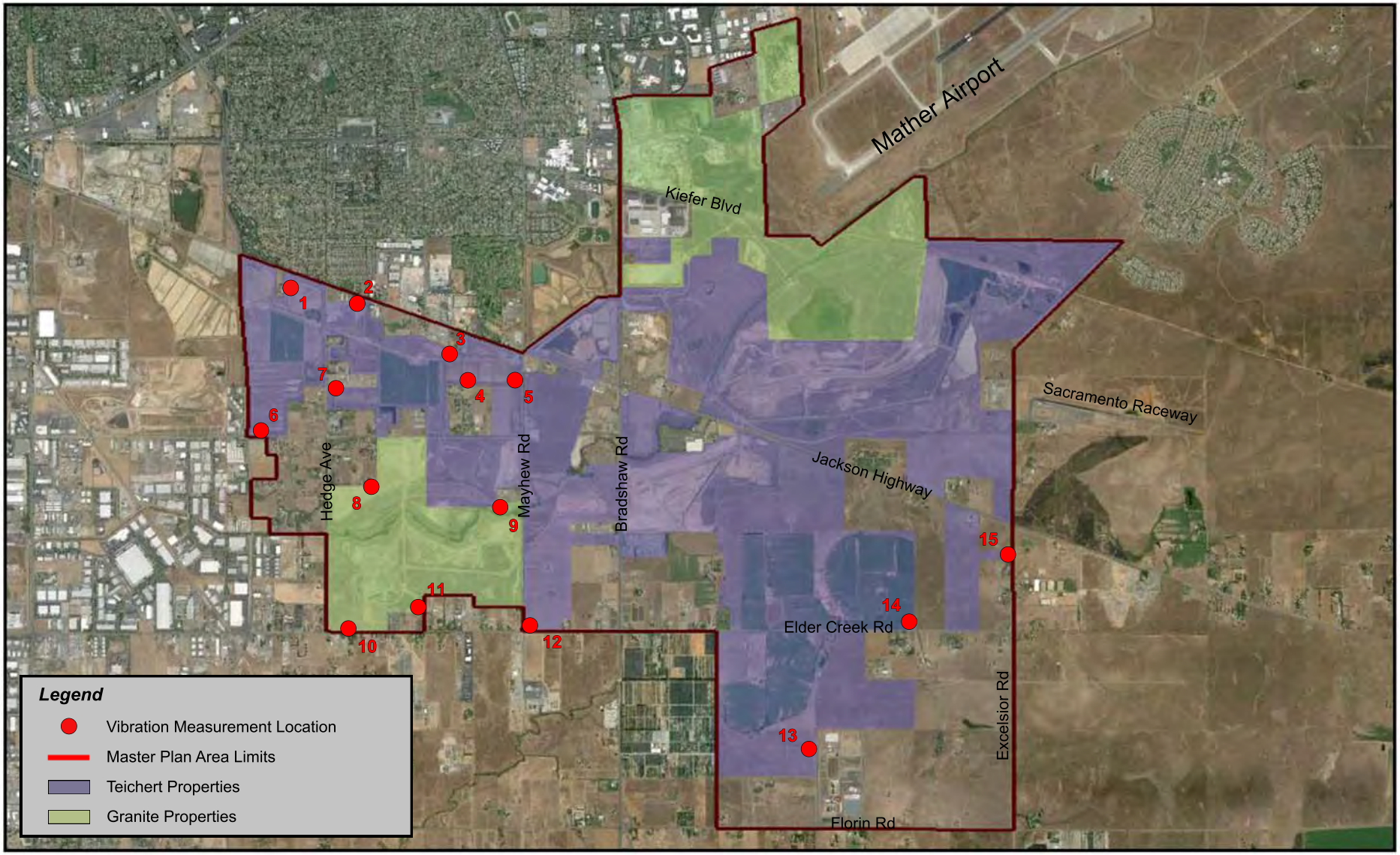
Table 12
Measured Baseline Vibration Levels (Peak Particle Velocity – Inches/Second)
West Jackson Highway Master Plan Area – Sacramento County

Short-Term Site[1]	Date	Time	Vibration Level
1	08/13/13	11:05 AM	0.00331
2	08/13/13	12:17 PM	0.00404
3	08/13/13	11:53 AM	0.00257
4	08/13/13	2:32 PM	0.00220
5	08/13/13	3:01 PM	0.00551
6	08/13/13	11:34 AM	0.00183
7	08/13/13	1:44 PM	0.00441
8	08/15/13	11:23 AM	0.00147
9	08/13/13	3:50 PM	0.00294
10	08/15/13	11:06 AM	0.00918
11	08/15/13	10:42 AM	0.01280
12	08/29/13	10:50 AM	0.00367
13	08/29/13	11:35 AM	0.00624
14	08/29/13	11:59 AM	0.00367
15	08/29/13	12:19 PM	0.00257

Source: Bollard Acoustical Consultants, Inc. (BAC)
[1] The general range at which vibration becomes distinctly to strongly perceptible is approximately 0.1 in/sec ppv.

Figure 12

West Jackson Highway Master Plan - Sacramento County, California
Ambient Vibration Measurement Locations



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Standards of Significance Applied to this Project

The following standards of significance, which are based on the California Environmental Quality Act Guidelines (State CEQA Guidelines) in conjunction with adopted local noise policy and appropriate noise standards as described above, are applied to this project:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

For transportation noise affecting existing or proposed noise-sensitive land uses within the Plan Area, the noise standards of Table 3 are applied. For aircraft noise affecting proposed noise-sensitive development within the Plan Area the General Plan policies NO-2, NO-3 and NO-4, with recently amended footnotes to General Plan Noise Element Table 4 (provided above in criteria section of this report).

For Non-transportation noise sources affecting existing or proposed noise-sensitive land uses within the Plan Area, the noise standards of Table 4 are applied.

For the evaluation of speech interference and sleep disturbance impacts at future schools and residences proposed within the Plan Area, respectively, compliance with Sacramento County General Plan aircraft noise policies NO-2 through NO-4 is required.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

For this assessment, a vibration level of 1 in/sec ppv is considered a criterion that would protect against significant architectural or structural damage. The general range at which vibration becomes distinctly to strongly perceptible is approximately 0.1 in/sec ppv.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

Criteria for assessing the significance of project-related noise level increases in Sacramento County and neighboring jurisdictions (with the exception of the City of Sacramento) are as follows:

1. Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

2. Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

3. Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +1.5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant.

Criteria for assessing the significance of project-related noise level increases in the City of Sacramento are shown in Table 6.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above level existing without the project.

A substantial temporary increase in noise levels is defined using the criteria shown above in threshold C. Because temporary increases in noise are commonly limited to construction activities, and because all Master Plan development activities would occur within Sacramento County, the different thresholds used in the City of Sacramento would not be germane to this threshold.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project to excessive noise levels.

The standards of the Sacramento County General Plan which are applicable to Mather Airport are used as the criteria for assessing aircraft noise impacts for this project. In addition, an interior SEL value of 65 dB is applied to the noise-sensitive interior areas of schools and residences proposed within the plan area.

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

No private airstrips were identified in the project vicinity so an evaluation of aircraft noise impacts associated with such facilities is not warranted for this project.

Impacts and Mitigation Measures: Existing Plus Project and Future (Cumulative) Noise Environments

Aircraft

Master Plan Area & District Area Plans

Existing Plus Project and Cumulative Aircraft Noise Levels

The locations of the Mather Airport noise contours would not be affected by development within the Master Plan Area as a whole, or specific development within the District Area Plans. As a result, the aircraft noise contours shown on Figure 4 reflect the theoretical capacity aircraft noise within the project area.

Impact 1: 24-hour Average Aircraft Noise Exposure at Proposed Residential Uses within the WJHMP Area.

Most residential development proposed within the WJHMP area is located outside of the Mather Airport 60 dB Ldn theoretical capacity (worst case) exterior noise contour. However, some residential development is proposed within the Mather Airport 60-65 CNEL noise contours. As a result, **this impact is considered significant**.

Mitigation for Impact 1:

A. All residential development proposed within the Mather Airport 60 CNEL noise contours shall include sufficient noise mitigation to satisfy the requirements of Sacramento County General Plan Policies NO-2, NO-3, and NO-4, including the footnotes to General Plan Noise Element Table 4.

B. Appendix J contains the Acoustical Testing Plan for Mather Airport for residences proposed within the 60-65 dB CNEL Mather Airport noise contours. This testing plan shall be followed to ensure satisfaction with the County General Plan policies pertaining to Mather Airport noise exposure within new residential developments.

Significance after mitigation: *Less than significant*.

Impact 2: 24-hour Average Aircraft Noise Exposure at Proposed School within the WJHMP Area.

According to the County General Plan Noise Element school uses are considered acceptable in aircraft noise environments up to 65 dB CNEL. Because no school uses are proposed within Mather Airport noise environments exceeding 65 dB CNEL, **this impact is considered less than significant**.

Mitigation for Impact 2: None Required.

Impact 3: Single-Event Aircraft Noise Exposure and Sleep Disturbance at Proposed Residences within the WJHMP Area.

As discussed earlier, the County has determined that single-event aircraft noise exposure and associated sleep disturbance impacts are to be assessed in accordance with the Sacramento County General Plan Noise Element Policies NO-2 through NO-4 on aircraft noise. Those policies, which are provided above in the criteria section, restrict new residential development to areas outside the 60 dB CNEL airport noise contours (unless specific policy conditions are met), require noise insulation to ensure interior noise levels do not exceed 45 dB CNEL within residences, require notification that prospective buyers are located within an Airport Policy Area, and require that an avigation easement be recorded acknowledging the property is located within an Airport Planning Policy Area.

Because prospective owners of residences constructed within the Airport Policy Area would be choosing to live in an environment where aircraft overflights occur, and because they would be properly notified of the presence of Mather Airport and, therefore, able to make an informed decision regarding purchasing a residence near an airport, and because interior noise levels must not exceed 45 dB CNEL within residences, Sacramento County has concluded that the satisfaction of the County's General Plan policies related to aircraft noise would ensure that no significant impacts occur with respect to aircraft single-event noise exposure and associated sleep disturbance. Therefore, **this impact is considered less than significant**.

Mitigation for Impact 3: None Required.

Traffic Noise

Master Plan Area & District Area Plans

Existing Plus Project Traffic Noise Levels

With development within the Master Plan Area as a whole, and specific development within the District Area Plans, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels. The FHWA Model was used with traffic input data provided by Sacramento County to predict existing and existing plus project traffic noise levels, and the project-related noise level increases. Table 13 shows existing versus existing plus project traffic noise levels on the regional roadway network. Appendix E contains the FHWA Model inputs for this scenario. The traffic noise levels shown in Table 13 were predicted at a normalized reference distance of 100 feet from the centerlines of the various project-area roadways. It is recognized that the actual distances from project area

roadways to existing and proposed future noise-sensitive land uses varies but the normalization of the traffic noise levels to a standard distance allows a more uniform comparison of traffic noise levels between existing and existing plus project conditions.

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
1	Bradshaw	Folsom	US 50	67.6	67.3	-0.3	No
2	Bradshaw	US 50	Lincoln Village	70.7	71.9	1.2	No
3	Bradshaw	Lincoln Village	Old Placerville	69.8	71.4	1.6	Yes
4	Bradshaw	Old Placerville	Goethe	69.4	70.4	1.0	No
5.1	Bradshaw	Goethe	Collector WJ-8	68.0	70.2	2.1	Yes
5.2	Bradshaw	Collector WJ-8	Kiefer	68.0	69.7	1.6	Yes
6.1	Bradshaw	Kiefer	Collector WJ-9	68.3	69.9	1.6	Yes
6.2	Bradshaw	Collector WJ-9	Mayhew	68.3	69.9	1.6	Yes
6.3	Bradshaw	Mayhew	Jackson	68.3	70.1	1.8	Yes
7.1	Bradshaw	Jackson	Rock Creek	68.1	68.0	-0.1	No
7.2	Bradshaw	Rock Creek	Collector WJ-10	68.1	68.2	0.0	No
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	68.1	68.3	0.2	No
7.4	Bradshaw	Collector WJ-11	Elder Creek	68.1	67.4	-0.8	No
8	Bradshaw	Elder Creek	Florin	68.0	69.4	1.4	No
9	Bradshaw	Florin	Gerber	68.1	69.6	1.4	No
10	Bradshaw	Gerber	Calvine	67.7	69.2	1.6	Yes
11	Calvine	Waterman	Bradshaw	66.5	67.5	1.0	No
12	Calvine	Bradshaw	Vineyard	66.3	66.3	0.0	No
13	Calvine	Vineyard	Excelsior	63.2	63.3	0.1	No
14	Chrysanthy	Sunrise	Rancho Cordova	58.8	59.0	0.2	No
15	Douglas	Mather	Zinfandel	61.7	61.1	-0.6	No
16	Douglas	Zinfandel	Sunrise	62.7	62.9	0.2	No
17	Douglas	Sunrise	Rancho Cordova	62.6	63.2	0.5	No
18.1	Douglas	Rancho Cordova	Americanos	62.6	63.2	0.6	No
18.2	Douglas	Americanos	Grant Line	62.6	63.2	0.6	No
19.1	Eagles Nest	Kiefer	N Bridgewater	54.9	57.6	2.7	No
19.2	Eagles Nest	N Bridgewater	S Bridgewater	54.9	57.6	2.7	No
19.3	Eagles Nest	S Bridgewater	Jackson	54.9	57.6	2.7	No
20	Eagles Nest	Jackson	Florin	54.1	54.2	0.0	No
21	Eagles Nest	Florin	Grant Line	49.8	51.0	1.2	No
22	Elder Creek	65th St	Power Inn	66.0	67.0	0.9	No
23	Elder Creek	Power Inn	Florin-Perkins	65.5	66.8	1.3	No
24	Elder Creek	Florin Perkins	South Watt	63.9	65.7	1.8	No
25	Elder Creek	South Watt	Hedge	62.0	67.8	5.8	Yes
26	Elder Creek	Hedge	Mayhew	62.2	67.7	5.6	Yes
27	Elder Creek	Mayhew	Bradshaw	61.8	64.8	3.0	Yes
28.1	Elder Creek	Bradshaw	Vineyard	57.9	66.1	8.3	Yes
28.2	Elder Creek	Vineyard	Excelsior	57.9	64.5	6.6	Yes
29	Elk Grove-Florin	Florin	Gerber	67.1	67.4	0.3	No
30.1	Excelsior	Kiefer	Douglas	57.7	54.2	-3.4	No
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	59.2	64.9	5.7	Yes
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59.2	64.4	5.2	Yes
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59.2	64.2	5.0	Yes

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
31.1	Excelsior	Jackson	Collector WJ-6	60.5	65.6	5.1	Yes
31.2	Excelsior	Collector WJ-6	Elder Creek	60.5	65.6	5.0	Yes
32	Excelsior	Elder Creek	Florin	59.7	63.5	3.8	No
33	Excelsior	Florin	Gerber	60.8	63.7	2.9	No
34	Excelsior	Gerber	Calvine	59.8	62.9	3.1	No
35	Excelsior	Calvine	Sheldon	61.9	63.9	2.0	No
36	Florin	Stockton	Power Inn	67.9	68.3	0.4	No
37	Florin	Power Inn	Florin-Perkins	66.8	68.1	1.3	No
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	66.0	67.8	1.8	Yes
39	Florin	South Watt	Hedge	64.3	66.9	2.6	No
40	Florin	Hedge	Mayhew	63.4	65.8	2.4	No
41	Florin	Mayhew	Bradshaw	63.4	65.9	2.5	No
42.1	Florin	Bradshaw	Vineyard	61.8	66.8	5.0	Yes
42.2	Florin	Vineyard	Excelsior	61.8	65.9	4.0	Yes
43	Florin	Excelsior	Sunrise	63.6	64.7	1.1	No
44	Folsom	Howe	Jackson	69.2	70.7	1.4	No
45	Fruitridge	65th St	Power Inn	65.7	66.9	1.2	No
46	Fruitridge	Power Inn	Florin Perkins	66.4	68.6	2.3	Yes
47	Fruitridge	Florin Perkins	South Watt	64.7	67.7	3.0	Yes
48	Fruitridge	South Watt	Hedge	57.0	63.5	6.5	Yes
49.1	Fruitridge	Hedge	Collector WJ-12	54.9	64.4	9.5	Yes
49.2	Fruitridge	Collector WJ-12	Mayhew	54.9	63.9	9.0	Yes
50	Grant Line	White Rock	Douglas	64.3	64.5	0.1	No
51.1	Grant Line	Douglas	Chrysanthy	65.8	66.3	0.5	No
51.2	Grant Line	Chrysanthy	Kiefer	65.8	66.3	0.5	No
52.1	Grant Line	Kiefer	Rancho Cordova	65.0	65.4	0.4	No
52.2	Grant Line	Rancho Cordova	Jackson	65.0	65.4	0.4	No
53	Grant Line	Jackson	Sunrise	69.1	69.0	-0.1	No
54	Grant Line	Sunrise	Calvine	69.6	69.8	0.2	No
55.1	Grant Line	Calvine	Elk Grove City Limit	66.8	67.7	0.9	No
55.2	Grant Line	Elk Grove City Limit	Sheldon	66.8	66.9	0.1	No
56	Grant Line	Sheldon	Wilton	68.0	68.5	0.5	No
57	Grant Line	Wilton	Bond	67.7	68.0	0.4	No
58.1	Happy Lane	Old Placerville	Routier Ext	57.4	59.2	1.8	No
58.2	Happy Lane	Routier Ext	Kiefer	57.4	62.0	4.6	No
59.1	Hedge	Jackson	Rock Creek	57.2	61.3	4.1	No
59.2	Hedge	Rock Creek	Fruitridge	57.2	57.2	0.0	No
60	Hedge	Fruitridge	Elder Creek	58.1	58.4	0.3	No
61	Hedge	Elder Creek	Florin	56.7	58.2	1.5	No
62	Howe	US 50	Folsom	70.8	71.3	0.5	No
63	International	Mather Field	Zinfandel	65.9	66.8	0.9	No
64	International	Zinfandel	Sunrise	62.9	63.8	0.9	No
65	Jackson	Folsom	Florin Perkins	66.5	69.8	3.3	Yes
66.1	Jackson	Florin Perkins	14th	65.8	70.2	4.4	Yes

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
66.2	Jackson	14th	Rock Creek	64.9	69.2	4.3	Yes
66.3	Jackson	Rock Creek	Aspen 1 Dwy	64.9	69.2	4.3	Yes
66.4	Jackson	Aspen 1 Dwy	South Watt	64.9	69.2	4.3	Yes
67	Jackson	South Watt	Hedge	67.9	72.1	4.2	Yes
68.1	Jackson	Hedge	Collector WJ-3	66.6	71.3	4.7	Yes
68.2	Jackson	Collector WJ-3	Mayhew	66.6	71.5	4.9	Yes
69	Jackson	Mayhew	Bradshaw	67.4	70.1	2.7	Yes
70.1	Jackson	Bradshaw	Collector WJ-4	67.6	70.3	2.7	Yes
70.2	Jackson	Collector WJ-4	Happy Ln	67.6	70.2	2.6	Yes
70.3	Jackson	Happy Ln	Rock Creek	67.6	67.2	-0.3	No
70.4	Jackson	Rock Creek	Collector WJ-5	67.6	67.2	-0.4	No
70.5	Jackson	Collector WJ-5	Collector WJ-6	67.6	68.2	0.6	No
70.6	Jackson	Collector WJ-6	Excelsior	67.6	67.9	0.3	No
71.1	Jackson	Excelsior	Collector JT-3	66.6	67.6	1.0	No
71.2	Jackson	Collector JT-3	Tree View Ln	66.6	67.6	1.0	No
71.3	Jackson	Tree View Ln	Collector JT-4	66.6	67.6	1.0	No
71.4	Jackson	Collector JT-4	Eagles Nest	66.6	67.6	1.0	No
72.1	Jackson	Eagles Nest	Rockbridge	66.4	67.2	0.8	No
72.2	Jackson	Rockbridge	Sunrise	66.4	67.2	0.8	No
73	Jackson	Sunrise	Grant Line	69.2	69.7	0.5	No
74	Kiefer	Florin Perkins	South Watt	60.1	60.3	0.2	No
75	Kiefer	South Watt	Mayhew	66.2	67.0	0.8	No
76	Kiefer	Mayhew	Bradshaw	63.2	68.3	5.1	Yes
77.1	Kiefer	Bradshaw Road	Collector WJ-14	61.2	68.1	6.9	Yes
77.2	Kiefer	Collector WJ-14	Routier Ext	61.2	67.2	6.0	Yes
77.3	Kiefer	Routier Ext	Happy Lane	61.2	66.5	5.3	Yes
78.1	Kiefer	Eagles Nest	W Collector MS-1	55.2	58.2	3.1	No
78.2	Kiefer	W Collector MS-1	Northbridge	55.2	58.2	3.1	No
78.3	Kiefer	Northbridge	E Collector MS-1	55.2	58.2	3.1	No
78.4	Kiefer	E Collector MS-1	Sunrise	55.2	58.2	3.1	No
79	Kiefer	Sunrise	Rancho Cordova	56.8	56.9	0.0	No
80	Mather / Norden	Von Karman St	Bleckely St	58.8	58.8	0.0	No
81	Mather	Bleckely St	Femoyer St	58.8	58.8	0.0	No
82	Mather	Femoyer St	Douglas	58.8	58.7	-0.1	No
83	Mather-Excelsior	Douglas	Kiefer	60.3	59.1	-1.2	No
84	Mather Field	US 50	Rockingham	71.2	71.2	0.0	No
85	Mather Field	Rockingham	International	71.1	71.7	0.6	No
86	Mather Field	International	Peter A McCuen	66.2	66.3	0.1	No
87	Mayhew	Folsom	Goethe	61.9	64.1	2.2	No
88	Mayhew	Goethe	Kiefer	61.7	63.1	1.5	No
89.1	Mayhew	Jackson	Rock Creek	55.6	68.7	13.1	Yes
89.2	Mayhew	Rock Creek	Fruitridge	55.6	68.2	12.6	Yes
90	Old Placerville	Bradshaw	Granby	62.8	62.0	-0.8	No
91	Old Placerville	Granby	Happy Ln	62.1	60.5	-1.6	No
92	Old Placerville	Happy Ln	Routier	62.3	60.3	-2.0	No

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
93	Old Placerville	Routier	Rockingham	62.7	66.6	4.0	Yes
94	Power Inn	Folsom	14th	69.1	68.9	-0.1	No
95	Rockingham	Old Placerville	Mather Field	66.5	68.4	2.0	Yes
96	South Watt	Folsom	Kiefer	70.6	72.3	1.7	Yes
97	South Watt	Kiefer	Jackson	69.6	71.3	1.7	Yes
98.1	South Watt	Jackson	Rock Creek	68.6	69.4	0.8	No
98.2	South Watt	Rock Creek	Fruitridge	68.6	69.3	0.7	No
99	South Watt	Fruitridge	Elder Creek	67.8	68.1	0.3	No
100	South Watt	Elder Creek	Florin	68.2	69.2	1.0	No
101	Sunrise	US 50	Folsom	70.8	70.8	0.0	No
102	Sunrise	Folsom	Trade Center	70.4	70.4	0.0	No
103	Sunrise	Trade Center	White Rock	68.9	68.9	0.1	No
104.1	Sunrise	White Rock	International	67.6	67.8	0.2	No
104.2	Sunrise	International	Rio Del Oro	68.0	68.1	0.1	No
104.3	Sunrise	Rio Del Oro	Douglas	69.5	69.6	0.1	No
105	Sunrise	Douglas	Kiefer	67.9	68.0	0.1	No
106	Sunrise	Kiefer	Jackson	68.5	68.8	0.2	No
107	Sunrise	Jackson	Florin	66.8	67.3	0.6	No
108	Sunrise	Florin	Grant Line	65.2	65.6	0.5	No
109	Vineyard	Gerber	Calvine	59.4	59.0	-0.4	No
110	Watt	US 50	Folsom	73.5	74.2	0.6	No
111	White Rock	International	Quality	58.3	58.2	-0.2	No
112	White Rock	Quality	Zinfandel	62.9	62.5	-0.4	No
113	White Rock	Zinfandel	Kilgore	64.1	64.1	0.0	No
114	White Rock	Kilgore	Sunrise	64.1	64.1	0.1	No
115	White Rock	Sunrise	Fitzgerald	66.3	66.5	0.1	No
116.1	White Rock	Fitzgerald	Rancho Cordova	59.4	59.3	0.0	No
116.2	White Rock	Rancho Cordova	Americanos	59.4	59.3	0.0	No
116.3	White Rock	Americanos	Grant Line	58.4	58.4	0.0	No
117	White Rock	Grant Line	Prairie City	66.0	66.0	0.1	No
118	Zinfandel	US 50	White Rock	68.9	68.6	-0.3	No
119	Zinfandel	White Rock	International	64.9	64.7	-0.2	No
120	Zinfandel	International	Baroque	62.3	61.5	-0.8	No
121	Zinfandel	Baroque	City Limit	62.3	61.5	-0.8	No
122	Zinfandel	City Limit	Douglas	62.3	61.5	-0.8	No
123.1	Zinfandel	Douglas	Collector MS-2	58.0	57.1	-1.0	No
123.2	Zinfandel	Collector MS-2	Collector MS-3	58.0	57.1	-1.0	No
123.3	Zinfandel	Collector MS-3	Collector MS-4	58.0	57.1	-1.0	No
123.4	Zinfandel	Collector MS-4	Kiefer	58.0	57.1	-1.0	No

Source: FHWA Model with inputs from Sacramento County
Note: All traffic noise levels are presented in terms of Ldn at a reference distance of 100 feet from the roadway centerlines

Impact 4: Project-Generated Traffic Noise Increases on Existing Receptors: Existing Plus Project

Impact 4 specifically relates to traffic noise impacts of development of the Project on existing sensitive receptors. See Impact 7 for specific discussion related to traffic noise impacts at sensitive receptors proposed as part of the WJHMP.

Development within the District Area Plans would cause increases in existing traffic noise levels on the local roadway network. A total of 171 existing roadway segments were evaluated (See Table 13), and it was determined that the project-related traffic noise level increase relative to existing traffic noise levels without the Project would range from -5.0 dB to +13.1 dB, with an average noise level increase of 1.6 dB Ldn. Of the 171 segments evaluated, the increase was considered to be substantial on 45 roadway segments. The criteria for determination of a substantial project-related increase in traffic noise levels is as follows:

- 5 dB increase where baseline levels are below 60 dB Ldn.
- 3 dB increase where baseline levels are between 60 – 65 dB Ldn.
- 1.5 dB increase where baseline levels exceed 65 dB Ldn.

A finding of a substantial traffic noise increase may or may not trigger a finding of significant noise impact. For example, if a roadway segment where a substantial increase has been identified has no existing noise-sensitive land uses developed adjacent to that roadway, then no impact would be identified. Similarly, if sensitive development is substantially shielded by either topography, structures, or soundwalls, it may reduce the baseline noise conditions at that receptor such that the threshold for a finding of significance increases from 1.5 dB to 3 dB or 5 dB. For example, where an increase of 1.5 dB would be considered significant for an unshielded residence with a baseline exposure exceeding 65 dB Ldn, the same 1.5 dB increase would not be considered significant if the baseline exposure at that same residence was reduced to less than 65 dB Ldn through shielding.

After identification of the roadway segment for which a substantial increase in traffic noise levels was determined to result from the project, additional analysis of those roadway segments was conducted to identify those segments containing residential or other noise-sensitive development, as well as segments containing existing sound walls. Table 14 contains the results of that additional analysis.

While it is recognized that the noise attenuation provided by existing noise barriers within the Plan Area will vary depending on many factors, for purposes of this assessment it was assumed that the barriers would

intercept line of sight between the traffic noise source and the sensitive receptor. The resulting noise attenuation provided by such a barrier is 5 dB or more. Although the attenuation by barriers would not affect the increase in traffic noise experienced at existing residences resulting from the project, it would lower the baseline noise condition of the receptor. In some cases, the application of a 5 dB decrease to the baseline noise exposure results in a decrease in the threshold for a finding of significant noise impacts.

As noted in Table 14, not all of the roadway segments identified as having a substantial project-related traffic noise increase contain impacted noise-sensitive receptors. In addition, not all segments with sensitive receptors are shielded by existing barriers. Table 14 indicates that development within the Master Plan Area would result in significant noise impacts along 21 roadway segments, and potentially significant noise impacts along an additional 5 segments. The reason some impacts are identified as "potentially significant" is because it is not clear if the sensitive receptors would benefit sufficiently from the presence of existing noise barriers to reduce the impact to a less than significant level. As a result, ***this impact is considered significant***.

Table 14
Traffic Noise Impact Assessment: Existing Plus Project Conditions
West Jackson Highway Master Plan

Seg.	Road	From	To	Existing	Existing + Project	Change	Substantial Increase?	Sensitive Uses?	Noise Barriers	Significant Impact?
3	Bradshaw	Lincoln Village	Old Placerville	69.8	71.4	1.6	Yes	Yes	Yes	LTS
5.1	Bradshaw	Goethe	Collector WJ-8	68.0	70.2	2.1	Yes	No	N/A	LTS
5.2	Bradshaw	Collector WJ-8	Kiefer	68.0	69.7	1.6	Yes	No	N/A	LTS
6.1	Bradshaw	Kiefer	Collector WJ-9	68.3	69.9	1.6	Yes	No	N/A	LTS
6.2	Bradshaw	Collector WJ-9	Mayhew	68.3	69.9	1.6	Yes	Yes	No	S
6.3	Bradshaw	Mayhew	Jackson	68.3	70.1	1.8	Yes	Yes	No	S
10	Bradshaw	Gerber	Calvine	67.7	69.2	1.6	Yes	Yes	Some	PS
25	Elder Creek	South Watt	Hedge	62.0	67.8	5.8	Yes	Yes	No	S
26	Elder Creek	Hedge	Mayhew	62.2	67.7	5.6	Yes	Yes	No	S
27	Elder Creek	Mayhew	Bradshaw	61.8	64.8	3.0	Yes	Yes	No	S
28.1	Elder Creek	Bradshaw	Vineyard	57.9	66.1	8.3	Yes	Yes	No	S
28.2	Elder Creek	Vineyard	Excelsior	57.9	64.5	6.6	Yes	Yes	No	S
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	59.2	64.9	5.7	Yes	Yes	Yes	S
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59.2	64.4	5.2	Yes	Yes	Yes	S
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59.2	64.2	5.0	Yes	Yes	No	S
31.1	Excelsior	Jackson	Collector WJ-6	60.5	65.6	5.1	Yes	No	N/A	LTS
31.2	Excelsior	Collector WJ-6	Elder Creek	60.5	65.6	5.0	Yes	No	N/A	LTS
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	66.0	67.8	1.8	Yes	Yes	No	S
42.1	Florin	Bradshaw	Vineyard	61.8	66.8	5.0	Yes	Yes	No	S
42.2	Florin	Vineyard	Excelsior	61.8	65.9	4.0	Yes	Yes	No	S
46	Fruitridge	Power Inn	Florin Perkins	66.4	68.6	2.3	Yes	No	N/A	LTS
47	Fruitridge	Florin Perkins	South Watt	64.7	67.7	3.0	Yes	No	N/A	LTS
48	Fruitridge	South Watt	Hedge	57.0	63.5	6.5	Yes	No	N/A	LTS
49.1	Fruitridge	Hedge	Collector WJ-12	54.9	64.4	9.5	Yes	Yes	No	S
49.2	Fruitridge	Collector WJ-12	Mayhew	54.9	63.9	9.0	Yes	Yes	No	S
65	Jackson	Folsom	Florin Perkins	66.5	69.8	3.3	Yes	Yes	No	S
66.1	Jackson	Florin Perkins	14th	65.8	70.2	4.4	Yes	No	N/A	LTS
66.2	Jackson	14th	Rock Creek	64.9	69.2	4.3	Yes	No	N/A	LTS
66.3	Jackson	Rock Creek	Aspen 1 Dwy	64.9	69.2	4.3	Yes	No	N/A	LTS
66.4	Jackson	Aspen 1 Dwy	South Watt	64.9	69.2	4.3	Yes	No	N/A	LTS

Table 14
Traffic Noise Impact Assessment: Existing Plus Project Conditions
West Jackson Highway Master Plan

Seg.	Road	From	To	Existing	Existing + Project	Change	Substantial Increase?	Sensitive Uses?	Noise Barriers	Significant Impact?
67	Jackson	South Watt	Hedge	67.9	72.1	4.2	Yes	Yes	Some	PS
68.1	Jackson	Hedge	Collector WJ-3	66.6	71.3	4.7	Yes	Yes	Some	PS
68.2	Jackson	Collector WJ-3	Mayhew	66.6	71.5	4.9	Yes	Yes	Some	PS
69	Jackson	Mayhew	Bradshaw	67.4	70.1	2.7	Yes	No	N/A	LTS
70.1	Jackson	Bradshaw	Collector WJ-4	67.6	70.3	2.7	Yes	Yes	No	S
70.2	Jackson	Collector WJ-4	Happy Ln	67.6	70.2	2.6	Yes	Yes	No	S
76	Kiefer	Mayhew	Bradshaw	63.2	68.3	5.1	Yes	No	N/A	LTS
77.1	Kiefer	Bradshaw Road	Collector WJ-14	61.2	68.1	6.9	Yes	Yes	No	S
77.2	Kiefer	Collector WJ-14	Routier Ext	61.2	67.2	6.0	Yes	Yes	No	S
77.3	Kiefer	Routier Ext	Happy Lane	61.2	66.5	5.3	Yes	Yes	No	S
89.1	Mayhew	Jackson	Rock Creek	55.6	68.7	13.1	Yes	No	N/A	LTS
89.2	Mayhew	Rock Creek	Fruitridge	55.6	68.2	12.6	Yes	No	N/A	LTS
93	Old Placerville	Routier	Rockingham	62.7	66.6	4.0	Yes	Yes	Yes	LTS
95	Rockingham	Old Placerville	Mather Field	66.5	68.4	2.0	Yes	Yes	No	S
96	South Watt	Folsom	Kiefer	70.6	72.3	1.7	Yes	Yes	Yes	LTS
97	South Watt	Kiefer	Jackson	69.6	71.3	1.7	Yes	Yes	Yes	LTS

LTS: Less-than-significant Impact
PS: Potentially Significant Impact
Note: All traffic noise levels are presented in terms of Ldn at a reference distance of 100 feet from the roadway centerlines
Source: FHWA-RD-77-108 with inputs from Sacramento County & BAC analysis.

Mitigation for Impact 4

The mitigation of impacts at existing sensitive receptors resulting from significant project-related traffic noise increases is frequently challenging because of a combination of limited mitigation options, constraints upon implementation of certain options, cost of implementation, and limited effectiveness of some options. Nonetheless, the following specific options for mitigation of off-site traffic noise impacts at existing noise sensitive receptors should be considered to the extent reasonable and feasible:

A. **Reduction in Traffic Volumes:** Because one of the most important factors in traffic noise generation is daily vehicle volume, a reduction in traffic noise levels can be achieved by reducing the overall volume of traffic which would be generated by the project. It should be noted, however, that a 3 dB reduction in traffic noise levels would require a 50% reduction in projected traffic volumes. So this measure would require a substantial decrease in traffic volume to achieve an appreciable decrease in traffic noise levels. As a result, it is unlikely that this measure would be a feasible means of fully mitigating this noise impact.

B. **Reduction in Vehicle Speeds:** Another factor in the generation of traffic noise is vehicle speed. Higher speeds translate to higher traffic noise levels. However, vehicle speed limits are set based on speed surveys, safety considerations, and other factors, and cannot be arbitrarily reduced to achieve lower traffic noise levels. As a result, this measure would not likely be a feasible means of mitigating this noise impact.

C. **Construction of Noise Barriers:** As noted in the discussion of noise mitigation fundamentals in the beginning of this report, appreciable reductions in traffic noise levels can be achieved through the construction of traffic noise barriers. However, at locations where openings or gaps in the barriers would be required for driveway openings or to maintain safe sight distances, the effectiveness of noise barriers is severely compromised. In addition, this measure would typically require construction of noise barriers on the property of the impacted receptor, rather than within a public right-of-way, so there is no guarantee the impacted receptor would agree to the construction of such barriers or that adequate space is available to construct a barrier. Furthermore, the construction of off-site traffic noise barriers could be extremely costly per benefitted receptor, potentially rendering this measure infeasible.

D. **Use of Setbacks:** A 4.5 dB decrease in traffic noise levels can be achieved for each doubling of distance between the roadway centerline

and affected residences. However, because the locations of existing residences which would be impacted by project-generated increases in traffic noise are fixed, as are the roadways of concern, this measure is not viable for existing residences.

E. **Noise-Reducing Pavement:** Noise-reducing pavement types, such as rubberized asphalt, have been shown to provide an appreciable noise level reduction relative to other pavement types (approximately 3-4 dB over conventional asphalt overlays). However, because the project-related increase in existing traffic noise levels exceeds 4 dB along many of the roadway segments analyzed in Table 13, the benefits of noise-reducing paving materials, even if feasible, would be insufficient to fully mitigate this impact. Nonetheless, at roadway segments where a 3-4 dB decrease in traffic noise levels would be sufficient to reduce this impact to a less than significant level, this mitigation alternative would be effective.

F. **Building Insulation:** As noted in the fundamentals section of this report, when interior noise levels are of concern, noise reduction may be obtained through acoustical improvement of building facades. The greatest improvement in building façade noise reduction can typically be realized through specification of upgraded windows with higher Sound Transmission Class (STC) ratings. Additional noise control for exterior doorways can be provided by replacing hollow doors with solid core doors and by acoustically sealing door perimeters with suitable gaskets.

Some of the aforementioned noise mitigation measures may be utilized to provide appreciable traffic noise level decreases. However, because such measures may be infeasible from a cost, engineering or safety standpoint, may not fully mitigate noise impacts, or could require the consent of the impacted receptor, the successful implementation of these measures cannot be guaranteed. As a result this impact is considered significant and unavoidable.

Significance after Mitigation: ***Significant and Unavoidable.***

Cumulative Traffic Noise Levels

With cumulative development of the region, including this proposed project and the three other Master Plan developments being considered concurrently with the West Jackson Highway Master Plan, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in cumulative traffic noise levels. The FHWA Model was used with traffic input data provided by Sacramento County to predict future (cumulative) vs. Cumulative-No-Project traffic noise levels, and the project-related noise level increases. Table 15 shows the results of that analysis on the existing and future regional roadway network. Appendices G, H & I contain the FHWA Model inputs for the cumulative scenarios.

The traffic noise levels shown in Table 15 were predicted at a normalized reference distance of 100 feet from the centerlines of the various project-area roadways. It is recognized that the actual distances from project area roadways to existing and proposed future noise-sensitive land uses varies but the normalization of the traffic noise levels to a standard distance allows a more uniform comparison of traffic noise levels between cumulative and cumulative plus project conditions.

It should be noted that several of the roadways evaluated in Table 15 would not exist without the construction of the project. As a result, the predicted noise levels for cumulative plus project conditions are provided for those segments but there are no cumulative no project noise levels for those same roadways. In such cases the change and substantial increase indicators are identified as not applicable (N/A).

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
1	Bradshaw	Folsom	US 50	68.6	68.3	-0.3	No
2	Bradshaw	US 50	Lincoln Village	71.7	72.7	1.0	No
3	Bradshaw	Lincoln Village	Old Placerville	70.8	72.3	1.5	Yes
4	Bradshaw	Old Placerville	Goethe	71.7	72.1	0.4	No
5.1	Bradshaw	Goethe	Collector WJ-8	70.5	71.4	0.9	No
5.2	Bradshaw	Collector WJ-8	Kiefer	70.4	71.2	0.8	No
6.1	Bradshaw	Kiefer	Collector WJ-9	71.1	70.8	-0.3	No
6.2	Bradshaw	Collector WJ-9	Mayhew	71.1	70.8	-0.3	No
6.3	Bradshaw	Mayhew	Jackson	71.1	71.1	0.0	No
7.1	Bradshaw	Jackson	Rock Creek	69.8	69.3	-0.5	No
7.2	Bradshaw	Rock Creek	Collector WJ-10	69.8	69.5	-0.3	No
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	70.9	70.2	-0.7	No
7.4	Bradshaw	Collector WJ-11	Elder Creek	70.9	69.8	-1.1	No
8	Bradshaw	Elder Creek	Florin	70.5	71.7	1.2	No
9	Bradshaw	Florin	Gerber	70.3	71.7	1.4	No
10	Bradshaw	Gerber	Calvine	69.7	71.1	1.3	No
11	Calvine	Waterman	Bradshaw	65.8	66.1	0.3	No
12	Calvine	Bradshaw	Vineyard	65.4	65.1	-0.3	No
13	Calvine	Vineyard	Excelsior	65.4	65.2	-0.2	No
14	Chrysanthy	Sunrise	Rancho Cordova	63.5	63.3	-0.2	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
15	Douglas	Mather	Zinfandel	67.6	68.7	1.1	No
16	Douglas	Zinfandel	Sunrise	69.5	70.5	1.0	No
17	Douglas	Sunrise	Rancho Cordova	72.4	72.6	0.2	No
18.1	Douglas	Rancho Cordova	Americanos	72.6	72.5	0.0	No
18.2	Douglas	Americanos	Grant Line	71.4	71.3	-0.1	No
19.1	Eagles Nest	Kiefer	N Bridgewater	66.7	66.7	0.0	No
19.2	Eagles Nest	N Bridgewater	S Bridgewater	67.0	66.9	-0.1	No
19.3	Eagles Nest	S Bridgewater	Jackson	67.8	67.4	-0.4	No
20	Eagles Nest	Jackson	Florin	67.1	66.6	-0.5	No
21	Eagles Nest	Florin	Grant Line	64.0	63.6	-0.5	No
22	Elder Creek	65th St	Power Inn	67.6	68.0	0.4	No
23	Elder Creek	Power Inn	Florin-Perkins	67.8	68.0	0.3	No
24	Elder Creek	Florin Perkins	South Watt	68.1	68.4	0.3	No
25	Elder Creek	South Watt	Hedge	70.8	71.8	0.9	No
26	Elder Creek	Hedge	Mayhew	69.4	69.8	0.4	No
27	Elder Creek	Mayhew	Bradshaw	71.2	70.6	-0.6	No
28.1	Elder Creek	Bradshaw	Vineyard	67.8	69.4	1.7	Yes
28.2	Elder Creek	Vineyard	Excelsior	67.9	68.6	0.7	No
29	Elk Grove-Florin	Florin	Gerber	70.5	70.2	-0.2	No
30.1	Excelsior	Kiefer	Douglas	57.7	59.5	1.8	No
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	64.5	67.8	3.3	Yes
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	66.4	67.6	1.2	No
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	66.5	67.5	1.0	No
31.1	Excelsior	Jackson	Collector WJ-6	68.2	69.2	1.0	No
31.2	Excelsior	Collector WJ-6	Elder Creek	68.2	69.1	0.9	No
32	Excelsior	Elder Creek	Florin	62.9	64.5	1.6	No
33	Excelsior	Florin	Gerber	63.5	64.7	1.1	No
34	Excelsior	Gerber	Calvine	59.8	62.7	2.9	No
35	Excelsior	Calvine	Sheldon	61.7	64.1	2.4	No
36	Florin	Stockton	Power Inn	70.0	70.2	0.3	No
37	Florin	Power Inn	Florin-Perkins	69.4	69.9	0.5	No
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	68.5	69.1	0.6	No
39	Florin	South Watt	Hedge	64.8	64.3	-0.5	No
40	Florin	Hedge	Mayhew	65.3	64.7	-0.6	No
41	Florin	Mayhew	Bradshaw	67.2	69.5	2.3	Yes
42.1	Florin	Bradshaw	Vineyard	69.3	69.8	0.5	No
42.2	Florin	Vineyard	Excelsior	67.9	68.6	0.7	No
43	Florin	Excelsior	Sunrise	70.3	70.1	-0.3	No
44	Folsom	Howe	Jackson	70.6	71.0	0.4	No
45	Fruitridge	65th St	Power Inn	67.3	67.9	0.6	No
46	Fruitridge	Power Inn	Florin Perkins	67.9	69.5	1.6	Yes
47	Fruitridge	Florin Perkins	South Watt	65.9	67.9	2.0	Yes

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
48	Fruitridge	South Watt	Hedge	57.8	66.2	8.4	Yes
49.1	Fruitridge	Hedge	Collector WJ-12	57.9	66.2	8.3	Yes
49.2	Fruitridge	Collector WJ-12	Mayhew	57.9	65.8	7.8	Yes
50	Grant Line	White Rock	Douglas	73.6	73.5	-0.1	No
51.1	Grant Line	Douglas	Chrysanthy	75.8	75.6	-0.2	No
51.2	Grant Line	Chrysanthy	Kiefer	74.9	74.7	-0.2	No
52.1	Grant Line	Kiefer	Rancho Cordova	72.8	73.1	0.2	No
52.2	Grant Line	Rancho Cordova	Jackson	73.5	73.6	0.1	No
53	Grant Line	Jackson	Sunrise	72.4	72.2	-0.2	No
54	Grant Line	Sunrise	Calvine	73.7	73.6	-0.1	No
55.1	Grant Line	Calvine	Elk Grove City Limit	72.2	72.1	-0.1	No
55.2	Grant Line	Elk Grove City Limit	Sheldon	72.2	72.1	-0.1	No
56	Grant Line	Sheldon	Wilton	72.0	72.2	0.2	No
57	Grant Line	Wilton	Bond	71.5	71.7	0.2	No
58.1	Happy Lane	Old Placerville	Routier Ext	60.4	64.9	4.5	Yes
58.2	Happy Lane	Routier Ext	Kiefer	61.2	66.6	5.4	Yes
59.1	Hedge	Jackson	Rock Creek	58.0	63.1	5.1	Yes
59.2	Hedge	Rock Creek	Fruitridge	58.1	61.2	3.1	No
60	Hedge	Fruitridge	Elder Creek	61.4	62.4	1.0	No
61	Hedge	Elder Creek	Florin	65.8	65.9	0.0	No
62	Howe	US 50	Folsom	71.8	72.0	0.2	No
63	International	Mather Field	Zinfandel	70.9	70.2	-0.6	No
64	International	Zinfandel	Sunrise	70.2	69.5	-0.7	No
65	Jackson	Folsom	Florin Perkins	69.0	69.5	0.5	No
66.1	Jackson	Florin Perkins	14th	69.2	70.4	1.2	No
66.2	Jackson	14th	Rock Creek	70.2	71.9	1.6	Yes
66.3	Jackson	Rock Creek	Aspen 1 Dwy	69.7	71.5	1.9	Yes
66.4	Jackson	Aspen 1 Dwy	South Watt	69.4	71.4	2.0	Yes
67	Jackson	South Watt	Hedge	71.2	73.1	1.9	Yes
68.1	Jackson	Hedge	Collector WJ-3	70.1	72.4	2.4	Yes
68.2	Jackson	Collector WJ-3	Mayhew	70.5	72.5	2.0	Yes
69	Jackson	Mayhew	Bradshaw	69.6	71.4	1.8	Yes
70.1	Jackson	Bradshaw	Collector WJ-4	68.8	71.7	2.9	Yes
70.2	Jackson	Collector WJ-4	Happy Ln	68.8	71.7	2.9	Yes
70.3	Jackson	Happy Ln	Rock Creek	68.7	70.1	1.4	No
70.4	Jackson	Rock Creek	Collector WJ-5	68.7	70.1	1.3	No
70.5	Jackson	Collector WJ-5	Collector WJ-6	70.6	71.7	1.1	No
70.6	Jackson	Collector WJ-6	Excelsior	70.6	71.7	1.1	No
71.1	Jackson	Excelsior	Collector JT-3	72.8	73.7	0.9	No
71.2	Jackson	Collector JT-3	Tree View Ln	71.5	72.4	0.9	No
71.3	Jackson	Tree View Ln	Collector JT-4	70.8	71.9	1.1	No
71.4	Jackson	Collector JT-4	Eagles Nest	70.5	71.5	1.0	No
72.1	Jackson	Eagles Nest	Rockbridge	70.5	71.5	1.0	No
72.2	Jackson	Rockbridge	Sunrise	70.7	71.6	0.8	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
73	Jackson	Sunrise	Grant Line	74.0	74.5	0.5	No
74	Kiefer	Florin Perkins	South Watt	58.3	60.3	2.0	No
75	Kiefer	South Watt	Mayhew	67.2	68.6	1.4	No
76	Kiefer	Mayhew	Bradshaw	65.5	69.8	4.3	Yes
77.1	Kiefer	Bradshaw Road	Collector WJ-14	62.2	70.6	8.4	Yes
77.2	Kiefer	Collector WJ-14	Routier Ext	62.3	70.2	7.9	Yes
77.3	Kiefer	Routier Ext	Happy Lane	62.3	70.5	8.2	Yes
78.1	Kiefer	Eagles Nest	W Collector MS-1	68.6	71.3	2.7	Yes
78.2	Kiefer	W Collector MS-1	Northbridge	68.6	71.0	2.4	Yes
78.3	Kiefer	Northbridge	E Collector MS-1	69.1	71.2	2.1	Yes
78.4	Kiefer	E Collector MS-1	Sunrise	71.1	72.2	1.1	No
79	Kiefer	Sunrise	Rancho Cordova	66.4	67.6	1.2	No
80	Mather / Norden	Von Karman St	Bleckely St	65.0	64.1	-0.9	No
81	Mather	Bleckely St	Femoyer St	65.0	64.1	-0.9	No
82	Mather	Femoyer St	Douglas	65.0	64.1	-0.9	No
83	Mather-Excelsior	Douglas	Kiefer	57.4	55.9	-1.4	No
84	Mather Field	US 50	Rockingham	73.7	73.4	-0.3	No
85	Mather Field	Rockingham	International	74.2	74.0	-0.1	No
86	Mather Field	International	Peter A McCuen	65.8	66.7	1.0	No
87	Mayhew	Folsom	Goethe	62.7	65.1	2.4	No
88	Mayhew	Goethe	Kiefer	64.1	64.9	0.8	No
89.1	Mayhew	Jackson	Rock Creek	58.9	70.3	11.4	Yes
89.2	Mayhew	Rock Creek	Fruitridge	58.9	70.2	11.3	Yes
90	Old Placerville	Bradshaw	Granby	69.5	67.1	-2.5	No
91	Old Placerville	Granby	Happy Ln	69.2	66.7	-2.6	No
92	Old Placerville	Happy Ln	Routier	69.0	66.1	-2.9	No
93	Old Placerville	Routier	Rockingham	66.9	68.0	1.1	No
94	Power Inn	Folsom	14th	69.9	70.2	0.3	No
95	Rockingham	Old Placerville	Mather Field	69.0	69.5	0.5	No
96	South Watt	Folsom	Kiefer	72.9	73.6	0.7	No
97	South Watt	Kiefer	Jackson	72.9	73.0	0.1	No
98.1	South Watt	Jackson	Rock Creek	72.3	72.2	-0.1	No
98.2	South Watt	Rock Creek	Fruitridge	72.5	72.3	-0.3	No
99	South Watt	Fruitridge	Elder Creek	72.4	72.2	-0.2	No
100	South Watt	Elder Creek	Florin	73.0	73.2	0.2	No
101	Sunrise	US 50	Folsom	71.6	71.5	-0.2	No
102	Sunrise	Folsom	Trade Center	71.4	71.3	-0.2	No
103	Sunrise	Trade Center	White Rock	69.5	69.2	-0.2	No
104.1	Sunrise	White Rock	International	70.5	72.4	1.8	Yes
104.2	Sunrise	International	Rio Del Oro	71.3	72.7	1.4	No
104.3	Sunrise	Rio Del Oro	Douglas	73.7	73.4	-0.3	No
105	Sunrise	Douglas	Kiefer	71.2	70.9	-0.4	No
106	Sunrise	Kiefer	Jackson	70.8	70.7	-0.1	No
107	Sunrise	Jackson	Florin	71.1	71.1	0.0	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
108	Sunrise	Florin	Grant Line	67.9	68.0	0.1	No
109	Vineyard	Gerber	Calvine	62.7	63.8	1.1	No
110	Watt	US 50	Folsom	75.3	75.7	0.3	No
111	White Rock	International	Quality	60.0	59.8	-0.3	No
112	White Rock	Quality	Zinfandel	65.1	64.9	-0.2	No
113	White Rock	Zinfandel	Kilgore	67.6	67.3	-0.3	No
114	White Rock	Kilgore	Sunrise	68.6	68.3	-0.3	No
115	White Rock	Sunrise	Fitzgerald	69.9	70.0	0.0	No
116.1	White Rock	Fitzgerald	Rancho Cordova	72.1	71.9	-0.1	No
116.2	White Rock	Rancho Cordova	Americanos	68.2	67.7	-0.5	No
116.3	White Rock	Americanos	Grant Line	68.6	68.5	-0.2	No
117	White Rock	Grant Line	Prairie City	75.9	75.9	0.0	No
118	Zinfandel	US 50	White Rock	71.8	71.5	-0.3	No
119	Zinfandel	White Rock	International	69.0	68.7	-0.4	No
120	Zinfandel	International	Baroque	69.1	68.7	-0.4	No
121	Zinfandel	Baroque	City Limit	69.1	68.7	-0.4	No
122	Zinfandel	City Limit	Douglas	69.1	68.7	-0.4	No
123.1	Zinfandel	Douglas	Collector MS-2	67.9	67.0	-0.9	No
123.2	Zinfandel	Collector MS-2	Collector MS-3	65.5	65.8	0.3	No
123.3	Zinfandel	Collector MS-3	Collector MS-4	65.1	65.8	0.7	No
123.4	Zinfandel	Collector MS-4	Kiefer	64.5	65.8	1.3	No
124	14th	Power Inn	Florin Perkins	66.2	68.4	2.1	Yes
125	14th	Florin Perkins	Jackson	63.5	66.5	2.9	No
126	Chrysanthy	Rancho Cordova	Americanos	66.9	66.8	-0.1	No
127	Chrysanthy	Americanos	Grant Line	65.8	65.5	-0.3	No
128	Douglas Ext.	Mather	Kiefer	64.5	67.8	3.2	Yes
129	International	Sunrise	Rancho Cordova	69.2	68.5	-0.7	No
130	International	Rancho Cordova	Americanos	66.3	66.2	-0.1	No
131	Kiefer	Rancho Cordova	Americanos	61.3	62.3	0.9	No
132	Kiefer	Americanos	Grant Line	65.6	66.3	0.7	No
133	Rancho Cordova	US 50	Easton Valley	72.0	71.9	-0.1	No
134	Rancho Cordova	Easton Valley	White Rock	72.2	72.1	-0.1	No
135	Rancho Cordova	White Rock	International	70.6	70.5	-0.1	No
136	Rancho Cordova	International	Rio Del Oro	71.7	71.2	-0.4	No
137	Rancho Cordova	Rio Del Oro	Villagio	69.8	69.3	-0.5	No
138	Rancho Cordova	Villagio	Douglas	69.2	68.5	-0.6	No
139	Rancho Cordova	Douglas	Chrysanthy	69.2	68.7	-0.5	No
140	Rancho Cordova	Chrysanthy	Kiefer	67.2	66.3	-0.8	No
141	Rancho Cordova	Kiefer	Grant Line	64.9	65.0	0.1	No
142	Americanos	White Rock	Douglas	59.1	58.7	-0.5	No
143	Americanos	Douglas	Chrysanthy	62.3	61.9	-0.3	No
144	Americanos	Chrysanthy	Kiefer	62.1	61.5	-0.6	No
145	Vineyard	Florin	Gerber	55.9	63.5	7.6	Yes
146	Rio Del Oro	Sunrise	Rancho Cordova	68.4	67.4	-1.0	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
147	Rio Del Oro	Rancho Cordova	White Rock	62.9	61.7	-1.2	No
200	Kiefer	Tree View Ln	Eagles Nest	66.9	70.2	3.4	Yes
400	Collector JT-1	Excelsior	Collector JT-3	58.4	57.4	-1.1	No
401	Collector JT-1	Collector JT-3	Tree View Ln	53.8	52.7	-1.1	No
402	Collector JT-3	Kiefer	Collector JT-1	53.0	53.4	0.4	No
403	Collector JT-3	Collector JT-1	Collector JT-6	51.8	51.9	0.1	No
404	Collector JT-3	Collector JT-6	Collector JT-5	53.5	55.0	1.5	No
405	Collector JT-3	Collector JT-5	Jackson	63.3	63.8	0.5	No
406	Collector JT-4	Jackson	Bridgewater	54.6	57.3	2.6	No
407	Collector JT-5	Collector JT-3	Tree View Ln	60.5	60.8	0.3	No
408	Collector JT-6	Excelsior	Collector JT-3	56.5	57.2	0.7	No
409	Collector JT-6	Collector JT-3	Tree View Ln	51.2	50.1	-1.2	No
410	Kiefer	Excelsior	Tree View Ln	58.6	68.5	9.9	Yes
411	Tree View Ln	Kiefer	Collector JT-1	63.7	63.8	0.1	No
412	Tree View Ln	Collector JT-1	Collector JT-6	64.3	63.6	-0.6	No
413	Tree View Ln	Collector JT-6	Collector JT-5	64.3	63.6	-0.7	No
414	Tree View Ln	Collector JT-5	Jackson	63.3	62.2	-1.2	No
415	Collector JT-7	Collector JT-3	Tree View Ln	53.5	52.8	-0.7	No
416	Collector JT-8	Collector JT-3	Tree View Ln	53.8	53.2	-0.6	No
417	Collector JT-9	Jackson	Collector JT-8	56.1	56.3	0.3	No
418	Collector JT-10	Jackson	Collector JT-8	54.2	52.7	-1.5	No
419	Collector JT-6	Tree View Ln	Jackson	54.3	53.3	-1.0	No
500	S Bridgewater	Collector JT-4	Eagles Nest	57.8	58.0	0.2	No
501	S Bridgewater	Eagles Nest	Northbridge	57.0	57.4	0.4	No
502	N Bridgewater	Northbridge	Eagles Nest	51.6	51.7	0.1	No
503	Northbridge	Kiefer	Bridgewater	56.8	57.1	0.3	No
504	Street A	S Bridgewater	Street B	53.6	53.3	-0.2	No
505	Street B	S Bridgewater	Street A	52.2	52.4	0.2	No
506	Rockbridge	Street B	Stonebridge	54.0	53.5	-0.6	No
507	Rockbridge	Stonebridge	Jackson	59.7	59.6	-0.1	No
508	Stonebridge	S Bridgewater	Rockbridge	54.7	54.7	0.1	No
509	Stonebridge	Rockbridge	Jackson	57.3	57.3	-0.1	No
600	Collector MS-1	Kiefer	Collector MS-5	62.8	63.0	0.3	No
601	Collector MS-1	Collector MS-5	Collector MS-4	59.9	59.6	-0.3	No
602	Collector MS-1	Collector MS-4	Collector MS-3	58.3	58.8	0.5	No
603	Collector MS-1	Collector MS-3	Collector MS-2	55.4	55.7	0.4	No
604	Collector MS-2	Eagles Nest	Collector MS-5	60.4	60.3	-0.1	No
605	Collector MS-3	Eagles Nest	Collector MS-5	59.3	59.1	-0.2	No
606	Collector MS-4	Eagles Nest	Collector MS-5	58.9	59.3	0.4	No
607	Collector MS-5	Kiefer	Collector MS-1	59.2	60.2	1.0	No

Source: FHWA-RD-77-108 with inputs from Sacramento County

Impact 5: Project-Generated Traffic Noise Increase on Existing Receptors - Cumulative Plus Project

Development within the District Area Plans would cause increases in future (cumulative) traffic noise levels on the local roadway network. A total of 234 future roadway segments were evaluated (See Table 15), and it was determined that the project-related traffic noise level increase relative to future (cumulative) traffic noise levels without the project would range from -2.9 dB to +11.4 dB, with an average noise level increase of 0.8 dB Ldn. Of the 234 segments evaluated, the increase was considered to be substantial on 35 roadway segments.

As noted in Impact 1, a finding of a substantial traffic noise increase may or may not trigger a finding of significant noise impact. However, while not all of the 35 roadway segments identified in Table 15 as having a substantial project-related traffic noise increase contain impacted noise-sensitive receptors, several segments do contain unshielded residences. As a result, ***this impact is considered significant***.

Mitigation for Impact 5

The mitigation of cumulative traffic noise impacts at sensitive receptors resulting from significant project-related traffic noise increases is frequently challenging because of a combination of limited mitigation options, constraints upon implementation of certain options, cost of implementation, and limited effectiveness of some options. Nonetheless, the specific options identified in Mitigation Measure 4 should be considered to the extent reasonable and feasible. However, because such measures may be infeasible from a cost, engineering or safety standpoint, may not fully mitigate noise impacts, or could require the consent of the impacted receptor, the successful implementation of these measures cannot be guaranteed. As a result this impact is considered significant and unavoidable.

Significance after Mitigation: ***Significant and Unavoidable.***

Cumulative Plus-Project Traffic Noise Levels at Proposed Noise-Sensitive Uses

Land uses proposed within the District Area Plans have varying degrees of noise sensitivity. The most sensitive of the proposed land uses include residential (of all densities), and school uses (interior spaces only). To predict future traffic noise exposure at the proposed sensitive land uses within the District Area Plans, the information contained in Table 15 was utilized. Specifically, the roadways within the West Jackson Highway Master Plan Area were extracted from the Table 15 data in order to identify exposure at the land uses proposed adjacent to those roadways. Table 16 shows the future traffic noise levels and distances to the critical 65 dB Ldn traffic noise contours for the roadways adjacent to which noise-sensitive development is proposed.

Table 16
Cumulative Project Traffic Noise Levels at Proposed Receptors
Interior Roadways - West Jackson Highway Master Plan

Seg.	Road	From	To	Ldn at 100 ft	Distances to 65 dB contour (ft)
5.2	Bradshaw	Collector WJ-8	Kiefer	71.2	257
6.1	Bradshaw	Kiefer	Collector WJ-9	70.8	243
6.2	Bradshaw	Collector WJ-9	Mayhew	70.8	244
6.3	Bradshaw	Mayhew	Jackson	71.1	254
7.1	Bradshaw	Jackson	Rock Creek	69.3	193
7.2	Bradshaw	Rock Creek	Collector WJ-10	69.5	199
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	70.2	223
7.4	Bradshaw	Collector WJ-11	Elder Creek	69.8	210
27	Elder Creek	Mayhew	Bradshaw	70.6	237
28.1	Elder Creek	Bradshaw	Vineyard	69.4	197
28.2	Elder Creek	Vineyard	Excelsior	68.6	173
29	Elk Grove-Florin	Florin	Gerber	70.2	223
30.1	Excelsior	Kiefer	Douglas	59.5	43
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	67.8	154
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	67.6	150
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	67.5	148
31.1	Excelsior	Jackson	Collector WJ-6	69.2	190
31.2	Excelsior	Collector WJ-6	Elder Creek	69.1	187
32	Excelsior	Elder Creek	Florin	64.5	92
42.1	Florin	Bradshaw	Vineyard	69.8	208
42.2	Florin	Vineyard	Excelsior	68.6	174
48	Fruitridge	South Watt	Hedge	66.2	120
49.1	Fruitridge	Hedge	Collector WJ-12	66.2	121
49.2	Fruitridge	Collector WJ-12	Mayhew	65.8	112
59.1	Hedge	Jackson	Rock Creek	63.1	74
59.2	Hedge	Rock Creek	Fruitridge	61.2	56
60	Hedge	Fruitridge	Elder Creek	62.4	67
67	Jackson	South Watt	Hedge	73.1	347
68.1	Jackson	Hedge	Collector WJ-3	72.4	311
68.2	Jackson	Collector WJ-3	Mayhew	72.5	316
69	Jackson	Mayhew	Bradshaw	71.4	268
70.1	Jackson	Bradshaw	Collector WJ-4	71.7	278
70.2	Jackson	Collector WJ-4	Happy Ln	71.7	279
70.3	Jackson	Happy Ln	Rock Creek	70.1	219

Table 16
Cumulative Project Traffic Noise Levels at Proposed Receptors
Interior Roadways - West Jackson Highway Master Plan

Seg.	Road	From	To	Ldn at 100 ft	Distances to 65 dB contour (ft)
70.4	Jackson	Rock Creek	Collector WJ-5	70.1	218
70.5	Jackson	Collector WJ-5	Collector WJ-6	71.7	278
70.6	Jackson	Collector WJ-6	Excelsior	71.7	280
83	Mather-Excelsior	Douglas	Kiefer	55.9	25
89.2	Mayhew	Rock Creek	Fruitridge	70.2	222
98.1	South Watt	Jackson	Rock Creek	72.2	304
98.2	South Watt	Rock Creek	Fruitridge	72.3	304
300	Douglas	Excelsior	Rock Creek	67.8	155
301	Douglas	Rock Creek	Kiefer	69.2	190
305	Mayhew	Bradshaw	Jackson	69.6	203
306	Mayhew	Fruitridge	Collector WJ-13	68.3	165
307	Mayhew	Collector WJ-13	Elder Creek	68.6	174
309	Rock Creek	Hedge	Mayhew	62.8	71
310	Rock Creek	Mayhew	Bradshaw	59.1	41
311	Rock Creek East	Excelsior Road	Collector WJ-16	63.7	82
312	Rock Creek East	Collector WJ-16	Jackson Road	65.2	103
313	Vineyard	Jackson Road	New Collector	68.4	169
314	Vineyard	New Collector	Collector WJ-18	67.7	151
318	Routier Ext	Happy Lane	Kiefer	68.9	182
319	Routier Ext	Kiefer	Mayhew Road	69.4	197
320	Collector WJ-16	Rock Creek	Collector WJ-6	50.6	11
321	Collector WJ-17	Rock Creek	Collector WJ-6	50.1	10
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	55.1	22
323	Collector WJ-6	Jackson Road	Collector WJ-18	56.4	27
324	Collector WJ-2	Excelsior Road	Collector WJ-6	55.3	23
325	Collector WJ-18	Vineyard	Collector WJ-6	56.0	25
326	Collector WJ-18	Collector WJ-6	Excelsior Road	55.9	25
327	Collector WJ-19	Bradshaw Road	Vineyard Road	61.3	57
400	Collector JT-1	Excelsior	Collector JT-3	57.4	31
401	Collector JT-1	Collector JT-3	Tree View Ln	52.7	15
402	Collector JT-3	Kiefer	Collector JT-1	53.4	17
403	Collector JT-3	Collector JT-1	Collector JT-6	51.9	13
404	Collector JT-3	Collector JT-6	Collector JT-5	55.0	21
405	Collector JT-3	Collector JT-5	Jackson	63.8	83
406	Collector JT-4	Jackson	Bridgewater	57.3	30
407	Collector JT-5	Collector JT-3	Tree View Ln	60.8	53
408	Collector JT-6	Excelsior	Collector JT-3	57.2	30
409	Collector JT-6	Collector JT-3	Tree View Ln	50.1	10
410	Kiefer	Excelsior	Tree View Ln	68.5	171
411	Tree View Ln	Kiefer	Collector JT-1	63.8	83
412	Tree View Ln	Collector JT-1	Collector JT-6	63.6	81
413	Tree View Ln	Collector JT-6	Collector JT-5	63.6	81
414	Tree View Ln	Collector JT-5	Jackson	62.2	65
415	Collector JT-7	Collector JT-3	Tree View Ln	52.8	15

Table 16
Cumulative Project Traffic Noise Levels at Proposed Receptors
Interior Roadways - West Jackson Highway Master Plan

Seg.	Road	From	To	Ldn at 100 ft	Distances to 65 dB contour (ft)
416	Collector JT-8	Collector JT-3	Tree View Ln	53.2	16
417	Collector JT-9	Jackson	Collector JT-8	56.3	26
418	Collector JT-10	Jackson	Collector JT-8	52.7	15
419	Collector JT-6	Tree View Ln	Jackson	53.3	16
503	Northbridge	Kiefer	Bridgewater	57.1	30
504	Street A	S Bridgewater	Street B	53.3	17
505	Street B	S Bridgewater	Street A	52.4	14
506	Rockbridge	Street B	Stonebridge	53.5	17
507	Rockbridge	Stonebridge	Jackson	59.6	44
508	Stonebridge	S Bridgewater	Rockbridge	54.7	21
509	Stonebridge	Rockbridge	Jackson	57.3	30
600	Collector MS-1	Kiefer	Collector MS-5	63.0	74
601	Collector MS-1	Collector MS-5	Collector MS-4	59.6	44
602	Collector MS-1	Collector MS-4	Collector MS-3	58.8	39

Source: FHWA-RD-77-108 with inputs from Sacramento County
Note: Ldn values presented in red indicate roadway segments where the County's 65 dB Ldn exterior noise standard would be exceeded at a distance of 100 feet from the roadway centerline. If, however, the property adjacent to the roadway is depressed relative to the roadway, the shielding provided by the depression would reduce traffic noise levels by approximately 10-15 dB Ldn relative to those shown in this table. The precise degree of shielding will depend on the ultimate elevation of the ground containing noise-sensitive land uses relative to the roadway elevation.

Impact 6: Traffic Noise Levels at Sensitive Receptors Proposed Within the District Area Plans – Cumulative-Plus-Project

Development within the District Area Plans will have varying degrees of noise sensitivity. The most sensitive of the proposed land uses include residential (of all densities), and school uses. Where future traffic noise levels at proposed sensitive land uses within the District Areas Plans would exceed the Sacramento County General Plan noise standards applicable to sensitive land uses (Table 3), a finding of significant noise impact is made and mitigation measures must be considered.

The Table 16 data, which represent predicted future (cumulative plus project) traffic noise levels within the WJHMP Area, indicate that traffic noise levels are predicted to exceed the County's 65 dB Ldn exterior noise standard at a distance of 100 feet along 46 of the 92 roadway segments analyzed within the Plan Area. It should be noted, however, that several of the areas proposed for development within the District Area Plans are former aggregate excavation sites which are substantially depressed relative to the Master Plan areas roadways. This depression provides substantial shielding of traffic noise levels. Noise surveys conducted at such depressed locations within the District Plan Areas indicate that this shielding results in a traffic noise level reduction of approximately 10-15 dB

Ldn, depending on the relative elevations of the roadway and adjacent property.

Because none of the predicted future traffic noise levels shown in Table 16 exceed 75 dB Ldn at a reference distance of 100 feet from the roadway centerlines, it can be concluded that development occurring within the areas which are depressed relative to existing roadways would be shielded to levels below the County's 65 dB Ldn exterior noise level standard.

At proposed sensitive developments adjacent to new roadways or adjacent to roadways which are at the same relative elevation as the development site, such shielding would not necessarily be present. Because final site design and grading has not been completed, it is not possible to determine at this time whether noise impacts would actually occur along each of the roadway segments identified in Table 16 as exceeding 65 dB Ldn. However, because it is possible that noise-sensitive development could occur within the 65 dB Ldn noise contours adjacent to portions of these roadways, ***this impact is considered significant***.

Mitigation for Impact 6

When tentative maps and grading plans are available for specific residential and other noise-sensitive developments proposed within the District Area Plans, a project specific acoustical review should be conducted to ensure that appropriate noise mitigation measures are incorporated into the project design to achieve satisfaction with Sacramento County noise standards. The following general noise mitigation measures should be considered as potential noise mitigation options:

A. Building façade (window & glass door) improvements to ensure compliance with County Interior noise level standard within schools and residences.

B. Mechanical ventilation for all schools and residences to allow occupants of those structures to close doors and windows as desired for additional acoustical isolation.

C. Site design for school and residential uses to maximize the setback between roadways and proposed outdoor activity areas.

D. Shielding of outdoor activity areas of proposed multi-family residential uses from view of impacted roadway segments by intervening structures or topography.

E. Where possible, locate noise-sensitive land uses in areas which would be depressed relative to the impacted roadway segments.

F. Provide statements to prospective residences located adjacent to impacted roadway segments disclosing that the roadways are substantial noise sources and that variation in traffic conditions or atmospheric conditions can result in variations in perceived noise levels.

G. Consider construction of noise barriers to achieve compliance with County exterior noise standards only after all other feasible options have been considered.

Significance after Mitigation: ***Less than Significant.***

Non-Transportation Noise Sources

Master Plan Area & District Area Plans

Granite Aggregates Processing Facility

The existing Granite Aggregates processing facility located northeast of the intersection of Bradshaw Road and Kiefer Boulevard is located within Granite's District 2 Area Plan. The proposed use of the site currently containing the aggregate processing facility is identified in Figure 2 as being industrial uses. Until such time as the Granite facility ceases operations the noise generation of that facility is expected to generally remain at the current levels identified in Figure 11.

Impact 7: Impacts to Proposed Land Uses due to Ongoing Granite Aggregate Plant Operations

As noted previously, Granite operates an aggregates processing facility at the northeast corner of Kiefer Boulevard and Bradshaw Road. Granite's operations are expected to continue for the foreseeable future. Figure 11B shows the processing equipment locations and approximate location of the 50 dB L50 noise contour. The 50 dB contour is important in that it represents the most restrictive nighttime noise level standard contained within the Sacramento County Noise Ordinance. Existing Employment and open space uses to the south, and light-industrial (county corporation yard) and professional uses to the west of the Granite facility are not currently impacted by Granite operations. Changes in land use resulting from development of the Granite District Plan Area would consist of converting a portion of the frontage along Bradshaw Road into commercial uses, with additional employment uses generated to the immediate east, and 7 acres of high-density residential uses to the north. The 50 dB L50 noise contour shown on Figure 11B extends into the future commercial and high-density residential use areas to the north of the existing facility. As a result, if the Granite aggregate processing facility were to remain in operation after construction of those high-density residential uses, those residences could be adversely affected by noise if Granite's operations occur at night. As a result, **this impact is considered significant.**

Mitigation for Impact 7

Operations at the Granite aggregate processing facility may cease prior to the development of noise-sensitive land uses to the immediate north of that facility. However, if Granite operations continue when construction of high-density residential land uses to the north is complete and occupancy begins, then a detailed analysis of noise mitigation options would be required at the time specific development site and grading plans have been developed. That analysis would determine the most appropriate and feasible noise mitigation measures required to achieve compliance with the

County's noise standards at the proposed residential uses. Specific options for mitigation of the aggregate facility are as follows:

A. Agreement by Granite that no building permit may be pulled for residential units within 2,000 feet of the aggregate processing facility until plant operations have ceased, or otherwise reduced to levels in compliance with local noise standards.

B. Use of localized noise barriers, partial enclosures, or suspended acoustic curtain/barriers (to be funded and constructed by the developer of the future noise sensitive land use) to reduce noise at residential units to a state of compliance with County noise standards.

C. Lining of metal hoppers with urethane sheets (if consented to by the plant operator; to be funded and constructed by the developer of the future noise sensitive use).

D. Other actions at the aggregate processing facility, to be consented to by the operator and funded by the developer of the future noise sensitive use, that will reduce noise generated by the aggregate processing facility, as measured at residential sites within 2,000 feet of the facility, to levels in compliance with local noise standards.

E. Upgraded construction of the proposed residential structures. Typically, windows are the greatest source of sound transmission into a residence and a substantial improvement in acoustical isolation can be achieved from upgrading window assemblies alone.

Significance after Mitigation: ***Less than Significant.***

Sacramento Raceway

As noted previously, the Sacramento Raceway, which is located immediately east of the eastern WJHMP boundary, is an existing non-conforming use. It is also located within a separate Master Plan area where additional residential development is envisioned. Because of these factors, it is possible that the Raceway will not be in existence throughout the buildout of the WJHMP area. For the duration of time the raceway remains in operation at its current location, it is reasonable to conclude that the noise generation of that facility will continue at, or near, current levels.

Impact 8: Impacts on Proposed Land Uses due to Ongoing Sacramento Raceway Operations.

As noted previously, the Sacramento Raceway, located east of the WJHMP Area on Excelsior Road, is an existing non-conforming use. As such, and given the proposed development of the area upon which the raceway is

located in a parallel Master Plan Study currently being prepared, the future of the raceway is unclear. Nonetheless, should the raceway continue to be in operation at the time noise sensitive land uses are developed in the Teichert District Plan Area 1, racetrack operations would exceed the Sacramento County noise standards shown in Table 4. No impacts due to ongoing Sacramento Raceway operations are anticipated in Granite District Plan Area 2. Specifically, residences constructed within the 75 dB Lmax noise contour shown on Figure 10 would be exposed to maximum noise levels during certain raceway events which exceed the County's noise standard. As a result, **this impact is considered Significant**.

Mitigation for Impact 8

Given the non-conforming status of the raceway, it is unclear if the raceway would be required to implement mitigation to reduce raceway noise exposure at new residential uses proposed in the WJHMP Area. If it is determined that the Raceway must mitigate potential noise impacts upon the WJHMP development, a study would need to be commissioned by the Raceway to identify feasible options for such mitigation. If, on the other hand, the Raceway is to remain in operation and mitigation must be implemented by the WJHMP developers, additional analysis of site and grading plans would be required to develop such mitigation. The following general noise mitigation measures could be implemented to reduce Raceway noise levels at future residences within the WJHMP Area to a state of compliance with the Sacramento County daytime and nighttime Noise Ordinance standards of 55 and 50 dB, respectively:

A. Building façade (windows & glass doors) improvements to ensure compliance with County Interior noise level standards within residences.

B. Mechanical ventilation included in residential construction to allow residents to close doors and windows as desired for additional acoustical isolation.

C. Use of setbacks to maximize the distance between the raceway and proposed residential land uses.

D. Shielding of outdoor activity areas of proposed residential uses from view of the raceway by intervening structures or topography.

E. Design site grading so as to maximize the degree of natural shielding of raceway noise generation by intervening topography.

F. Provide statements to all prospective residences located in the Raceway vicinity disclosing that the raceway is a substantial noise source and that raceway events will result in substantial short-term variations in ambient noise levels.

G. Consider construction of noise barriers to achieve compliance with County exterior noise standards only after all other feasible options have been considered.

Significance after Mitigation: ***Less than Significant.***

Aggregate Excavation and Reclamation Activities

Many of the District Area Plan properties have already been excavated, others are engaged in excavation currently, while still others may be excavated in the future prior to buildout of the District Areas. Because excavated materials are transported to the Teichert and Granite aggregate plants via conveyor, the noise generation of these operations is highly localized to the areas near the excavation activities and locations adjacent to the conveyors. Until such time as aggregate excavation and reclamation is completed within the District Area Plans, the noise generation of those activities will likely remain at current levels, although the location of the noise generation will change as excavation and reclamation activities progress. Due to the lack of specificity regarding details of future noise-sensitive development near aggregate-related equipment and operations, this impact must be evaluated in greater detail at the tentative map stage.

Impact 9: Impacts on Proposed Land Uses due to Ongoing Conveyor Belt Operations

Ongoing aggregate excavation and conveyance of materials to the Teichert and Granite processing plants may continue to occur during development within the District Area Plans. The conveyors typically operate at the same times as the Teichert and Granite plants.

Conveyor noise level measurements indicate that the 55 dB L50 noise contour is located approximately 350 feet from the operating conveyor, with slightly higher noise levels near conveyor transfer locations. As a result, residential uses constructed within 350 feet of ongoing conveyor operations could be exposed to conveyor noise generation in excess of the County's 55 dB L50 exterior noise standard. If such construction were to occur within that distance, **this impact would be considered significant**.

Mitigation for Impact 9

Because it is possible that either Granite or Teichert conveyor belts could operate concurrently with residential construction within either District Plan Area, consideration of noise mitigation would be required for such development. Specific options for mitigation of conveyor noise to

acceptable levels at future residences constructed within the WJHMP Area are as follows:

A. Disclosure Statements.

All prospective residents of residences located within 350 feet of unshielded conveyors should be provided statements disclosing that operations of aggregate conveyors can and do occur during both daytime and nighttime hours, and that variations in those operations or atmospheric conditions can result in variations in perceived noise levels.

B. Relocation of Conveyor System.

At such a time as development of noise-sensitive land uses within the WJHMP Area is projected to encroach within 350 feet of operating conveyors, the conveyor system could be relocated, at the expense of the developer of the noise sensitive use, to a position further from the residences. While this measure would shift the noise impact zone of the conveyors further away from residences, it would not by itself decrease the actual noise generation of the conveyor system. As a result, eventually additional noise mitigation measures could be required as development moves closer to the relocated conveyor system.

C. Construction of Earth Berms and / or Noise Barriers Adjacent to the Conveyor System.

At such a time as residential development is projected to encroach within 350 feet of operating conveyors, an earth berm or solid noise barrier could be constructed adjacent to the conveyor system to further reduce conveyor noise levels, at the expense of the developer of the noise sensitive use. Such a barrier could take the form of an earthen berm, solid wall, or combination of berms and walls. The noise reduction provided by such a barrier would depend on the relative heights of the conveyor, top of barrier, and nearby residences, as well as the relative distances between the conveyor and noise barrier, and distance from noise barrier to receiver.

Significance after Mitigation: ***Less than Significant.***

Vibration Impacts

Master Plan Area & District Area Plans

Impact 10: Impacts associated with Project-Generated Vibration

Extensive field inspections and monitoring of baseline vibration within the District Plan Areas revealed no discernable sources of vibration which would adversely affect future sensitive land uses located within the project area. In addition, the project does not propose any appreciable sources of ongoing vibration, and short-term vibration generated by project construction activities would be at or below vibration levels currently generated by heavy Teichert and Granite excavation equipment. As a result, vibration impacts either due to the project, or upon the project, are not anticipated, and this **impact is considered less than significant.**

Construction Noise Impacts

Master Plan Area & District Area Plans

Impact 11: Impacts associated with Project Construction

During the construction phases of the project, noise from on-site construction activities, including infrastructure construction, grading, and development of a variety of land use types, would add to the noise environment in the project vicinity.

Activities involved in construction would typically generate maximum noise levels ranging from 85 to 90 dB at a distance of 50 feet (*Federal Transit Administration Noise and Vibration Impact Assessment Manual*, 2018, Table 7-1). Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites.

Provided construction activities occur between the hours of 6 am – 8 pm during weekdays, and 7 am – 8 pm on weekends, construction activities would be exempt from the provisions of the Sacramento County Noise Ordinance (6.68.090). Because on-site construction activities are proposed to adhere to the County's requirements, no adverse on-site or off-site construction noise effects are identified for this project and **this impact is considered less than significant.**

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

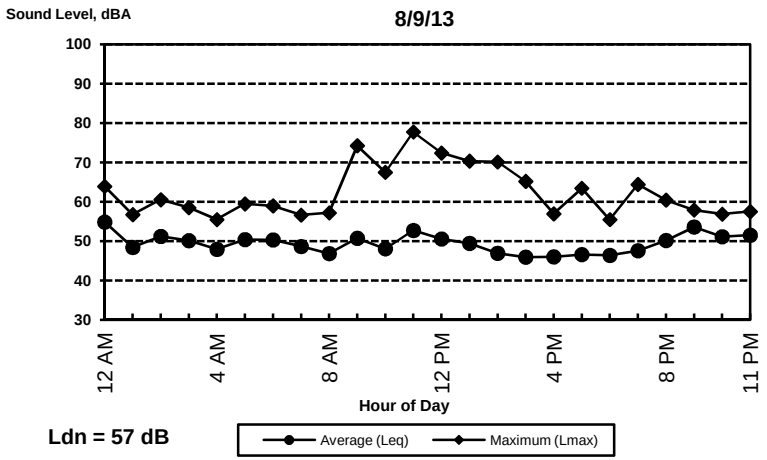
Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

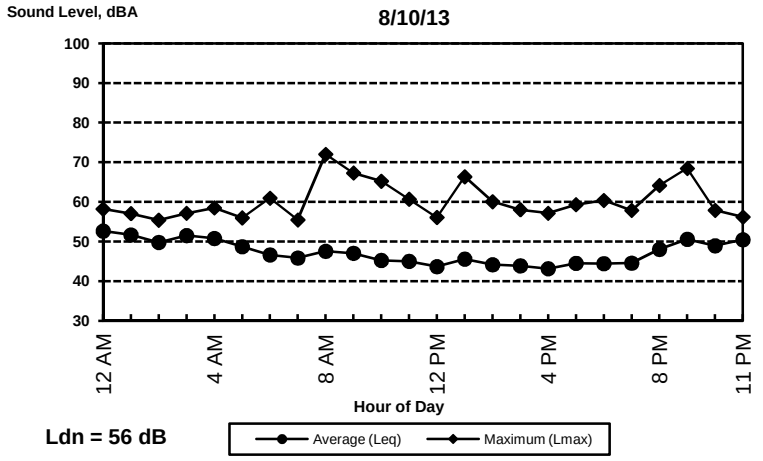
RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

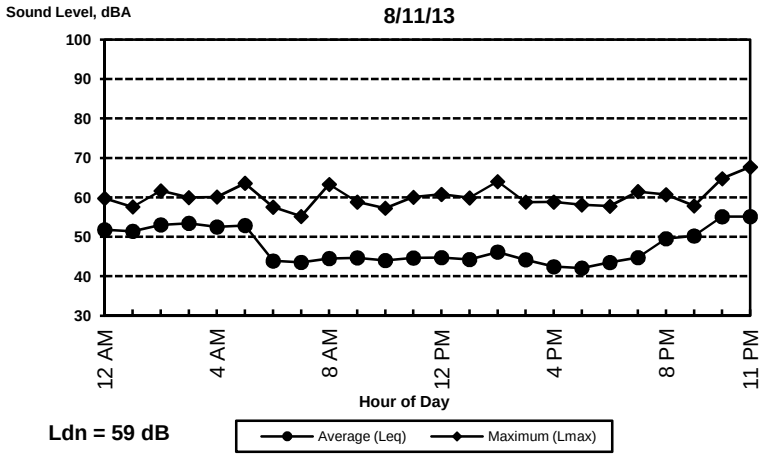
Appendix B-1
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 1 (2013)



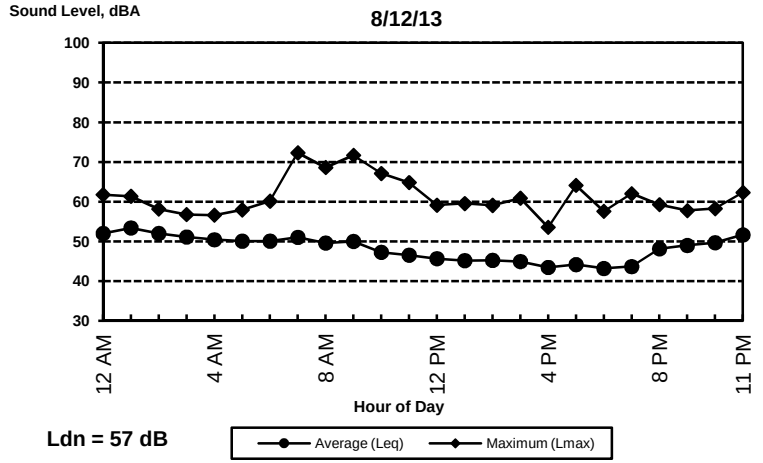
Ldn = 57 dB



Ldn = 56 dB



Ldn = 59 dB



Ldn = 57 dB

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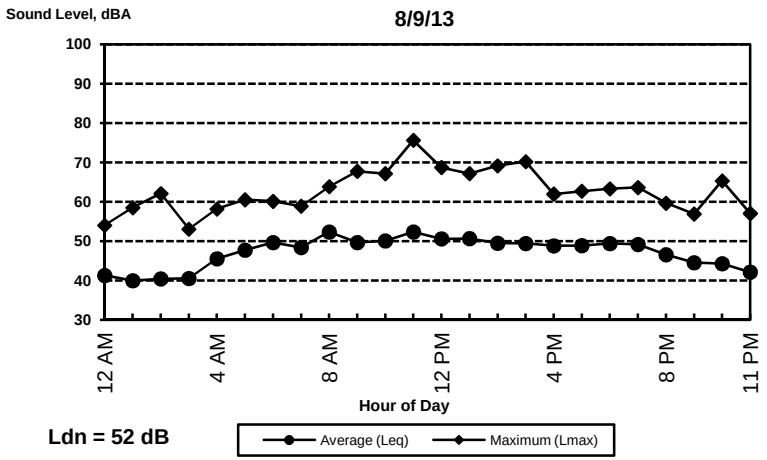
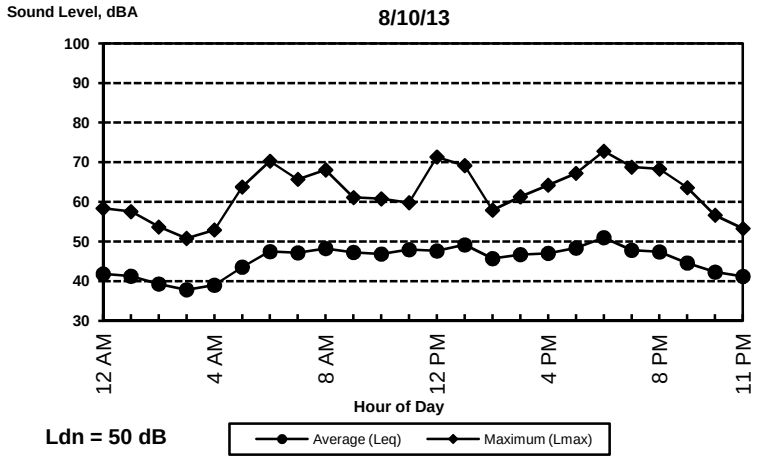
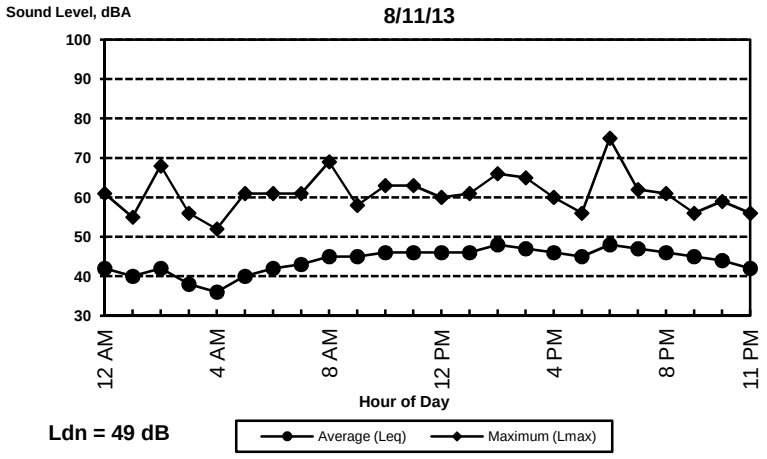
Appendix B-2
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 2 (2013)



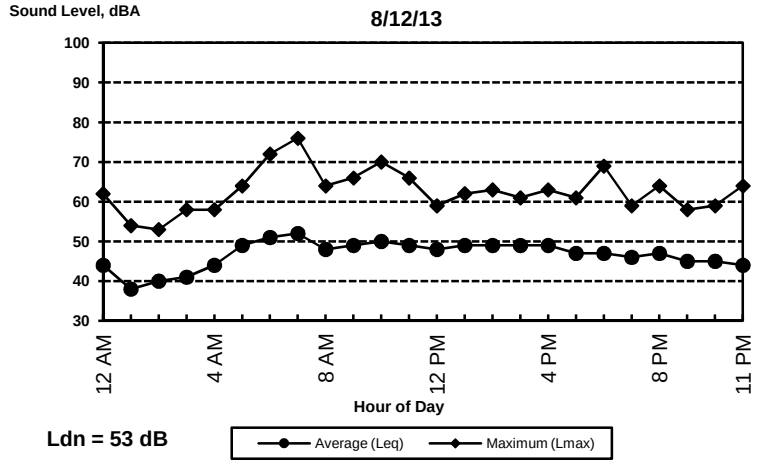
Ldn = 52 dB



Ldn = 50 dB



Ldn = 49 dB



Ldn = 53 dB

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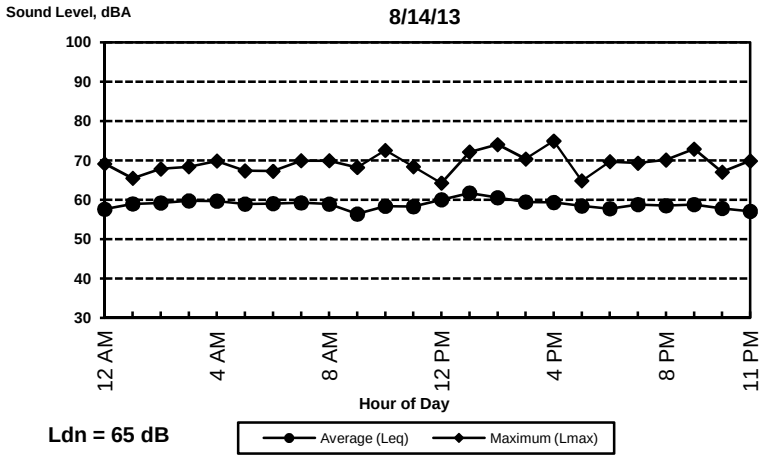
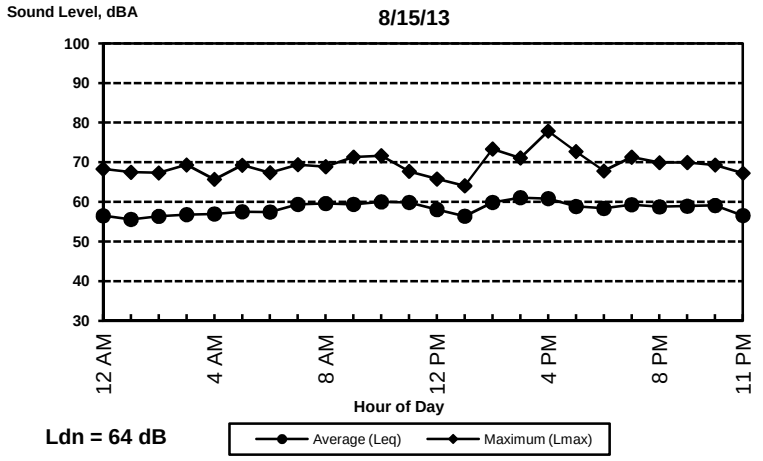
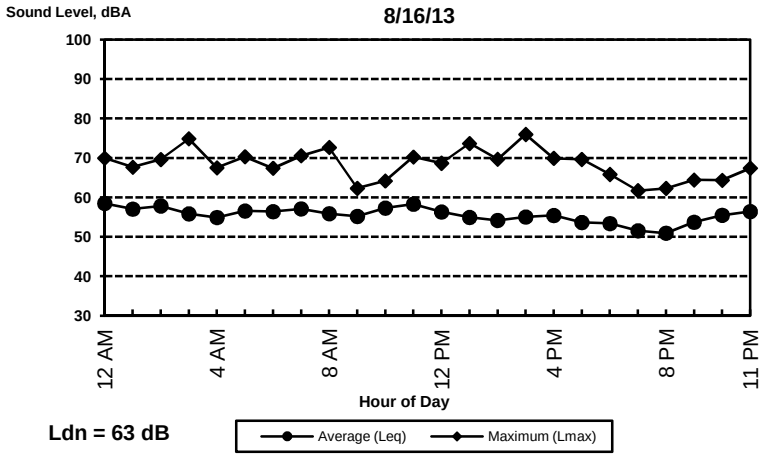
Appendix B-3
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 3 (2013)



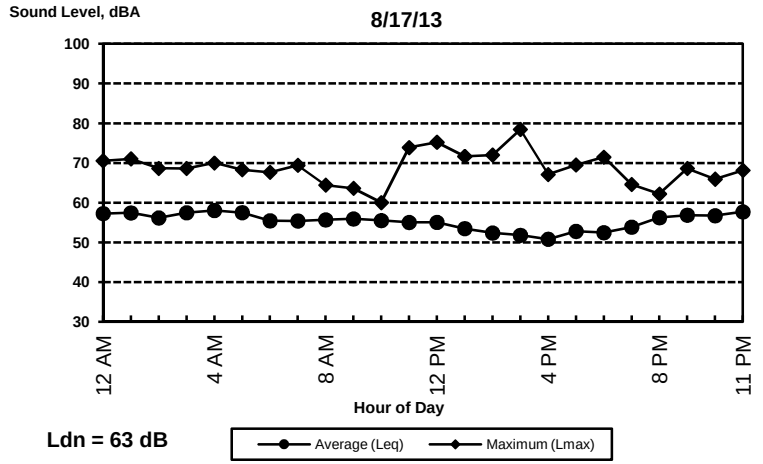
Ldn = 65 dB



Ldn = 64 dB



Ldn = 63 dB



Ldn = 63 dB

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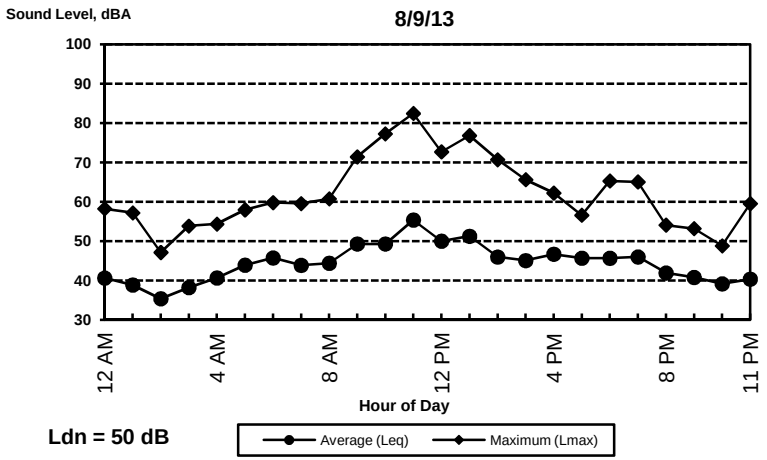
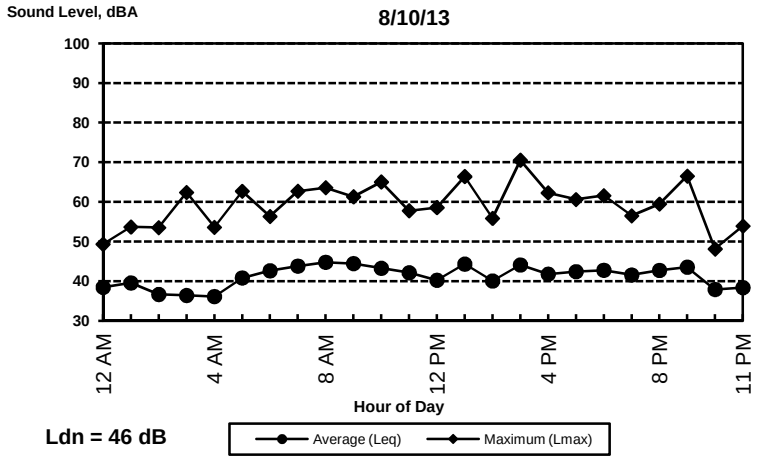
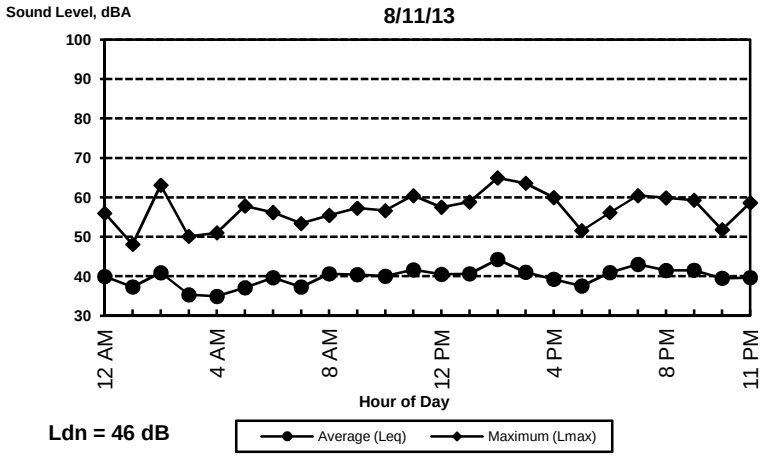
Appendix B-4
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 4 (2013)



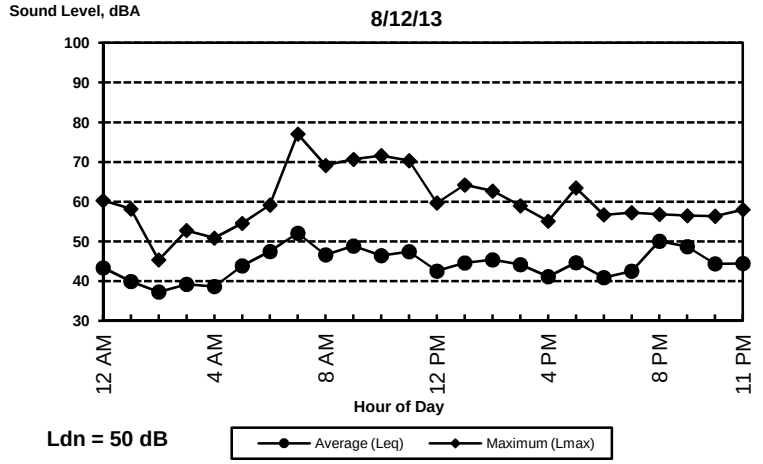
Ldn = 50 dB



Ldn = 46 dB



Ldn = 46 dB



Ldn = 50 dB

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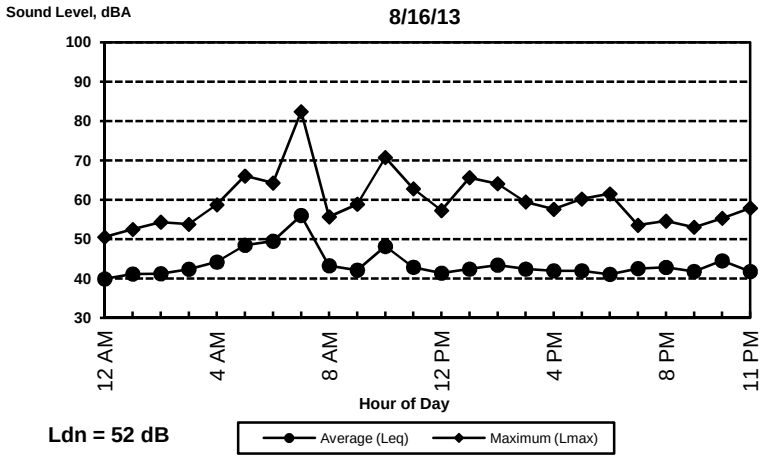
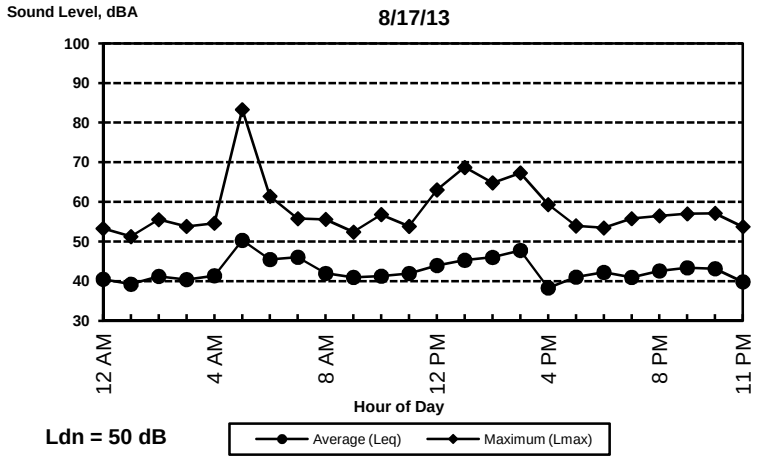
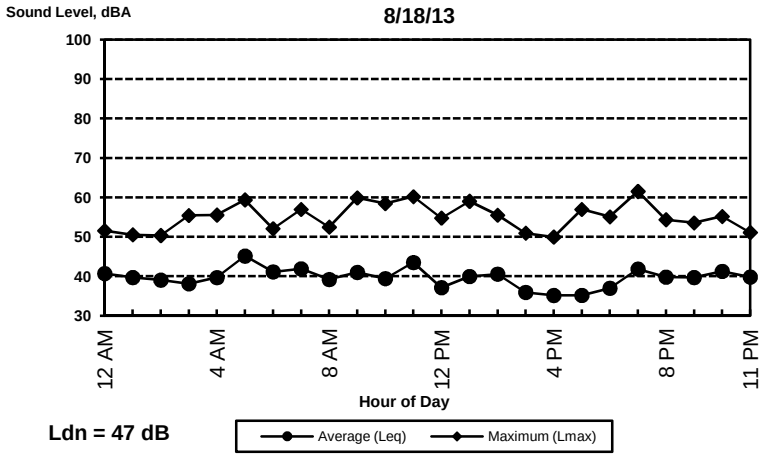
Appendix B-5
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 5 (2013)



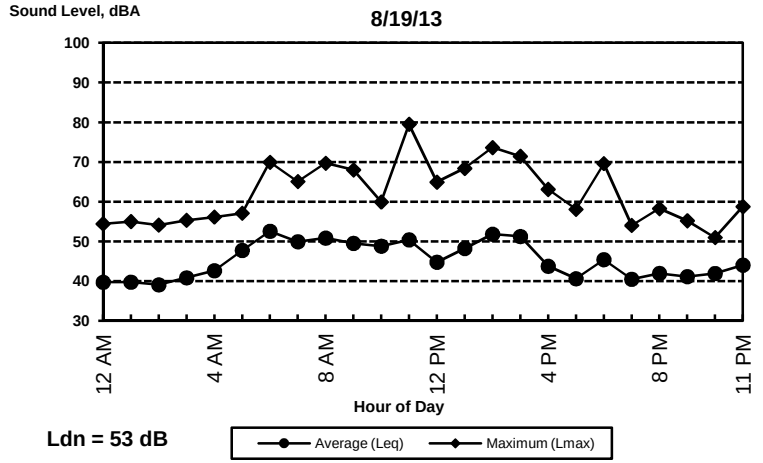
Ldn = 52 dB



Ldn = 50 dB



Ldn = 47 dB



Ldn = 53 dB

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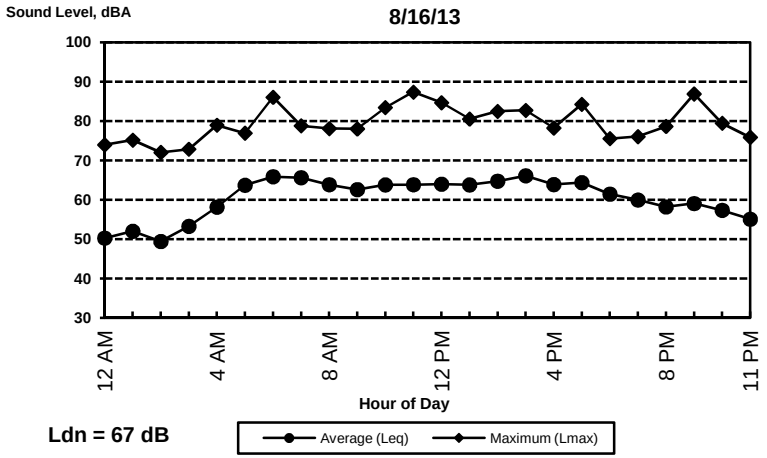
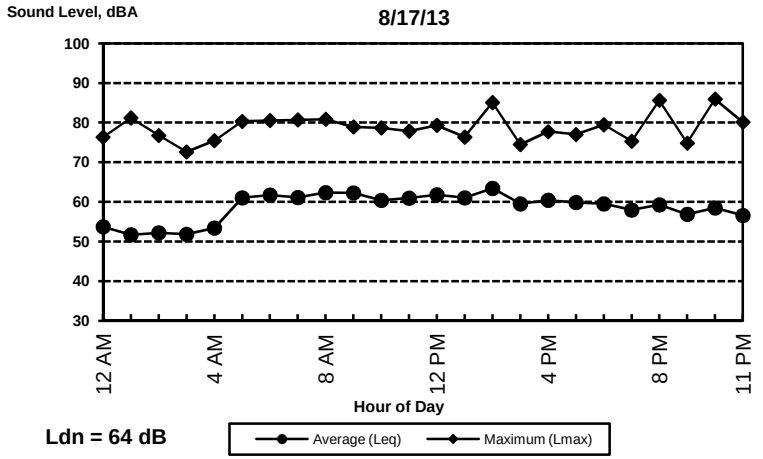
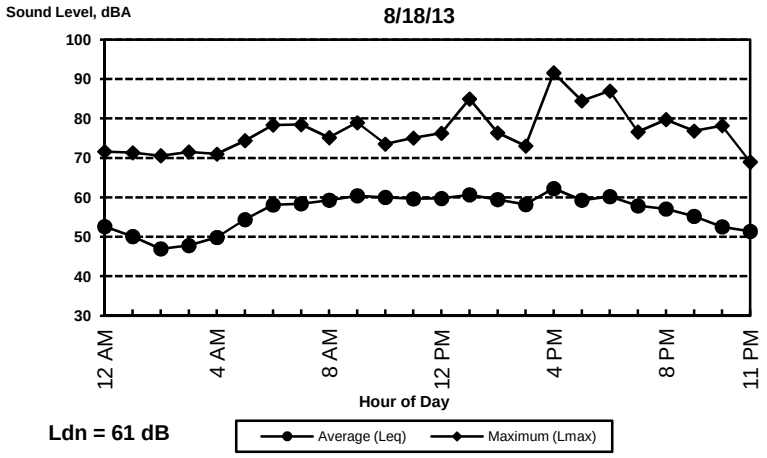
Appendix B-6
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 6 (2013)



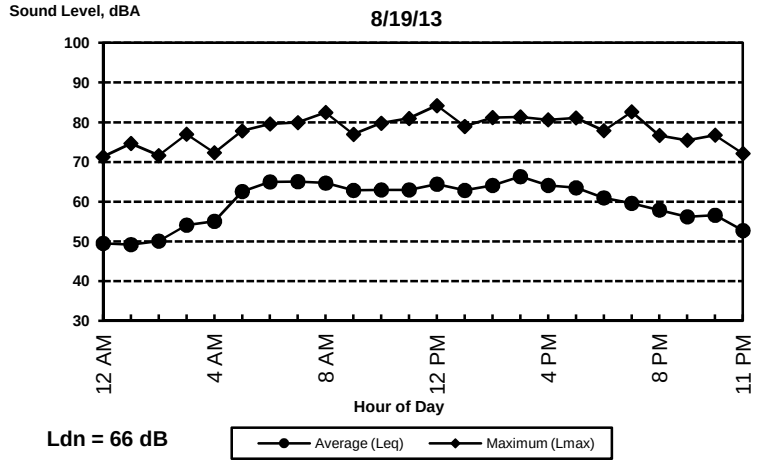
Ldn = 67 dB



Ldn = 64 dB



Ldn = 61 dB



Ldn = 66 dB

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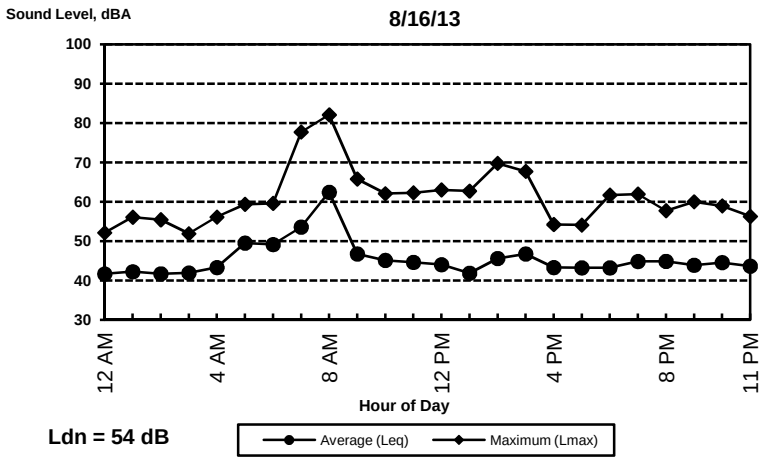
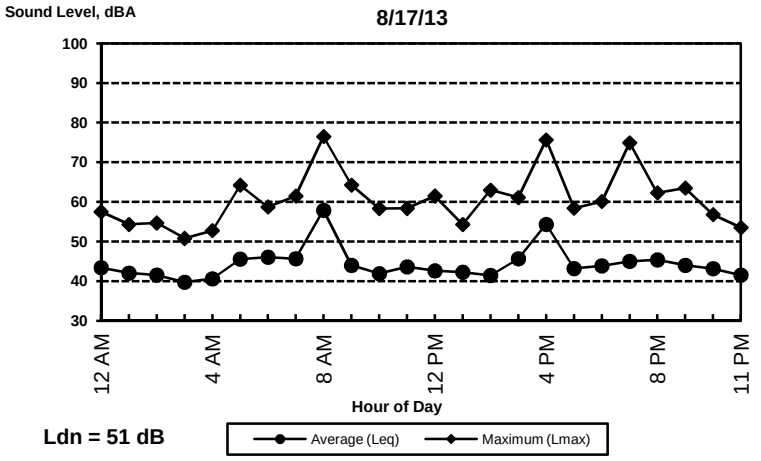
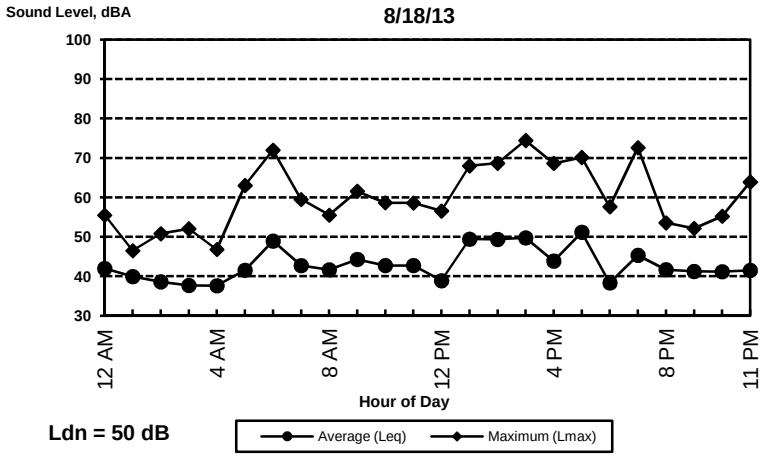
Appendix B-7
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 7 (2013)



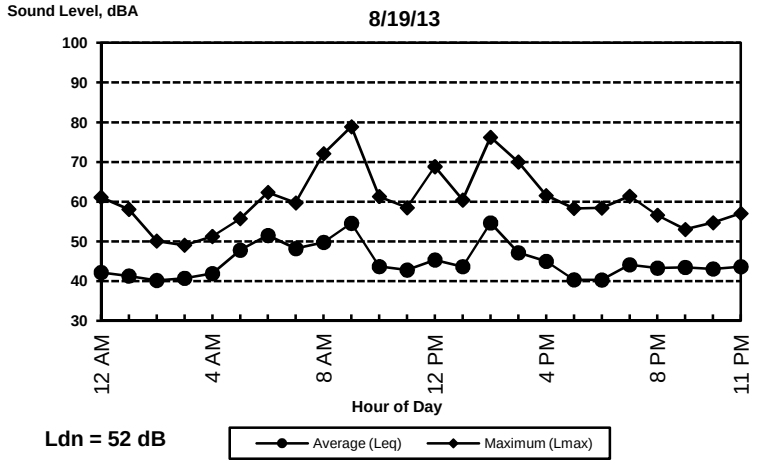
Ldn = 54 dB



Ldn = 51 dB



Ldn = 50 dB



Ldn = 52 dB

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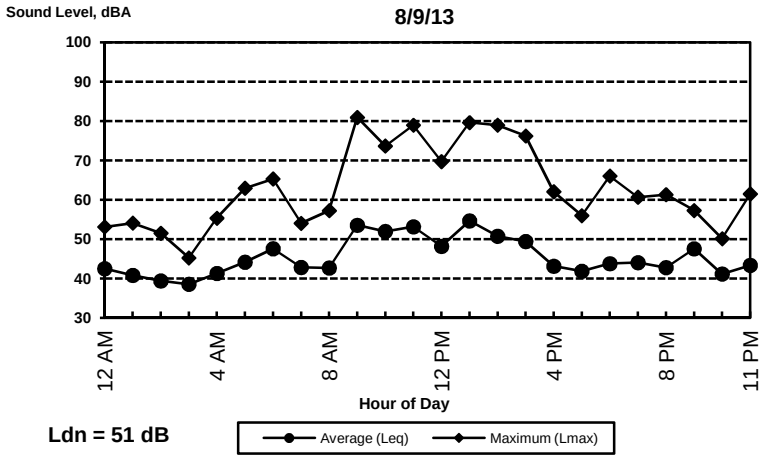
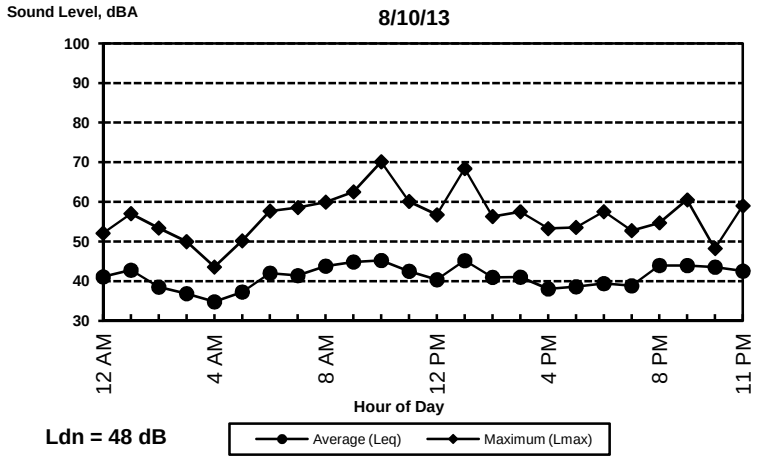
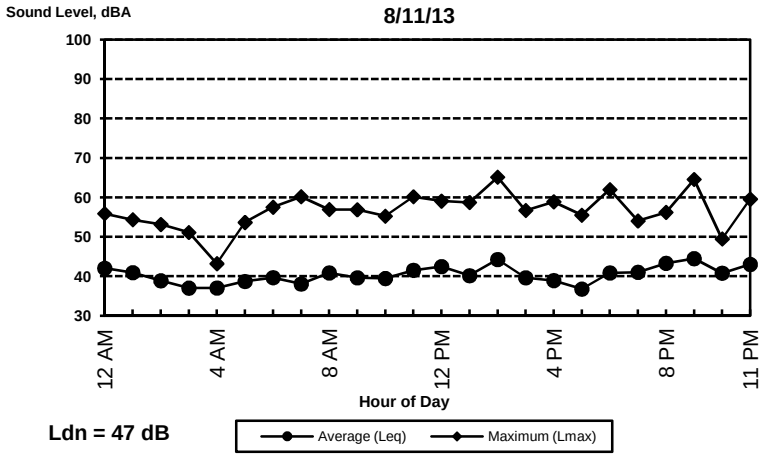
Appendix B-8
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 8 (2013)



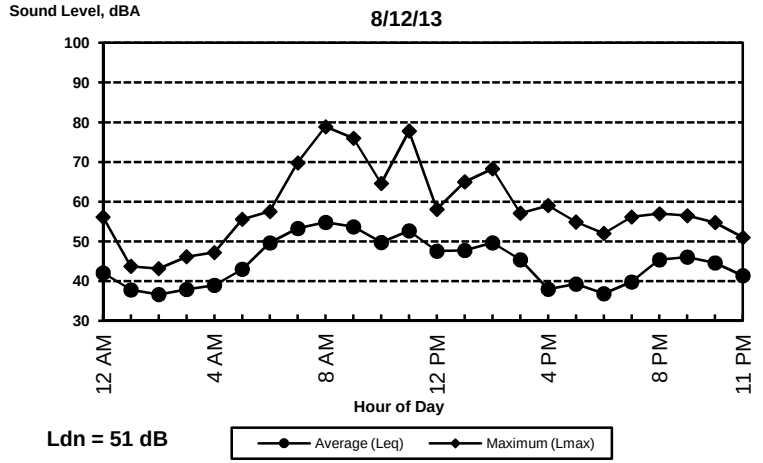
Ldn = 51 dB



Ldn = 48 dB



Ldn = 47 dB



Ldn = 51 dB

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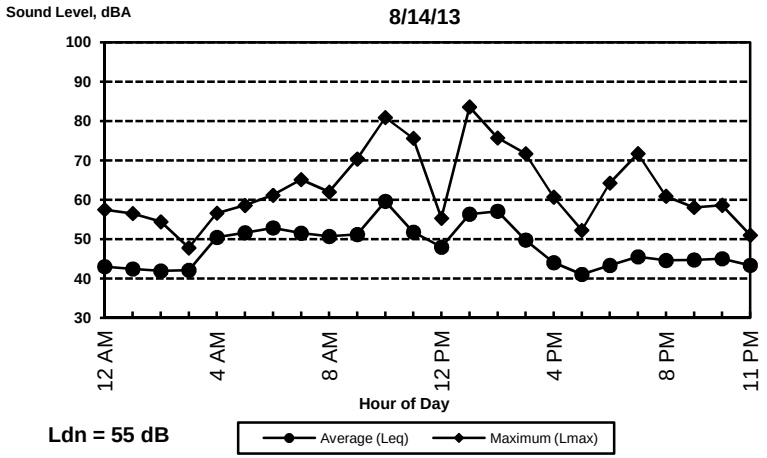
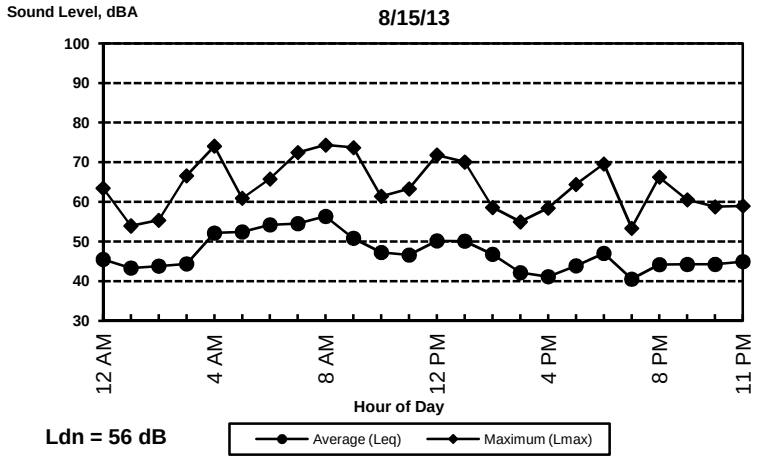
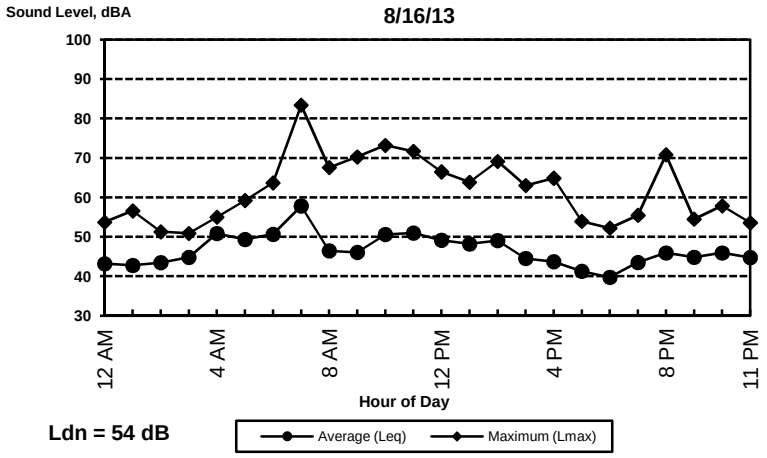
Appendix B-9
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 9 (2013)



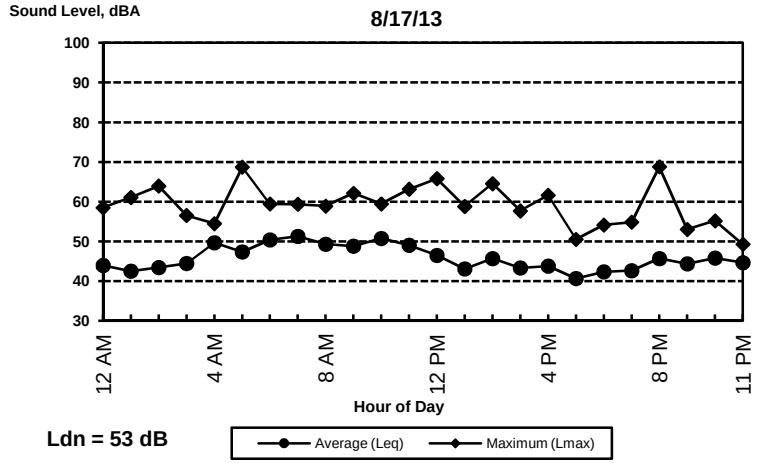
Ldn = 55 dB



Ldn = 56 dB



Ldn = 54 dB



Ldn = 53 dB

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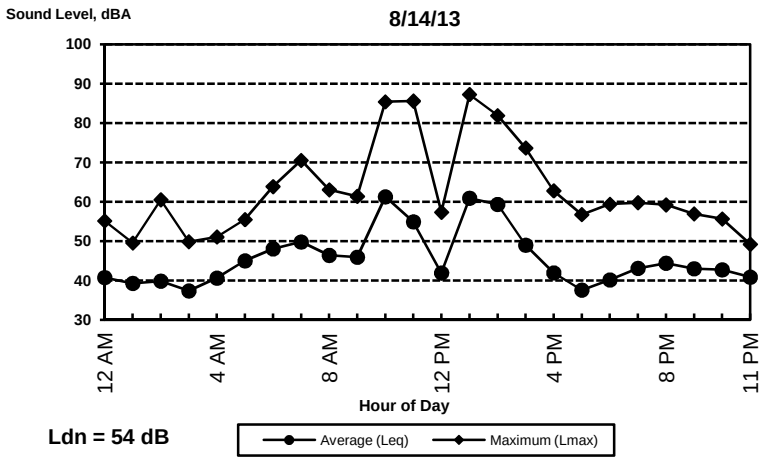
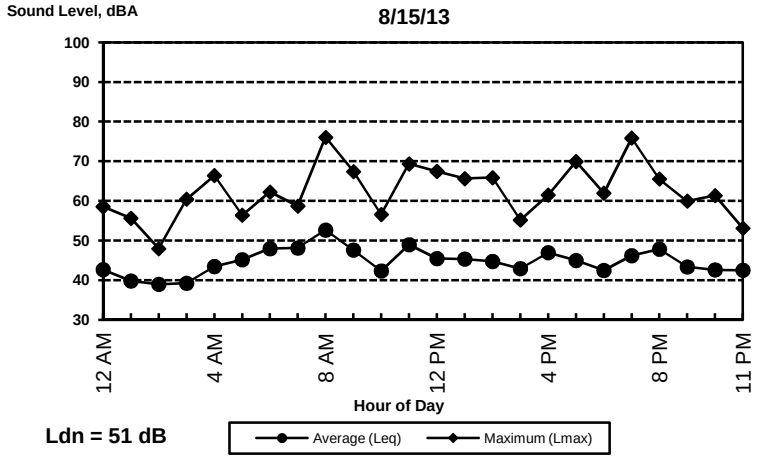
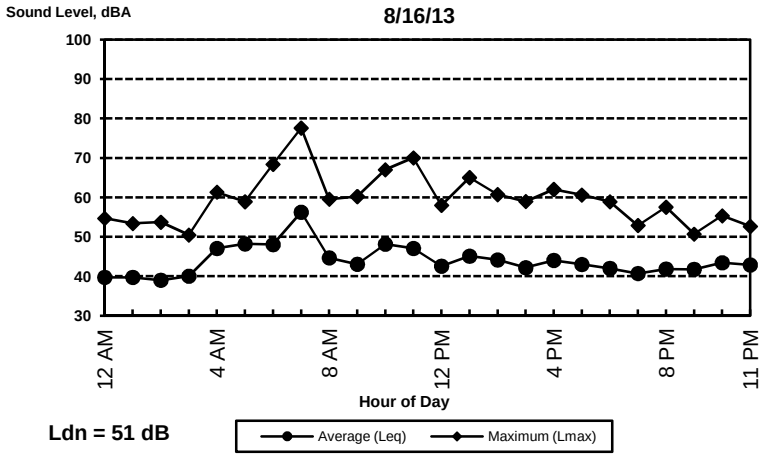
Appendix B-10
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 10 (2013)



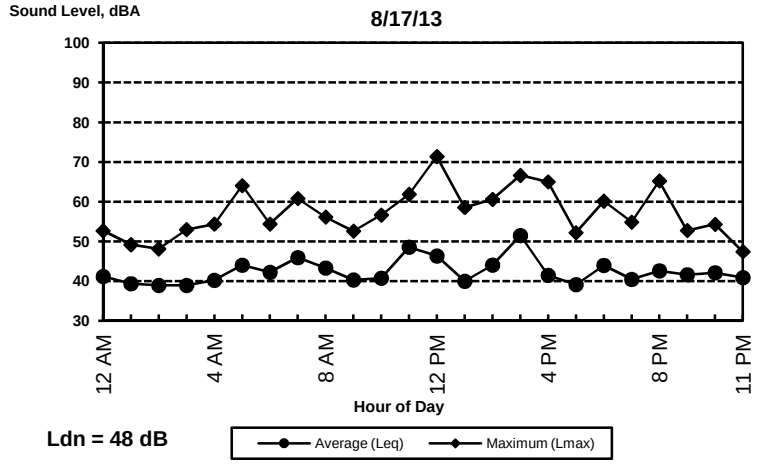
Ldn = 54 dB



Ldn = 51 dB



Ldn = 51 dB



Ldn = 48 dB

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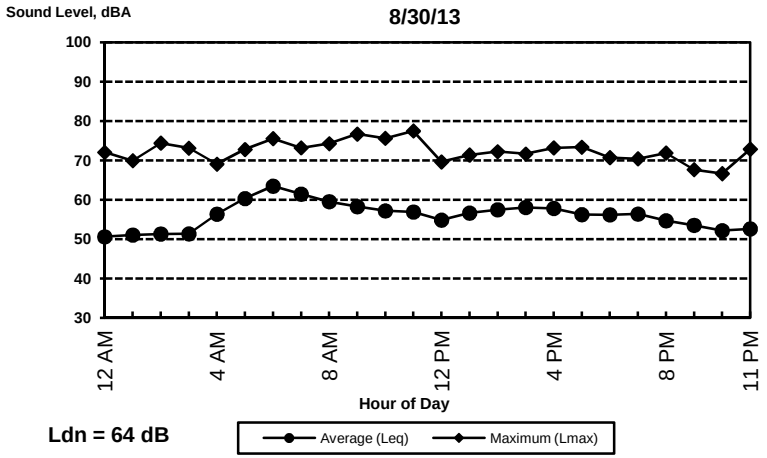
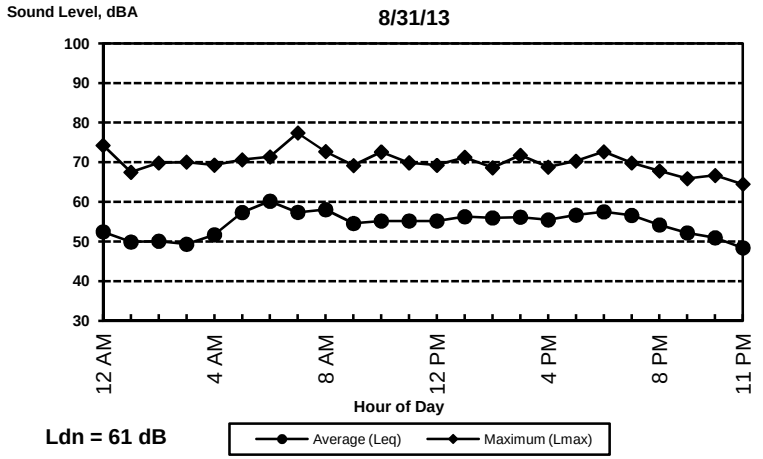
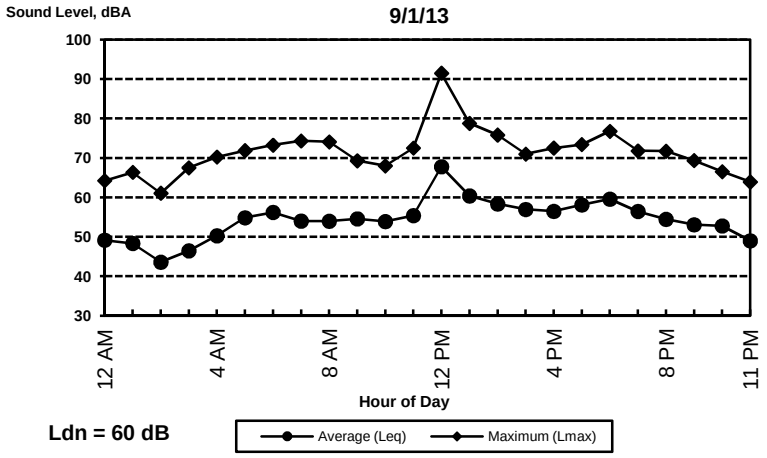
Appendix B-11
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 11 (2013)



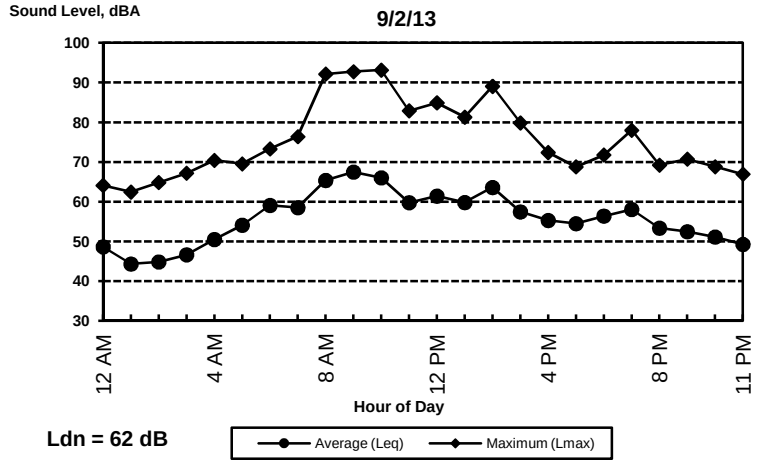
Ldn = 64 dB



Ldn = 61 dB



Ldn = 60 dB



Ldn = 62 dB

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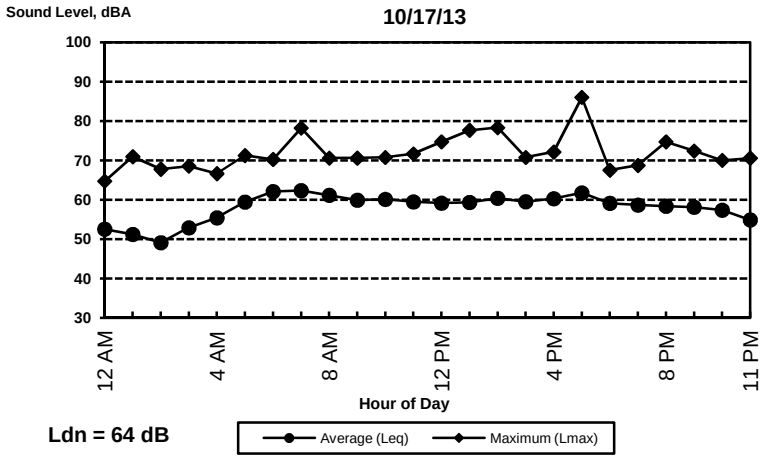
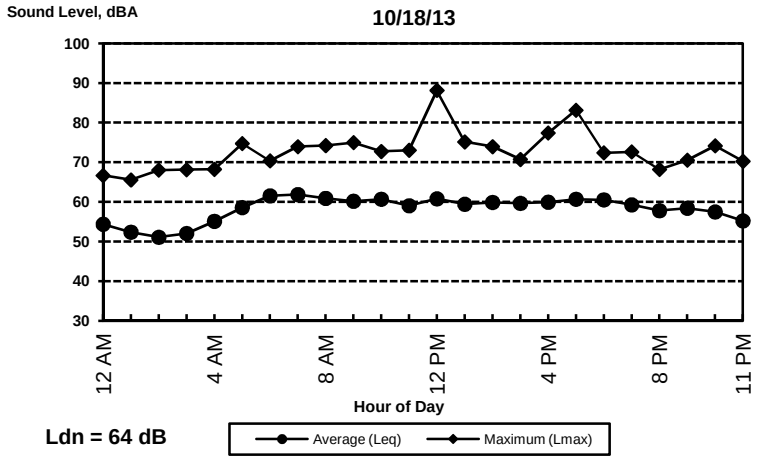
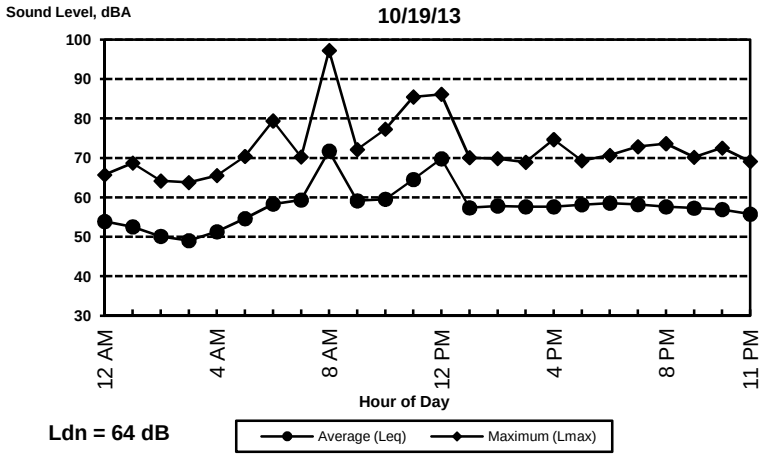
Appendix B-12
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 12 (2013)



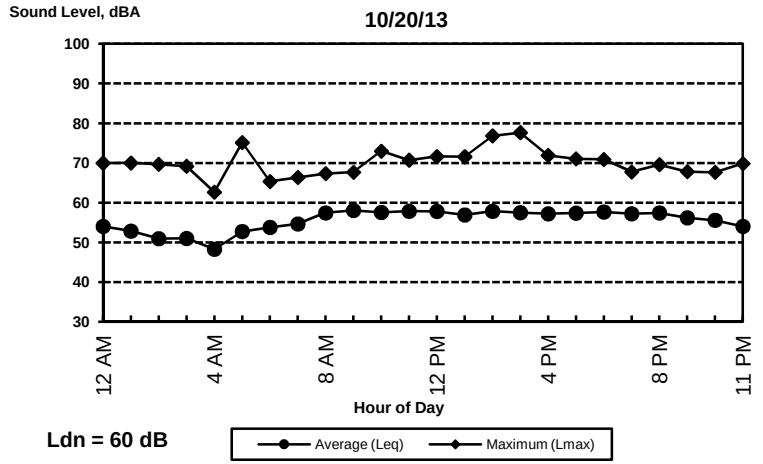
Ldn = 64 dB



Ldn = 64 dB



Ldn = 64 dB



Ldn = 60 dB

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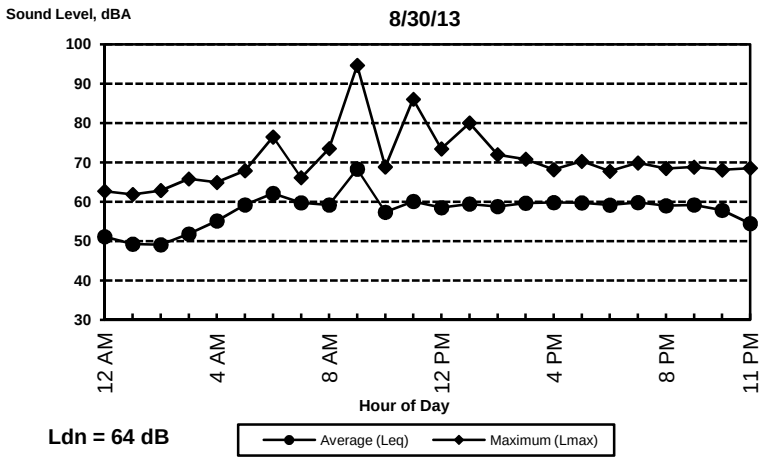
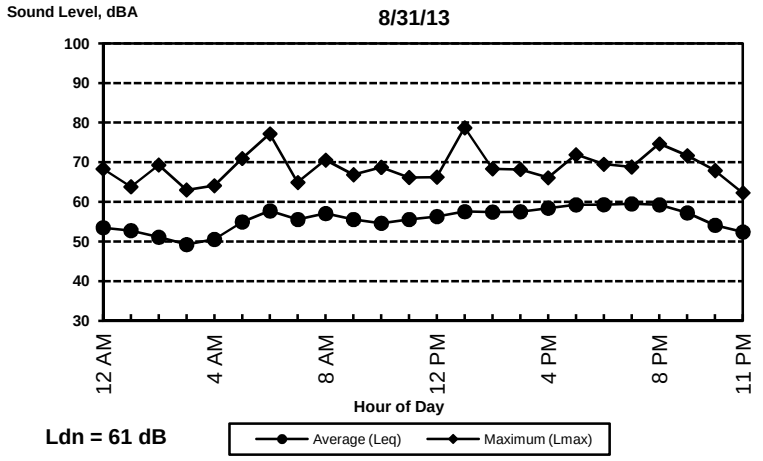
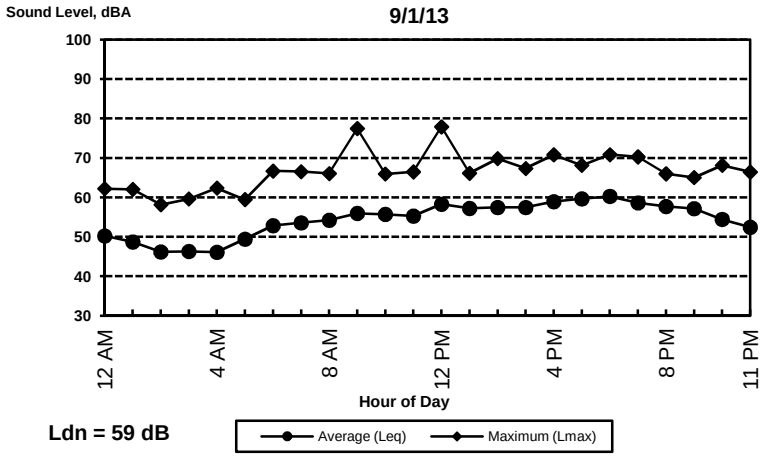
Appendix B-13
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 13 (2013)



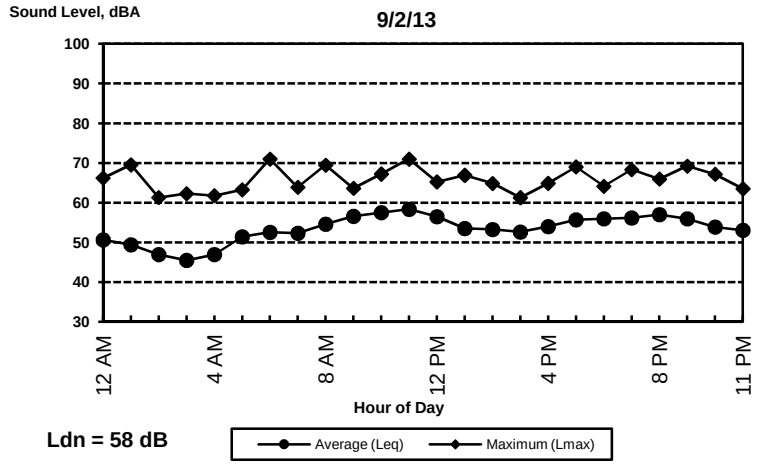
Ldn = 64 dB



Ldn = 61 dB



Ldn = 59 dB



Ldn = 58 dB

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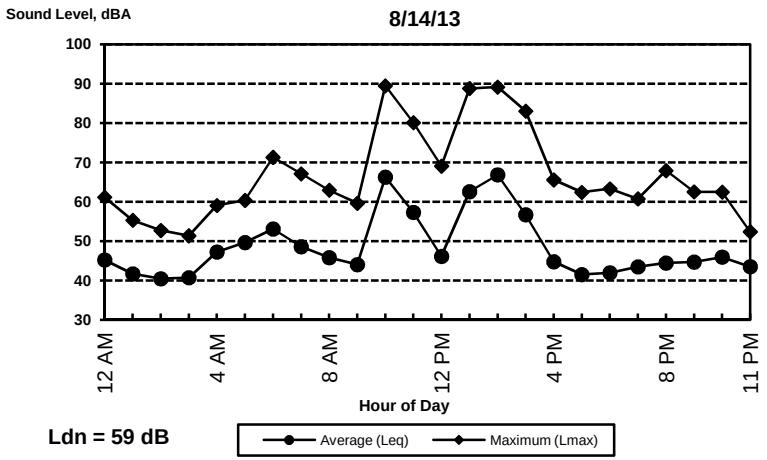
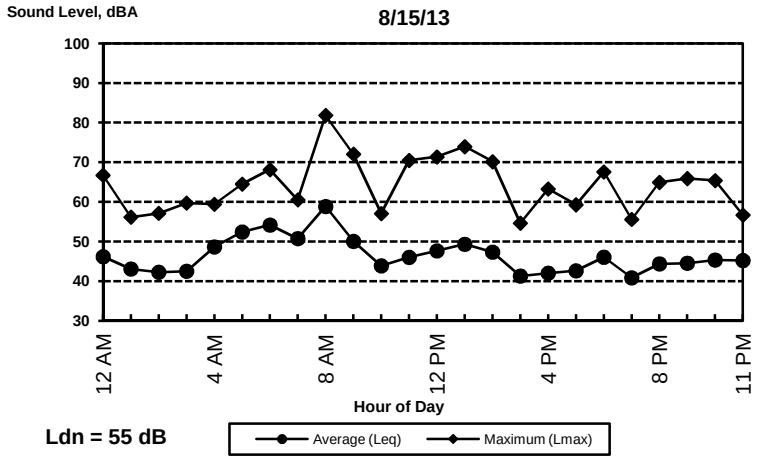
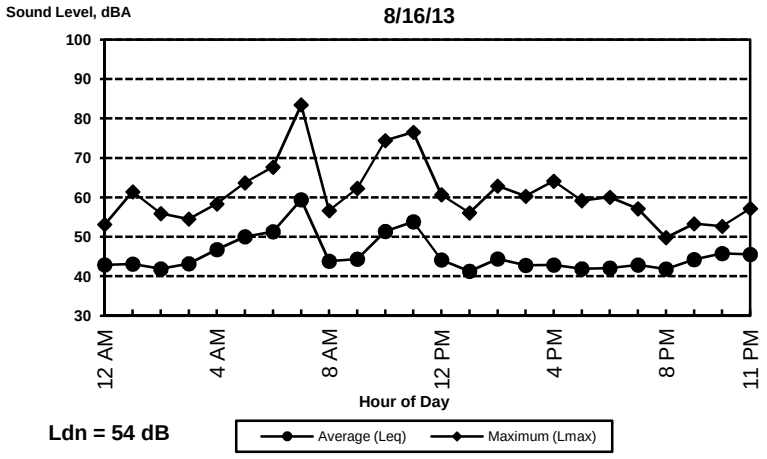
Appendix B-14
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 14 (2013)



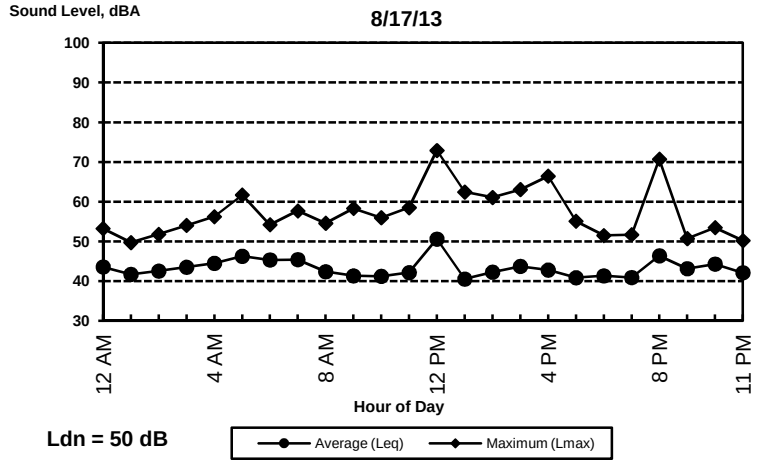
Ldn = 59 dB



Ldn = 55 dB



Ldn = 54 dB



Ldn = 50 dB

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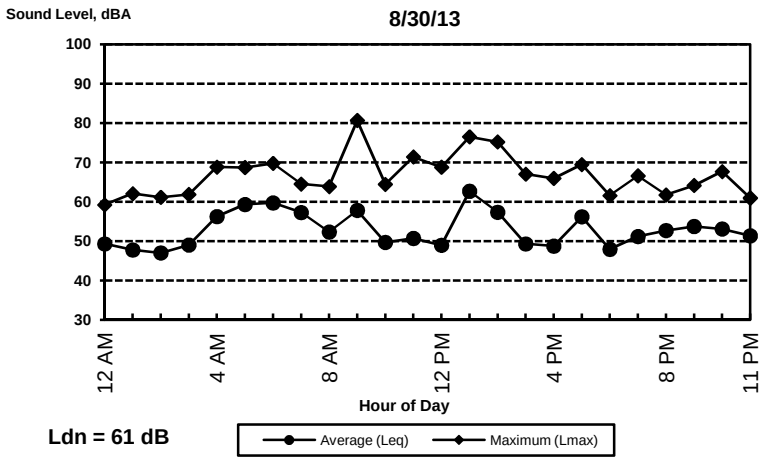
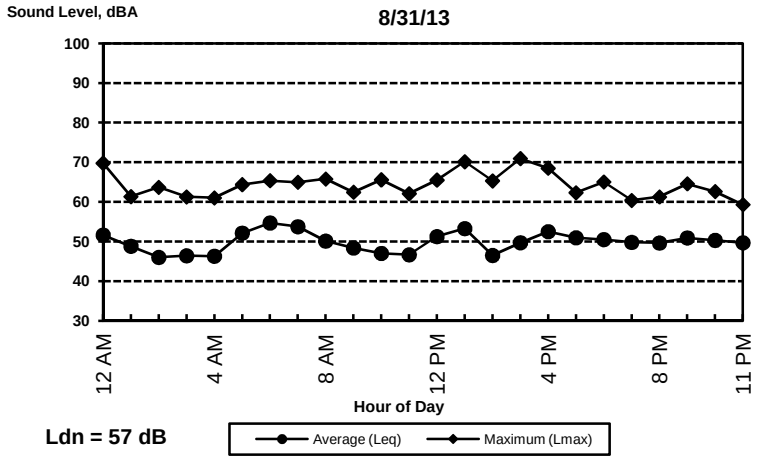
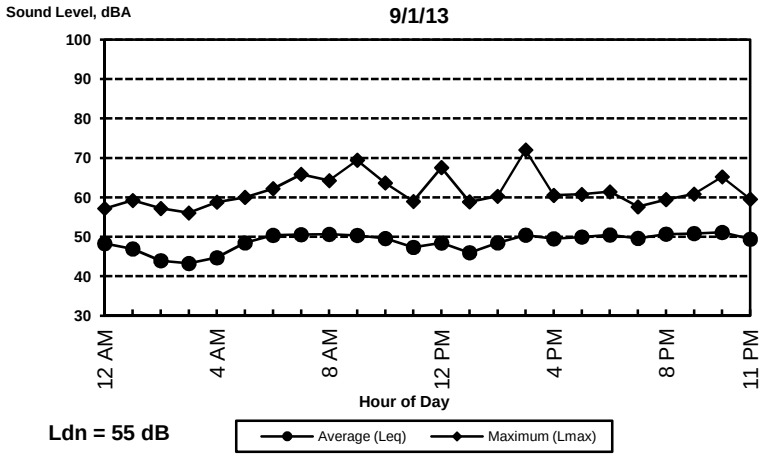
Appendix B-15
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 15 (2013)



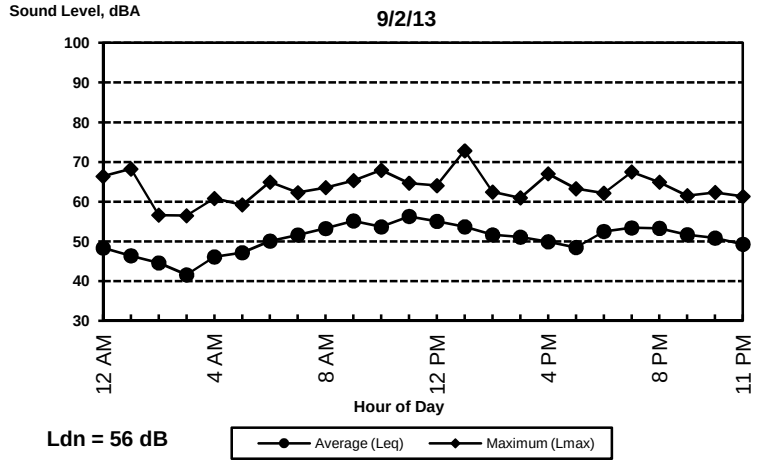
Ldn = 61 dB



Ldn = 57 dB



Ldn = 55 dB



Ldn = 56 dB

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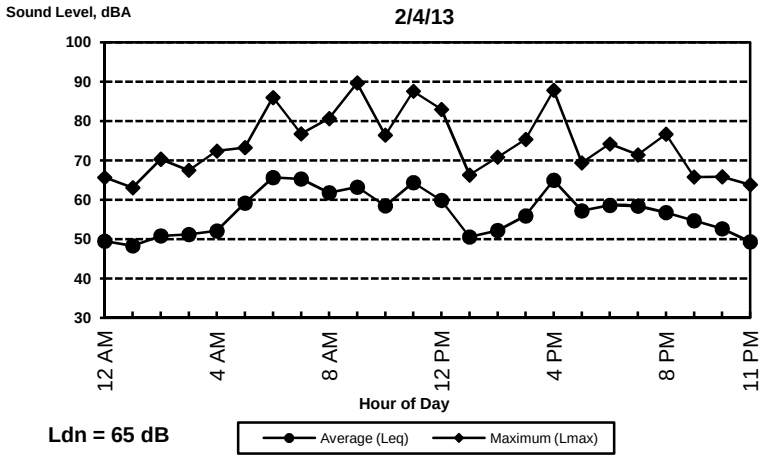
Appendix B-16
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 16 (2013)



Ldn = 65 dB

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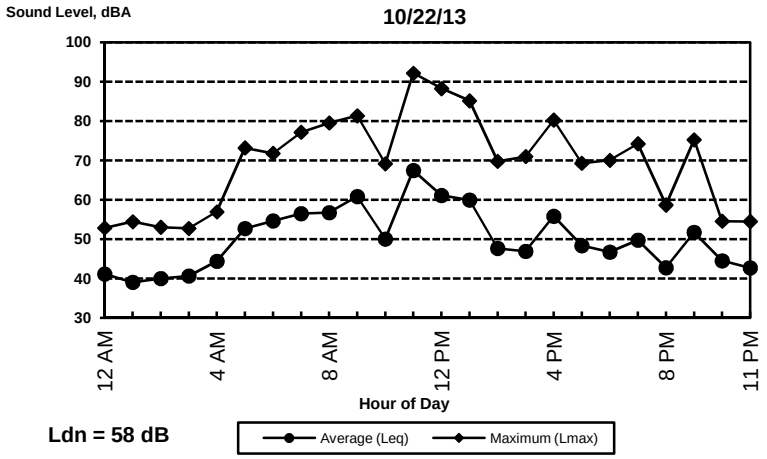
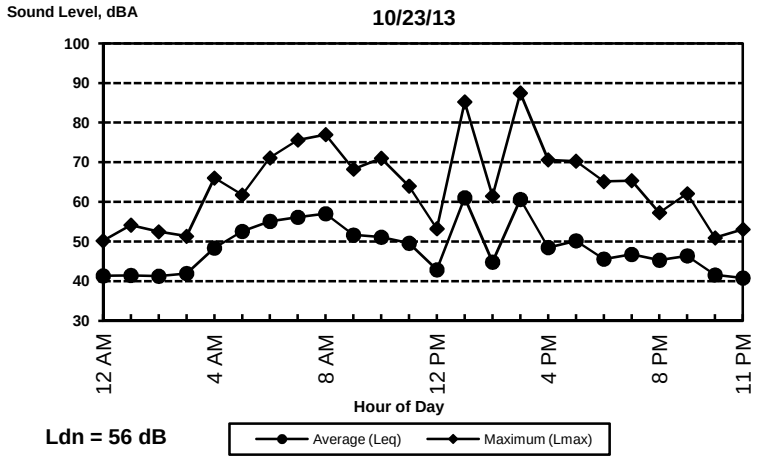
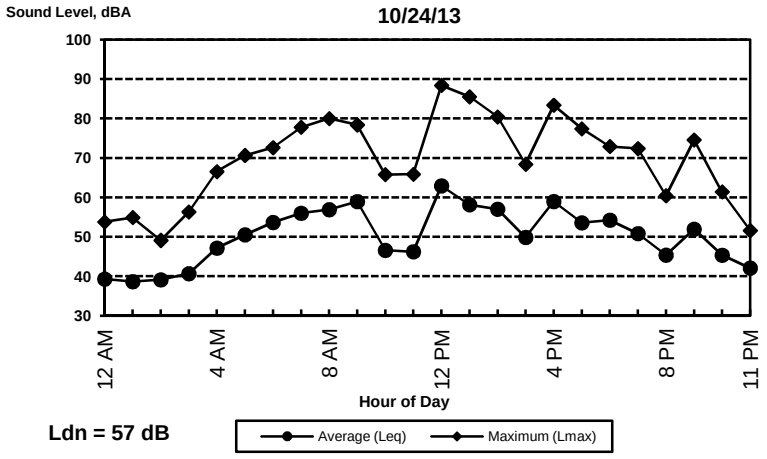
Appendix B-17
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 17 (2013)



Ldn = 58 dB



Ldn = 56 dB



Ldn = 57 dB

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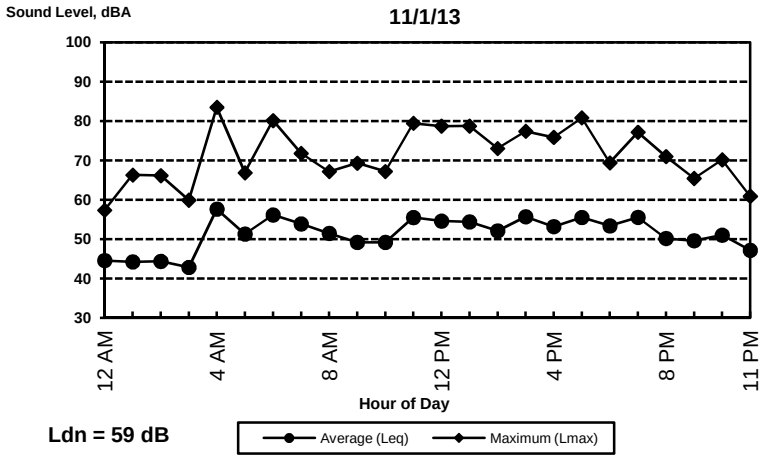
Appendix B-18
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 18 (2013)



Ldn = 59 dB

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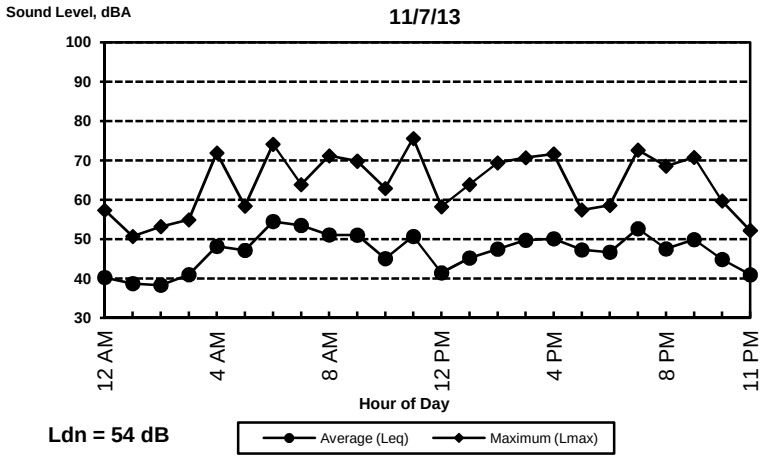
Appendix B-19
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 19 (2013)



Ldn = 54 dB

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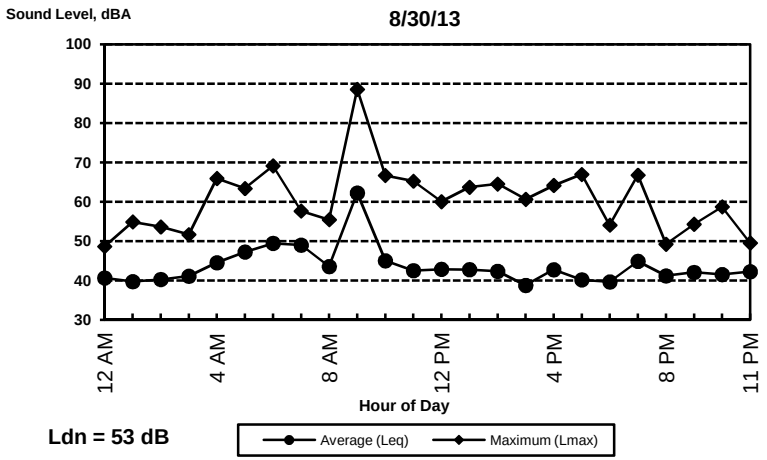
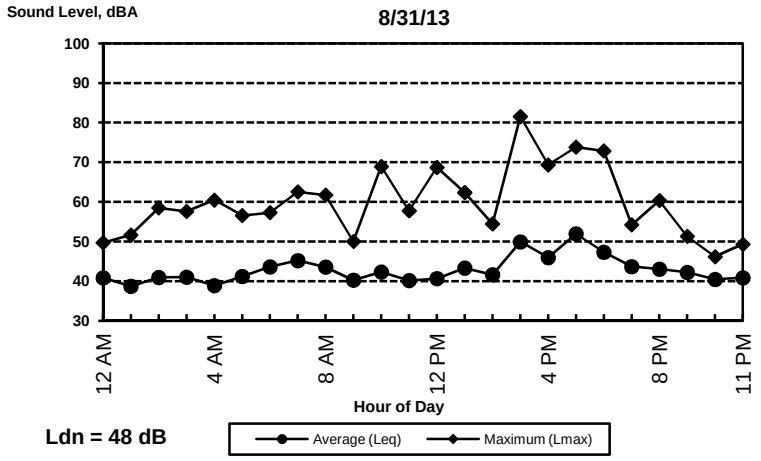
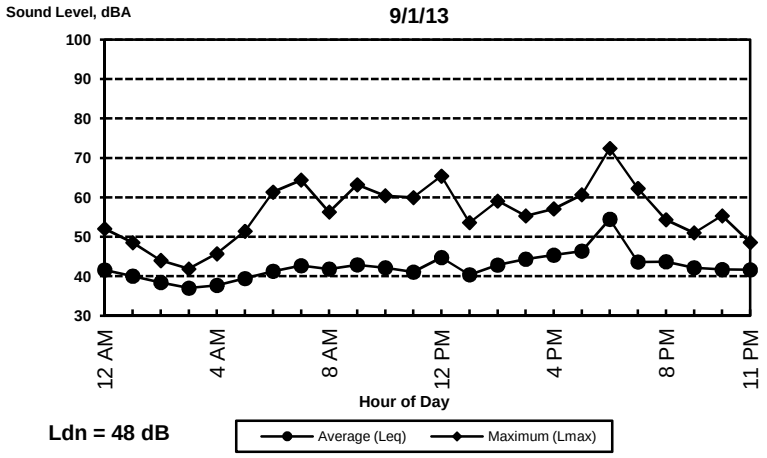
Appendix B-20
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 20 (2013)



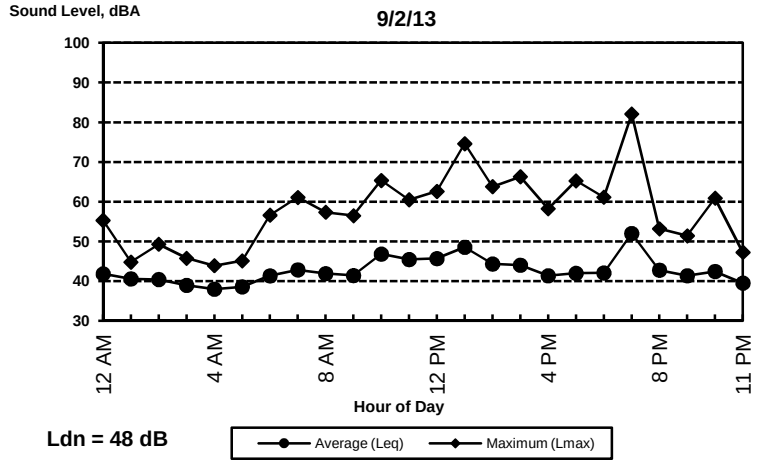
Ldn = 53 dB



Ldn = 48 dB



Ldn = 48 dB



Ldn = 48 dB

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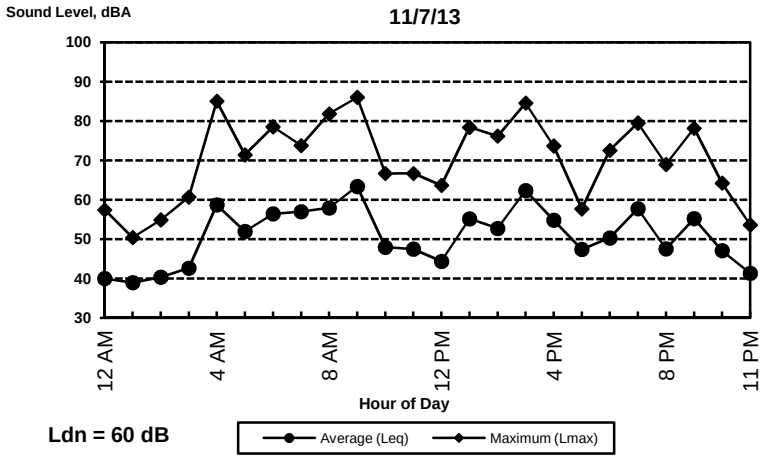
Appendix B-21
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 21 (2013)



Ldn = 60 dB

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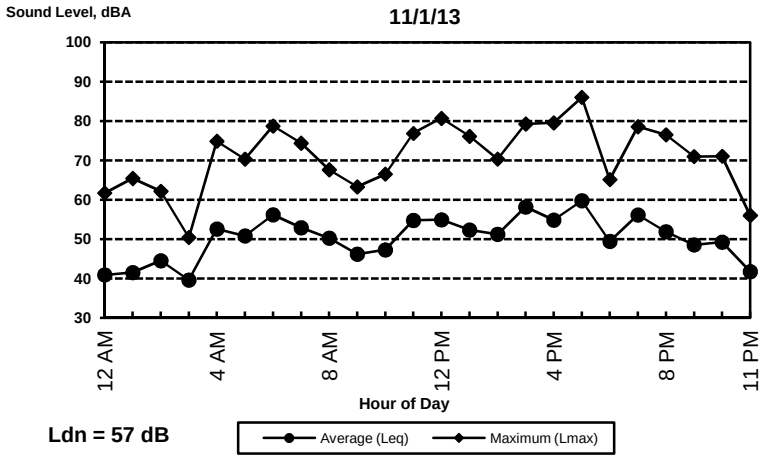
Appendix B-22
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 22 (2013)



Ldn = 57 dB

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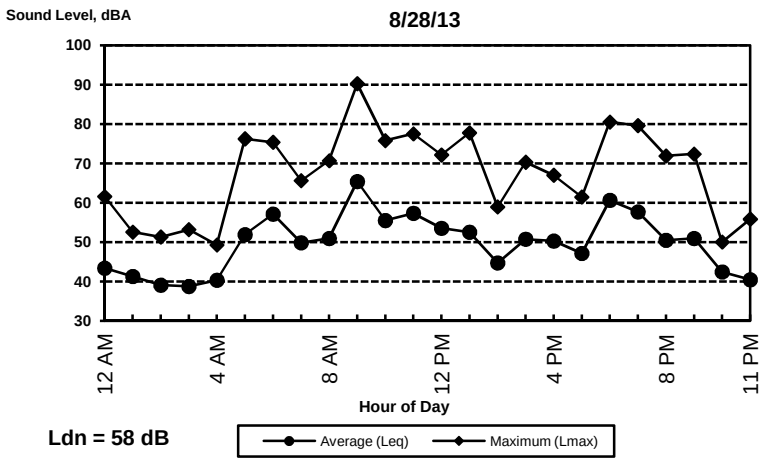
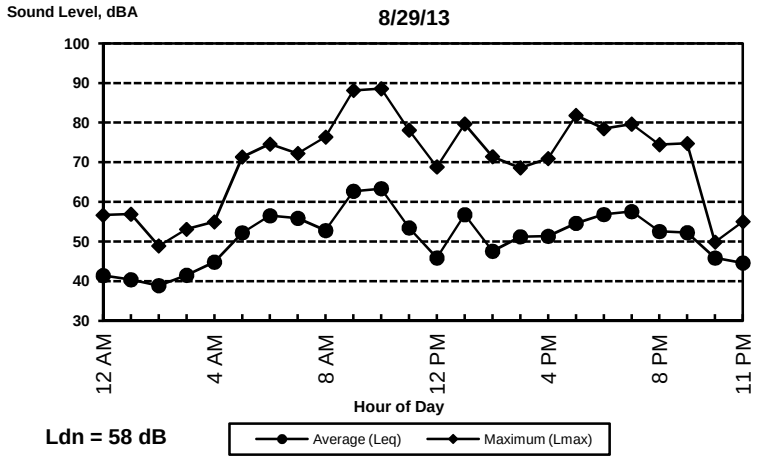
Appendix B-23
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 23 (2013)



Ldn = 58 dB



Ldn = 58 dB

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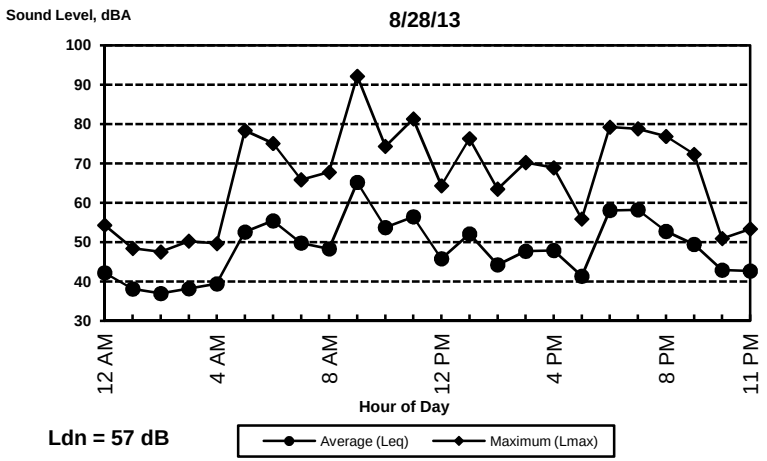
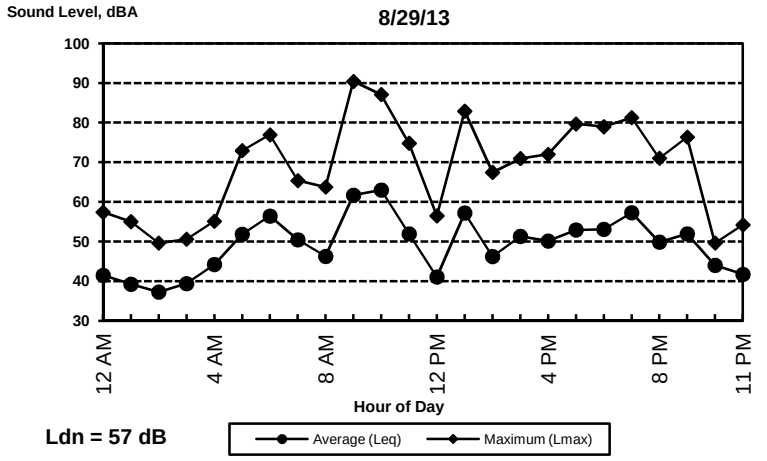
Appendix B-24
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 24 (2013)





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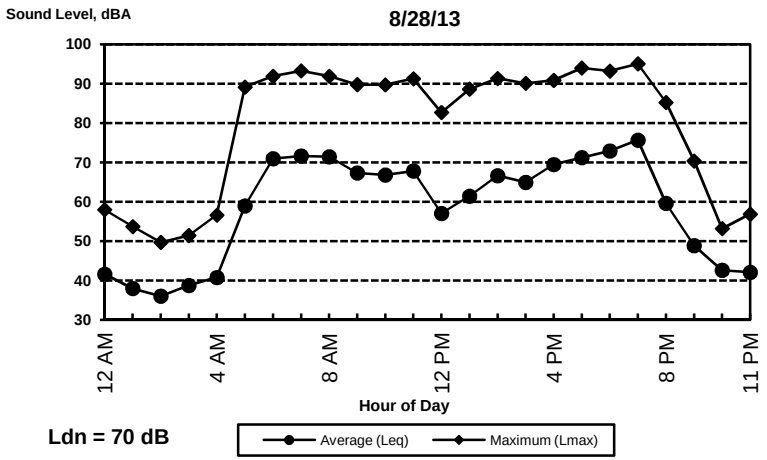
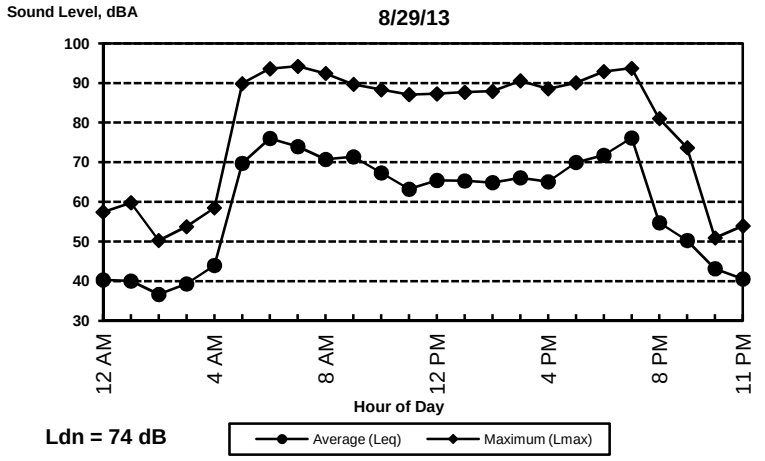
Appendix B-25
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 25 (2013)



Ldn = 70 dB



Ldn = 74 dB

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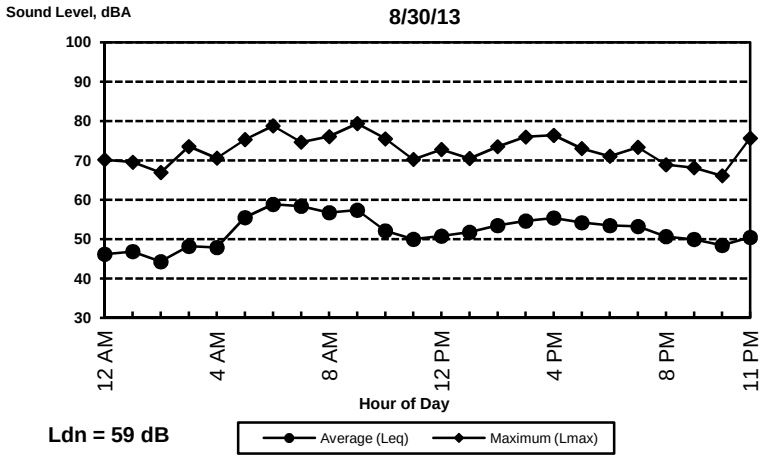
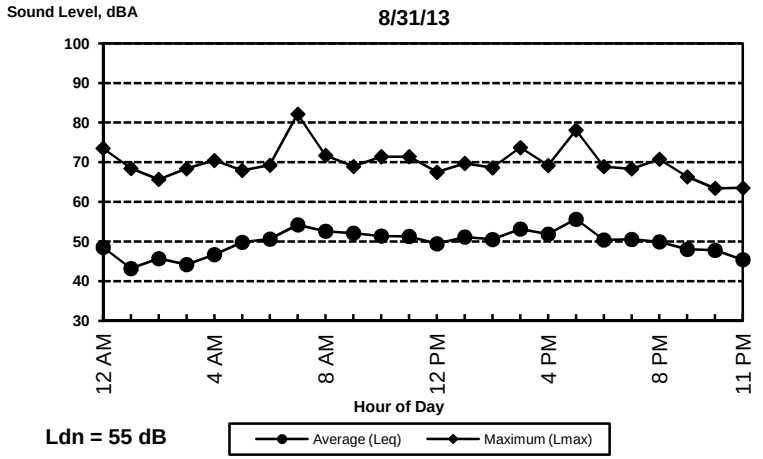
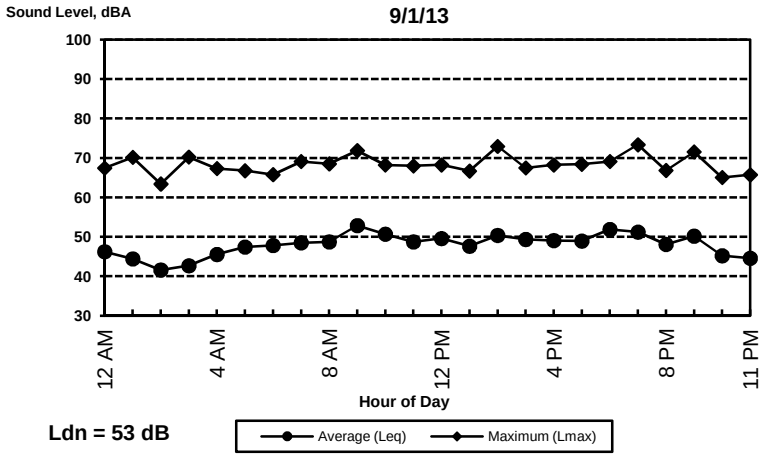
Appendix B-26
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 26 (2013)



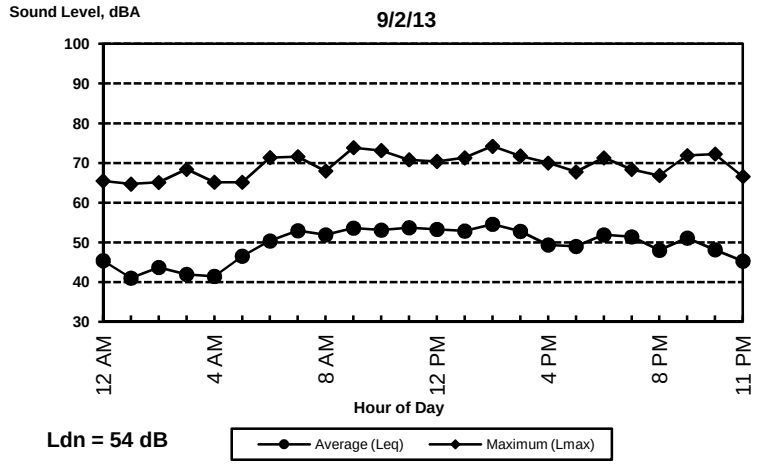
Ldn = 59 dB



Ldn = 55 dB



Ldn = 53 dB



Ldn = 54 dB

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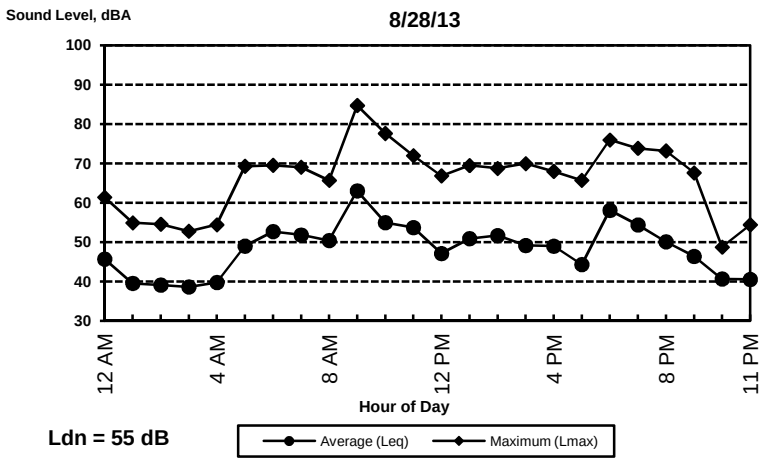
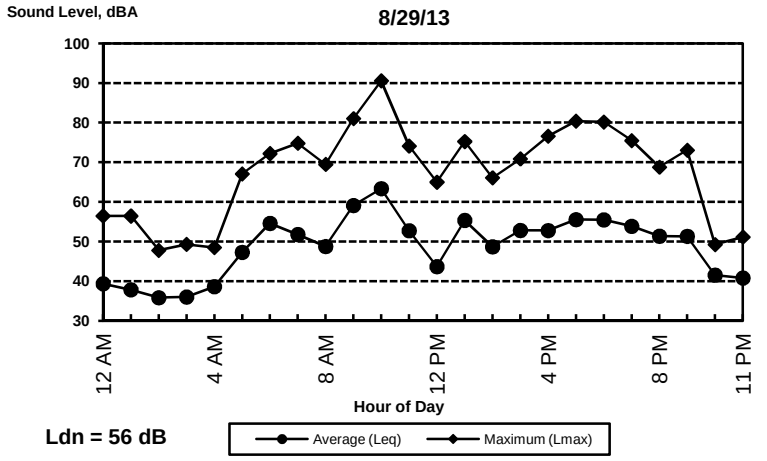
Appendix B-27
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 27 (2013)



Ldn = 55 dB



Ldn = 56 dB

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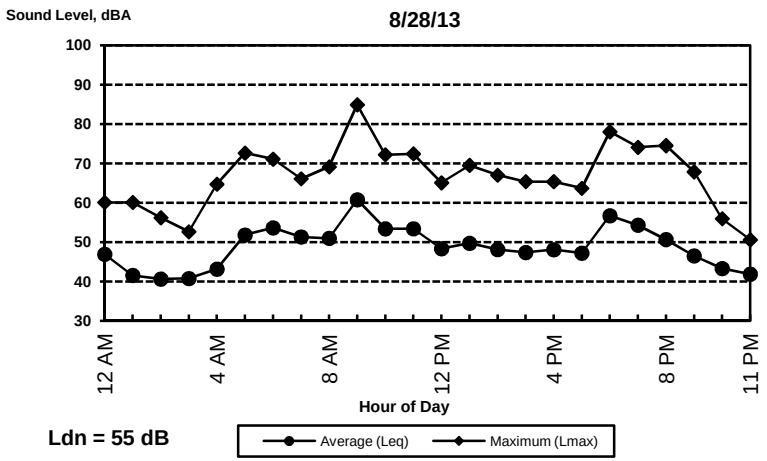
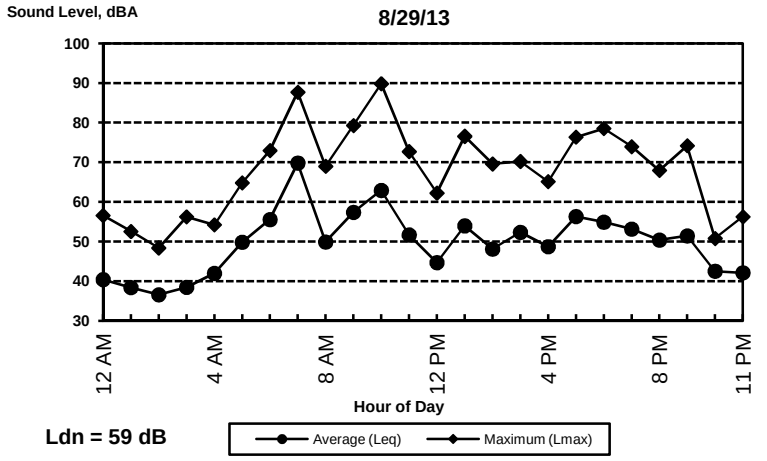
Appendix B-28
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 28 (2013)



Ldn = 55 dB



Ldn = 59 dB

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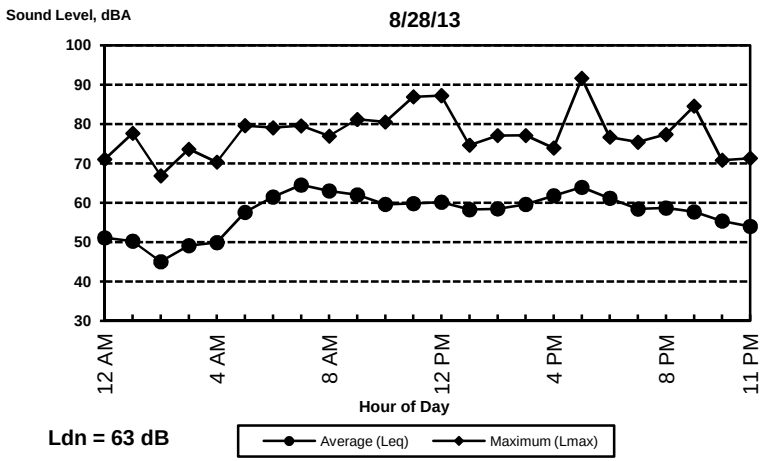
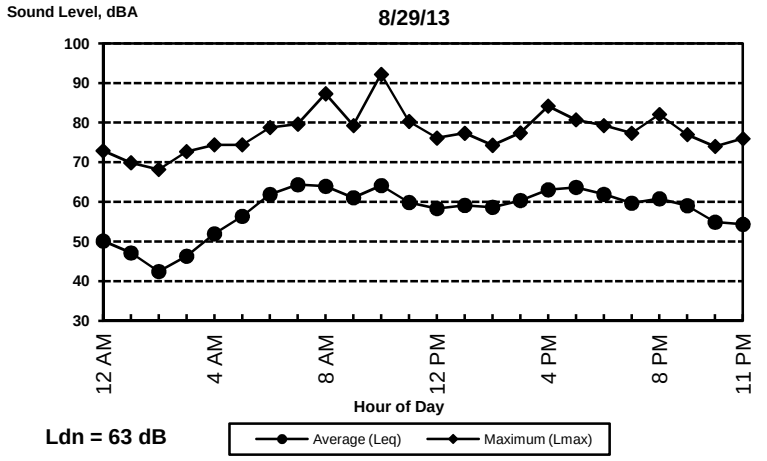
Appendix B-29
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 29 (2013)





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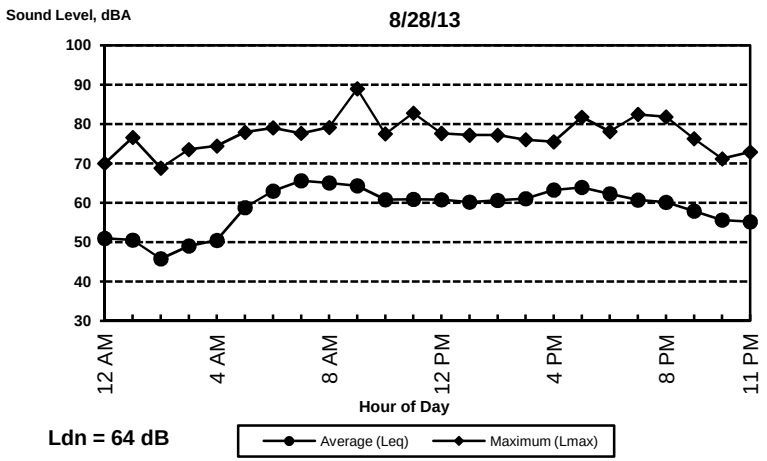
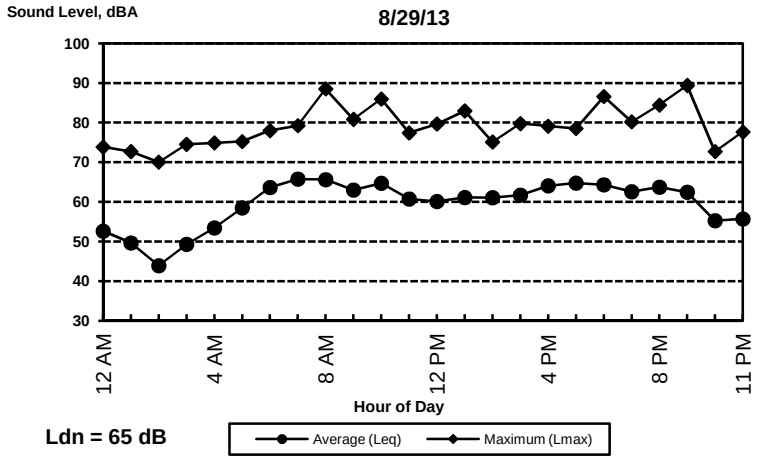
Appendix B-30
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 30 (2013)



Ldn = 64 dB



Ldn = 65 dB

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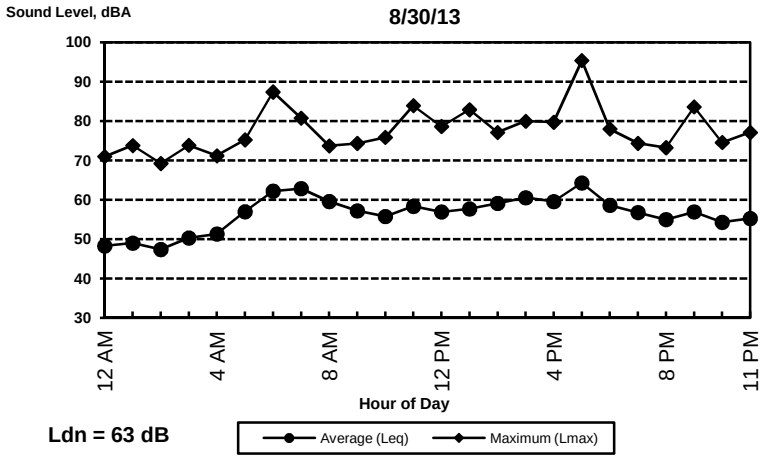
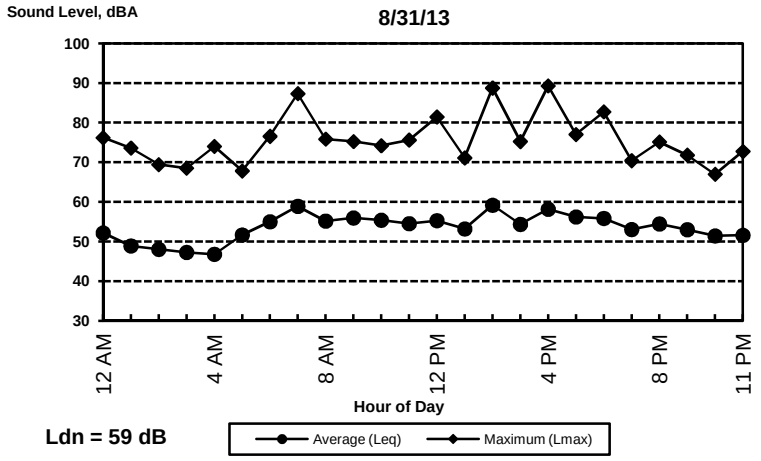
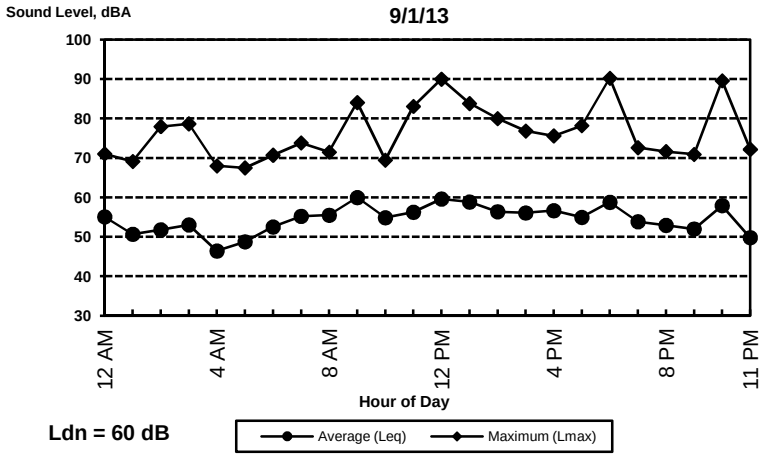
Appendix B-31
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 31 (2013)



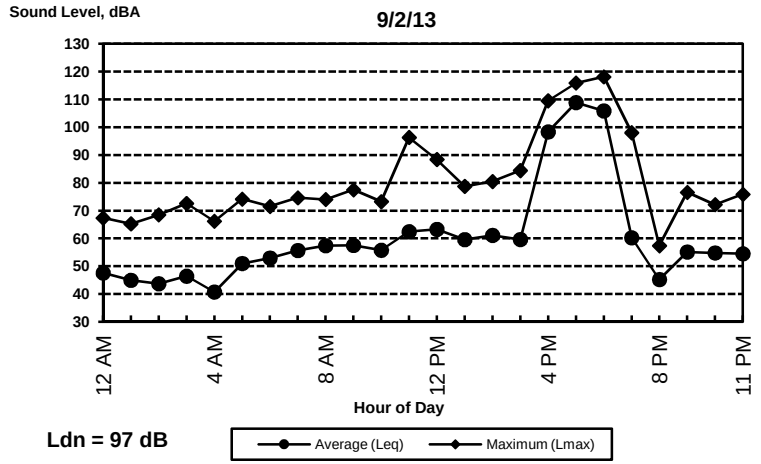
Ldn = 63 dB



Ldn = 59 dB



Ldn = 60 dB



Ldn = 97 dB

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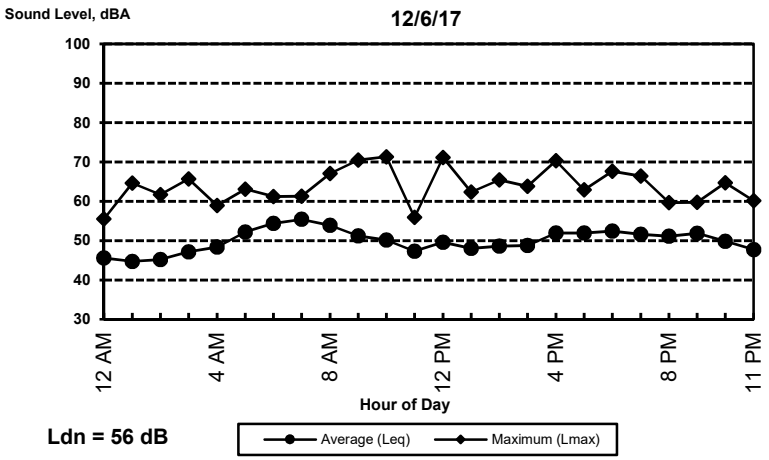
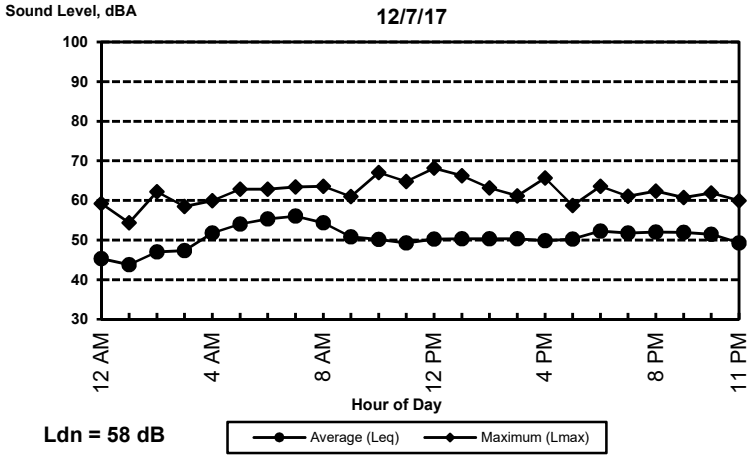
Appendix C-1
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 1 (2017)



Ldn = 56 dB



Ldn = 58 dB

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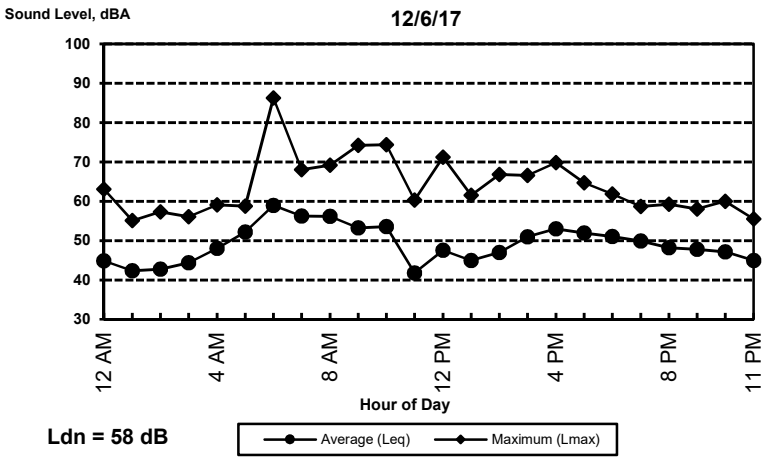
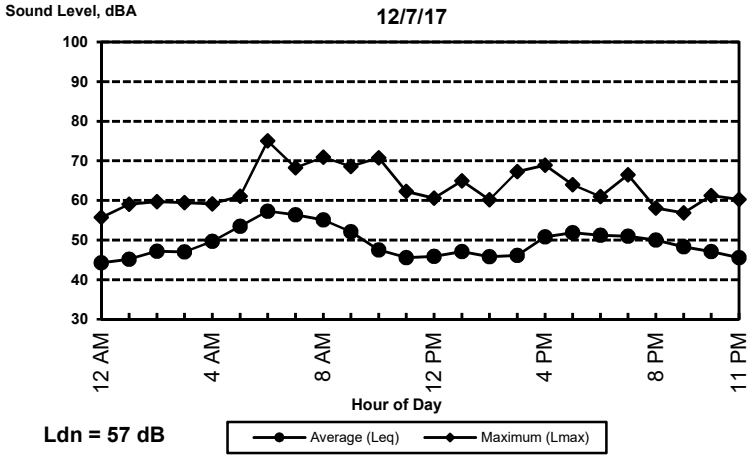
Appendix C-2
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 7 (2017)



Ldn = 58 dB



Ldn = 57 dB

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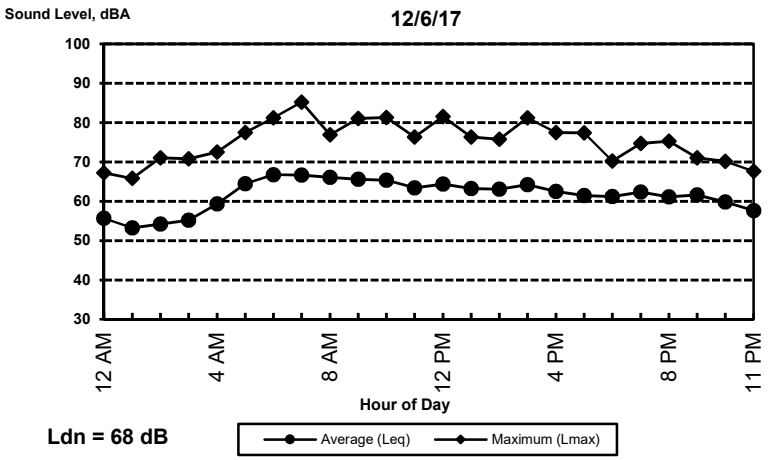
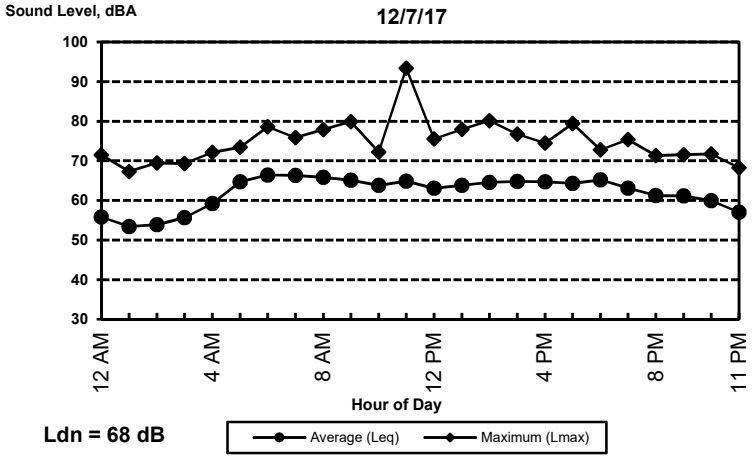
Appendix C-3
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 12 (2017)



Ldn = 68 dB



Ldn = 68 dB

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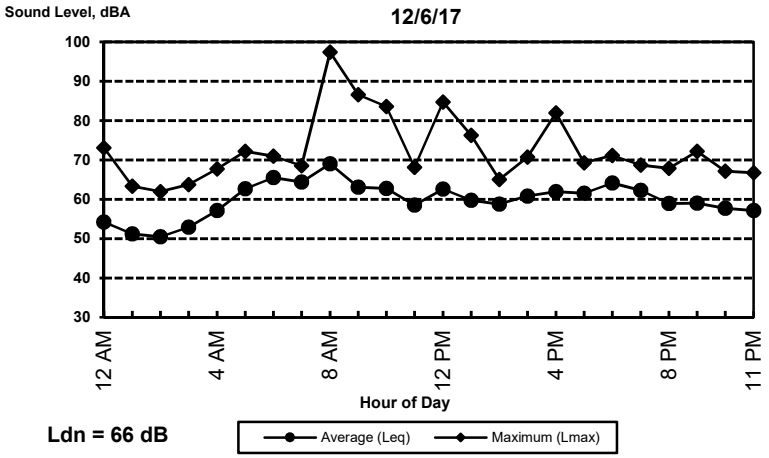
Appendix C-4
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 13 (2017)



Ldn = 66 dB

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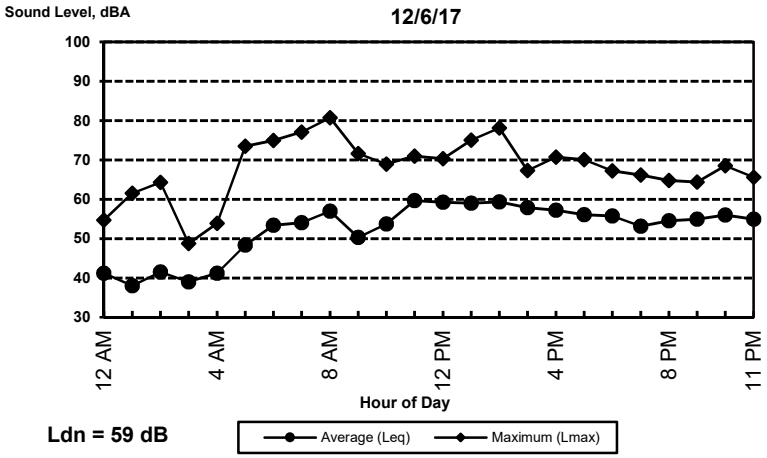
Appendix C-5
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 20-A (2017)



Ldn = 59 dB

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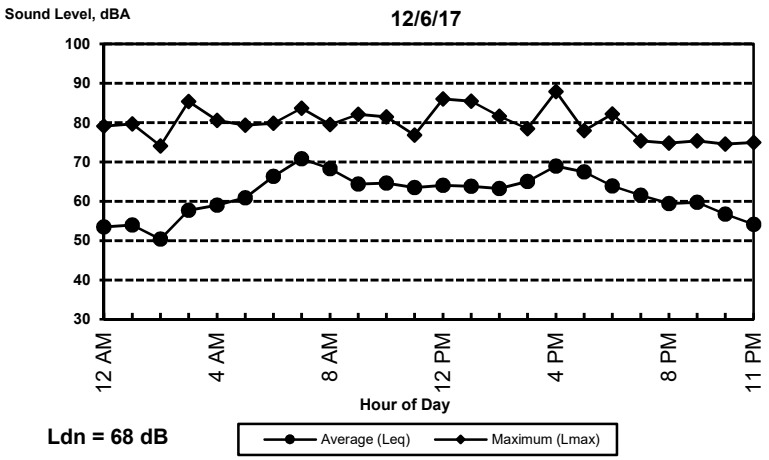
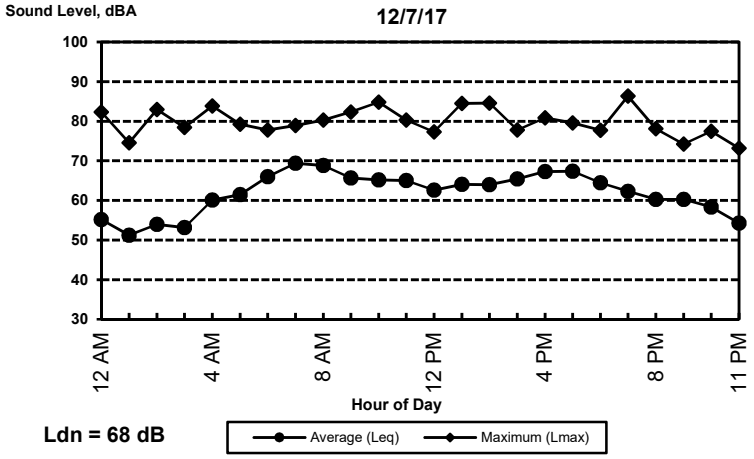
Appendix C-6
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 30 (2017)



Ldn = 68 dB



Ldn = 68 dB

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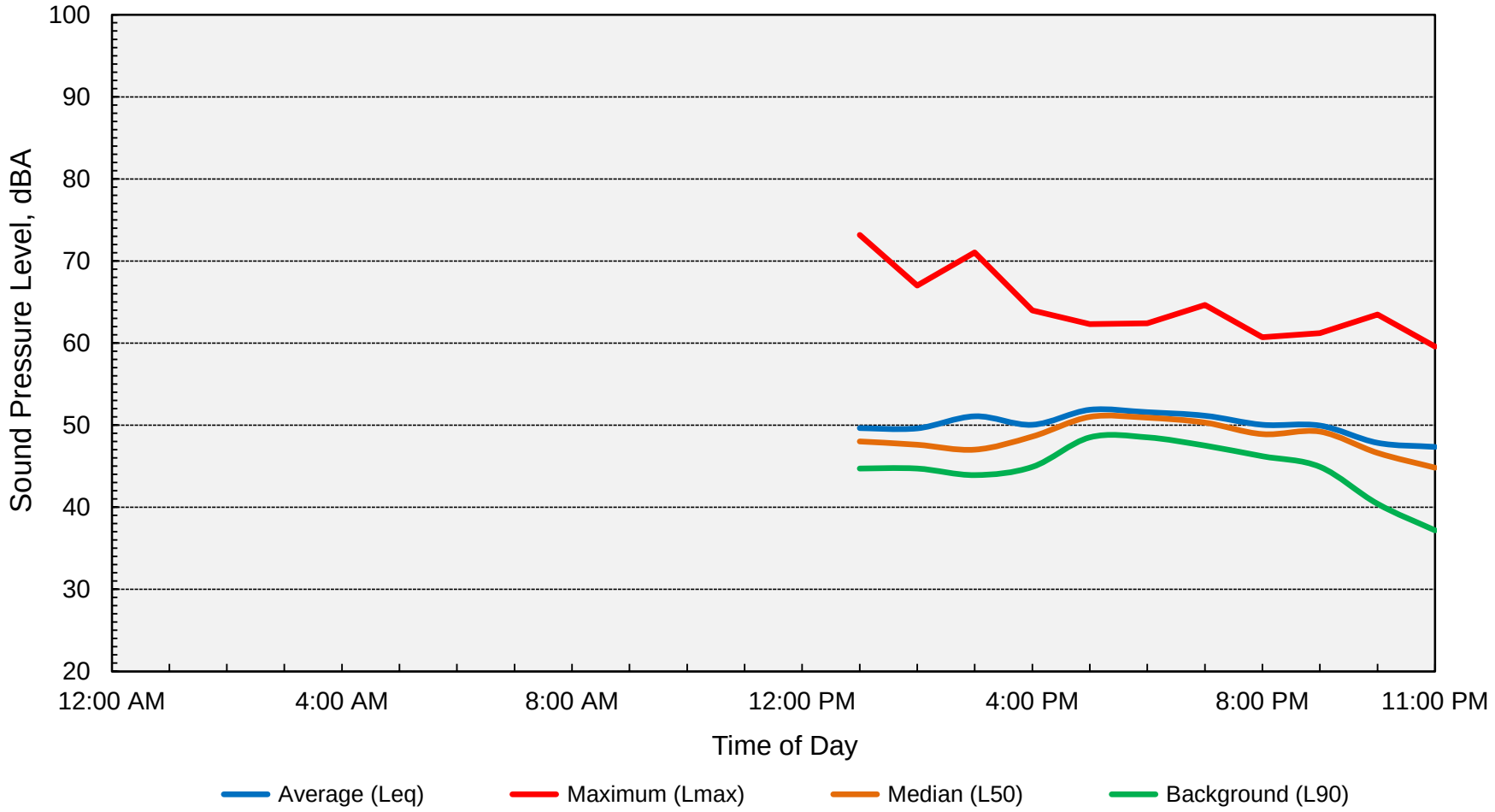
Appendix D-1
Long-Term Ambient Noise Monitoring Results - Site 1
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 55 dB

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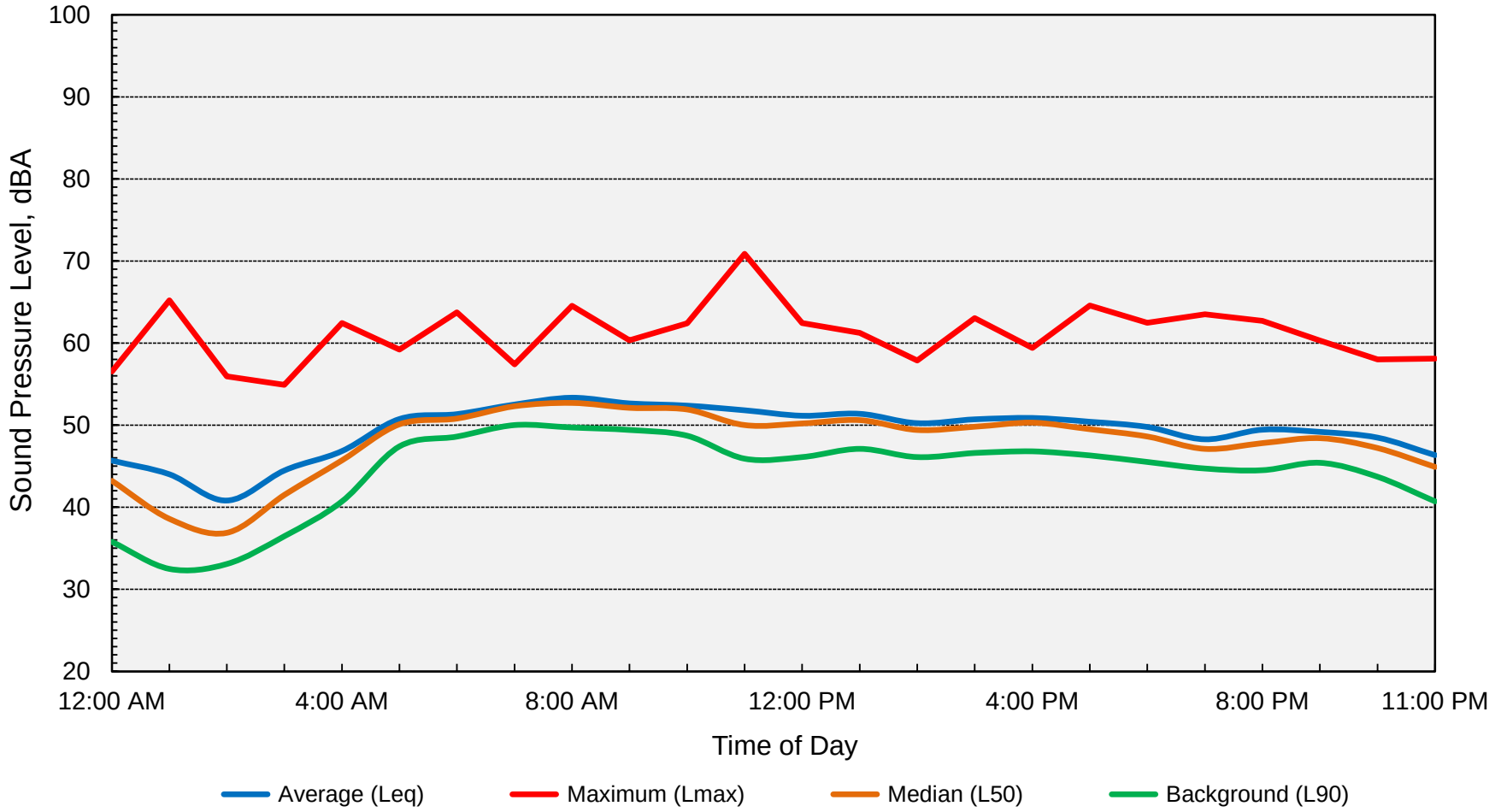
Appendix D-2
Long-Term Ambient Noise Monitoring Results - Site 1
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 55 dB

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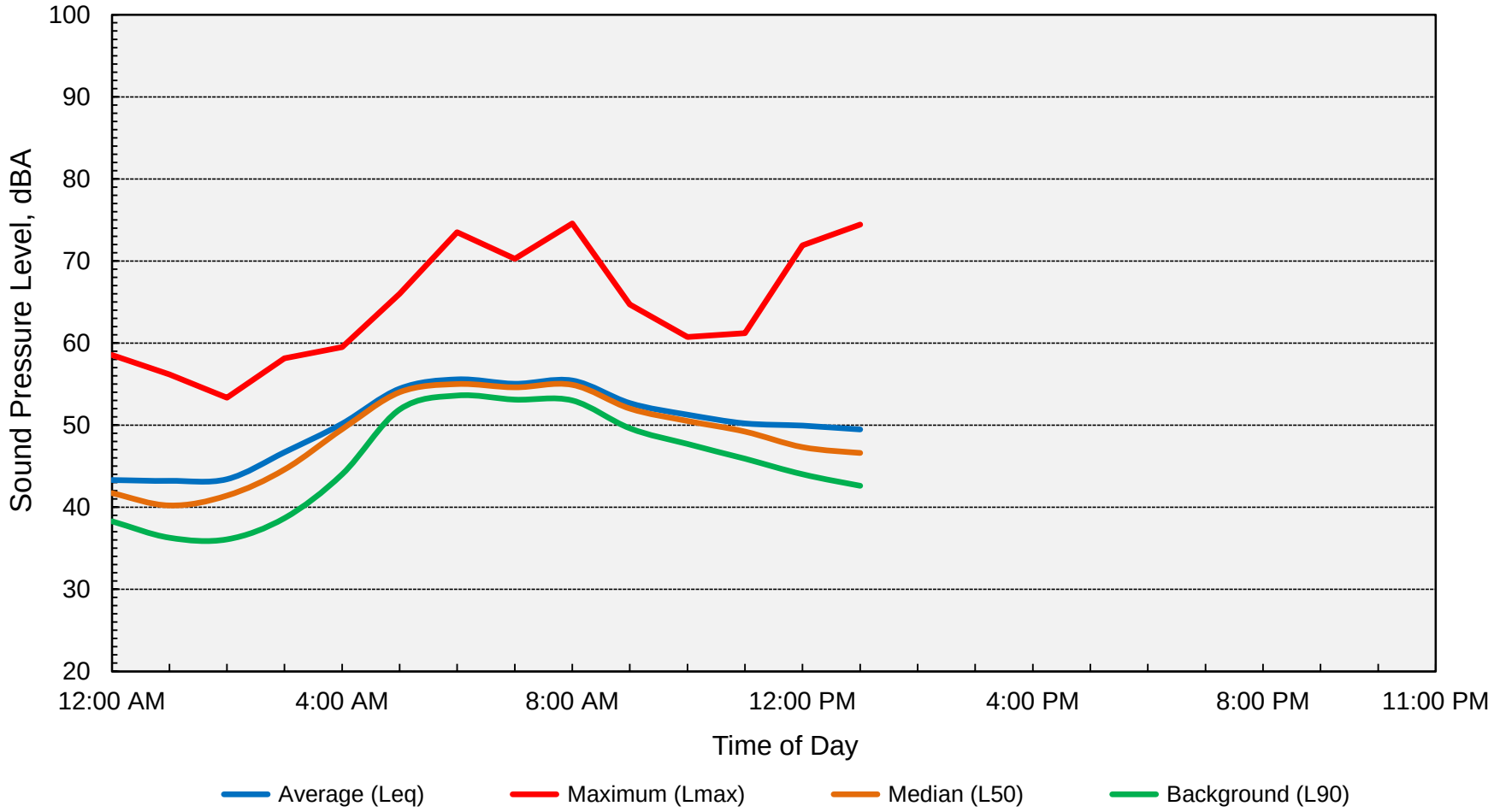
Appendix D-3
Long-Term Ambient Noise Monitoring Results - Site 1
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 58 dB

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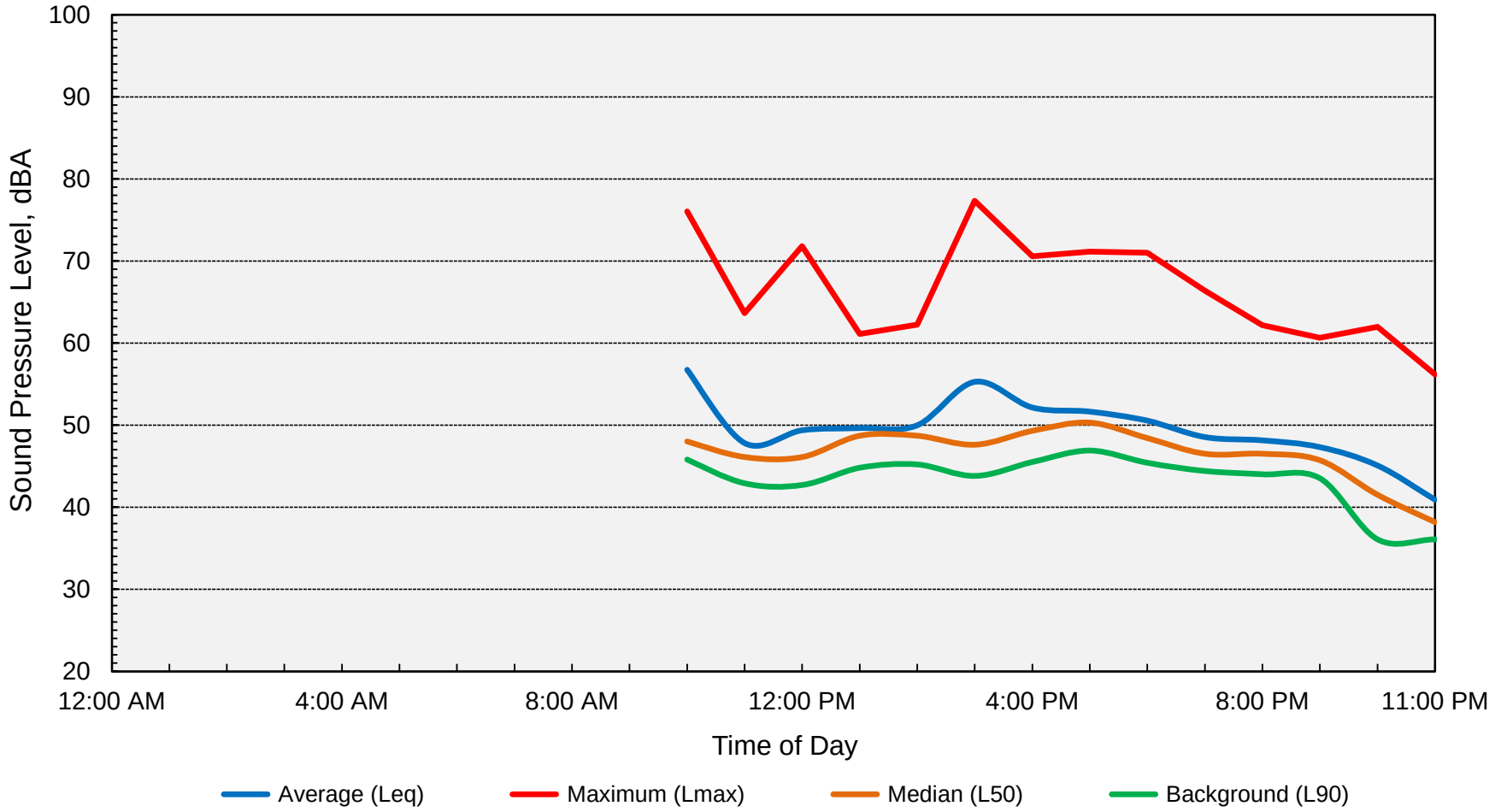
Appendix D-4
Long-Term Ambient Noise Monitoring Results - Site 7
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 52 dB

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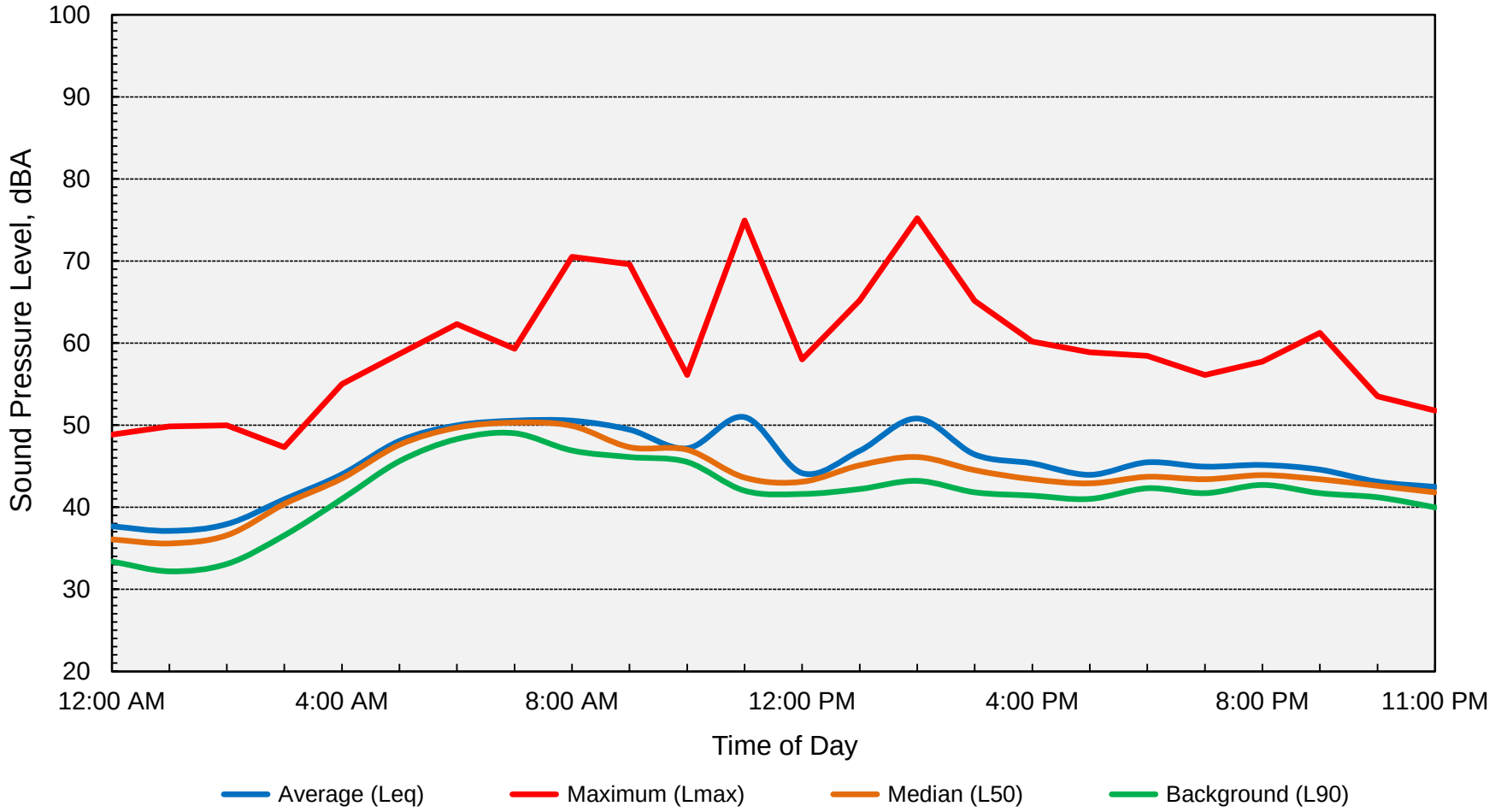
Appendix D-5
Long-Term Ambient Noise Monitoring Results - Site 7
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 52 dB

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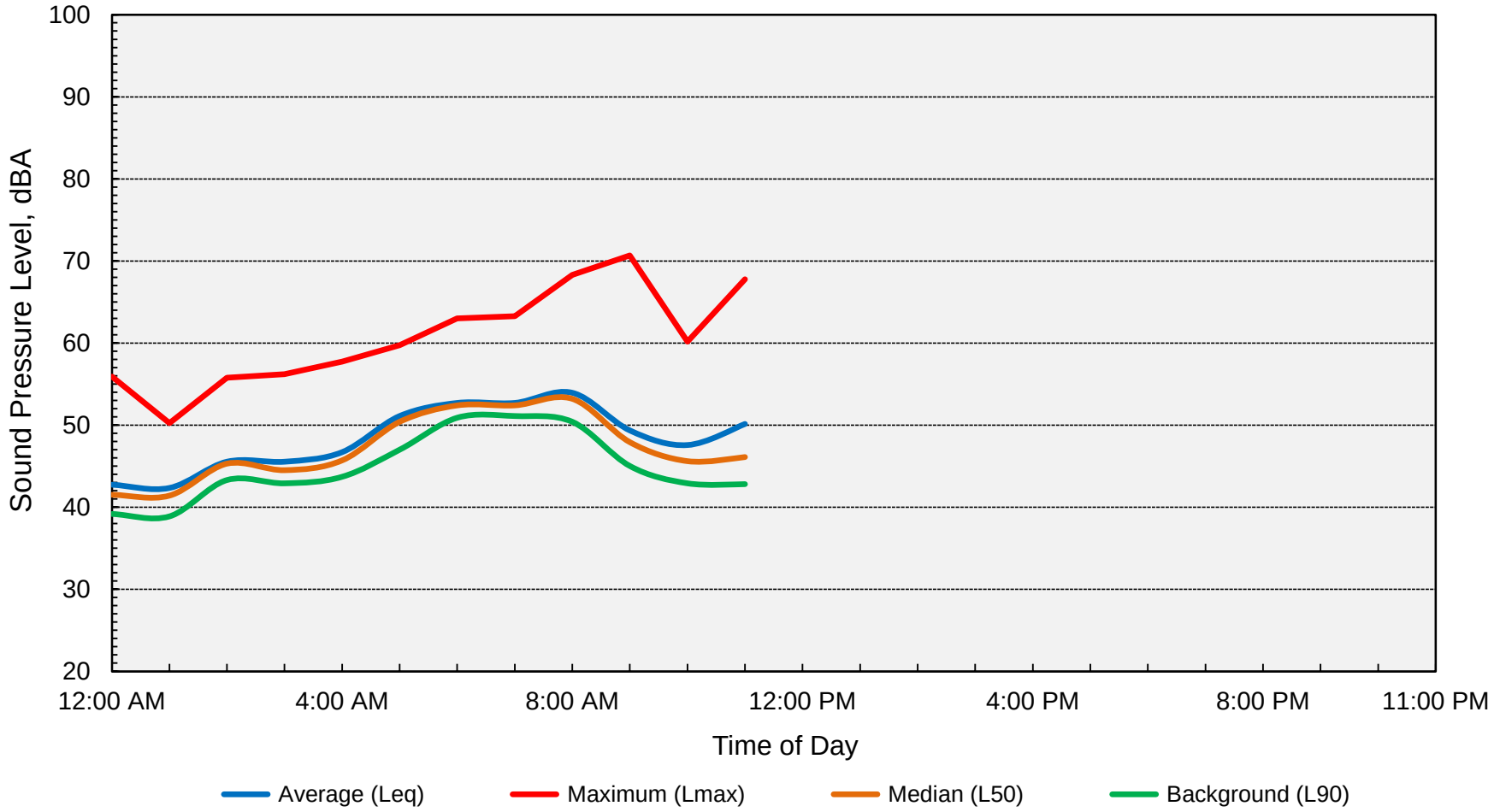
Appendix D-6
Long-Term Ambient Noise Monitoring Results - Site 7
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 55 dB

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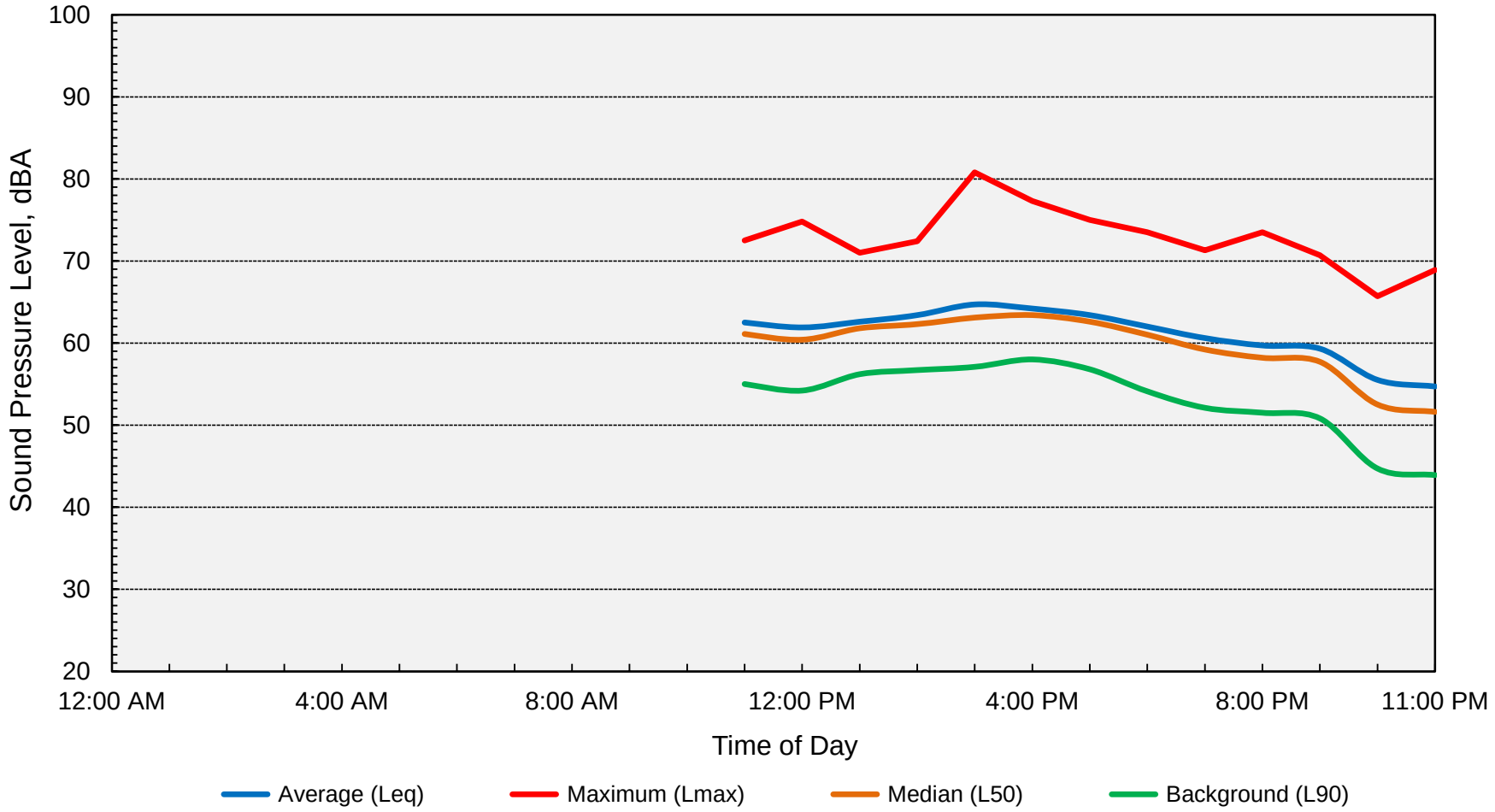
Appendix D-7
Long-Term Ambient Noise Monitoring Results - Site 12
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 64 dB

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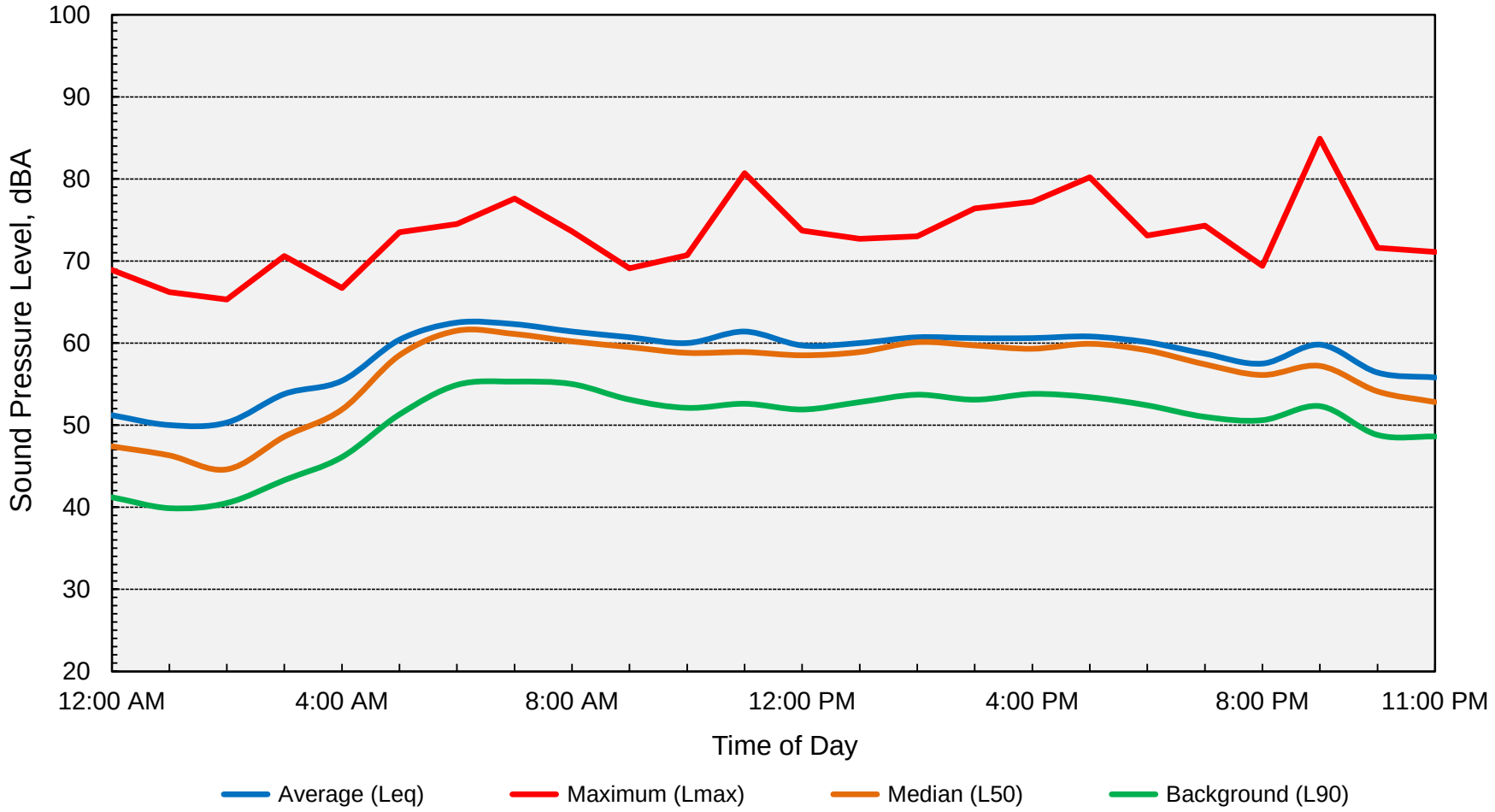
Appendix D-8
Long-Term Ambient Noise Monitoring Results - Site 12
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 64 dB

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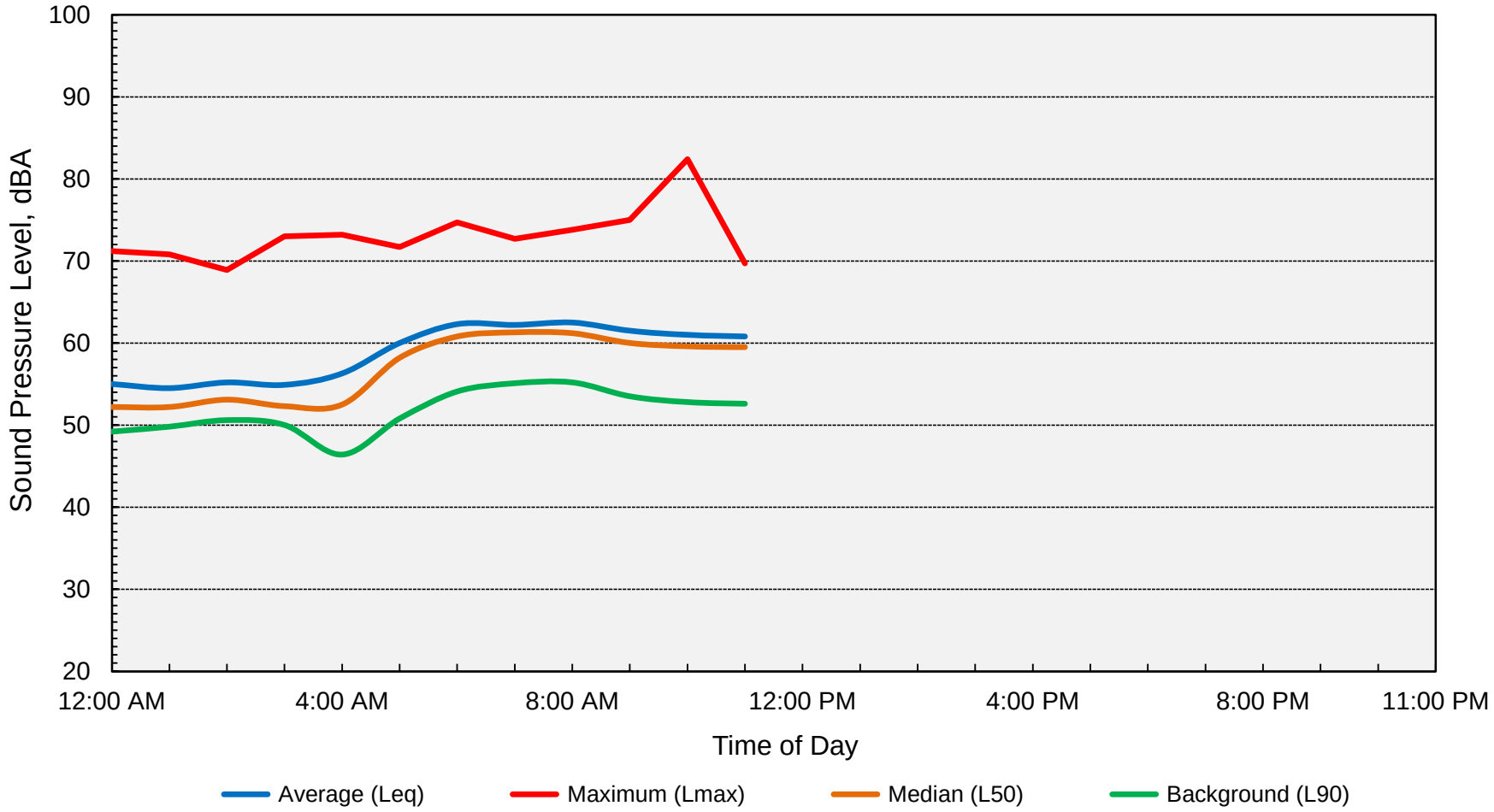
Appendix D-9
Long-Term Ambient Noise Monitoring Results - Site 12
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 65 dB

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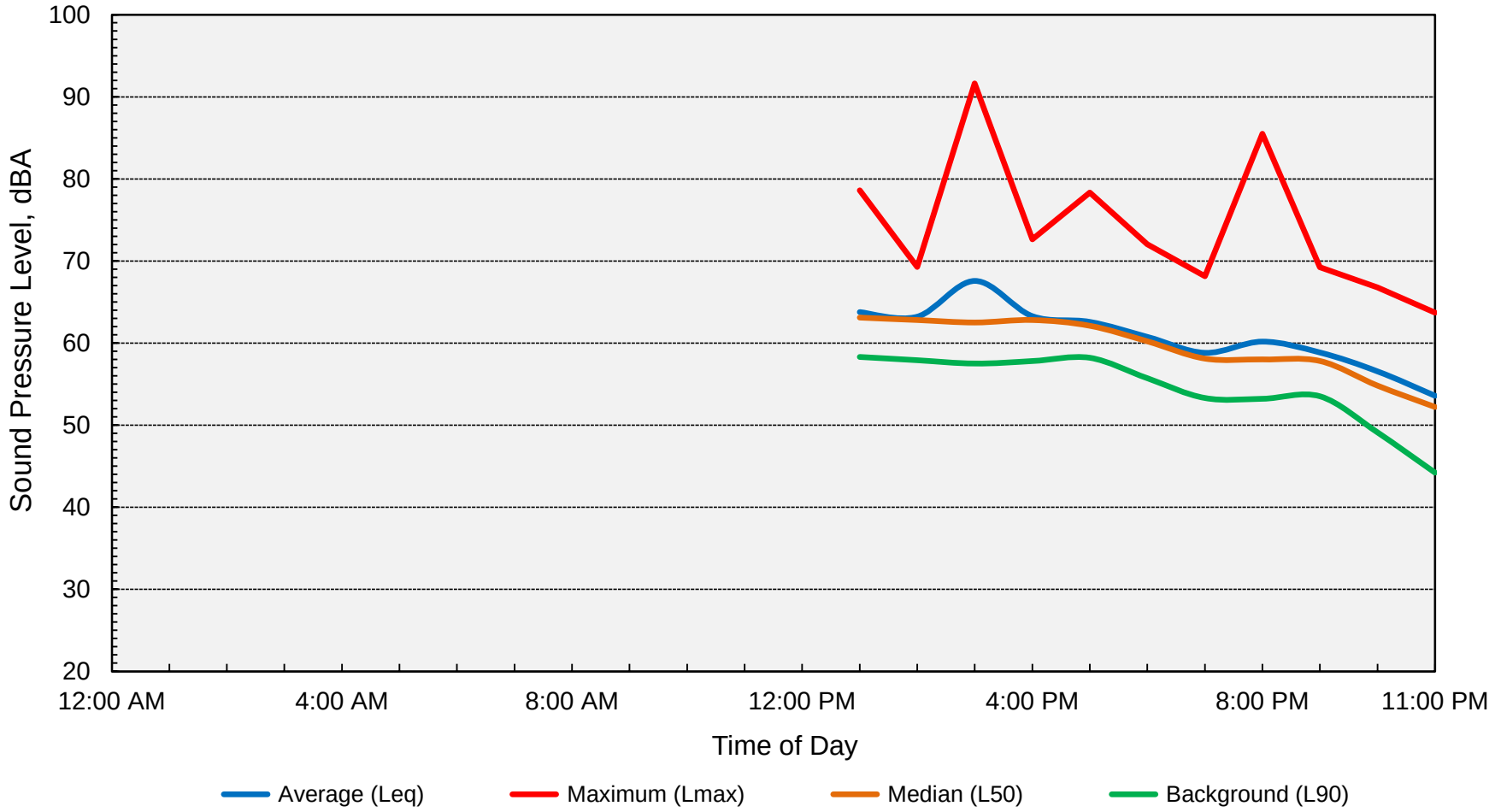
Appendix D-10
Long-Term Ambient Noise Monitoring Results - Site 13
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 64 dB

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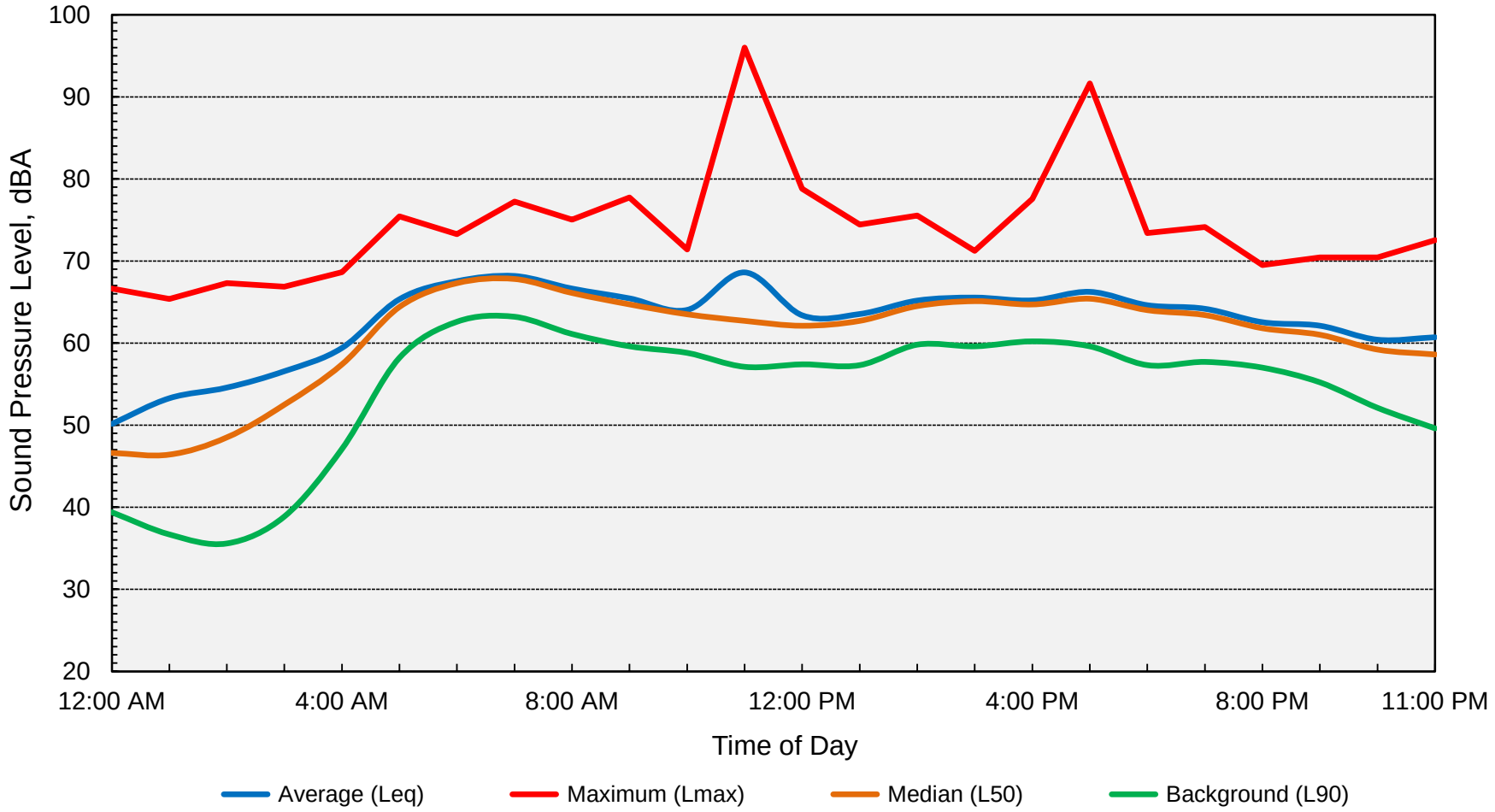
Acoustical Consultants

Appendix D-11
Long-Term Ambient Noise Monitoring Results - Site 13
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 69 dB

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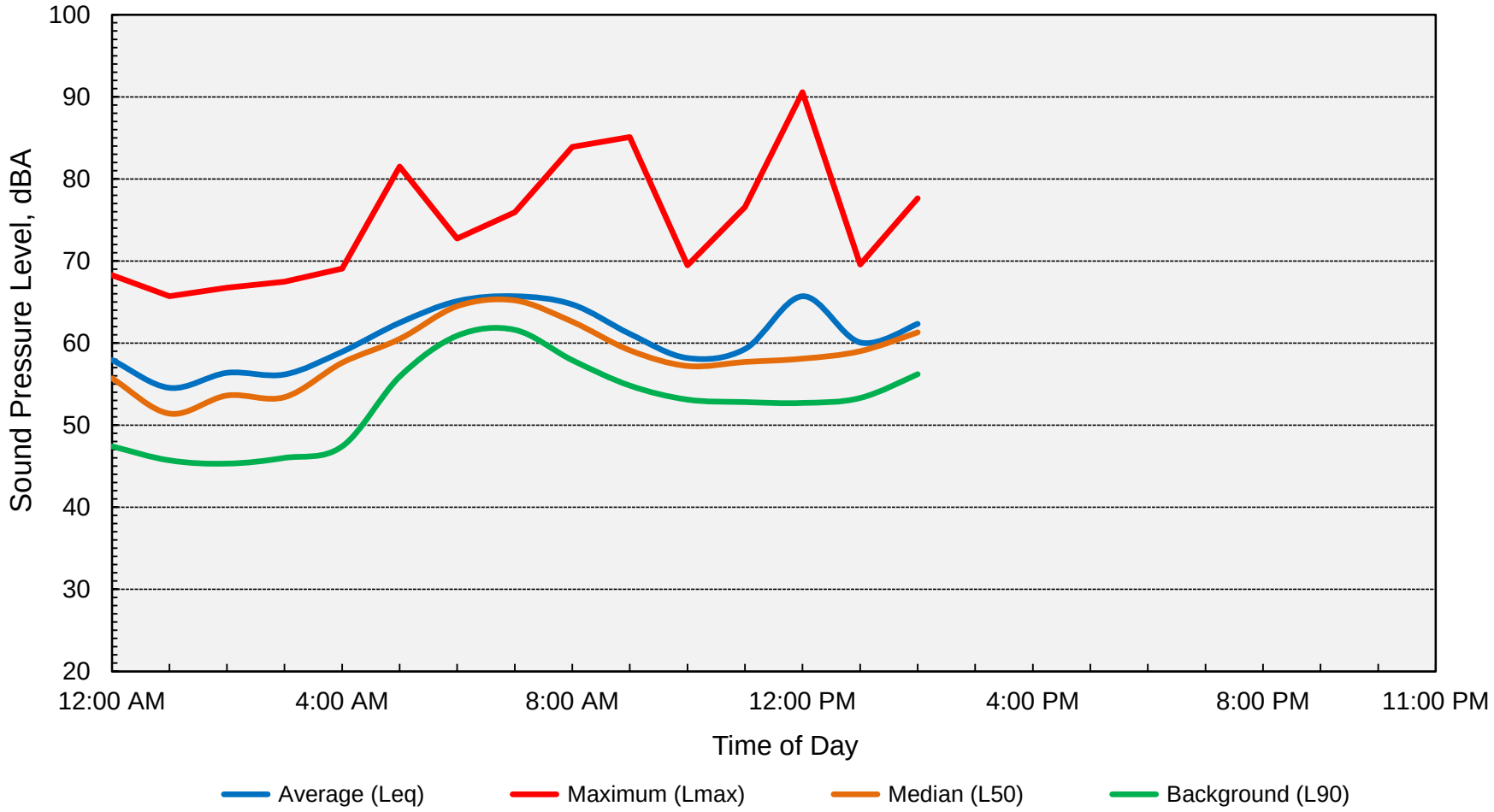
Acoustical Consultants

Appendix D-12
Long-Term Ambient Noise Monitoring Results - Site 13
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 67 dB

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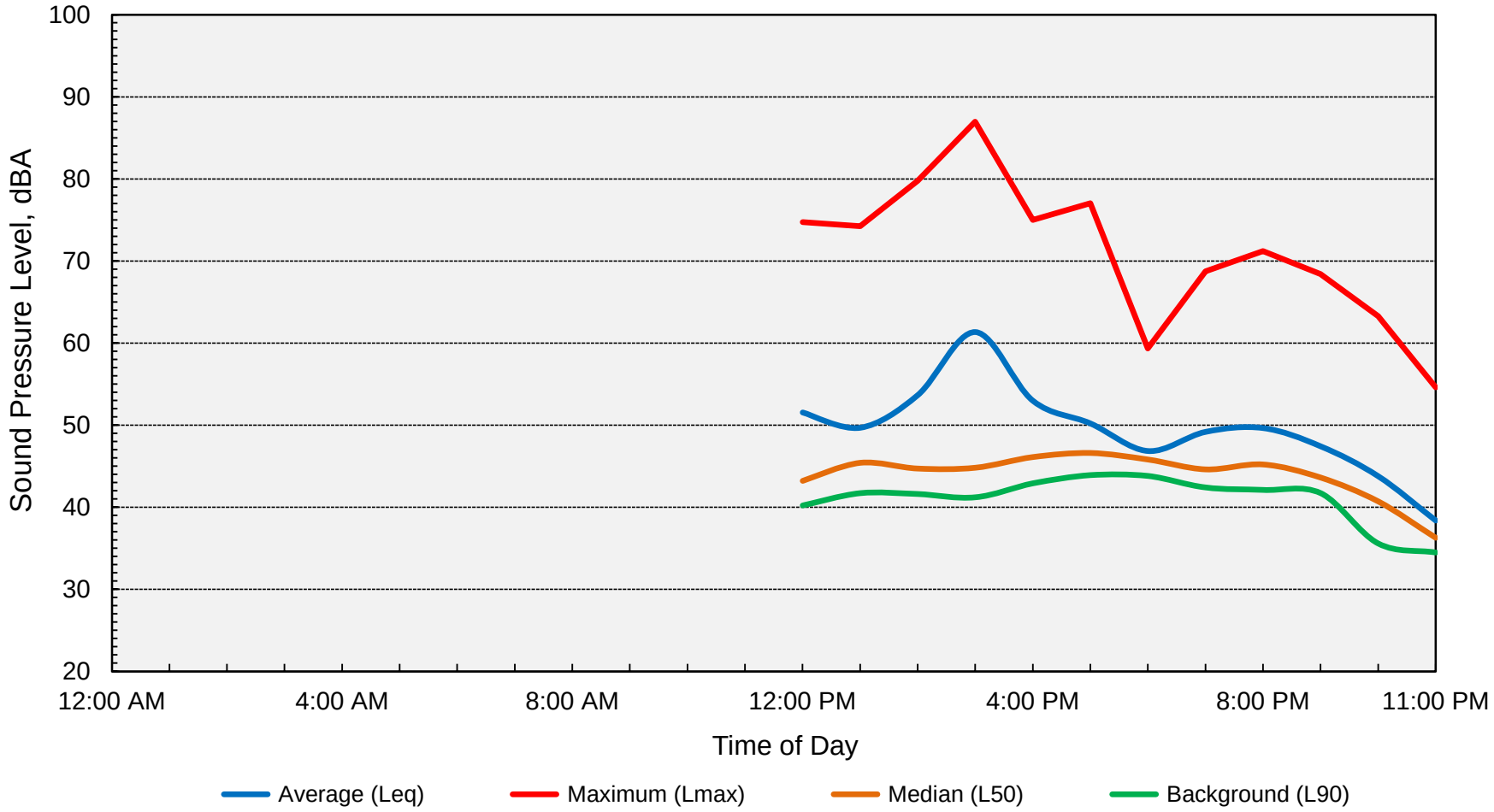
Appendix D-13
Long-Term Ambient Noise Monitoring Results - Site 20
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 53 dB

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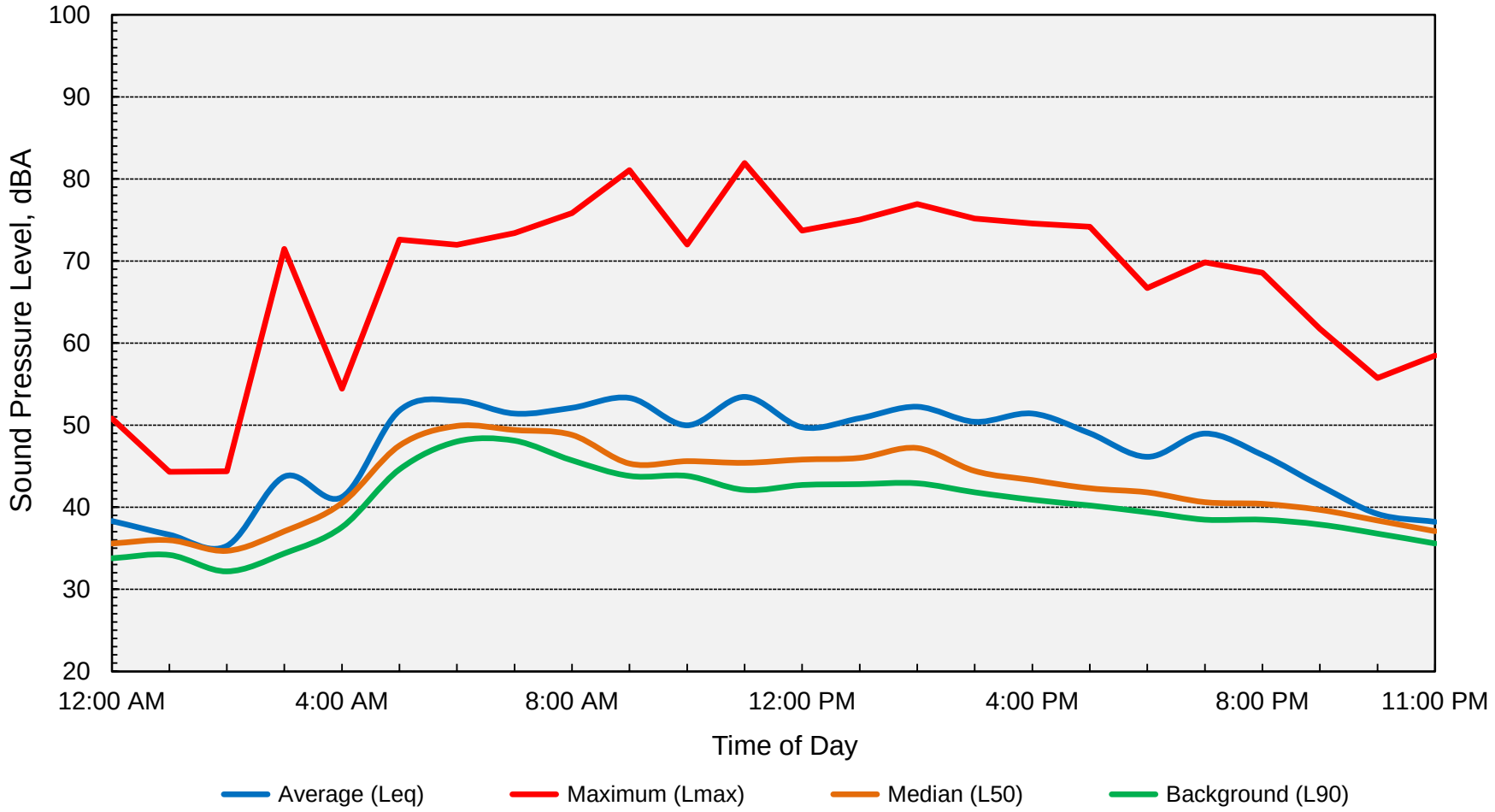
Appendix D-14
Long-Term Ambient Noise Monitoring Results - Site 20
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 54 dB

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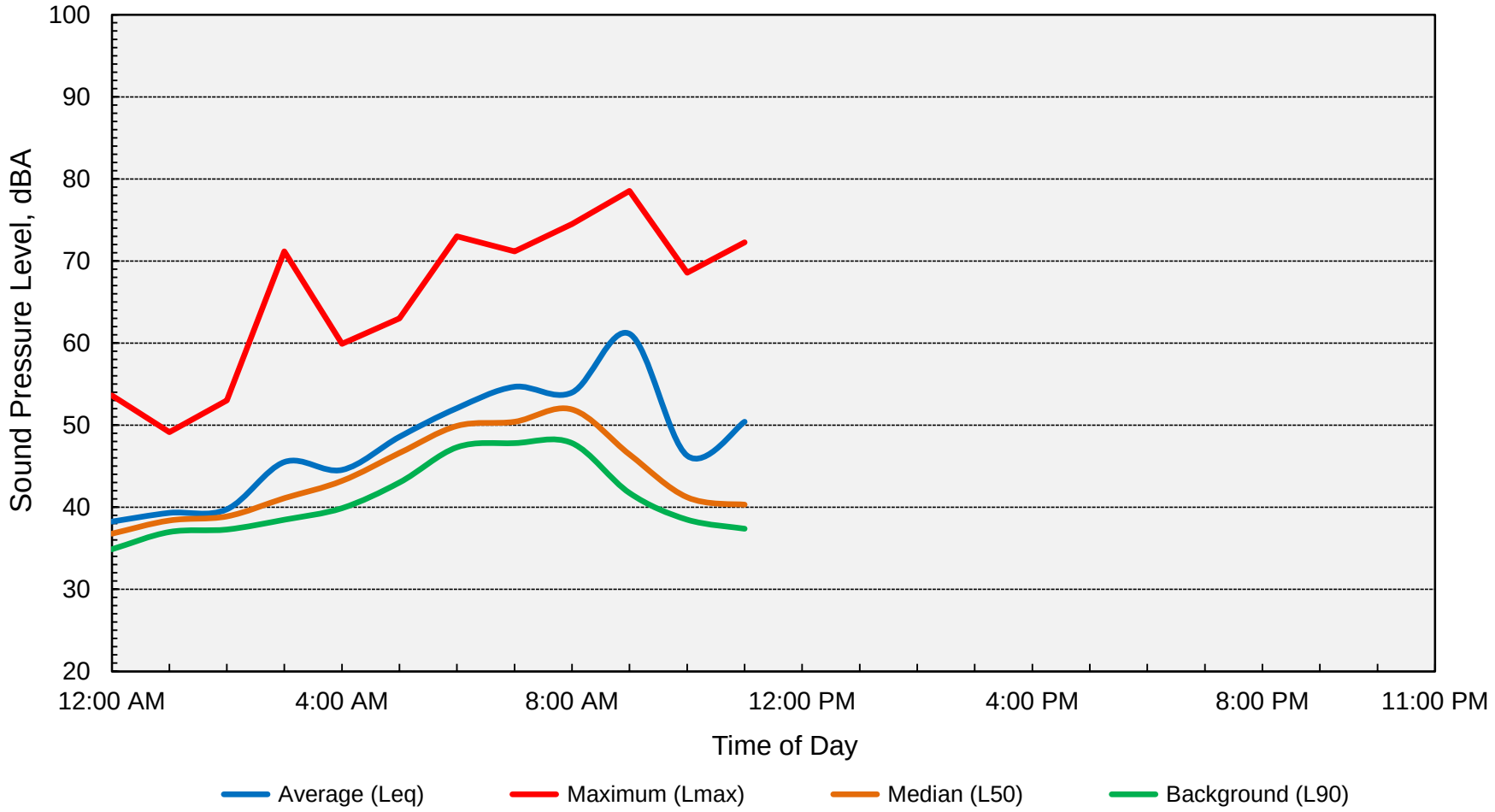
Appendix D-15
Long-Term Ambient Noise Monitoring Results - Site 20
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 56 dB

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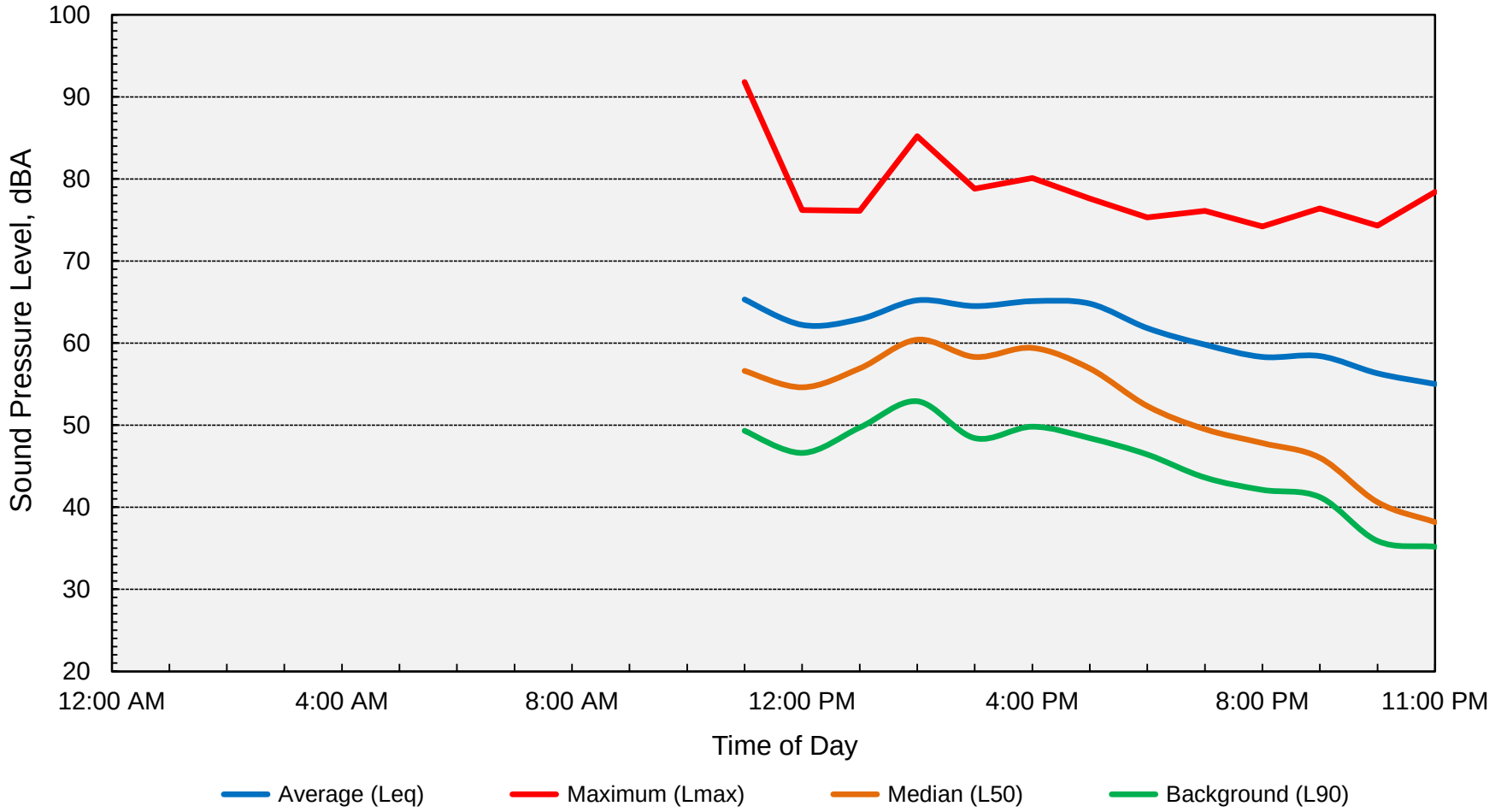
Appendix D-16
Long-Term Ambient Noise Monitoring Results - Site 30
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 64 dB

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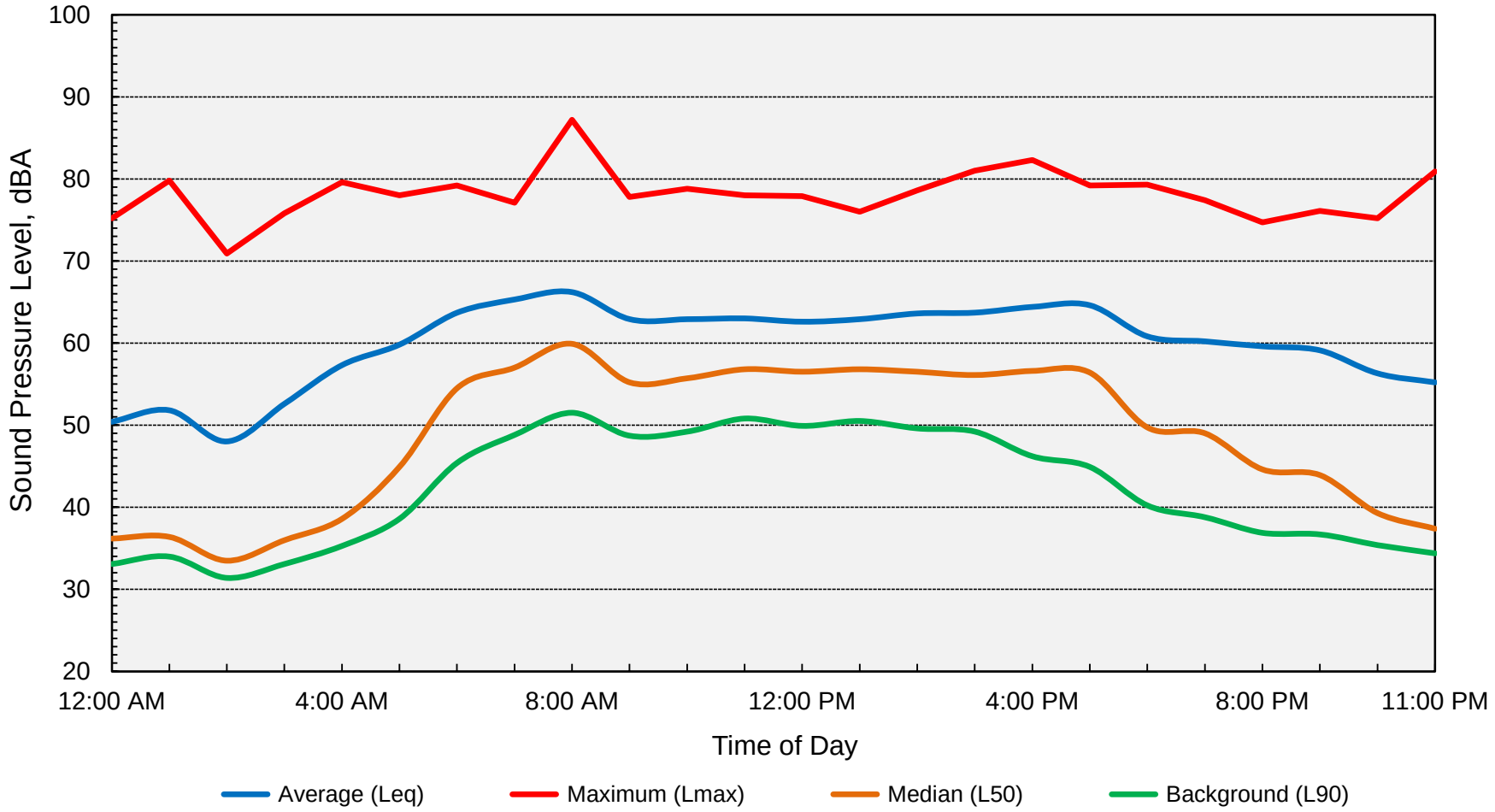
Appendix D-17
Long-Term Ambient Noise Monitoring Results - Site 30
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 65 dB

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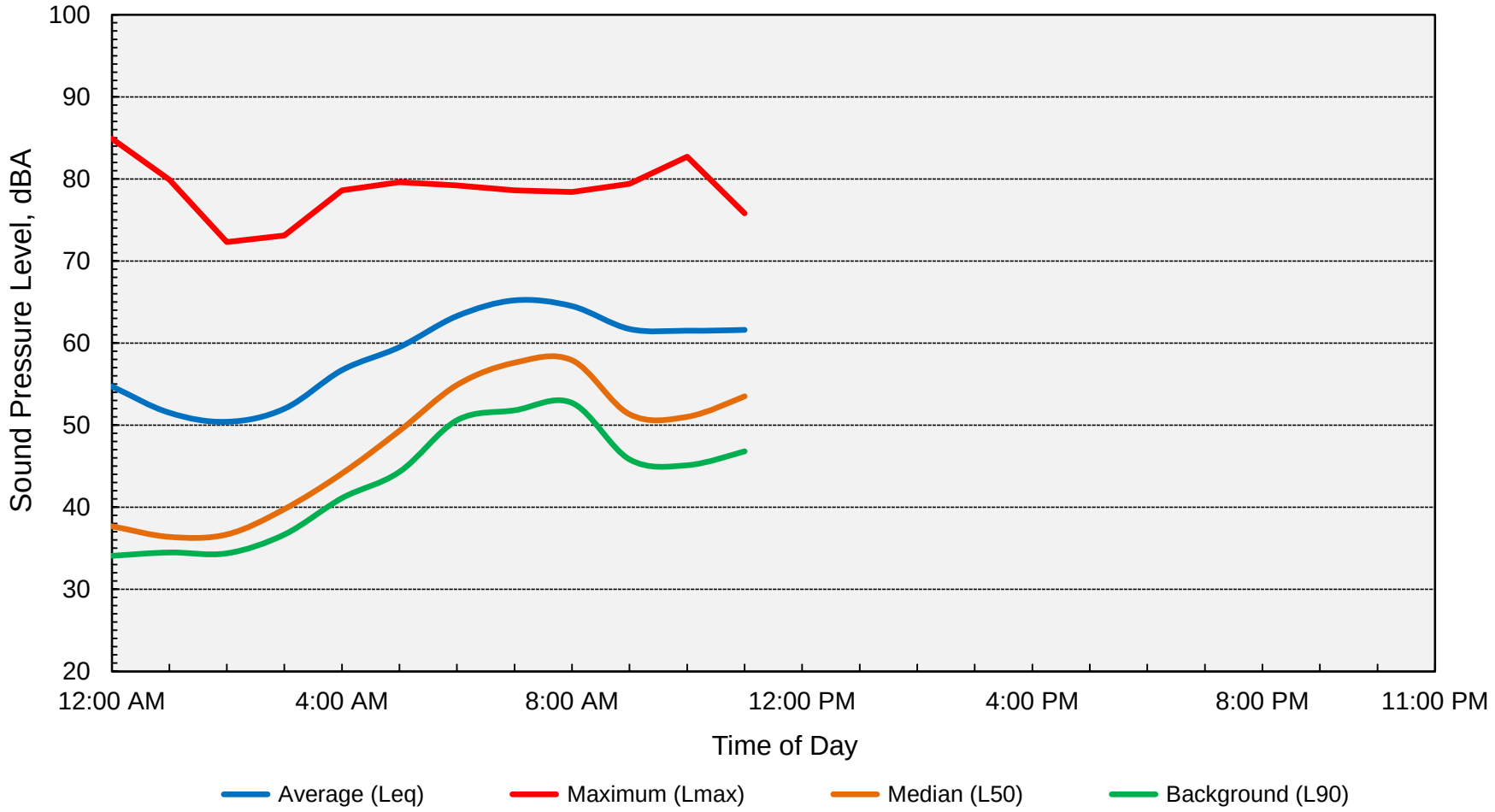
Appendix D-18
Long-Term Ambient Noise Monitoring Results - Site 30
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 66 dB

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Appendix E-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	20592	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	52590	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	42787	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	38984	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	28651	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	28651	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	30726	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	30726	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	30726	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	22871	80	20	2	3	45	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	22871	80	20	2	3	45	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	22871	80	20	2	3	45	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	22871	80	20	2	3	45	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	22265	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	22883	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	16984	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	16015	80	20	2	5	40	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	12395	80	20	2	5	45	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	6036	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	3411	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	6635	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	8369	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	3674	80	20	2	10	45	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	3674	80	20	2	10	45	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	3674	80	20	2	10	45	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	740	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	740	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	740	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	517	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	189	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	17891	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	15734	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	11092	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	5576	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	5797	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	5355	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	2158	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	2158	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	22960	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	3716	80	20	2	3	40	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	3716	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	3716	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	3716	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	5075	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	5075	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	4203	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	5423	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	4229	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	4473	80	20	2	5	45	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	27495	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	21595	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	14163	80	20	2	5	40	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	7718	80	20	2	5	45	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	6312	80	20	2	5	45	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	6317	80	20	2	5	45	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	3478	80	20	2	8	45	100	0

Appendix E-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	3478	80	20	2	8	45	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	3835	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	37516	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	16634	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	15214	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	10280	80	20	2	3	45	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	2890	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	1790	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	1790	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	7189	80	20	2	6	45	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	6143	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	6143	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	5758	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	5758	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	14720	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	14812	80	20	2	8	55	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	13140	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	13140	80	20	2	8	40	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	17459	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	16064	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	4635	80	20	2	3	25	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	4635	80	20	2	3	25	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	3061	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	3061	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	3737	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	2722	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	53849	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	17500	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	8802	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	12358	80	20	2	8	40	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	10414	80	20	2	8	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	10414	80	20	2	8	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	10414	80	20	2	8	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	10414	80	20	2	8	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	17060	80	20	2	8	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	12616	80	20	2	8	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	12616	80	20	2	8	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	14996	80	20	2	8	40	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	13030	80	20	2	8	45	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	13030	80	20	2	8	45	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	13030	80	20	2	8	45	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	13030	80	20	2	8	45	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	13030	80	20	2	8	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	13030	80	20	2	8	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	10478	80	20	2	8	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	10478	80	20	2	8	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	10478	80	20	2	8	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	10478	80	20	2	8	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	9976	80	20	2	8	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	9976	80	20	2	8	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	13306	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	4616	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	18668	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	9274	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	4618	80	20	2	3	45	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	4618	80	20	2	3	45	100	0

Appendix E-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	4618	80	20	2	3	45	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	656	80	20	2	10	45	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	656	80	20	2	10	45	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	656	80	20	2	10	45	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	656	80	20	2	10	45	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	2786	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	4373	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	4373	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	4373	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	6751	80	20	2	3	20	100	0
84	Mather Field Rd	US 50	Rockingham Dr	37755	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	37520	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	14857	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	6977	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	6593	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	1616	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	1616	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	15800	80	20	2	3	25	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	13573	80	20	2	3	25	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	10710	80	20	2	3	30	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	10710	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	36175	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	19881	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	40920	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	32415	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	25832	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	25832	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	21567	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	19069	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	54500	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	49500	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	34571	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	25811	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	28400	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	25811	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	21878	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	16894	80	20	2	5	50	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	11181	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	7752	80	20	2	5	50	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	5515	80	20	2	3	30	100	0
110	Watt Ave	US 50	Folsom Blvd	65242	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	3962	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	11200	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	14756	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	14756	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	15433	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	2490	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	2490	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	2490	80	20	2	5	40	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	9400	80	20	2	10	40	100	0
118	Zinfandel Dr	US 50	White Rock Rd	45228	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	17923	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	7595	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	7595	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	7595	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	2848	80	20	2	3	40	100	0

Appendix E-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	2848	80	20	2	3	40	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	2848	80	20	2	3	40	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	2848	80	20	2	3	40	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	0	80	20	2	6	0	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	0	80	20	2	6	0	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	6	0	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	6	0	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	0	80	20	2	6	0	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	6	0	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	6	0	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	6	0	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	6	0	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	0	80	20	2	6	0	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	0	80	20	2	6	0	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	0	80	20	2	6	0	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	0	80	20	2	6	0	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	0	80	20	2	6	0	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	0	80	20	2	6	0	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	0	80	20	2	6	0	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	6	0	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	0	80	20	2	6	0	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	0	80	20	2	6	0	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	0	80	20	2	6	0	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	6	0	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	0	80	20	2	6	0	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	6	0	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	0	80	20	2	6	0	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	0	80	20	2	6	0	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	0	80	20	2	6	0	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	0	80	20	2	6	0	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	0	80	20	2	6	0	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	0	80	20	2	6	0	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	0	80	20	2	6	0	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	0	80	20	2	6	0	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	0	80	20	2	6	0	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	0	80	20	2	6	0	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	0	80	20	2	6	0	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	0	80	20	2	6	0	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	0	80	20	2	6	0	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	0	80	20	2	6	0	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	0	80	20	2	6	0	100	0
313	Vineyard Rd	Jackson Road	New Collector	0	80	20	2	6	0	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	0	80	20	2	6	0	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	0	80	20	2	6	0	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	0	80	20	2	6	0	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	0	80	20	2	6	0	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	0	80	20	2	6	0	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	0	80	20	2	6	0	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	6	0	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	6	0	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	0	80	20	2	6	0	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	0	80	20	2	6	0	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	0	80	20	2	6	0	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	0	80	20	2	6	0	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	0	80	20	2	6	0	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	0	80	20	2	6	0	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	0	80	20	2	6	0	100	0

Appendix E-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	0	80	20	2	6	0	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	0	80	20	2	6	0	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	0	80	20	2	6	0	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	0	80	20	2	6	0	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	0	80	20	2	6	0	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	0	80	20	2	6	0	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	0	80	20	2	6	0	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	0	80	20	2	6	0	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	0	80	20	2	6	0	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	0	80	20	2	6	0	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	0	80	20	2	6	0	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	0	80	20	2	6	0	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	0	80	20	2	6	0	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	0	80	20	2	6	0	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	0	80	20	2	6	0	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	0	80	20	2	6	0	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	0	80	20	2	6	0	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	0	80	20	2	6	0	100	0
504	Street A	S Bridgewater Dr	Street B	0	80	20	2	6	0	100	0
505	Street B	S Bridgewater Dr	Street A	0	80	20	2	6	0	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	0	80	20	2	6	0	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	0	80	20	2	6	0	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	0	80	20	2	6	0	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	0	80	20	2	6	0	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	0	80	20	2	6	0	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	0	80	20	2	6	0	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	0	80	20	2	6	0	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	0	80	20	2	6	0	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	0	80	20	2	6	0	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	0	80	20	2	6	0	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	0	80	20	2	6	0	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	0	80	20	2	6	0	100	0

Appendix F-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	19040	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	69570	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	62320	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	54620	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	46720	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	41820	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	43950	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	44100	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	46030	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	36700	80	20	2	3	35	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	37970	80	20	2	3	35	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	30260	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	24480	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	30520	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	31710	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	24290	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	20280	80	20	2	5	40	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	12460	80	20	2	5	45	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	6120	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	3570	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	5790	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	8800	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	4150	80	20	2	10	45	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	4190	80	20	2	10	45	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	4190	80	20	2	10	45	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	1380	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	1380	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	1380	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	520	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	250	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	22160	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	21300	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	16680	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	21090	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	20920	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	10730	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	14440	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	9940	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	24700	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	1680	80	20	2	3	30	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	13940	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	12180	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	11740	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	16400	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	16060	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	9990	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	10530	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	8730	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	7120	80	20	2	5	45	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	30370	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	29080	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	21570	80	20	2	5	40	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	14120	80	20	2	5	45	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	11000	80	20	2	5	45	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	11170	80	20	2	5	45	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	10960	80	20	2	8	45	100	0

Appendix F-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	8800	80	20	2	8	45	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	4950	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	52320	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	21790	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	25580	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	20740	80	20	2	3	45	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	13050	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	15900	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	14200	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	7440	80	20	2	6	45	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	6830	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	6830	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	6320	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	6320	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	14370	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	15340	80	20	2	8	55	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	13350	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	13470	80	20	2	8	40	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	19610	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	17460	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	6960	80	20	2	3	25	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	13380	80	20	2	3	25	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	7810	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	3060	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	3990	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	3830	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	60850	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	21630	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	10850	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	31370	80	20	2	6	40	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	33910	80	20	2	6	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	33910	80	20	2	6	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	33910	80	20	2	6	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	33910	80	20	2	6	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	53240	80	20	2	6	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	44370	80	20	2	6	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	45710	80	20	2	6	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	41200	80	20	2	6	35	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	43250	80	20	2	6	35	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	42310	80	20	2	6	35	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	21430	80	20	2	6	35	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	21000	80	20	2	6	35	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	17370	80	20	2	6	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	16240	80	20	2	6	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	13130	80	20	2	8	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	13130	80	20	2	8	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	13130	80	20	2	8	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	13130	80	20	2	8	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	12000	80	20	2	8	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	12000	80	20	2	8	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	14890	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	4870	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	22500	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	29910	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	29100	80	20	2	3	40	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	23640	80	20	2	3	40	100	0

Appendix F-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	19960	80	20	2	3	40	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	1330	80	20	2	10	45	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	1330	80	20	2	10	45	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	1330	80	20	2	10	45	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	1330	80	20	2	10	45	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	2810	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	4360	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	4360	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	4300	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	5090	80	20	2	3	15	100	0
84	Mather Field Rd	US 50	Rockingham Dr	37760	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	43180	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	15150	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	11570	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	9230	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	33240	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	29420	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	13180	80	20	2	3	25	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	9460	80	20	2	3	25	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	6700	80	20	2	3	30	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	26740	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	35230	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	31260	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	60150	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	48090	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	31300	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	30480	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	23030	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	24280	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	53890	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	49760	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	35130	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	26840	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	28750	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	26110	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	22430	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	17850	80	20	2	5	50	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	12800	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	8610	80	20	2	5	50	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	5000	80	20	2	3	30	100	0
110	Watt Ave	US 50	Folsom Blvd	75330	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	3790	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	10210	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	14730	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	14980	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	15850	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	2470	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	2470	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	2470	80	20	2	5	40	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	9600	80	20	2	10	40	100	0
118	Zinfandel Dr	US 50	White Rock Rd	42330	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	17250	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	6290	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	6290	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	6290	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	2280	80	20	2	3	40	100	0

Appendix F-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	2280	80	20	2	3	40	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	2280	80	20	2	3	40	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	2280	80	20	2	3	40	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	0	80	20	2	0	0	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	0	80	20	2	0	0	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	0	0	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	0	0	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	0	80	20	2	0	0	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	0	0	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	0	0	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	0	0	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	0	0	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	0	80	20	2	0	0	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	0	80	20	2	0	0	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	0	80	20	2	0	0	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	0	80	20	2	0	0	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	0	80	20	2	0	0	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	0	80	20	2	0	0	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	0	80	20	2	0	0	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	0	0	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	0	80	20	2	0	0	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	0	80	20	2	0	0	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	0	80	20	2	0	0	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	0	0	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	0	80	20	2	0	0	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	0	0	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	0	80	20	2	0	0	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	0	80	20	2	0	0	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	13880	80	20	2	3	40	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	17610	80	20	2	3	40	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	25020	80	20	2	3	40	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	6150	80	20	2	3	40	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	24160	80	20	2	3	40	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	26230	80	20	2	3	40	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	17680	80	20	2	3	40	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	17670	80	20	2	3	40	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	2080	80	20	2	3	35	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	6390	80	20	2	3	35	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	3520	80	20	2	3	35	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	5140	80	20	2	3	35	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	11930	80	20	2	3	35	100	0
313	Vineyard Rd	Jackson Road	New Collector	20980	80	20	2	3	40	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	19780	80	20	2	3	40	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	17210	80	20	2	3	40	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	8780	80	20	2	3	40	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	30430	80	20	2	3	40	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	23590	80	20	2	3	40	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	22610	80	20	2	3	40	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	870	80	20	2	3	25	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	690	80	20	2	3	25	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	2580	80	20	2	3	25	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	1840	80	20	2	3	25	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	1880	80	20	2	3	25	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	3050	80	20	2	3	25	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	2900	80	20	2	3	25	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	3320	80	20	2	3	35	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0

Appendix F-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	0	80	20	2	0	0	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	0	80	20	2	0	0	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	0	80	20	2	0	0	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	0	80	20	2	0	0	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	0	80	20	2	0	0	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	0	80	20	2	0	0	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	0	80	20	2	0	0	100	0
504	Street A	S Bridgewater Dr	Street B	0	80	20	2	0	0	100	0
505	Street B	S Bridgewater Dr	Street A	0	80	20	2	0	0	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	0	80	20	2	0	0	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	0	80	20	2	0	0	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	0	80	20	2	0	0	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	0	80	20	2	0	0	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	0	80	20	2	0	0	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	0	80	20	2	0	0	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	0	80	20	2	0	0	100	0

Appendix G-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	27240	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	66770	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	52940	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	62600	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	47100	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	45320	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	51270	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	52070	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	52020	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	52190	80	20	2	3	40	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	52220	80	20	2	3	45	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	52390	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	52410	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	44990	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	42300	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	29810	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	16370	80	20	2	5	35	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	14540	80	20	2	5	35	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	8500	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	8010	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	21870	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	37550	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	42770	80	20	2	10	40	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	42630	80	20	2	10	40	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	33520	80	20	2	10	40	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	4620	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	4620	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	4710	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	3670	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	3300	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	24130	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	25170	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	27840	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	40860	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	29970	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	17980	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	9230	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	9430	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	48390	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	4150	80	20	2	3	40	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	11290	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	11840	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	11840	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	11960	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	11960	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	4670	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	5970	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	2520	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	2960	80	20	2	5	40	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	42720	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	37240	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	29890	80	20	2	5	35	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	9760	80	20	2	5	35	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	10420	80	20	2	5	35	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	30290	80	20	2	5	35	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	19680	80	20	2	8	40	100	0

Appendix G-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	11650	80	20	2	8	45	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	14020	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	50520	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	23040	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	20400	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	13770	80	20	2	3	40	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	5770	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	2140	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	2110	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	39480	80	20	2	6	55	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	58610	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	44930	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	34170	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	43400	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	33180	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	42840	80	20	2	8	50	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	36290	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	36380	80	20	2	8	45	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	40570	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	36110	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	3980	80	20	2	3	25	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	4970	80	20	2	3	25	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	7060	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	7180	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	8460	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	22520	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	67180	80	20	2	3	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	48380	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	35840	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	30450	80	20	2	8	35	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	30980	80	20	2	8	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	40320	80	20	2	8	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	34630	80	20	2	8	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	32480	80	20	2	8	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	38240	80	20	2	8	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	31080	80	20	2	8	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	31040	80	20	2	8	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	33920	80	20	2	8	40	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	23120	80	20	2	8	45	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	23190	80	20	2	8	45	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	23000	80	20	2	8	45	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	23000	80	20	2	8	45	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	23010	80	20	2	8	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	23010	80	20	2	8	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	23020	80	20	2	8	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	23020	80	20	2	8	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	22990	80	20	2	8	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	23020	80	20	2	8	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	21910	80	20	2	8	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	22630	80	20	2	8	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	31730	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	3290	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	21620	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	13290	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	5940	80	20	2	3	45	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	6100	80	20	2	3	45	100	0

Appendix G-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	6100	80	20	2	3	45	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	10210	80	20	2	10	45	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	10210	80	20	2	10	45	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	10210	80	20	2	10	45	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	10150	80	20	2	10	45	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	20760	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	14470	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	14470	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	14510	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	8260	80	20	2	3	20	100	0
84	Mather Field Rd	US 50	Rockingham Dr	65530	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	71740	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	15810	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	7280	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	10630	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	1930	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	1930	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	30190	80	20	2	3	40	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	26590	80	20	2	3	40	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	22820	80	20	2	3	30	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	24070	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	43320	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	31970	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	68980	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	67470	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	61290	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	64380	80	20	2	5	45	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	61240	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	55580	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	64250	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	61340	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	38330	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	49020	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	54190	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	54110	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	34760	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	30000	80	20	2	5	45	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	28280	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	15030	80	20	2	5	45	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	7900	80	20	2	3	40	100	0
110	Watt Ave	US 50	Folsom Blvd	98040	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	5420	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	18300	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	31760	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	40310	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	34470	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	56320	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	22050	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	15870	80	20	2	5	50	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	53780	80	20	2	10	55	100	0
118	Zinfandel Dr	US 50	White Rock Rd	82790	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	40800	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	32660	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	32660	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	32660	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	14770	80	20	2	3	40	100	0

Appendix G-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	12590	80	20	2	3	40	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	0	80	20	2	3	0	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	12590	80	20	2	3	40	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	15910	80	20	2	6	35	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	9360	80	20	2	6	35	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	22200	80	20	2	3	40	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	16570	80	20	2	3	40	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	7380	80	20	2	3	50	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	31010	80	20	2	3	40	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	19350	80	20	2	3	40	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	3870	80	20	2	3	35	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	10250	80	20	2	3	40	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	70390	80	20	2	3	40	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	72220	80	20	2	3	40	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	46590	80	20	2	3	40	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	55520	80	20	2	3	40	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	37890	80	20	2	3	40	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	32060	80	20	2	3	40	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	34220	80	20	2	3	40	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	20780	80	20	2	3	40	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	15510	80	20	2	3	40	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	5630	80	20	2	3	25	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	9560	80	20	2	3	35	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	9030	80	20	2	3	35	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	1500	80	20	2	3	40	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	24000	80	20	2	3	40	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	8220	80	20	2	3	40	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	0	80	20	2	0	0	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	7380	80	20	2	3	45	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	7380	80	20	2	3	45	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	0	80	20	2	0	0	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	0	80	20	2	0	0	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	0	80	20	2	0	0	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	0	80	20	2	0	0	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	0	80	20	2	0	0	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	0	80	20	2	0	0	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	0	80	20	2	0	0	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	0	80	20	2	0	0	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	0	80	20	2	0	0	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	0	80	20	2	0	0	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	0	80	20	2	0	0	100	0
313	Vineyard Rd	Jackson Road	New Collector	0	80	20	2	0	0	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	0	80	20	2	0	0	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	0	80	20	2	0	0	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	0	80	20	2	0	0	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	0	80	20	2	0	0	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	0	80	20	2	0	0	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	0	80	20	2	0	0	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	0	80	20	2	0	0	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	0	80	20	2	0	0	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	0	80	20	2	0	0	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	0	80	20	2	0	0	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	0	80	20	2	0	0	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	0	80	20	2	0	0	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0

Appendix G-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	0	80	20	2	0	0	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	0	80	20	2	0	0	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	0	80	20	2	0	0	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	0	80	20	2	0	0	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	0	80	20	2	0	0	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	0	80	20	2	0	0	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	0	80	20	2	0	0	100	0
504	Street A	S Bridgewater Dr	Street B	0	80	20	2	0	0	100	0
505	Street B	S Bridgewater Dr	Street A	0	80	20	2	0	0	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	0	80	20	2	0	0	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	0	80	20	2	0	0	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	0	80	20	2	0	0	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	0	80	20	2	0	0	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	0	80	20	2	0	0	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	0	80	20	2	0	0	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	0	80	20	2	0	0	100	0

Appendix H-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	26040	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	66770	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	54160	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	66730	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	50810	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	49070	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	57310	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	57380	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	57330	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	54820	80	20	2	3	35	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	54850	80	20	2	3	35	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	55020	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	55160	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	39050	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	37850	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	27060	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	17030	80	20	2	5	35	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	15660	80	20	2	5	35	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	9960	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	9970	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	25980	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	40130	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	40990	80	20	2	10	40	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	42960	80	20	2	10	40	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	33000	80	20	2	10	40	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	11280	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	11900	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	14270	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	10280	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	5080	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	25600	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	26700	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	28700	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	42650	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	30800	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	46100	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	20950	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	21750	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	49790	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	3740	80	20	2	3	30	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	12620	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	19490	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	19990	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	29460	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	29460	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	8710	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	10090	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	4280	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	5310	80	20	2	5	40	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	44850	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	39370	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	31950	80	20	2	5	35	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	13630	80	20	2	5	35	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	15150	80	20	2	5	35	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	23480	80	20	2	5	35	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	23230	80	20	2	8	40	100	0

Appendix H-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	17110	80	20	2	8	40	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	18160	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	51630	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	23960	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	21670	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	17510	80	20	2	3	40	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	3520	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	3580	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	3580	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	42130	80	20	2	6	55	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	60520	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	49920	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	35020	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	40390	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	31290	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	45220	80	20	2	8	50	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	37700	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	37720	80	20	2	8	45	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	43480	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	38780	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	6310	80	20	2	3	35	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	7610	80	20	2	3	35	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	3660	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	3780	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	7920	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	22250	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	68310	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	54570	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	46340	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	31930	80	20	2	6	35	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	33540	80	20	2	6	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	42620	80	20	2	6	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	37410	80	20	2	6	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	35050	80	20	2	6	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	42830	80	20	2	6	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	32910	80	20	2	6	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	36410	80	20	2	6	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	36950	80	20	2	6	35	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	30380	80	20	2	6	35	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	30450	80	20	2	6	35	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	30260	80	20	2	6	35	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	30260	80	20	2	6	35	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	30300	80	20	2	6	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	30300	80	20	2	6	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	50080	80	20	2	6	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	37650	80	20	2	6	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	32060	80	20	2	6	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	29810	80	20	2	6	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	29700	80	20	2	6	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	31410	80	20	2	6	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	40650	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	3070	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	23270	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	15790	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	7420	80	20	2	3	40	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	7580	80	20	2	3	40	100	0

Appendix H-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	7580	80	20	2	3	40	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	17090	80	20	2	10	40	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	17140	80	20	2	10	40	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	19340	80	20	2	10	40	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	30570	80	20	2	10	40	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	25190	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	18330	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	18330	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	18440	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	8900	80	20	2	3	15	100	0
84	Mather Field Rd	US 50	Rockingham Dr	67890	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	75720	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	13540	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	8260	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	11460	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	3480	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	3480	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	40120	80	20	2	3	40	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	37220	80	20	2	3	40	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	35350	80	20	2	3	40	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	28120	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	43930	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	35660	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	69480	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	69360	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	61160	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	63730	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	62070	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	56980	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	65710	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	62760	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	39640	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	50650	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	61210	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	68380	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	47630	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	34940	80	20	2	5	45	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	30320	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	17790	80	20	2	5	45	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	8290	80	20	2	3	40	100	0
110	Watt Ave	US 50	Folsom Blvd	98250	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	5830	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	18740	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	33610	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	42450	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	35300	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	57610	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	23670	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	17170	80	20	2	5	50	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	56440	80	20	2	10	55	100	0
118	Zinfandel Dr	US 50	White Rock Rd	87500	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	46350	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	36300	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	36300	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	36300	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	27540	80	20	2	3	40	100	0

Appendix H-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	20430	80	20	2	3	35	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	18760	80	20	2	3	35	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	16170	80	20	2	3	35	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	16970	80	20	2	6	35	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	9130	80	20	2	6	35	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	22050	80	20	2	3	40	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	16850	80	20	2	3	40	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	10000	80	20	2	3	50	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	36910	80	20	2	3	40	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	19120	80	20	2	3	40	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	7820	80	20	2	3	35	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	16240	80	20	2	3	40	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	71410	80	20	2	3	40	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	74280	80	20	2	3	40	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	50800	80	20	2	3	40	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	65590	80	20	2	3	40	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	42860	80	20	2	3	40	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	36830	80	20	2	3	40	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	37010	80	20	2	3	40	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	23230	80	20	2	3	40	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	13890	80	20	2	3	40	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	6860	80	20	2	3	25	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	9810	80	20	2	3	35	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	9380	80	20	2	3	35	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	1740	80	20	2	3	40	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	30920	80	20	2	3	40	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	8670	80	20	2	3	40	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	17020	80	20	2	3	45	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	0	80	20	2	0	0	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	0	80	20	2	0	0	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	0	80	20	2	0	0	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	0	80	20	2	0	0	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	0	80	20	2	0	0	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	0	80	20	2	0	0	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	0	80	20	2	0	0	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	0	80	20	2	0	0	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	0	80	20	2	0	0	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	0	80	20	2	0	0	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	0	80	20	2	0	0	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	0	80	20	2	0	0	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	0	80	20	2	0	0	100	0
313	Vineyard Rd	Jackson Road	New Collector	0	80	20	2	0	0	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	0	80	20	2	0	0	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	0	80	20	2	0	0	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	0	80	20	2	0	0	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	0	80	20	2	0	0	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	0	80	20	2	0	0	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	0	80	20	2	0	0	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	0	80	20	2	0	0	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	0	80	20	2	0	0	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	0	80	20	2	0	0	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	0	80	20	2	0	0	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	0	80	20	2	0	0	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	0	80	20	2	0	0	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	5840	80	20	2	3	25	100	0

Appendix H-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	2000	80	20	2	3	25	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	1680	80	20	2	3	25	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	1270	80	20	2	3	25	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	1870	80	20	2	3	25	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	17980	80	20	2	3	25	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	2420	80	20	2	3	25	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	9410	80	20	2	3	25	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	3730	80	20	2	3	25	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	1110	80	20	2	3	25	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	3260	80	20	2	3	40	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	10380	80	20	2	3	40	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	11960	80	20	2	3	40	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	11950	80	20	2	3	40	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	9620	80	20	2	3	40	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	1880	80	20	2	3	25	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	2020	80	20	2	3	25	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	3370	80	20	2	3	25	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	2210	80	20	2	3	25	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	2230	80	20	2	3	25	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	5010	80	20	2	3	25	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	4190	80	20	2	3	25	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	1210	80	20	2	3	25	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	4030	80	20	2	3	25	100	0
504	Street A	S Bridgewater Dr	Street B	1900	80	20	2	3	25	100	0
505	Street B	S Bridgewater Dr	Street A	1390	80	20	2	3	25	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	2120	80	20	2	3	25	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	7890	80	20	2	3	25	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	2450	80	20	2	3	25	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	4520	80	20	2	3	25	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	15880	80	20	2	3	25	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	8220	80	20	2	3	25	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	5670	80	20	2	3	25	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	2870	80	20	2	3	25	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	9080	80	20	2	3	25	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	7130	80	20	2	3	25	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	6510	80	20	2	3	25	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	6900	80	20	2	3	25	100	0

Appendix I-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	24460	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	84620	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	76770	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	73340	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	62160	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	58600	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	53770	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	54090	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	57490	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	49210	80	20	2	3	35	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	51610	80	20	2	3	35	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	47250	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	43190	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	51950	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	51660	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	36900	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	18310	80	20	2	5	35	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	14680	80	20	2	5	35	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	9620	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	9590	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	33390	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	50360	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	43250	80	20	2	10	40	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	42870	80	20	2	10	40	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	31900	80	20	2	10	40	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	11220	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	11620	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	13130	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	9110	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	4530	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	27900	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	28360	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	30940	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	52900	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	33660	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	40490	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	30740	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	25360	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	47190	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	5600	80	20	2	3	30	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	26970	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	25900	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	25400	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	36910	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	36220	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	12520	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	13080	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	8360	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	9180	80	20	2	5	40	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	47560	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	43690	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	36490	80	20	2	5	35	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	12010	80	20	2	5	35	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	13280	80	20	2	5	35	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	40200	80	20	2	5	35	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	26070	80	20	2	8	40	100	0

Appendix I-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	19920	80	20	2	8	40	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	17090	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	56000	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	27610	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	31090	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	27770	80	20	2	3	40	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	24240	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	24260	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	21800	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	41130	80	20	2	6	55	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	57810	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	47640	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	37030	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	41700	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	30160	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	43760	80	20	2	8	50	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	36840	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	36890	80	20	2	8	45	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	45430	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	40370	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	13820	80	20	2	3	40	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	20580	80	20	2	3	40	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	11760	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	7720	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	10010	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	22460	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	71420	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	47100	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	39710	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	35860	80	20	2	6	35	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	44100	80	20	2	6	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	61980	80	20	2	6	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	57690	80	20	2	6	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	55370	80	20	2	6	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	66380	80	20	2	6	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	56540	80	20	2	6	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	57880	80	20	2	6	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	56220	80	20	2	6	35	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	59380	80	20	2	6	35	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	59660	80	20	2	6	35	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	41550	80	20	2	6	35	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	41200	80	20	2	6	35	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	38910	80	20	2	6	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	39330	80	20	2	6	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	62220	80	20	2	6	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	46480	80	20	2	6	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	41360	80	20	2	6	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	37600	80	20	2	6	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	37120	80	20	2	6	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	37910	80	20	2	6	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	45290	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	4830	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	32130	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	42310	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	50960	80	20	2	3	40	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	47140	80	20	2	3	40	100	0

Appendix I-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	49820	80	20	2	3	40	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	31900	80	20	2	10	40	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	29740	80	20	2	10	40	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	31570	80	20	2	10	40	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	39820	80	20	2	10	40	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	33580	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	14820	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	14820	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	14850	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	6410	80	20	2	3	15	100	0
84	Mather Field Rd	US 50	Rockingham Dr	63760	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	73260	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	16910	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	14330	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	13680	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	47790	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	46860	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	22760	80	20	2	3	40	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	20690	80	20	2	3	40	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	18090	80	20	2	3	40	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	36350	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	47170	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	40280	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	81880	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	70930	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	59970	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	60090	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	59400	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	59670	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	63100	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	60460	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	37470	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	49770	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	53890	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	63690	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	43880	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	33930	80	20	2	5	45	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	30370	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	18270	80	20	2	5	45	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	10620	80	20	2	3	40	100	0
110	Watt Ave	US 50	Folsom Blvd	106480	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	5490	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	18020	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	31090	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	39540	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	35570	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	55810	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	21040	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	16530	80	20	2	5	50	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	56000	80	20	2	10	55	100	0
118	Zinfandel Dr	US 50	White Rock Rd	81540	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	42520	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	33450	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	33450	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	33450	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	22250	80	20	2	3	40	100	0

Appendix I-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	16860	80	20	2	3	35	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	17200	80	20	2	3	35	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	16970	80	20	2	3	35	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	27820	80	20	2	6	35	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	17910	80	20	2	6	35	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	21510	80	20	2	3	40	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	15790	80	20	2	3	40	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	20970	80	20	2	3	50	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	31560	80	20	2	3	40	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	18670	80	20	2	3	40	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	9730	80	20	2	3	35	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	19200	80	20	2	3	40	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	69710	80	20	2	3	40	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	72320	80	20	2	3	40	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	49960	80	20	2	3	40	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	59540	80	20	2	3	40	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	37840	80	20	2	3	40	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	32000	80	20	2	3	40	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	33340	80	20	2	3	40	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	19280	80	20	2	3	40	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	14180	80	20	2	3	40	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	6150	80	20	2	3	25	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	9060	80	20	2	3	35	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	8210	80	20	2	3	35	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	10060	80	20	2	3	40	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	31920	80	20	2	3	40	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	8590	80	20	2	3	40	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	37180	80	20	2	3	45	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	27160	80	20	2	3	45	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	36990	80	20	2	3	45	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	63170	80	20	2	3	45	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	33150	80	20	2	3	40	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	39470	80	20	2	3	40	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	40970	80	20	2	3	40	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	30030	80	20	2	3	40	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	32580	80	20	2	3	40	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	7450	80	20	2	3	35	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	10940	80	20	2	3	35	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	4730	80	20	2	3	35	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	13510	80	20	2	3	35	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	19230	80	20	2	3	35	100	0
313	Vineyard Rd	Jackson Road	New Collector	31060	80	20	2	3	40	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	26270	80	20	2	3	40	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	25590	80	20	2	3	40	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	14340	80	20	2	3	40	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	41410	80	20	2	3	40	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	34670	80	20	2	3	40	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	39110	80	20	2	3	40	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	950	80	20	2	3	25	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	850	80	20	2	3	25	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	2730	80	20	2	3	25	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	3640	80	20	2	3	25	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	2860	80	20	2	3	25	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	3360	80	20	2	3	25	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	3270	80	20	2	3	25	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	7820	80	20	2	3	35	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	4570	80	20	2	3	25	100	0

Appendix I-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	1550	80	20	2	3	25	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	1840	80	20	2	3	25	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	1290	80	20	2	3	25	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	2630	80	20	2	3	25	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	20070	80	20	2	3	25	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	4440	80	20	2	3	25	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	10100	80	20	2	3	25	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	4370	80	20	2	3	25	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	850	80	20	2	3	25	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	31510	80	20	2	3	40	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	10660	80	20	2	3	40	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	10340	80	20	2	3	40	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	10250	80	20	2	3	40	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	7370	80	20	2	3	40	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	1590	80	20	2	3	25	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	1740	80	20	2	3	25	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	3600	80	20	2	3	25	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	1570	80	20	2	3	25	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	1770	80	20	2	3	25	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	5220	80	20	2	3	25	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	4620	80	20	2	3	25	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	1240	80	20	2	3	25	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	4320	80	20	2	3	25	100	0
504	Street A	S Bridgewater Dr	Street B	1800	80	20	2	3	25	100	0
505	Street B	S Bridgewater Dr	Street A	1440	80	20	2	3	25	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	1850	80	20	2	3	25	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	7640	80	20	2	3	25	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	2480	80	20	2	3	25	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	4440	80	20	2	3	25	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	16870	80	20	2	3	25	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	7670	80	20	2	3	25	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	6350	80	20	2	3	25	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	3140	80	20	2	3	25	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	8910	80	20	2	3	25	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	6860	80	20	2	3	25	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	7130	80	20	2	3	25	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	8770	80	20	2	3	25	100	0

Acoustical Testing Plan for Mather Airport

Residential Sound Insulation Program
ALUC Exception for Units in the 60-65 dB CNEL Contour

HMMH Report No. 311390.002

July 2022

Prepared for:
Sacramento County Department of Airports

Prepared by:
Gene Reindel

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1 Introduction

The Sacramento County's Airport Land Use Compatibility Plan and General Plan (Noise Element, NO-3) prohibits residential development inside the Community Noise Equivalent Level (CNEL) 60 dB contour as determined through a theoretical capacity analysis, which the Sacramento County Department of Airports (SCDA) updates periodically. With the recent update to the Mather Airport theoretical capacity analysis, the proposed West Jackson Master Plan Alternative 1C development would include residential properties within the CNEL 60 to 65 dB contour.

For federally funded airport residential sound insulation programs, the Federal Aviation Administration (FAA) guidelines suggest assigning an exterior level of CNEL 65 dB to all parcels within the CNEL 60 to 65 dB contour. To ensure that the interior CNEL is below 45 dB, with an appropriate margin of error, we would specify a design goal of 25 dB noise level reduction (NLR), which can be achieved with all structural façade elements having a minimum rating of Outdoor-Indoor Transmission Class (OITC) 25.

In accordance with Appendix R "Noise Compatibility Planning/Projects" of FAA Order 5100.38D Airport Improvement Program Handbook[1] (AIP Handbook), SCDA requires an Acoustical Testing Plan (ATP) and testing in accordance with the ATP to ensure the residential properties constructed within the CNEL 60 to 65 dB contour have a minimum average NLR of 25 dB.

The ATP conforms to "best-practices" utilized by industry professionals for over thirty years in sound insulation programs across the nation and includes acoustical testing methods for determining interior noise levels that are outlined in the FAA's adopted guidance[2] per Advisory Circular 150/5000-9A, *Announcement of Availability – Report No. DOT/FAA/PP/92-5, Guidelines for the Sound Insulation of Residents Exposed to Aircraft Noise*, issued in 1992[3]. The various steps outlined in the ATP also comply with requirements set forth in Table R-4 "Pre- and Post-Testing Criteria for Noise Insulation Projects" of Appendix R in the AIP Handbook.

The following sections provide detailed descriptions of the key components in implementing the ATP.

[1] FAA Order 5100.38D "Airport Improvement Program Handbook", Appendix R "Noise Compatibility Planning/Projects", effective date September 30, 2014.

[2] "Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations", which is attached to FAA Advisory Circular AC150/5000-9a

[3] FAA released an update in June 2022 for which there are modified testing requirements not included in this ATP.

2 Acoustical Testing

The acoustical testing program is to validate that the residential units constructed within the 60 to 65 dB CNEL contour achieves a minimum of 25 dB NLR to provide for appropriate interior habitable spaces from aircraft noise levels.

2.1 Measurement Methodology

Sound insulation measurements have historically been conducted using either an artificial noise source or actual aircraft noise events. An artificial noise source allows measurements to be made at the properties during a brief measurement period, independent from the reliance on aircraft over flights and without the need for multiple sound level meters to simultaneously measure aircraft noise in all habitable rooms.[4] The testing procedure described herein has been developed to accurately measure outdoor-to-indoor noise level reduction (NLR) of rooms.

The equipment required to complete the sound insulation measurements includes:

- Integrating sound level meter (with spectrum logging capability)[5]
- Loudspeaker (active or passive)
- Power amplifier (may be integrated with speaker)
- Signal generator (pink noise or simulated via graphic equalizer)
- Monopod for microphone
- Speaker tripod
- Power cables
- Digital camera
- Measuring tape

The testing procedures generally follow those outlined in the American Society for Testing and Materials (ASTM) Standard E966[6]. The methodology also conforms to good practice in sound insulation programs and the efficiency and flexibility of the testing procedures are enhanced using methods and theories from other sources such as Leo Beranek's "Noise and Vibration Control", which are applied in supplement to the ASTM standard to achieve the same level of overall accuracy in the testing process.

2.2 Measurement Procedures

The acoustical consultant shall use a field kit that includes a signal generator and public announcement (PA) type loudspeaker to produce a noise source of equal energy in each octave band or one-third octave band (referred to in the acoustics field as "pink noise") at an approximate overall sound level of 90 to 100 dB as measured at the exterior building façade under test.

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[4] Defined in the AIP Handbook as living, sleeping, eating or cooking areas. Additional discussion is provided in Section **Error! Reference source not found.**

[5] Either octave band or one-third octave band capability is acceptable. This ATP provides methodology for either instrumentation.

[6] ASTM E966-10$^{\varepsilon 1}$ "Standard Guide for Field Measurements of Airborne Sound Attenuation of Building Facades and Façade Elements", with editorial changes in April 2011.

The loudspeaker will be positioned either on a tripod or placed on the ground unless there is compelling evidence that the roof/ceiling element of the room under test has the potential to contribute significantly to the interior sound level from aircraft operations. Examples of compelling reasons include: existence of weak elements within the roof/ceiling structure, such as sky lights; relatively light weight materials to make up the roof structure; limited airspace between the roof and ceiling; and limited or no use of insulation in the space between the roof and ceiling. In these instances, the speaker will be lifted above the roofline of the home to obtain both exterior façade and roof exposure through the use of an industrial grade hoisting device, such as a bucket truck, scissors lift or mobile crane.

The loudspeaker is directed at the room under test as required in the ASTM Standard E966, typically at a 45-degree incidence angle to minimize the application of adjustments to the data. The goal is to obtain a uniform sound field exposure of the entire exterior surface (façade) of interest, whether a single room or multiple rooms along the same facade. To obtain a uniform sound field along a wider area (testing of multiple rooms along the same façade) requires the speaker to be a greater distance from the façade at an increased volume as compared to the measurement of a single room.

The loudspeaker must be positioned such that the sound field at the façade of the room under test is as uniform as possible (± 2 dB along the façade of measurement) at a 45-degree angle of incidence. Corner rooms with two exterior facades should have both facades exposed simultaneously, with the direction of the speaker aimed at the center of only one of the facades. If only one façade is tested, it must be the least performing façade in terms of potential noise reduction. From the center of the façade, the perpendicular and the parallel distance to the speaker must be roughly equal.

At times the consultant may request that the roof/ceiling structure be tested to determine whether it is a major sound transmission path into a particular room. When measuring the acoustical performance of the roof/ceiling structure, the loudspeaker is placed over the roof such that the other structural elements (i.e., doors, windows, walls, etc.) are shielded from the sound field as much as possible. This often requires the use of a longer hoisting device than is necessary when the loudspeaker is placed over the yard.

With the loudspeaker placed to provide sufficiently uniform sound across the primary façade, octave band or one-third octave band sound level measurements are made both on the exterior and in the interior of the structure using both time and spatial averaging of sound levels. Additional measurements are conducted without the loudspeaker in operation to provide background or ambient sound levels.

2.2.1 Interior measurement method

Interior measurements occur to calculate the NLR for each room tested.

For interior room measurements, the microphone is swept in an elliptical or figure-8 pattern throughout the room volume for a minimum period of 20 seconds to measure the spatial average sound level (Leq) of the room. The microphone should, at all times, be at least 12 inches from sound transmitting elements (window, door, wall, vent, etc.) and from any hard reflective surfaces (e.g., walls, floor, and ceiling).

The interior room Leq is measured by sweeping the microphone as described above with the loudspeaker system turned on. The interior background Leq is measured by repeating the interior room Leq process, but with the loudspeaker system turned off. To ensure no contamination of the interior measurements conducted with the loudspeaker on, the background Leq measured with the speaker off must be at least 10 dB below the noise levels measured in each octave band or one-third octave band with the speaker turned on. To obtain this environment, household noise sources may need to be reduced or eliminated including pet noise, talking, and/or movements within the home and specific appliances or electronic devices may also need to be turned down, turned off or muted such as televisions, radios, phones,

ventilation (fan) systems, refrigerators and fish tanks. All household noise sources will be returned to their original conditions once the measurements are completed.

2.2.2 Exterior measurements methods

For exterior building façade measurements, the microphone is swept in a repeated "S" pattern for a minimum period of 20 seconds to measure the average exterior sound level (Leq) for the room or element of interest.

The exterior room façade Leq is measured by sweeping the microphone as described above with the loudspeaker system turned on. The exterior background Leq is measured by repeating the exterior facade Leq process, but with the loudspeaker system turned off. To ensure no contamination of the exterior measurements conducted with the loudspeaker on, the background Leq measured with the speaker off must be at least 10 dB below the noise levels measured in each octave band or one-third octave band with the speaker on.

There are three measurement methods which may be utilized to determine exterior sound levels. Any of the three methods may be used to determine the sound pressure level at the exterior building façade and these methods, when conducted as prescribed in the ASTM standard, will provide the same outdoor sound pressure level at the exterior facade of the structure under ideal conditions. The variety of methods for determining the outdoor sound pressure levels exist to provide flexibility since no one method can be used in all situations encountered in the field.

Each of the three methods are outlined below, in the preferred order of use.

(1) Flush method:

The flush outdoor measurement procedure[7] is outlined in the ASTM E966 standard. This method requires the microphone to be "very close" to the façade surface, but not so close that it is likely to touch the surface. The ASTM standard indicates that this measurement position requires a subtraction of 5 dB to account for the approximate doubling of the sound pressure (+6 dB) at the façade surface. The flush method is the most common and ideal method because of the ease to accomplish, applicability in most circumstances, assurance of the ability to measure similarly for pre- and post-construction conditions and repeatability of the measurement technique in the field.

(2) Nearby method:

ASTM E966 provides a second method for determining the outdoor sound pressure level: the nearby microphone method[8] with a 2 dB subtraction to the measured level to account for the reflection of sound energy from the façade and back to the microphone. This method requires the microphone to be 4 to 8 feet from the surface. This method also requires that the loudspeaker be positioned far away from the building façade (at least 40 feet) to minimize the increase in sound level associated with the measurement position being 4 to 8 feet closer to the speaker than is the façade. An additional adjustment factor of 1 dB should be subtracted from the measured exterior level to account for this effect.

[7] ASTM E966 Section 8.3.3 describes how to conduct the measurements and Section 8.5.3 provides required adjustments.

[8] ASTM E966 Section 8.3.2 describes how to conduct the measurement and Section 8.5.2 provides required adjustments.

(3) Free-field method:

The third technique, known as the free-field or calibration method[9], requires no adjustment as the measurement is conducted in an environment relatively free of reflective surfaces. The free-field method usually requires a separate speaker set up and measurement. To use the free field method, first measure the distance from the speaker to the façade during the interior room measurement. Then position the loudspeaker in a free-field environment over soft ground and measure the sound level at that same distance from the speaker by sweeping the microphone at the distance determined."

2.2.3 Measurement documentation

Digital photographs must be taken of the following:

- Exterior of each home to aid in identifying the property
- Loudspeaker positions and associated exterior façade areas under test
- Exterior elements that have noticeable product and/or installation defects
- Room interiors to document conditions in case noise modeling is undertaken or retesting is required

The digital camera must be set to the same date and time as the integrating sound level meter and all photographs must have a date and time stamp for reference. Data log sheets must also be completed (digital format is acceptable) that include, at a minimum, the following information:

- Airport code/identifier
- Address of property tested
- Resident last name or site name
- Site or parcel number (if known and applicable)
- Building number and unit number (multi-family only)
- Building floor number and unit type (multi-family only)
- Date and time of the measurements
- Initials of person(s) conducting the testing
- Description of rooms and elements tested
- Speaker set up (ground, tripod, or elevated)
- Noise-exposed room surfaces (façade, roof, or both)
- Exterior measurement method (flush, nearby, or free-field)
- A-weighted Leq noise levels, in dB, and corresponding SLM data file numbers (for interior background, interior test, exterior background, and exterior test)
- Sketch of floorplan, including all eligible rooms and noting all exterior elements
- Documentation on sketch of all loudspeaker positions, including reference distances

2.3 Calculation of Outdoor/Indoor Noise Reduction (OINR)

The Outdoor/Indoor Noise Reduction (OINR) of tested rooms and building elements are calculated from the measured exterior and interior sound levels in each octave band or one-third octave band, as outlined in ASTM E966. The OINR values are used to compute the outdoor-to-indoor Noise Level Reduction (NLR) of aircraft noise as measured in A-weighted decibels, denoted dB.

[9] ASTM E966 Section 8.3.1 describes how to conduct the measurement and Section 8.5.1 provides required adjustments.

The OINR values are computed for each tested eligible room by subtracting the interior noise level measured in each octave band or one-third octave band from the corresponding exterior sound level measurement. The exterior sound level data are first adjusted to account for the acoustic energy reflected from the building façade under evaluation, as outlined previously in report Section 2.2.2. The exterior and interior sound level data collected with the artificial noise source operating are likewise adjusted to account for the ambient acoustical energy measured with the noise source turned off. These are shown in the following equations.

The adjusted exterior level in each octave band or one-third octave band is:

$$L_{Ext\ Adj} = 10\log\left(10^{\frac{L_{Ext\ Measured}}{10}} - 10^{\frac{L_{Ext\ Background}}{10}}\right) - Adj_{Ref\ Energy}$$

The adjusted interior level in each octave band or one-third octave band is:

$$L_{Int\ Adj} = 10\log\left(10^{\frac{L_{Int\ Measured}}{10}} - 10^{\frac{L_{Int\ Background}}{10}}\right)$$

The OINR level in each octave band or one-third octave band is then determined by:

$$OINR = L_{Ext\ Adj} - L_{Int\ Adj}$$

The measurements may also be adjusted per ASTM E966 based on the angle of incidence of the noise source. The acoustical consultant typically attempts to position the loudspeaker to obtain an incident angle of 45 degrees for consistency, repeatability and efficiency as it requires no correction in the calculations. If a different angle-of-incidence is required, the consultant must apply the appropriate correction to the calculations as provided in ASTM E966.

2.4 Calculation of Noise Level Reduction (NLR)

NLR is a single number rating used for the comparison of the difference in outdoor-to-indoor noise levels. This number is typically used to judge the overall effectiveness of airport sound insulation programs.

The NLR of a room is dependent on the frequency (sound spectrum) content of the exterior noise source. For aviation sound insulation programs, the computed NLR values are determined using an appropriate aircraft noise source. The exterior aircraft source spectrum is also A-weighted to resemble human perception and to be consistent with FAA guidelines for assessing aircraft noise in communities.

The exterior aircraft noise spectrum was determined using the theoretical capacity analysis. The T-38A was estimated to be the greatest overall contributor to CNEL sound levels for departures from runways 22 L/R. Figure 1 and Table 1 present the octave band aircraft noise spectrum, normalized to an overall A-weighted sound level of 65 dB. Table 2 provides the corresponding one-third octave band sound levels.

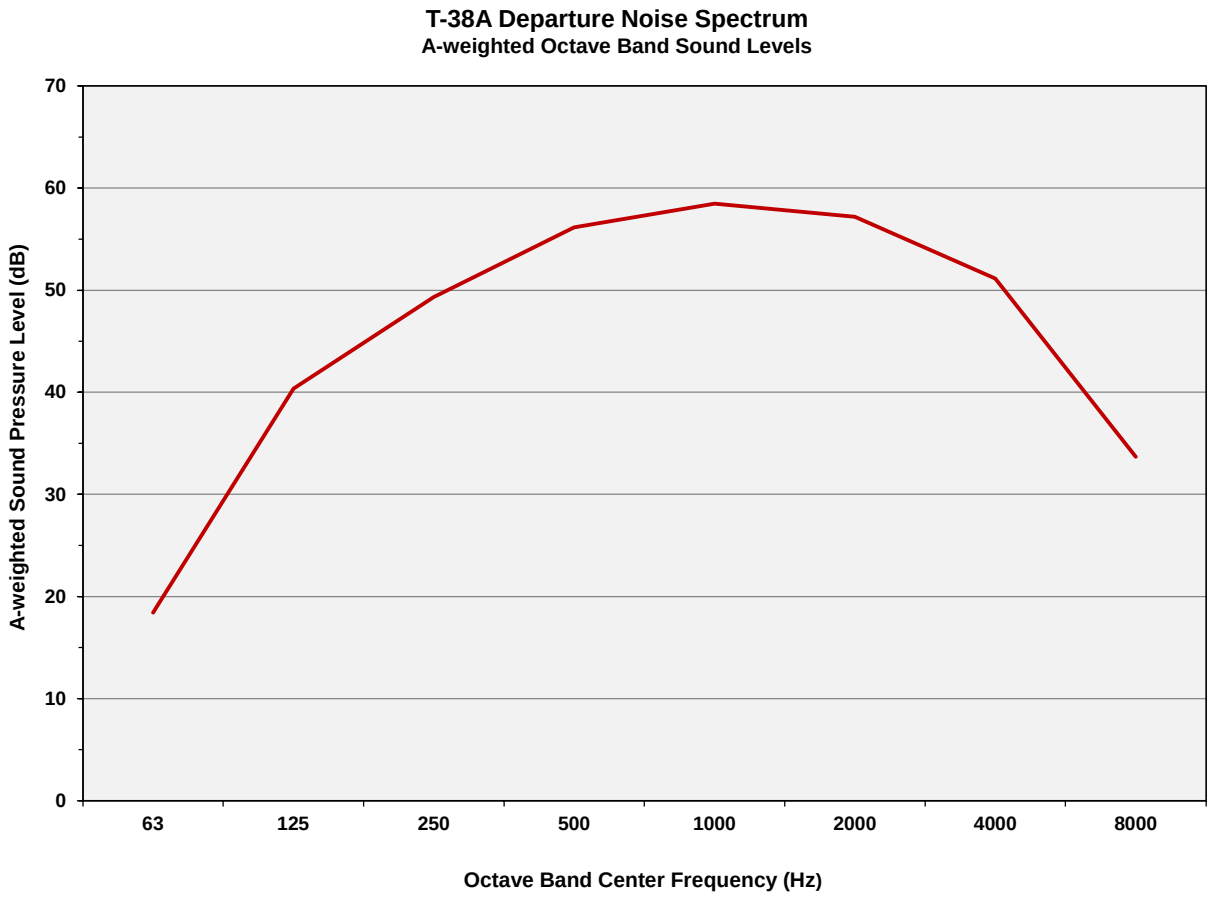

Figure 1. A-weighted Octave Band Aircraft Noise Spectrum

Table 1. A-weighted Octave Band Aircraft Noise Spectrum

Hz	63	125	250	500	1000	2000	4000	8000
dB	20.7	42.6	51.6	58.4	60.8	59.5	53.4	36.0

Table 2. A-weighted One-third Octave Band Aircraft Noise Spectrum

Hz	50	63	80	100	125	160	200	250	315	400	500	630	Hz
dB	11.4	14.7	21.0	30.9	38.2	42.4	42.3	47.3	49.9	52.4	52.4	54.9	dB
Hz	800	1000	1250	1500	2000	2500	3150	4000	5000	6300	8000	10000	Hz
dB	55.8	56.1	55.8	55.3	54.7	53.8	51.6	47.8	42.5	35.2	29.4	24.9	dB

The indoor A-weighted noise source spectrum for each tested eligible room in a structure is obtained by subtracting the measured OINR values from each corresponding octave band or one-third octave band of the exterior A-weighted aircraft source spectrum.

The overall A-weighted interior noise level is then obtained by summing the individual energies calculated for each octave band. The A-weighted NLR value for each tested room, based on the exterior aircraft spectrum, is computed from the difference between the overall outdoor and indoor A-weighted aircraft noise levels. This is shown in the following equations.

The exterior A-weighted total level is:

$$L_{Ext\ Total} = 10log \sum_{i=1}^{k} 10^{\frac{L_{Ext\ Noise\ Source\ Spectrum,i}}{10}}$$

The interior A-weighted total level is:

$$L_{Int\ Total} = 10log \sum_{i=1}^{k} 10^{\frac{L_{Ext\ Noise\ Source\ Spectrum,i} - OINR_i}{10}}$$

where "k" is the total number of octave or one-third octave bands used.

The NLR is then determined by:

$$NLR = L_{Ext\ Total} - L_{Int\ Total}$$

Table 3 presents an example of an octave band measurement calculation.

Table 3. Example Octave Band Measurement Calculation

	Octave Band Center Frequency								A-weighted Total
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Unweighted Measurement Data									
Exterior Background	67.3	66.2	58.4	50.2	48.5	45.6	39.8	34.2	**56.0**
Exterior Measurement (flush)	93.1	93.3	88.3	87.9	88.4	86.8	88.1	89.5	**95.1**
Exterior Adjusted	88.1	88.3	83.3	82.9	83.4	81.8	83.1	84.5	**90.1**
Interior Background	49.1	46.4	37.2	28.1	29.0	23.7	21.4	20.7	**35.6**
Interior Measurement	70.4	70.0	61.4	61.8	60.2	56.8	57.8	54.1	**65.8**
Interior Adjusted	70.4	70.0	61.4	61.8	60.2	56.8	57.8	54.1	**65.8**
Outdoor-Indoor Noise Reduction (OINR)	**17.7**	**18.3**	**21.9**	**21.1**	**23.2**	**25.0**	**25.3**	**30.4**	
A-weighted Aircraft Sound Levels									
Exterior Noise Level	20.7	42.6	51.6	58.4	60.8	59.5	53.4	36.0	**65.0**
Interior Noise Level	3.0	24.3	29.7	37.3	37.6	34.5	28.1	5.6	**42.0**
								Noise Level Reduction (NLR):	***23.0 dB***

Under the "Unweighted Measured Data" section, the *Interior Background* shows the measured interior background octave band levels with the loudspeaker turned off and the A-weighted total. The *Interior Measurement* presents the measured interior octave band levels with the loudspeaker turned on and the A-weighted total. The *Interior Adjusted* provides the interior octave band levels with the measured background sound level contribution removed and the A-weighted total. The *Exterior Background* shows the measured exterior background octave band levels with the loudspeaker off and the A-weighted total. The *Exterior Measurement* shows the measured exterior façade octave band levels with the loudspeaker on and the A-weighted total. The *Exterior Adjusted* provides the exterior octave band levels with the measured background sound level and the façade reflected energy contributions removed and the A-weighted total. In this example, note that the octave band levels and the A-weighted totals both show the measurements with the speaker turned on being more than 10 dB louder than the background levels with the speaker turned off.

The OINR is then developed by subtracting the *Interior Adjusted* level from the *Exterior Adjusted* level for each octave band, as outlined in Section 2.3. Under "A-Weighted Aircraft Noise Source Spectrum" the OINR is subtracted from the *Exterior Spectrum* to obtain the *Interior Spectrum*. The A-weighted acoustical

energy totals of the *Exterior Spectrum* and the *Interior Spectrum* are subtracted to obtain the NLR value, shown on the last line of the example table.

2.5 Extent of Acoustical Testing

According to Appendix R of the AIP Handbook, FAA recommends testing between 10% and 30% of the potentially eligible parcels[10]. In order to verify that homes are constructed in substantial conformance to a particular master permit plan set for a floorplan type and satisfy the design goal of achieving 25 dB Noise Level Reduction (NLR), post-construction acoustical testing of the first home conforming to the master permit plan set for a floorplan type (typically the model home) and at least one additional home for each floorplan type randomly selected during each construction phase to ensure the homes all meet the acoustical goal.

[10] FAA Order 5100.38D Appendix R, Table R-4 "Pre- and Post-Testing Criteria for Noise Insulation Projects", c. "First Step – Initial Testing" Paragraph (3): "Once the sponsor has characterized the diversity of the residences in the noise contour, it will select a representative sample of each type of similarly-constructed residences for testing, which based on industry review is typically 10% to 30%."

3 Compliance Determination

SCDA will determine compliance based on the testing reports provided during each phase of construction. Residential structures with an average NLR of 25 dB or greater will be considered to have met the SCDA requirements for those within the 60 to 65 dB CNEL contour.

Wildlife Hazard Assessment
for the
West Jackson Highway Master Plan

Sacramento County, California

Prepared For:

StoneBridge Properties
Granite Construction

Prepared By:

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July 10, 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

Term	Definition
AC	Advisory Circular
AOA	Aircraft Operations Area
CEQA	California Environmental Quality Act
FAA	Federal Aviation Administration
FPA	Future Planning Area
g	Gram
SCDA	Sacramento County Department of Airports
WHA	Wildlife Hazard Assessment
WJHMP	West Jackson Highway Master Plan

EXECUTIVE SUMMARY

StoneBridge Properties (a Teichert subsidiary) and Granite Construction are seeking approval from Sacramento County for a Master Plan to guide development within a 5,913-acre planning area along Jackson Highway (State Route 16). The West Jackson Highway Master Plan (WJHMP; Master Plan) area is located within 0.25-3 miles of Mather Airport.

The Master Plan would result in construction of residential and commercial uses with associated flood control facilities, schools, parks, urban farming and other uses in an area that mostly supports grasslands, seasonal wetlands, and active and reclaimed aggregate mining lands. Consistent with Federal Aviation Administration (FAA) regulations, StoneBridge and Granite have commissioned preparation of this Wildlife Hazard Assessment (WHA) to evaluate whether the developed Master Plan would increase the risk of bird-aircraft collisions, and determine what measures should be taken to minimize any increase. The draft proposal for the WHA process was reviewed and approved by Sacramento County Department of Airports, and this resulting analysis also will undergo Airports' review.

The WHA examined available information and evaluated potential bird-aircraft collision under existing conditions and the conditions to be created under the Master Plan. The analysis focused on 14 species and species groups considered to pose the greatest risk to aircraft ("potentially hazardous bird species"), selected based on 1) their size and resulting potential for aircraft damage, and 2) propensity to collide with aircraft determined from bird-aircraft collision data from Mather Airport, FAA's national collision data reporting and hazard assessment, and the authors' knowledge of species in the region. The WHA considered four main components of the hazard:

1. Land cover changes and associated changes in bird use;
2. The extent and conditions of stormwater flooding and associated bird use;
3. Frequencies of aircraft flights at various heights over the Master Plan area, existing bird aircraft collision information, and relative frequency of flights at various heights by potentially hazardous bird species; and
4. The potential for synergistic effects, whereby conditions created within the Master Plan area could result in increased travel by birds to and from the plan area that might cross aircraft flight paths.

Effects of land cover changes and flight heights were analyzed within 17 different subregions ("analysis areas") of the Master Plan area.

Land Cover Analysis

Relative levels of bird use were determined based on habitat quality and quantity in the Master Plan area as a whole and within individual analysis units. Species and species-group use was quantified by multiplying the species' relative abundances in various land cover types (on a scale of 0.0-1.0) by the area (in acres) occupied by the various land covers under existing and Master Plan conditions. The resulting quantities ("habitat units") added across all land covers showed, not surprisingly, that development of

substantial areas of grassland, wetlands, and agriculture, would reduce habitat value and expected use (by 20-58 percent) for 11 of the 14 identified potentially hazardous species.

Habitat values under the assumed 50-year build-out of the Master Plan would increase for three species groups that favor residential areas and the resulting urban forest conditions: Rock Pigeon and European Collared-Dove (by 12 percent), Cooper's and Red-shouldered Hawks (by 100 percent), and Yellow-billed Magpie and American Crow (by 12 percent). The increases in the hawks and corvids (magpie and crow) would not occur, however, until at least 20 years after trees are established in development areas, so would gradually increase over a period of 20-70 years.

Stormwater Management Effects

Under the Master Plan, stormwater would be more extensively managed to protect life and property. Stormwater flooding effects, analyzed as the conditions 48 hours after the peak of the 2-year and 10-year storm events, showed that the area inundated would decline as stormwater is conveyed, concentrated, detained, and evacuated through pumping. Overall, the area inundated after the 2-year event would decline by 83% and the area flooded after the 10-year event would decline by 84% compared to existing conditions.

Only six of the potentially hazardous bird species/groups make extensive use of flooded lands (Mute Swan, Canada Goose, ducks, gulls, and herons and egrets, and Bald Eagle). The decline in the amount and duration of flooding, along with the conversion of non-flooded areas to land covers with lower value for these species, demonstrates that the Master plan would substantially reduce risks associated with bird use of flooded lands compared to existing conditions.

Aircraft and Bird Flight Analysis

Aircraft flights were analyzed based on flights arriving and departing during November 15 to December 15, 2022. The rationale for choosing this period is described in Section 4.5.1. Flight paths provided by Sacramento Airports showed that aircraft flew over the Master Plan area for 27 flight hours over that one-month period (i.e., 54 min/day). No aircraft crossed above the Master Plan area at heights below 100 ft and only 1 percent of flight time (i.e., 32 sec/day) occurred at 100 to 500 ft. No flights below 500 ft occurred above 10 of 17 analysis areas within the plan area. Roughly half of flight-time was within 500-1,500 ft and the other half was above 1,500 ft.

Information on bird-aircraft collisions from Mather Airport showed a modest number of collisions (120 over 11 years). Unsurprisingly, most collisions occurred on or near the ground; species that spend most or all of their time on the ground comprised over half of the species identified during collisions. Thus, most collisions occurred near the ground during takeoff and landing, as would be expected, and thus not over the Master Plan area. Over three-fourths of species reported in Mather collisions were small (<500 g) and only 4 (4 percent) were large (>1,200 g). Nearly all large or moderate-sized species were considered potentially hazardous species in this WHA.

Flight characteristics estimated for potentially hazardous species showed that most flights of all species occurred below 100 ft, a height at which few aircraft flights occurred above the Master Plan area. Eight of

14 potentially hazardous species/groups flew at a moderate frequency at 100-500 ft, while the other six groups flew there at low frequency. Eight of the groups flew at low frequency at 500-1500 ft and six flew there at very low frequency. All species were judged to fly at very low frequency (6 groups) or not at all (7 groups) above 1,500 ft, except the Turkey Vulture which flew there at low frequency.

Synergistic Effects

Synergistic effects are defined by FAA as two or more land uses that together may pose additional hazards, such as by creating a flight corridor between bird feeding and resting areas. Synergetic effects were evaluated based on species' uses of various land covers and other habitat elements for nesting, roosting, and foraging activities. The focus was on whether species moved among different land covers for these activities and whether the land covers that are used by these species increased or decreased under the Master Plan. Eleven of 14 potentially hazardous species or groups were expected to move among different land covers for different uses. Nine of these species were considered less likely to engage in synergistic movements under conditions of the Master Plan than under existing conditions because the habitats they use would decline in abundance.

The Rock Pigeon, Turkey Vulture, and American Crow were initially identified as species that had potential to be involved in synergistic effects under the Master Plan. Further evaluation, however, suggests that such effects are unlikely. Rock Pigeons generally fly to agricultural lands which are located primarily east and south of the Master Plan area and Mather Airport. Pigeons also can be discouraged through building design. Synergistic uses by crows appear unlikely because the species would increase mainly during the breeding season (when distant movements don't occur) and removal of grassland and agriculture in the Master Plan areas would reduce long-distance winter movements to the site. Roosting by migrating and wintering vultures in the Sacramento region tends to be highly localized and focused on large, older trees. Roost establishment would not occur for 40-70 years when the urban forest matures or may not occur at all. If so, future measures to discourage roost development may be warranted.

Overall Effects of the Master Plan on Bird Aircraft Collision Risk

This WHA indicates that potential bird-aircraft hazard would be reduced overall and for most of the potentially hazardous species we identified. The species that are predicted to increase would do so over a period of decades as the urban forest in residential and commercial areas develops. Even those species that may increase would likely not pose substantial bird-aircraft collision hazards because of seasonality of susceptible behavior and the ability to apply measures to discourage use. With adopted mitigation measures, development of the Master Plan is expected to reduce bird-aircraft collision hazards to a low level that is below current levels.

1.0 INTRODUCTION

ECORP Consulting, Inc. prepared this WHA for the WJHMP in Sacramento County, California. This WHA was prepared in accordance with current industry standard (FAA) guidelines (FAA 2020) and in consultation with the Sacramento County Department of Airports (SCDA). The report addresses concerns about potential effects of land use changes on bird populations and thereby on potential for bird-aircraft collisions.

FAA reported that wildlife strikes to civil aircrafts in the United States killed more than 301 people and destroyed over 298 aircraft from 1988-2021 (Dolbeer et al. 2022). A total of 620 bird species were involved in FAA strike records, out of a total of 745 wildlife species. While only a small percentage of the 259,577 wildlife strikes analyzed within the 2022 report led to such dire outcomes, the FAA cites growing concerns due to wildlife strikes, and in particular the rebound of some relatively large-bodied bird species, such as the bald eagle (*Haliaeetus leucocephalus*), coincident with an increase in aircraft collisions with those species over time.

This WHA is intended to evaluate whether the proposed Master Plan (also referred to hereafter as Project) would significantly increase the potential risk of bird collisions with aircraft using Mather Airport above that which currently exists under pre-project conditions. The primary basis for evaluating potential bird-aircraft collision hazards is the presence of land covers (i.e., habitat types) attractive to bird species, and the interaction of aircraft and bird flight characteristics (Coccon et al. 2015).

2.0 MASTER PLAN AREA DESCRIPTION

The Master Plan consists of 5,913 acres, including several participating properties belonging to Teichert Construction (with StoneBridge Properties [StoneBridge] as its representing subsidiary) and Granite Construction (Granite) and other ownerships. Within the Master Plan area, Teichert and Granite own approximately 4,079 acres referred to collectively as the "participating properties". Three Future Planning Areas (FPA) also occur within the Master Plan, comprised of non-participating property owners (Figure 2-1). The future siting of land uses within the FPAs under the WJHMP build-out are yet to be determined. Therefore, they are not included in this analysis, although it is anticipated that similar requirements for evaluating and addressing wildlife hazards will be applied as future uses are proposed. The WJHMP plan area, excluding the FPAs and including all participating and non-participating properties in balance of the plan area, comprises the 4,895-acre area analyzed within this WHA (Figure 2-1), referred to hereafter as "Master Plan area" for simplicity.

2.1 Master Plan Area Location

The Master Plan area is located on the north and south sides of Jackson Road (State Route 16) in Sacramento County, California. The Master Plan area is generally bordered by South Watt Avenue to the west, the Rosemont community to the north, Mather Airport to the northeast, Excelsior Road to the east, and Elder Creek Road and Florin Road to the south. The entire Master Plan area occurs within a five-mile radius of Mather Airport (Figure 2-2). Much of the Master Plan area occurs within 10,000 feet of Mather Airport.

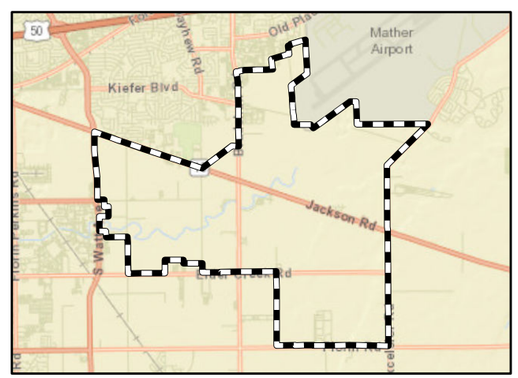
Figure 2-1.
West Jackson Highway Master Plan study area, with participating ownerships and further planning areas.

Map Features

- West Jackson Highway Master Plan Area
- Study Area
- Future Planning Areas

HAPPY LANE
FAIRBAIRN
FAIRBAIRN SOUTH II
ASPEN V
MACHIDA
ASPEN V
GRANITE I
GRANITE I
ASPEN VI East
ASPEN II
ASPEN IV
ASPEN III
ASPEN IV
ASPEN VI West
MAYHEW
FPA-A
ASPEN III SOUTH
ASPEN IV SOUTH
ASPEN V SOUTH
ASPEN VII
VINEYARD I
FPA-B
ASPEN VIII
ASPEN VII SOUTH
ASPEN IX
FPA-C

Source: ESRI USGS TOPO, World Street Map



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Map Date: 4/29/2023

ECORP: N:\2022\2022-228 West Jackson Hwy SP BASH\MAPS\Aerial_Maps\WJHMP_Study_Area_20221219.mxd (CCH)-chinkelman 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

Figure 2-2.
West Jackson Highway Master Plan area in relation to Mather Airfield and surrounding lands, and existing wetland habitats.

Map Features

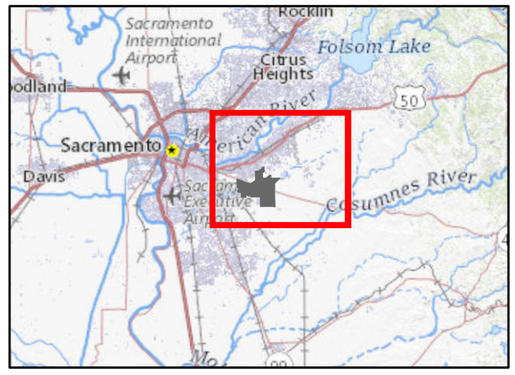
West Jackson Master Plan Area
10,000' Critical Zone
5 Mile Zone
Open Space (within Master Plan)

Map Features

All Habitat Types

- Channel
- Depressional Seasonal Wetland
- Ditch
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Industrial Pond
- Lake
- Marsh
- Pond
- Reclaimed Channel
- Reclaimed Depressional Seasonal Wetland
- Reclaimed Low Flow Corridor
- Reclaimed Seasonal Wetland Swale
- Reclaimed Vernal Pool
- Riverine
- Seasonal Riparian Wetland
- Seasonal Wetland
- Seasonal Wetland Swale
- Vernal Pool

Source: ESRI USGS TOPO, World Street Map



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Map Date: 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
0 6,300

ECORP N:\2022\2022-228 West Jackson Hwy SP BASH\MAPS\Jurisdictional_Delineation\WJHMP_Wetlands_20230206.mxd (j-chinkelman 4/29/2023

2.2 Master Plan Components

The Master Plan establishes a framework and strategy for all future land use within the plan area, including general land use and development standards, policies, land use allocations, infrastructure, and public service planning (Madrone 2018). The major components of the Master Plan include development of residential, commercial, industrial, employment facilities, parks, schools and farming areas. Within the Master Plan, two District Area Plans are established: District 1 and District 2. These District Area Plans establish land uses, along with policies and development standards, for the properties within their boundaries. The District Area Plans were defined in the biological report for the WJHMP (Madrone 2018) but are not addressed further in this WHA.

The Master Plan includes a variety of land uses, including residential areas at various densities, commercial, employment and industrial development, urban (mixed) farming, parks, schools, and flood management facilities (Figure 2-3).

3.0 REGULATORY CONTEXT

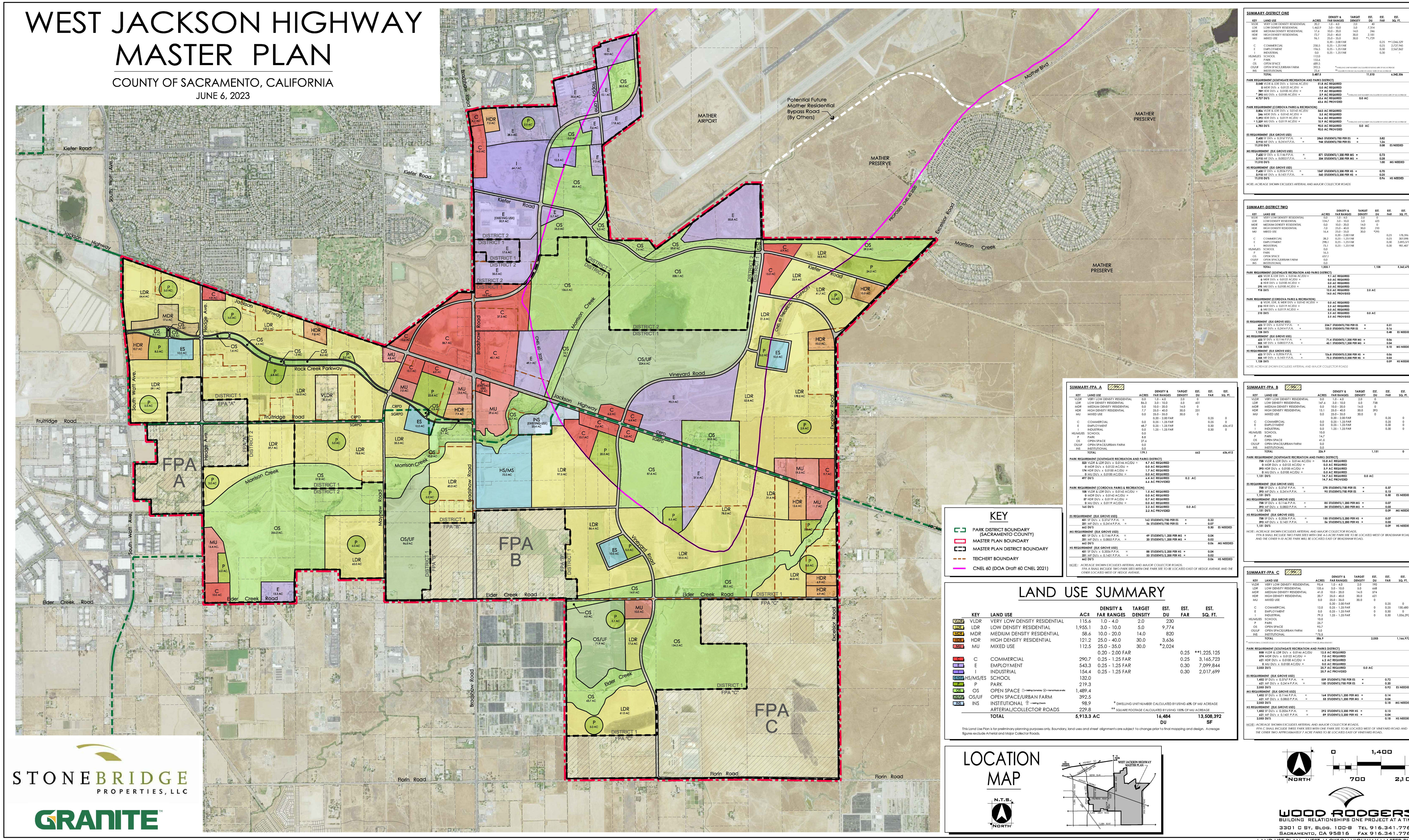
The County of Sacramento is the lead agency implementing the provisions of the California Environmental Quality Act (CEQA) to evaluate the impacts associated with implementation of the Master Plan. Concurrent with the CEQA process, the County Department of Planning and Environmental Review has required that the project applicants prepare a Wildlife Hazard Assessment to analyze bird-airstrike collision hazard change under the WJHMP buildout in accordance with current FAA guidelines.

3.1 Federal Aviation Administration Guidelines Overview and Summary

FAA provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. FAA also requires airports that receive Federal grant-in-aid assistance, such as Mather Airport, to utilize these guidelines for projects within their boundaries. Moreover, it recommends that land-use planners and project developers use the FAA's guidance for privately owned or initiated projects on or near airports.

The FAA released its up-to-date guidance in the 2020 Advisory Circular (AC) 150/5200-33C, replacing the 2007 AC. This WHA was prepared in accordance with the 2020 FAA AC 150/5200-33C (referred to hereafter as "FAA Guidelines"). A summary of the substantive and relevant components of the FAA Guidelines is provided below.

The FAA issued Advisory Circular 150/5200-33C to provide guidance on certain land uses that have potential to attract hazardous wildlife on or near airports. The updated AC was issued on February 21, 2020, replacing AC 150/5200-33B (FAA 2007). This section of the WHA broadly summarizes the guidance in the AC that is relevant to the WJHMP. Section numbers used in the Circular are preceded by the letters "AC" and shown in italics to clarify their source as the AC.



LAND USE SUMMARY

KEY	LAND USE	AC±	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	1.0 - 4.0	2.0	230		
LDR	LOW DENSITY RESIDENTIAL	1,955.1	3.0 - 10.0	5.0	9,774		
MDR	MEDIUM DENSITY RESIDENTIAL	58.6	10.0 - 20.0	14.0	820		
HDR	HIGH DENSITY RESIDENTIAL	121.2	25.0 - 40.0	30.0	3,636		
MU	MIXED USE	112.5	25.0 - 35.0	30.0	*2,024		
			0.20 - 2.00 FAR			0.25	**1,225,125
C	COMMERCIAL	290.7	0.25 - 1.25 FAR			0.25	3,165,723
E	EMPLOYMENT	543.3	0.25 - 1.25 FAR			0.30	7,099,844
I	INDUSTRIAL	154.4	0.25 - 1.25 FAR			0.30	2,017,699
HS/MS/ES	SCHOOL	132.0					
P	PARK	219.3					
OS	OPEN SPACE (C = Existing Cemetery, V = Vernal Pools on-site)	1,489.4					
OS/UF	OPEN SPACE/URBAN FARM	392.5					
INS	INSTITUTIONAL (= Existing Church)	98.9					
	ARTERIAL/COLLECTOR ROADS	229.8					
	TOTAL	5,913.3 AC			16,484 DU		13,508,392 SF

* DWELLING UNIT NUMBER CALCULATED BY USING 60% OF MU ACREAGE
** SQUARE FOOTAGE CALCULATED BY USING 100% OF MU ACREAGE

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

SUMMARY-DISTRICT ONE

KEY	LAND USE	ACRES	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	20.2	1.0 - 4.0	2.0	40		
LDR	LOW DENSITY RESIDENTIAL	1,462.9	3.0 - 10.0	5.0	7,314		
MDR	MEDIUM DENSITY RESIDENTIAL	17.6	10.0 - 20.0	14.0	246		
HDR	HIGH DENSITY RESIDENTIAL	72.7	25.0 - 40.0	30.0	2,181		
MU	MIXED USE	96.1	25.0 - 35.0	30.0	*1,729		
			0.20 - 2.00 FAR			0.25	**1,046,529
C	COMMERCIAL	250.5	0.25 - 1.25 FAR			0.25	2,727,945
E	EMPLOYMENT	196.5	0.25 - 1.25 FAR			0.30	2,567,862
I	INDUSTRIAL	0.0	0.25 - 1.25 FAR			0.30	-
HS/MS/ES	SCHOOL	112.0					
P	PARK	153.6					
OS	OPEN SPACE	689.5					
OS/UF	OPEN SPACE/URBAN FARM	392.5					
INS	INSTITUTIONAL	23.4					
	TOTAL	3,487.5			11,510		6,342,336

* DWELLING UNIT NUMBER CALCULATED BY USING 60% OF MU ACREAGE
** SQUARE FOOTAGE CALCULATED BY USING 100% OF MU ACREAGE

PARK REQUIREMENT (SOUTHGATE RECREATION AND PARKS DISTRICT)
3,548 VLDR & LDR DU's x 0.0146 AC/DU = 51.8 AC REQUIRED
0 MDR DU's x 0.0122 AC/DU = 0.0 AC REQUIRED
789 HDR DU's x 0.0100 AC/DU = 7.9 AC REQUIRED
* 390 MU DU's x 0.0100 AC/DU = 3.9 AC REQUIRED (* DWELLING UNIT NUMBER CALCULATED BY USING 60% OF MU ACREAGE)
4,727 DU'S 63.6 AC REQUIRED 0.0 AC
63.6 AC PROVIDED

PARK REQUIREMENT (CORDOVA PARKS & RECREATION)
3,806 VLDR & LDR DU's x 0.0142 AC/DU = 54.0 AC REQUIRED
246 MDR DU's x 0.0142 AC/DU = 3.5 AC REQUIRED
1,392 HDR DU's x 0.0119 AC/DU = 16.6 AC REQUIRED
* 1,339 MU DU's x 0.0119 AC/DU = 15.9 AC REQUIRED (* DWELLING UNIT NUMBER CALCULATED BY USING 60% OF MU ACREAGE)
6,783 DU'S 90.0 AC REQUIRED 0.0 AC
90.0 AC PROVIDED

ES REQUIREMENT (ELK GROVE USD)
7,600 SF DU's x 0.3767 P.P.H. = 2863 STUDENTS/750 PER ES = 3.82
3,910 MF DU's x 0.2414 P.P.H. = 944 STUDENTS/750 PER ES = 1.26
11,510 DU'S 5.08 ES NEEDED

MS REQUIREMENT (ELK GROVE USD)
7,600 SF DU's x 0.1146 P.P.H. = 871 STUDENTS/1,200 PER MS = 0.73
3,910 MF DU's x 0.0853 P.P.H. = 334 STUDENTS/1,200 PER MS = 0.28
11,510 DU'S 1.00 MS NEEDED

HS REQUIREMENT (ELK GROVE USD)
7,600 SF DU's x 0.2036 P.P.H. = 1547 STUDENTS/2,200 PER HS = 0.70
3,910 MF DU's x 0.1431 P.P.H. = 560 STUDENTS/2,200 PER HS = 0.25
11,510 DU'S 0.96 HS NEEDED

NOTE: ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS

SUMMARY-DISTRICT TWO

KEY	LAND USE	ACRES	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	0.0	1.0 - 4.0	2.0	0		
LDR	LOW DENSITY RESIDENTIAL	124.7	3.0 - 10.0	5.0	623		
MDR	MEDIUM DENSITY RESIDENTIAL	0.0	10.0 - 20.0	14.0	0		
HDR	HIGH DENSITY RESIDENTIAL	7.0	25.0 - 40.0	30.0	210		
MU	MIXED USE	16.4	25.0 - 35.0	30.0	*295		
			0.20 - 2.00 FAR			0.25	178,596
C	COMMERCIAL	28.2	0.25 - 1.25 FAR			0.25	307,098
E	EMPLOYMENT	298.1	0.25 - 1.25 FAR			0.30	3,895,571
I	INDUSTRIAL	75.1	0.25 - 1.25 FAR			0.30	981,407
HS/MS/ES	SCHOOL	0.0					
P	PARK	16.5					
OS	OPEN SPACE	637.1					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	0.0					
	TOTAL	1,203.1			1,128		5,362,672

PARK REQUIREMENT (SOUTHGATE RECREATION AND PARKS DISTRICT)
623 VLDR & LDR DU's x 0.0146 AC/DU = 9.1 AC REQUIRED
0 MDR DU's x 0.0122 AC/DU = 0.0 AC REQUIRED
0 HDR DU's x 0.0100 AC/DU = 0.0 AC REQUIRED
295 MU DU's x 0.0100 AC/DU = 3.0 AC REQUIRED
918 DU'S 12.0 AC REQUIRED 2.0 AC
14.0 AC PROVIDED

PARK REQUIREMENT (CORDOVA PARKS & RECREATION)
0 VLDR, LDR, & MDR DU's x 0.0142 AC/DU = 0.0 AC REQUIRED
210 HDR DU's x 0.0119 AC/DU = 2.5 AC REQUIRED
0 MU DU's x 0.0119 AC/DU = 0.0 AC REQUIRED
210 DU'S 2.5 AC REQUIRED 0.0 AC
2.5 AC PROVIDED

ES REQUIREMENT (ELK GROVE USD)
623 SF DU's x 0.3767 P.P.H. = 234.7 STUDENTS/750 PER ES = 0.31
505 MF DU's x 0.2414 P.P.H. = 122.0 STUDENTS/750 PER ES = 0.16
1,128 DU'S 0.48 ES NEEDED

MS REQUIREMENT (ELK GROVE USD)
623 SF DU's x 0.1146 P.P.H. = 71.4 STUDENTS/1,200 PER MS = 0.06
505 MF DU's x 0.0853 P.P.H. = 43.1 STUDENTS/1,200 PER MS = 0.04
1,128 DU'S 0.10 MS NEEDED

HS REQUIREMENT (ELK GROVE USD)
623 SF DU's x 0.2036 P.P.H. = 126.8 STUDENTS/2,200 PER HS = 0.06
505 MF DU's x 0.1431 P.P.H. = 72.3 STUDENTS/2,200 PER HS = 0.03
1,128 DU'S 0.09 HS NEEDED

NOTE: ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS

SUMMARY-FPA A

KEY	LAND USE	ACRES	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	0.0	1.0 - 4.0	2.0	0		
LDR	LOW DENSITY RESIDENTIAL	86.3	3.0 - 10.0	5.0	431		
MDR	MEDIUM DENSITY RESIDENTIAL	0.0	10.0 - 20.0	14.0	0		
HDR	HIGH DENSITY RESIDENTIAL	7.7	25.0 - 40.0	30.0	231		
MU	MIXED USE	0.0	25.0 - 35.0	30.0	0		
			0.20 - 2.00 FAR			0.25	0
C	COMMERCIAL	0.0	0.25 - 1.25 FAR			0.25	0
E	EMPLOYMENT	48.7	0.25 - 1.25 FAR			0.30	636,412
I	INDUSTRIAL	0.0	1.25 - 1.25 FAR			0.30	0
HS/MS/ES	SCHOOL	0.0					
P	PARK	8.8					
OS	OPEN SPACE	27.6					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	0.0					
	TOTAL	179.1			662		636,412

PARK REQUIREMENT (SOUTHGATE RECREATION AND PARKS DISTRICT)
323 VLDR & LDR DU's x 0.0146 AC/DU = 4.7 AC REQUIRED
0 MDR DU's x 0.0122 AC/DU = 0.0 AC REQUIRED
174 HDR DU's x 0.0100 AC/DU = 1.7 AC REQUIRED
0 MU DU's x 0.0100 AC/DU = 0.0 AC REQUIRED
497 DU'S 6.4 AC REQUIRED 0.2 AC
6.6 AC PROVIDED

PARK REQUIREMENT (CORDOVA PARKS & RECREATION)
108 VLDR & LDR DU's x 0.0142 AC/DU = 1.5 AC REQUIRED
0 MDR DU's x 0.0142 AC/DU = 0.0 AC REQUIRED
57 HDR DU's x 0.0119 AC/DU = 0.7 AC REQUIRED
0 MU DU's x 0.0119 AC/DU = 0.0 AC REQUIRED
165 DU'S 2.2 AC REQUIRED 0.0 AC
2.2 AC PROVIDED

ES REQUIREMENT (ELK GROVE USD)
431 SF DU's x 0.3767 P.P.H. = 162 STUDENTS/750 PER ES = 0.22
231 MF DU's x 0.2414 P.P.H. = 56 STUDENTS/750 PER ES = 0.07
662 DU'S 0.30 ES NEEDED

MS REQUIREMENT (ELK GROVE USD)
431 SF DU's x 0.1146 P.P.H. = 49 STUDENTS/1,200 PER MS = 0.04
231 MF DU's x 0.0853 P.P.H. = 20 STUDENTS/1,200 PER MS = 0.02
662 DU'S 0.06 MS NEEDED

HS REQUIREMENT (ELK GROVE USD)
431 SF DU's x 0.2036 P.P.H. = 88 STUDENTS/2,200 PER HS = 0.04
231 MF DU's x 0.1431 P.P.H. = 33 STUDENTS/2,200 PER HS = 0.02
662 DU'S 0.06 HS NEEDED

NOTE: ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS. FPA A SHALL INCLUDE TWO PARK SITES WITH ONE PARK SITE TO BE LOCATED EAST OF HEDGE AVENUE AND THE OTHER LOCATED WEST OF HEDGE AVENUE.

SUMMARY-FPA B

KEY	LAND USE	ACRES	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	0.0	1.0 - 4.0	2.0	0		
LDR	LOW DENSITY RESIDENTIAL	147.6	3.0 - 10.0	5.0	738		
MDR	MEDIUM DENSITY RESIDENTIAL	0.0	10.0 - 20.0	14.0	0		
HDR	HIGH DENSITY RESIDENTIAL	13.1	25.0 - 40.0	30.0	393		
MU	MIXED USE	0.0	25.0 - 35.0	30.0	0		
			0.20 - 2.00 FAR			0.25	0
C	COMMERCIAL	0.0	0.25 - 1.25 FAR			0.25	0
E	EMPLOYMENT	0.0	0.25 - 1.25 FAR			0.30	0
I	INDUSTRIAL	0.0	1.25 - 1.25 FAR			0.30	0
HS/MS/ES	SCHOOL	10.0					
P	PARK	14.7					
OS	OPEN SPACE	41.5					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	0.0					
	TOTAL	226.9			1,131		0

PARK REQUIREMENT (SOUTHGATE RECREATION AND PARKS DISTRICT)
738 VLDR & LDR DU's x 0.0146 AC/DU = 10.8 AC REQUIRED
0 MDR DU's x 0.0122 AC/DU = 0.0 AC REQUIRED
393 HDR DU's x 0.0100 AC/DU = 3.9 AC REQUIRED
0 MU DU's x 0.0100 AC/DU = 0.0 AC REQUIRED
1,131 DU'S 14.7 AC REQUIRED 0.0 AC
14.7 AC PROVIDED

ES REQUIREMENT (ELK GROVE USD)
738 SF DU's x 0.3767 P.P.H. = 278 STUDENTS/750 PER ES = 0.37
393 MF DU's x 0.2414 P.P.H. = 95 STUDENTS/750 PER ES = 0.13
1,131 DU'S 0.50 ES NEEDED

MS REQUIREMENT (ELK GROVE USD)
738 SF DU's x 0.1146 P.P.H. = 85 STUDENTS/1,200 PER MS = 0.07
393 MF DU's x 0.0853 P.P.H. = 34 STUDENTS/1,200 PER MS = 0.03
1,131 DU'S 0.09 MS NEEDED

HS REQUIREMENT (ELK GROVE USD)
738 SF DU's x 0.2036 P.P.H. = 150 STUDENTS/2,200 PER HS = 0.07
393 MF DU's x 0.1431 P.P.H. = 56 STUDENTS/2,200 PER HS = 0.03
1,131 DU'S 0.09 HS NEEDED

NOTE: ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS. FPA B SHALL INCLUDE TWO PARK SITES WITH ONE 4-5 ACRE PARK SITE TO BE LOCATED WEST OF BRADSHAW ROAD AND THE OTHER 9-10 ACRE PARK WILL BE LOCATED EAST OF BRADSHAW ROAD.

SUMMARY-FPA C

KEY	LAND USE	ACRES	DENSITY & FAR RANGES	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	95.4	1.0 - 4.0	2.0	190		
LDR	LOW DENSITY RESIDENTIAL	133.6	3.0 - 10.0	5.0	668		
MDR	MEDIUM DENSITY RESIDENTIAL	41.0	10.0 - 20.0	14.0	574		
HDR	HIGH DENSITY RESIDENTIAL	20.7	25.0 - 40.0	30.0	621		
MU	MIXED USE	0.0	25.0 - 35.0	30.0	0		
			0.20 - 2.00 FAR			0.25	0
C	COMMERCIAL	12.0	0.25 - 1.25 FAR		0	0.25	130,680
E	EMPLOYMENT	0.0	0.25 - 1.25 FAR		0	0.30	0
I	INDUSTRIAL	79.3	1.25 - 1.25 FAR		0	0.30	1,036,292
HS/MS/ES	SCHOOL	10.0					
P	PARK	25.7					
OS	OPEN SPACE	93.7					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	*75.5					
	TOTAL	586.9			2,053		1,166,972

* INSTITUTIONAL CONSISTS SOLELY OF SACRAMENTO COUNTY WATER AGENCY PARCEL #066-0060-001

PARK REQUIREMENT (SOUTHGATE RECREATION AND PARKS DISTRICT)
858 VLDR & LDR DU's x 0.0146 AC/DU = 12.5 AC REQUIRED
574 MDR DU's x 0.0122 AC/DU = 7.0 AC REQUIRED
621 HDR DU's x 0.0100 AC/DU = 6.2 AC REQUIRED
0 MU DU's x 0.0100 AC/DU = 0.0 AC REQUIRED
2,053 DU'S 25.7 AC REQUIRED 0.0 AC
25.7 AC PROVIDED

ES REQUIREMENT (ELK GROVE USD)
1,432 SF DU's x 0.3767 P.P.H. = 539 STUDENTS/750 PER ES = 0.72
621 MF DU's x 0.2414 P.P.H. = 150 STUDENTS/750 PER ES = 0.20
2,053 DU'S 0.92 ES NEEDED

MS REQUIREMENT (ELK GROVE USD)
1,432 SF DU's x 0.1146 P.P.H. = 164 STUDENTS/1,200 PER MS = 0.14
621 MF DU's x 0.0853 P.P.H. = 53 STUDENTS/1,200 PER MS = 0.04
2,053 DU'S 0.18 MS NEEDED

HS REQUIREMENT (ELK GROVE USD)
1,432 SF DU's x 0.2036 P.P.H. = 292 STUDENTS/2,200 PER HS = 0.13
621 MF DU's x 0.1431 P.P.H. = 89 STUDENTS/2,200 PER HS = 0.04
2,053 DU'S 0.18 HS NEEDED

NOTE: ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS. FPA C SHALL INCLUDE THREE PARK SITES WITH ONE PARK SITE TO BE LOCATED WEST OF VINEYARD ROAD AND THE OTHER TWO APPROXIMATELY 7 ACRE PARKS TO BE LOCATED EAST OF VINEYARD ROAD.

Source: Wood Rodgers

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 2-3. Proposed Land Uses Under the West Jackson Highway Master Plan

2022-228 West Jackson Highway Master Plan

3.1.1 Purpose

The AC provides guidance on land uses that have potential to attract hazardous wildlife on or near public-use airports.

3.1.2 Applicability

While the AC is non-regulatory and thus not mandatory, the FAA recommends that airports that have received Federal grant assistance funding, are funded by the Passenger Facility Charge program, or are certified under Title 14 of the Code of Federal Regulations use these guidelines. FAA also recommends that the guidance be used by land-use planners and project developers with projects on or near public-use airports.

3.1.3 Background

This section includes an overview of the risks posed to aircraft by wildlife species, highlighting that species differ in their relative hazards. A ranking of the hazards posed by various wildlife species commonly involved in damaging strikes with aircraft in the U.S. was previously included but has been moved to AC 150/5200-32 (FAA 2013). It also notes that the AC provides guidance needed "to assess and address potentially hazardous wildlife attractants when locating new facilities and implementing certain land use practices on or near public-use airports."

3.1.3.1 AC Section 1. General Separation Criteria for Hazardous Wildlife Attractant on or Near Airports.

The AC states "When considering proposed land uses, operators and sponsors of airports certificated under Part 139, local planners and development must consider whether the proposed land uses, including new development projects, will *increase* wildlife hazards (emphasis added). Land use practices that attract or sustain hazardous wildlife populations on or near airports…can significantly increase the potential for wildlife strikes."

This section introduces separation criteria between airports and "land-use practices that attract hazardous wildlife." The guidance notes that 78 percent of aircraft strikes occur at heights under 1,000 feet and 90 percent occur under 3,000 feet above ground level.

3.1.3.2 AC 1.3. Airports Serving Turbine-Powered Aircraft

For airports serving turbine-powered aircraft (such as Mather Airport), "FAA recommends a separation of 10,000 feet for wildlife attractants identified as hazardous".

3.1.3.3 AC 1.4. Protection of Approach, Departure, and Circling Airspace

The FAA "recommends a distance of 5 miles between the closest point of the airport's Aircraft Operations Area (AOA) and the hazardous wildlife attractant." Additionally, it states "Special attention should be given to hazardous wildlife attractants that could cause hazardous wildlife movement into or across the approach or departure airspace."

The AOA is defined as: "any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron." Approach and departure airspace is defined in the AC as "the airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff."

3.1.3.4 AC Section 2. Land-Use Practices on or near Airports that Potentially Attract Hazardous Wildlife

AC 2.1. General

This introduction notes that "wildlife species and size of populations attracted to the airport environment vary considerably depending on several factors including land-use practices on or near the airport."

AC 2.3 Water Management Facilities

This section notes that "storm water facilities…associated retention and settling ponds...and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife." It further states, "Development of new open water facilities within the separation criteria...should be avoided to prevent wildlife attractants. If necessary, land-use developers and airport operators may need to develop management plans, in compliance with local and state regulations, to support the operation of storm water management facilities on or near all public-use airports to ensure a safe airport environment." Also, the FAA recommends these plans be developed in consultation with a Qualified Airport Wildlife Biologist to minimize hazardous wildlife attractants.".

AC 2.3.2 New Storm Water Management Facilities

The FAA "recommends that storm water management systems located within the separations identified" (i.e., anywhere within 10,000 ft or within 5 miles of areas within approach and departure airspace) "be designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48–hour detention period after the design storm and remain completely dry between storms".

The guideline also recommends "the use of steep-sided, riprap or concrete lined, narrow, linearly shaped water detention basins," and note that physical barriers, such as bird balls, wires grids, pillows, or netting should be used within ponds located on Airport properties to prevent access of hazardous wildlife to open water. Also, this section notes "All vegetation in or around detention basins that provide food or cover for hazardous wildlife should be eliminated. If soil conditions and other requirements allow, the FAA encourages the use of underground storm water infiltration systems because they are less attractive to wildlife."

In summary, section 2.3.2 recommends that off-airport storm water facilities located within takeoff and approach zones and less than 5 miles from an airport facility, be capable of being drained within 48-hours, and recommends use of steep-sided riprap lined, narrow ponds within this distance. It does not specifically recommend use of physical barriers for offsite ponds or other facilities.

AC 2.4.1 Existing Wetlands on or near Airport Property

The guidelines state "if wetlands are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations."

AC 2.6 Agricultural Activities

While this section applies mainly to airport property, the guidelines assert "many agricultural crops can attract hazardous wildlife and should not be planted within the 10,000 ft and 5 mi of areas within approach and departure airspace) … corn, wheat, and other small grains in particular should be avoided".

AC 2.8.3 Structures

The guidelines assert "certain structures attract birds for loafing and nesting. Flat rooftops can be attractive to many species of gulls for nesting, hangars provide roosting / nesting opportunities for rock doves, towers, light posts and navigation aids can provide loafing / hunting perches for raptors and aircraft can provide loafing / nesting sites for European starlings, blackbirds and other species."

AC 2.8.4 Other Wildlife Attractants

This section acknowledges that there are other land uses or activities not addressed within the AC that may have the potential to attract hazardous wildlife.

AC 2.10. Synergistic Effects of Surrounding Land Uses

This section identifies potential synergistic effects as two or more land uses that together may pose additional hazards, such as by creating a flight corridor between bird feeding and resting areas and encourages evaluation of these effects.

AC 4.3. Other Land-Use Practice Changes

AC 4.3.4. Airports that have Received Federal Assistance.

"Airports that have received federal assistance are required by their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations." The FAA recommends that airport operators to the extent practicable oppose off-airport land-use changes or practices within the 10,000-ft or 5-mile separations zones that may attract hazardous wildlife"; and that "failure to do so may lead to noncompliance with applicable grant assurances".

4.0 METHODS

This WHA was conducted by Wildlife Biologists Angela Haas and Daniel Airola (see Appendix A for preparers' relevant qualifications), in consultation with SCDA Wildlife Biologist David Jernigan, and other Airport personnel. The assessment evaluated existing and post-project bird–aircraft collision hazard level within the Master Plan area based on four major analyses:

- Changes in land cover between existing and post-project conditions, and the effects on the occurrence and abundance of potentially hazardous bird species;
- Comparison of the effects of stormwater flooding conditions between existing and post-project conditions under 2-year and 10-year storm event scenarios and the effects on use by potentially hazardous bird species;
- Patterns of aircraft flights over various portions of the Master Plan area, including frequency and heights of flights, the flight height of potentially hazardous birds, and the resulting potential for bird-aircraft collisions; and
- Potential synergistic effects of land-use changes that would occur under the Master Plan on the movements of birds between feeding, roosting, and nesting sites that may cross aircraft flightpaths.

These analyses were conducted separately to characterize the bird-aircraft hazards that occur within the Master Plan area under existing and post-project conditions. The results of these analyses were then integrated into an overall evaluation of changes from existing to post-project conditions to determine if the project would result in a net change in bird-aircraft collision hazard. Measures to reduce hazards were identified for areas where hazards were predicted to increase.

Details of each of these analyses are presented in the following sections.

4.1 Characterizing Regional Habitat Conditions

4.1.1 Regional Habitat Conditions

Regional habitat conditions were evaluated qualitatively using aerial images from Google Earth, and from WHA biologists' knowledge of the region from many years of field work and bird surveys and studies conducted in the area (see Appendix A for details). Additionally, the regional abundance of wetland habitats within the 10,000-foot and five-mile zones around Mather Airport were estimated using data from South Sacramento County Habitat Conservation Plan wetlands dataset (Sacramento County 2007) and the National Wetlands Inventory (U. S. Fish and Wildlife Service 2018). This information was used to provide a regional context for the Master Plan area and assist in evaluating potential synergistic effects.

4.1.2 Establishing Analysis Areas within the Master Plan Area

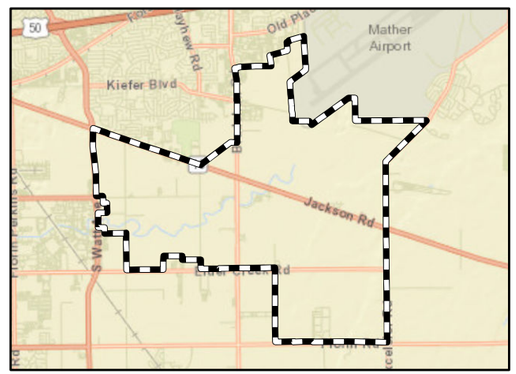
A set of 17 analysis areas were established within the Master Plan area (Figure 4-1) to provide meaningful "units" for describing the results of the analysis and to provide recommendations for mitigation actions based on anticipated implementation of the Master Plan. The analysis areas were used to display more localized differences in land use, use by potentially hazardous birds, aircraft flight frequency and heights, and resulting bird-aircraft hazards under existing and post-project conditions. The analysis area names were based on the names currently used by Teichert and Granite (Figure 4-1) but the analysis areas were expanded (indicated by the addition of a + sign in the name) to incorporate adjacent non-participating land ownerships.

Figure 4-1.
Analysis areas used in evaluating wildlife hazards for the WJHMP area.

Map Features

- West Jackson Highway Master Plan Area
- Study Area
- Future Planning Areas
- Non-Participating Properties

Source: ESRI USGS TOPO, World Street Map



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Map Date: 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

ECORP: N:\2022\2022-228 West Jackson Hwy SP BASH\MAPS\Aerial_Maps\WJHMP_Analysis_Area_20230421.mxd (CCH)-chinkelman 4/29/2023

4.1.3 Existing Habitat Conditions within the Master Plan Area

Existing habitat conditions within the Master Plan area were characterized using the following information sources:

- The long-term experience of WHA biologists working in the project area and similar areas in the surrounding region;
- A site reconnaissance field visit to all portions of the Master Plan area conducted November 18, 2022;
- The report, "Biological Resources Assessment for the West Jackson Highway Master Plan" (Madrone 2018), including current land uses, habitat designations, and wetlands and other mapped water features;
- Previous wildlife hazards assessments on bird-aircraft collision risk conducted in proximity to Mather Airport (Airola 2007a, b; Airola and Gibson & Skordal 2009; Airola and Lichtwardt 2014);
- Modeling of the extent of flooding within the Master Plan area during and following 2- and 10-yr storm events (Wood Rogers 2022; 2023); and
- General information on habitats within the South Sacramento County Habitat Conservation Plan (Sacramento County 2007).

Eleven land cover types that were considered biologically meaningful in characterizing bird use were identified to evaluate use under existing and post-project conditions. Land cover categories and their existing distributions within the Master Plan area were derived from the 25 land covers mapped by Madrone (2018; Table 4-1) and from the Master Plan land use categories (Figure 2-3; Table 4-2). Overall, eight land covers were present in both the existing and Master Plan (i.e., post-Project) conditions, three types (cultivated agriculture, mining areas, and drying beds) occurred only in existing condition, and three other types (residential, schools/parks, and urban farm) were unique to the Master Plan condition. (A small amount of rural residential use is included within the Commercial/Industrial designation.)

Table 4-1. Land Cover Types and Acreages Used in the Wildlife Hazard Analysis to Describe Existing Conditions for the West Jackson Highway Master Plan, with Constituent Land Cover Types as Designated by Madrone (2018)

WHA Land Cover Types	Area (acres)	Constituent Madrone Land Cover Types	Area (acres)
Annual Grassland/Seasonal Wetland	2,707	Annual Grasslands	875
		Restored Annual Grassland	89
		Disturbed Mining Area (in part)[a]	1,669
		Seasonal Wetland	7
		Depressional Seasonal Wetland	4
		Seasonal Wetland Swale	7

Table 4-1. Land Cover Types and Acreages Used in the Wildlife Hazard Analysis to Describe Existing Conditions for the West Jackson Highway Master Plan, with Constituent Land Cover Types as Designated by Madrone (2018)

WHA Land Cover Types	Area (acres)	Constituent Madrone Land Cover Types	Area (acres)
		Vernal Pool	21
		Constructed depression seasonal wetland	0.2
		Constructed seasonal wetland swale	0.3
		Constructed vernal pool	28
		Irrigated pasture	7
Channel/Ditch	126	Constructed Channel and adjacent wetlands	20
		Channel	12
		Ditch	3
		Constructed low flow channel	91
Pond/Emergent Marsh	343	Marsh	5
		Constructed emergent marsh	46
		Pond	3
		Industrial Pond	289
Riparian Woodland	55	Riparian Woodland	25
		Seasonal Riparian Wetland	1
		Restored Riparian Woodland	29
Cultivated Agriculture	129	Cropland	15
		Restored Agricultural Lands	114
Drying Beds	152	Drying Bed	152
Active Mining	708	Disturbed Mining Area (in part)b	708
Commercial/Industrial	676	Commercial/Residential/Industrial/ Institutional	527
		Road	118
		Abandoned Parking Lot	5
		Industrial Yard	22

Notes: [a]ECORP included this acreage of older mining areas as restored annual grassland, based on examination of conditions in the field and on aerial imagery. Madrone (2018) quantified it as acreage of active mining in their report in one area but also showed it as restored annual grassland elsewhere.
[b]ECORP judged this acreage to be the area of active mining, based on highly disturbed conditions and lack of vegetation.
WHA = Wildlife Hazard Assessment

Table 4-2. Land Cover Types Assigned to Master Plan Land Use Categories for the Wildlife Hazard Analysis

WHA Land Cover Types	Area (acres)	Constituent Master Plan Land Uses
Annual Grassland/Seasonal Wetland	1,093	Open Space - areas containing natural and restored annual grasslands and seasonal wetlands
Channel/Ditch	39	Open Space - Constructed channels and adjacent wetlands, stream channels and ditches
Pond/Emergent Marsh	72	Open Space - areas with these land covers
Riparian Woodland	75	Open Space - areas with Riparian Woodland
Residential	1,847	Very Low, Low, Medium, and High Density Residential; Mixed Use; Arterial/Collector Roads
Commercial and Industrial	1,095	Employment, Industrial, Institutional, Commercial
Schools/Parks	282	School, Park
Urban Farm	393	Open Space/Urban Farm

Notes: WHA = Wildlife Hazard Assessment

4.2 Identifying Potential Hazardous Bird Species

A list of bird species with the potential to occur within the Master Plan area was created using the following resources:

- A site reconnaissance field visit, the authors' studies in the region (Airola 2007a, b; 2011; Airola et al. 2021; Airola and Gibson & Skordal 2009; Airola and Lichwardt 2014; Airola 2019; Haas et al. 2020) and their personal knowledge of bird species occurrences and habitat associations in the region;
- California Natural Diversity Database review of species occurrences (Madrone 2018);
- eBird occurrences (ebird.org);
- References on birds in the Sacramento region, including the Sacramento Breeding Bird Atlas (Pandolfino et al. 2021) and articles published in the local ornithological journal *Central Valley Bird Club Bulletin/Central Valley Birds;* and
- Cornell University's Birds of the World accounts (https://birdsoftheworld.org/bow/home).

This list of potential species was organized into a smaller subset of species groups (i.e., ducks, gulls, crows and magpies) based on similarity of species behavior and ecology for the hazard analysis.

Characteristics used to identify potentially hazardous species/groups for detailed analysis of collision hazards resulting from the Master Plan implementation included likelihood to occur within the Master Plan area (based on habitat conditions and habitat use characteristics), body size (average species' mass from Sibley 2014), and likelihood to fly at higher (> 500 ft) altitudes. Behavioral ecology, including the

propensity of species to fly in flocks, also was considered. Selection of hazardous species/groups incorporated the FAA's (2013) findings that, the bird species groups with the most damaging strikes nationwide are waterfowl, gulls, and raptors and that FAA noted a strong correlation (R^2 = 0.81) between mean body mass and the likelihood of a strike causing damage to aircraft (Dolbeer et al. 2022).

In addition, this analysis considered the relative hazard score assigned to species/groups by the FAA in their composite ranking table (FAA 2013) and the frequency of reported collisions by aircraft using Mather Airport (http://wildlife.faa.gov/database.aspx). Using these factors, we assigned a qualitative hazard ranking to each species/group to determine which species should be included in the analysis, and which could be reasonably excluded due to lack of meaningful hazard. In general, species with small body size (< 150 grams [g]) and that spent most of their time at or near ground level were excluded (Appendix B).

4.3 Evaluating the Effects of Changes in Land Use under the Master Plan on the Abundance of Potentially Hazardous Bird Species

4.3.1 Overview of the Process Used to Evaluate and Compare Bird Use

Levels of use of the Master Plan area by potentially hazardous species, and comparison of species use under existing and post-project conditions were quantified using a modified version of the U. S. Fish and Wildlife Service's Habitat Evaluation Procedures program (U.S. Fish and Wildlife Service 1980). This methodology creates an index of species use and abundance ("habitat units") within various land covers (i.e., habitats) based on the quality and quantity of habitat present. Habitat units were calculated for each species/group based on the various amounts of land covers present under existing and post-project conditions.

4.3.2 Land Cover Suitability for Hazardous Bird Species

The hazard analysis method defines the suitability of each land cover types for each potentially hazardous species or group (i.e., habitat suitability index) on a scale of 0.0-1.0, as follows:

- 1.0 = high,
- 0.8 = high-moderate,
- 0.6 = moderate,
- 0.4 = moderate-low,
- 0.2 =low,
- 0.0 = absent.

The suitability ratings of the 11 different land covers were assigned for each species based on our knowledge of species-habitat relationships and previously cited sources (see Section 4.2).

4.3.3 Characterizing Habitat Values of WHA Analysis Areas and the Existing and Master Plan Scenarios

The land cover suitability ratings assigned to each land cover for each potentially hazardous species were multiplied by the acreage of each land cover type and then summed across land covers to generate a total habitat unit value for each species under both existing and post-project conditions. Habitat unit values were generated for each of the 17 WHA analysis areas to identify where various species would be expected to be most and least abundant. These totals were compared to determine the extent to which the Master Plan build-out would result in a net increase or decrease in habitat value, and thus abundance, for each species.

4.4 Evaluating Effects of Changes in Stormwater Flooding Regime on Bird-Aircraft Collision Hazard

Seasonally flooded land has the potential to attract certain birds in large numbers. Attracted species include a wide variety of waterbirds, including waterfowl (swans, geese, ducks), wading birds (herons, egrets), shorebirds (plovers, sandpipers), and other species. The degree of attraction of flooded areas to various species depends on the size and configuration of resulting water bodies, as well as their water depths and the underlying substrates. Vegetated areas, for example, are more attractive than unvegetated areas when they flood, because they provide vegetative (e.g., seed and fruit) and invertebrate foods, and sometimes fish, that certain species desire.

The degree of bird-aircraft hazards posed by flooding also depends on the duration of flooding. Shorter flood durations pose less risk than longer duration flood events. The size of flood events can also affect bird attraction. The sizes of floods are generally characterized by their frequencies. A 2-year flood (one that occurs on average every two years) is regular but not extensive. As the flood recurrence rate increases, the extent of flooding also increases. Bird responses to floods vary with intensity. Frequent low intensity floods tend to routinely attract birds from the immediate area. Floods of intermediate duration may attract larger numbers of birds, especially if the flood waters are not managed (i.e., evacuated). Very large flood events tend not to attract large numbers of birds to any one area simply because the water bird populations have so many options as to where they can go to forage or roost.

Our evaluation of flood effects on bird-aircraft collision risk used the modeled flooding conditions 48 hours after the 2-year and 10-year storm event as depicted by Wood Rodgers (2022, 2023). The flood hazard analysis evaluated resulting collision hazards posed by flooding primarily by considering the extent and duration of flooding, the factors that have the largest impact on potential waterbird use. Flood related collision risks were assessed qualitatively based on these factors for the existing and Master Plan conditions to determine if risks were likely to increase, stay the same, or decrease under the WJHMP.

4.5 Analyzing Aircraft and Bird Flight Heights and Resulting Potential for Collisions

In addition to the effects of land cover and flooding characteristics that may affect bird abundance and habitat use in the Master Plan area, the heights of aircraft flights and the flight heights of birds strongly influence the potential for collisions.

4.5.1 Aircraft Flight Characteristics over the Master Plan Area

SCDA maintains extensive records of aircraft flight paths and elevations because of high public concern about aircraft noise and public safety. SCDA provided a record of aircraft departure and arrival frequencies, locations, and heights over the Master Plan Area and surrounding areas during November 15-December 15, 2022, which we requested as representative of the pattern of flights using Mather Airport. This period was chosen for this WHA because it is a busy (i.e., high cargo) flight season for the airport that coincides with a period when flooded conditions and wintering waterbird species regularly occur.

Aircraft flight path data was used to summarize and display the frequency and altitude of flights over each of the 17 WHA analysis areas. Flight frequency was represented by points along each aircraft's flight path representing its location at 5-second intervals. The flight path points were then portrayed as the number of minutes per month of total flight time spent within several biologically meaningful flight height classes: 0-20 ft; 20-100 ft; 100-500 ft; 500-1,500 ft. (No flights from Mather Airport occurred at >1,500 ft over the Master Plan area.)

4.5.2 Bird Flight Heights

Little readily available systematic information exists on the frequency with which birds fly at different heights. Therefore, species biology and observation experience were used to assign relative frequencies of flights within the five designated altitude classes to potentially hazardous species. Because aircraft were never recorded flying at heights below 100 ft over the Master Plan Area (see Section 8.1), many species, mostly smaller passerines, were excluded initially as unlikely to fly above that height on a regular basis (see Appendix B). Species identified as potentially hazardous were evaluated based on their relative abundance and flight heights in relation to the frequency of aircraft flights at various heights to determine a generalized level of collision risk. We also considered the relationship between the land cover type and flooding condition and the species presence at a certain height, recognizing that as flight heights increase a species occurrence is less likely affected by land cover conditions below (i.e., because they have left from, and are going to, somewhere else).

4.5.3 Bird-Aircraft Collision Ratings and Records

Factors that affect the "hazard level" of a species include typical flight height and body mass. Most bird-airstrike collisions occur at less than 500 ft, and body mass is correlated with both the frequency of collisions and the likelihood of resulting damage to aircraft (Dolbeer et al. 2022). The FAA provides hazard level ratings for bird species based on the frequency of reported aircraft collisions. The rating is based on national data, so is affected by the overall abundance and geographic range of species (i.e., all else equal,

widespread and more abundant species are more likely to be struck than less common or more localized species). As a result, some species that occur in the Master Plan area are rated by the FAA (2013), but others that may have potential for collisions near Mather Airport are unrated (see Table 5-1 and Appendix B). We considered the FAA ratings for species when available, and applied ratings for some species to others that were unrated that we judged to have similar potential for collisions based on biological factors. For example, the FAA provided a rating for Red-tailed Hawk but not for Swainson's Hawk, so we considered the rating for Red-tailed Hawk to roughly apply to the Swainson's Hawk because of their generally similar life histories. We also considered records of local aircraft collisions in assigning collision risks to species within the Master Plan area. Bird airstrikes are an ongoing phenomenon at Mather Airport, and the County has reported systematic information on individual bird airstrikes at Mather for many years to the FAA's bird airstrike database (http://wildlife.faa.gov/database.aspx). We used the data from the period of 2012 to 2022 as a local data source to characterize bird-aircraft collision risk. The data had rather substantial limitations (discussed in detail in Section 8.2) and were therefore only used qualitatively in the analysis.

Notwithstanding the limitations in interpreting and applying FAA ratings and Mather collision reports, both provided information useful in identifying potentially hazardous species and in subjectively evaluating hazards.

4.5.4 Analysis of Net Change Bird-Aircraft Collision Hazards

Analyses of the changes in potential risks of bird-aircraft collisions were conducted for potentially hazardous species based on existing and post-project habitat conditions and resulting bird populations, in combination with information on aircraft flight heights and past information on bird-aircraft collisions in the area. These evaluations included assessment of the potential for collisions by birds with aircraft above the Master Plan area as a result of synergistic effects.

Existing bird hazard conditions were characterized partly based on the relative abundance of species at the project site. Relative abundance was scaled (from high to low) relative to the highest abundance of each species in local habitats and geographic areas. Species relative abundances in land cover types then became the basis for identifying changes in abundances of hazardous bird species under the conditions of proposed project.

To assess the net effects of the project, relative abundances of potential hazardous bird species were compared under the pre- and post-project conditions to identify those for which population levels were likely to increase. These species were then evaluated for their potential to pose a collision hazard to aircraft flying at known heights above the Master Plan area, to determine if the project would pose any net increase in aircraft collision hazard. Those species predicted by land cover modeling to increase under the proposed master plan, were evaluated in more detail to assess hazards, based on abundance, timing of occurrence, flight heights during various seasons, daily and seasonal movement patterns, and specific habitat use patterns.

4.6 Synergistic Effects

Synergistic effects are defined as those hazards created as a result of project conditions, in combination with other offsite conditions (FAA 2020). The relationship between post-project conditions within the Master Plan area and existing regional conditions were evaluated to determine if they could encourage bird flights to and from the site within the potential flight path and altitude of aircraft, and therefore result in increased hazard of airstrikes. Potential synergistic effects include the creation of nesting or roosting habitat that would attract birds that forage on offsite lands or the creation of foraging habitat onsite that would attract birds that roost or nest offsite. Positions of onsite and offsite habitat locations relative to one another were also considered to determine whether a bird theoretical flightpath would cross the Study AreaMaster Plan areaht and location that introduces a hazard.

5.0 IDENTIFICATION OF POTENTIALLY HAZARDOUS SPECIES AND THEIR LAND COVER SUITABILITIES

5.1 Potentially Hazardous Species

A total of 44 species and species groups were considered for inclusion in the analysis based on the potential species list generated per Section 4.2. For each species/group, a combination of body size, FAA relative hazard score (if available), and other relevant aspects of ecology and behavior were used to determine whether they would be analyzed as potentially hazardous (see Section 4.2 for further details). This process resulted in 14 species/groups identified as potentially hazardous to aircraft that are included for further analysis within this WHA (Table 5-1).

Table 5-1. Size and FAA Hazard Scores for Species Identified as Potentially Hazardous for West Jackson Highway Master Plan Wildlife Hazard Analysis

Species/Group	Body Size (g)[a]	Size Reference Species	FAA Relative Hazard Score	Hazard Score Reference Species	Flies in Flocks?	Notes
Mute Swan	10,000	–	NR	–	–	Large, non-native and increasing though control may prevent further increase
Canada Goose	4,500	–	57	–	Yes	Commutes between turf (to feed) and water bodies (resting)
Ducks	1,100	Mallard	27	Mallard	Yes	–
Rock Pigeon and Eurasian Collared Dove	270/200	–	14	Rock Pigeon	Yes	Collared Dove more sedentary and rural
Gulls	520	Ring-billed Gull	11	Ring-billed Gull	Yes	Mostly associated with rivers, lakes, and landfills.
Herons and Egrets	2,900/870	Great Blue Heron and Great Egret	26/17	Great Blue Heron and Great Egret	–	Nest mainly in riparian trees, foraging in wetlands and grassland
Turkey Vulture	1,830	–	63	–	Yes	Soars high during migration. Roosts in large trees, sometimes in urban parks.
Bald Eagle	4,325	–	48	–	–	Mostly forages at large water bodies, infrequently in open grasslands
Northern Harrier, White-tailed Kite	420/340	–	3	Northern Harrier	Yes	Kites form winter roosts, usually in winter areas
Red-shouldered Hawk, Cooper's Hawk,	630/450	–	NR	–	–	Hawk often soars high during spring courtship/territorial displays
Swainson's Hawk	855	–	NR	–	–	Nests in woodland, occasionally older residential areas. Forages in alfalfa, and other crops, less often in grassland
Red-tailed Hawk	1,080	–	19	–	–	Some high flight during courtship
Great Horned Owl and Barn Owl	1,400/460	–	14/5	Great Horned Owl	–	Neither species fly high
American Crow, Yellow-billed Magpie	450/155	–	11	American Crow	Yes	Crow is more abundant. Roosts in highly urbanized areas, forages in agricultural fields. Magpie associated with flowing water and turf or grazed grassland

Notes: [a]Bird masses from Sibley (2014). g = grams, NR = Not rated by FAA.

Table 5-2. Relative Habitat Suitability Ratings of Potentially Hazardous Bird Species within Land Cover Types Under Existing Conditions and Under the Master Plan

Potentially Hazardous Species/ Groups	Existing Land Cover Types								Additional Land Covers Under the Master Plan		
	Annual Grassland/ Seasonal Wetland	Channel and Ditch	Pond/ Emergent Marsh	Riparian Wood-land	Cultivated Agriculture	Drying Beds	Mining Areas	Commercial/ Industrial	Residential	School/ Park	Urban Farm
Mute Swan	0.2	0.4	1.0	0.2	0	0.2	0	0	0	0	0
Canada Goose	0.4	0.8	0.8	0.2	0.6	0.2	0	0	0	1.0	0.4
Ducks	0.4	0.8	1.0	0.4	0.4	0.2	0	0	0	0.2	0
Rock Pigeon and European Collared-Dove	0.4	0.4	0	0.4	0.8	0.2	0.4	0.6	0.4	0.4	0.8
Gulls	0.4	0.4	1.0	0	0.6	0.2	0.2	0	0	0.4	0.4
Herons and Egrets	0.6	0.6	0.8	0.6	0.2	0.2	0	0	0	0	0.2
Turkey Vulture	1.0	0.2	0	0.6	0.2	0	0	0	0.4	0	0.2
Bald Eagle	0.2	0.2	1.0	0.8	0	0	0	0	0	0	0
White-tailed Kite and Northern Harrier	1.0	0.4	0.2	0.8	0.6	0	0	0	0	0	0.2
Cooper's and Red-shouldered Hawk	0.2	0.4	0.2	1.0	0.2	0	0	0.2	0.6	0.6	0.4
Swainson's Hawk	0.8	0.4	0.2	0.6	1.0	0	0	0	0.2	0	0.6
Red-tailed hawk	1.0	1.0	0.2	0.8	0.6	0	0	0	0	2	1.0
Great Horned Owl and Barn Owl	1.0	0.8	0.2	1.0	0.4	0	0	0.4	0	0.6	0.8

Table 5-2. Relative Habitat Suitability Ratings of Potentially Hazardous Bird Species within Land Cover Types Under Existing Conditions and Under the Master Plan

Potentially Hazardous Species/ Groups	Existing Land Cover Types								Additional Land Covers Under the Master Plan		
	Annual Grassland/ Seasonal Wetland	Channel and Ditch	Pond/ Emergent Marsh	Riparian Wood-land	Cultivated Agriculture	Drying Beds	Mining Areas	Commercial/ Industrial	Residential	School/ Park	Urban Farm
Yellow-billed Magpie and American Crow	0.8	0.6	0.2	1.0	0.8	0	0	0.2	0.6	1.0	0.8
Average Score for Land Cover Type	0.60	0.53	0.49	0.60	0.46	0.09	0.04	0.10	0.16	0.44	0.41

Key to abundance levels:

Very High	1.0
High	0.8
Moderate	0.6
Low	0.4
Very Low	0.2
Not Used	0

6.0 EFFECTS OF LAND COVER CHANGES ON BIRD-AIRCRAFT HAZARDS

This section describes and compares the land cover conditions and resulting levels of use under existing conditions and under the Master Plan.

6.1 Land Cover Conditions and Changes under the Master Plan

6.1.1 Land Cover in Existing Master Plan area

The Master Plan area is 10 to 70 feet above mean sea level. Jackson Road/Highway 16 is the major roadway that runs approximately east to west through the Study AreaMaster Plan areaominant land uses have been aggregate mining and agriculture.

Existing land cover conditions are quantified in Table 6-1 and shown in Figure 6-1 by WHA analysis area. The major land uses under existing conditions include:

- Disturbed aggregate mining areas, industrial yards and ponds, and drying beds;
- Developed lands including commercial, rural residential, and industrial uses and associated infrastructure;
- Constructed/restored lands including restored riparian woodlands and associated wetland features, annual grasslands with vernal pools and other wetlands and agricultural lands; and
- Undeveloped lands consisting of annual grasslands interspersed with vernal pools and other seasonal wetlands, channels, creeks and riparian woodland corridors, croplands including wheat and hay, and irrigated pastures for cattle grazing (Madrone 2018). Irrigated areas are managed intensively through periodic cultivation, irrigation, hay harvest, and livestock use.

6.1.2 Land Cover Conditions under the Master Plan

Under the Master Plan, much of the Master Plan area would be consist of residential and commercial uses (Figure 6-2, Table 6-2). Major changes to habitat on the Master Plan area that would affect bird populations include creation of substantial areas of commercial/industrial, residential, and parks and schools land covers.

Land cover under the Master Plan would change markedly, with conversion of all mining (708 ac), drying bed (153 ac), and cultivated agricultural (128 ac) land covers, and substantial amounts of grassland/seasonal wetland (1,614 ac) and pond/emergent (272 ac) converted to developed residential, commercial/industrial, urban farm, and parks/schools land uses (Table 6-3).

6.2 Changes in Use Levels by Bird Species in Response to Land Cover Changes

Uses levels (in habitat units) for potentially hazardous species and groups within Master Plan area analysis areas under existing conditions are presented in Table 6-4. Species use levels under the Master Plan are shown in Table 6-5.

Table 6-1. Area of Various Land Covers Under Existing Conditions within Analysis Areas for the West Jackson Highway Master Plan Wildlife Hazard Analysis

Analysis Area[a]	Land Cover Types								Total
	Active Mining	Annual Grassland/ Seasonal Wetland	Channel/ Ditch	Cultivated Agriculture	Drying Bed	Pond/ Emergent Marsh	Riparian Woodland	Commercial / Industrial	
Aspen II+	–	50	1	55	80	4	–	3	193
Aspen III South +	–	94	5	–	–	–	9.9	7	115
Aspen III+	–	121	2	69	73	4	–	93	361
Aspen IV	–	33	–	–	–	36	–	5	73
Aspen IV South	154	21	2	–	–	3	0.7	13	193
Aspen IX+	109	241	3	–	–	2	–	0	356
Aspen V South+	174	173	2	–	–	5	18	38	410
Aspen V+	–	167	1	–	–	1	–	3	172
Aspen VI+ East	–	338	66	–	–	82	–	32	517
Aspen VI+ West	–	245	29	–	–	33	–	32	338
Aspen VII+	1	347	1	4	–	3	1	75	431
Aspen VIII	270	39	3	–	–	2	–	12	325
Fairbairn Machida	–	86	–	–	–	82	–	253	420
Granite I+	–	255	2	–	–	46	–	7	310
Happy Lane	–	10	–	–	–	40	–	23	73
Mayhew+	–	100	1	–	–	1	5.8	61	168
Vineyard I+	–	391	10	–	–	–	18.6	18	438
Total	**708**	**2,707**	**126**	**128**	**153**	**344**	**54**	**675**	**4,895**

Notes: [a] Analysis area names are property names used by Teichert/Stonebridge and Granite.
+ = additional non-participant lands are included in the area.

Figure 6-1.
Existing land cover within the WJHMP study area.

Map Features

- West Jackson Highway Master Plan Area
- Study Area
- Future Planning Areas
- Non-Participating Properties

Existing Land Use Type

- Active Mining
- Annual Grassland/Seasonal Wetland
- Channel/Ditch
- Commercial/Industrial
- Cultivated Agriculture
- Drying Bed
- Irrigated Pasture
- Pond/Emergent Marsh
- Riparian Woodland

Source: ESRI USGS TOPO, World Street Map



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Map Date: 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

ECORP: N:\2022\2022-228 West Jackson Hwy SP BASH\MAPS\Landuse\WJHMP_Existing_LU_20230421.mxd (CCH)-chinkelman 4/29/2023

Figure 6-2.
Land cover types to be created under the West Jackson Highway Master Plan.

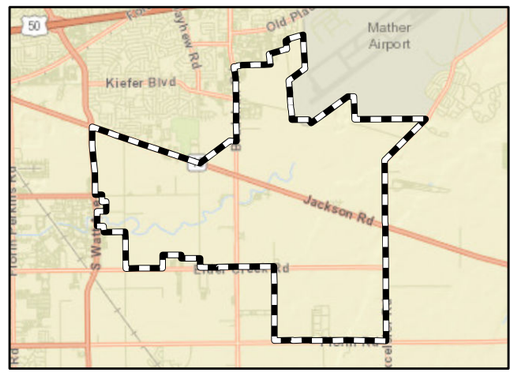
Map Features

- West Jackson Highway Master Plan Area
- Study Area
- Future Planning Areas
- Non-Participating Properties

Master Plan Land Use Type

- Annual Grassland/Seasonal Wetland
- Channel/Ditch
- Commercial/Industrial
- Commercial/Industrial/Cultivated Agriculture/AG
- Parks/Schools
- Residential
- Pond/Emergent Marsh
- Riparian Woodland
- Urban Farm

Source: ESRI USGS TOPO, World Street Map



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Map Date: 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

ECORP: N:\2022\2022-228 West Jackson Hwy SP BASH\MAPS\Landuse\WJHMP_Master_Plan_LU_20230421.mxd (CCH)-chinkelman 4/29/2023

Table 6-2. Area of Various Land Covers under the Master Plan within Analysis Areas for the West Jackson Highway Master Plan Wildlife Hazard Analysis

Analysis Area[a]	Annual Grassland/ Seasonal Wetland	Channel/ Ditch	Pond/ Emergent Marsh	Riparian Woodland	Commercial/ Industrial	Parks/ Schools	Residential	Urban Farm	Total
Aspen II+	–	–	–	–	6	28	159	–	193
Aspen III South +	–	–	–	28	4	5	79	–	115
Aspen III+	–	–	–	–	22	14	325	–	361
Aspen IV	–	–	–	–	73	–	–	–	73
Aspen IV South	27	–	–	–	6	5	60	96	193
Aspen IX+	177	–	–	–	9	10	88	72	356
Aspen V South+	85	–	–	27	79	92	127	–	410
Aspen V+	106	–	–	–	54	–	–	12	172
Aspen VI+ East	1	39	–	–	98	42	276	60	517
Aspen VI+ West	13	–	–	–	173	–	–	152	338
Aspen VII+	68	–	–	–	61	13	290	–	431
Aspen VIII	53	–	–	–	36	24	212	0	325
Fairbairn Machida	43	–	72	–	296	3	7	–	420
Granite I+	247	–	–	–	63	–	–	0	310
Happy Lane	–	–	–	20	53	–	–	–	73
Mayhew+	19	–	–	0	34	33	83	–	168
Vineyard I+	255	–	–	–	28	14	141	–	438
Total	**1,093**	**39**	**72**	**75**	**1,095**	**282**	**1,847**	**393**	**4,896**

Notes: [a] Analysis area names are property names used by Teichert/Stonebridge and Granite.
+ = additional non-participant lands are included in the area.

Table 6-3. Changes in Acreage of Land Covers within Analysis Areas Resulting from Development of the Master Plan

Analysis Area[a]	Active Mining	Annual Grassland/ Seasonal Wetland	Channel/ Ditch	Cultivated Agriculture	Drying Bed	Pond/ Emergent Marsh	Riparian Woodland	Commercial/ Industrial	Parks/ Schools	Residential	Urban Farm
Aspen II+	–	-50	-1	-55	-80	-4	–	2.9	28	159	–
Aspen III South +	–	-94	-5	–	–	–	18	-4	5	79	–
Aspen III+	–	-121	-2	-69	-73	-4	–	-71	14	325	–
Aspen IV	–	-33	–	–	–	-36	–	69	–	–	–
Aspen IV South	-154	6	-2	–	–	-3	-1	-7	5	60	96
Aspen IX+	-105	-65	-3	–	–	-2	–	6	10	88	72
Aspen V South+	-174	-88	-2	–	–	-5	9	41	92	127	–
Aspen V+	–	-61	-1	–	–	-1	–	51	–	–	12
Aspen VI+ East	–	-336	-26	–	–	-82	–	66	42	276	60
Aspen VI+ West	–	-232	-29	–	–	-33	–	141	–	–	152
Aspen VII+	-1	-279	-1	-4	–	-3	-1	-15	13	290	–
Aspen VIII	-255	14	-3	–	–	-2	–	9	24	212	–
Fairbairn Machida	–	-42	–	–	–	-10	–	43	3	7	–
Granite I+	–	-8	-2	–	–	-46	–	56	–	–	–
Happy Lane	–	-10	–	–	–	-40	20	30	–	–	–
Mayhew+	–	-81	-1	–	–	-1	-6	-27	33	83	–
Vineyard I+	–	-136	-10	–	–	–	-19	10	14	141	–
Total	**-689**	**-1614**	**-87**	**-128**	**-153**	**-273**	**21**	**401**	**282**	**1847**	**393**

Notes: [a] Analysis area names are property names used by Teichert/Stonebridge and Granite.
+ = additional non-participant lands are included in the area.

Table 6-4. Relative Use Levels (in Habitat Units) of Master Plan area Analysis Areas by Potentially Hazardous Bird Species Under Existing Conditions

Species/ Groups	Analysis Area[a]																	
	Aspen II+	Aspen III South +	Aspen III+	Aspen IV	Aspen IV South	Aspen IX+	Aspen V South+	Aspen V+	Aspen VI+ East	Aspen VI+ West	Aspen VII+	Aspen VIII	Fairbairn Machida	Granite I+	Happy Lane	Mayhew+	Vineyards	Total
Mute Swan	31	23	42	42	8	52	44	35	176	93	73	11	99	98	42	22	86	1,121
Canada Goose	73	43	110	42	13	101	78	68	253	147	144	19	100	141	36	43	169	1,870
Ducks	63	45	96	49	13	102	83	69	269	153	144	20	116	150	44	44	172	1,918
Rock Pigeon and European Collared-Dove	82	48	177	16	79	141	170	69	181	129	188	132	186	107	18	79	179	2,467
Gulls	74	39	110	49	43	122	109	68	243	142	144	73	116	149	44	41	161	2,022
Herons and Egrets	61	65	102	48	16	149	120	102	307	190	212	26	117	191	38	65	252	2,450
Turkey Vulture	61	100	129	33	21	242	184	167	351	250	348	39	86	255	10	104	404	3,387
Bald Eagle	15	28	27	42	8	51	54	35	163	87	73	11	99	98	42	26	95	1,100
White-tailed Kite and Northern Harrier	84	103	161	40	23	243	189	167	380	262	351	40	102	265	18	105	410	3,574
Cooper's and Red-shouldered Hawk	23	32	58	15	9	50	62	35	117	73	87	12	84	62	15	39	105	1,084
Swainson's Hawk	96	83	169	34	18	195	151	134	313	214	283	32	85	214	16	84	328	2,980
Red-tailed hawk	85	106	162	40	24	245	190	168	420	280	351	41	102	266	18	106	416	3,653
Great Horned Owl and Barn Owl	75	110	183	42	29	245	209	169	419	287	381	46	203	268	27	131	425	4,008
Yellow-billed Magpie and American Crow	86	89	172	34	22	196	166	135	332	226	298	35	135	216	21	99	341	3,196
Total Habitat Units	**908**	**913**	**1,700**	**525**	**325**	**2,134**	**1,808**	**1,420**	**3,923**	**2,533**	**3,075**	**536**	**1,630**	**2,478**	**390**	**987**	**3,543**	**34,828**

Notes: [a] Analysis area names are property names used by Teichert/Stonebridge and Granite.
+ = additional non-participant lands are included in the area.

Table 6-5. Relative Use Levels (in Habitat Units) of Master Plan Analysis Units by Potentially Hazardous Bird Species Under Conditions of the Master Plan

Species/Groups	Analysis Area[a]																	
	Aspen II+	Aspen III South +	Aspen III+	Aspen IV	Aspen IV South	Aspen IX+	Aspen V South+	Aspen V+	Aspen VI+ East	Aspen VI+ West	Aspen VII+	Aspen VIII	Fairbairn Machida	Granite I+	Happy Land	Mayhew+	Vineyards	Total
Mute Swan	–	6	–	–	5	35	22	21	16	3	14	11	80	49	4	4	51	471
Canada Goose	28	11	14	–	54	110	131	47	98	66	40	45	77	99	4	40	116	1,295
Ducks	6	12	3	–	12	73	63	43	40	5	30	26	89	99	8	14	105	937
Rock Pigeon and European Collared-Dove	78	47	149	44	117	172	180	84	251	231	185	134	199	137	40	74	181	2,768
Gulls	11	47	6	–	51	104	71	47	57	66	32	34	90	99	-	21	108	1,158
Herons and Egrets		17	–	–	35	120	67	66	37	38	41	32	83	148	12	11	153	1,315
Turkey Vulture	64	48	130	–	70	226	152	109	132	43	184	138	46	247	12	52	312	2,718
Bald Eagle	–	22	–	–	5	35	38	21	8	3	14	11	80	49	16	4	51	508
White-tailed Kite and Northern Harrier	–	22	–	–	46	191	106	109	29	43	68	53	58	247	16	19	255	2,027
Cooper's and Red-shouldered Hawk	114	79	208	15	84	124	191	37	251	98	207	156	88	62	31	80	150	2,177
Swainson's Hawk	32	32	65	–	91	202	109	92	108	101	112	85	50	198	12	32	232	2,179
Red-tailed hawk	57	32	28	–	133	269	290	118	186	165	94	100	62	247	16	84	283	2,928
Great Horned Owl and Barn Owl	19	32	17	29	109	243	199	137	146	204	100	75	177	272	42	52	275	2,985
Yellow-billed Magpie and American Crow	125	81	213	15	140	263	279	105	300	167	253	198	115	210	31	104	308	3,575
Total Habitat Units:	**534**	**488**	**831**	**102**	**951**	**2,167**	**1,899**	**1,036**	**1,659**	**1,231**	**1,373**	**1,096**	**1,295**	**2,162**	**245**	**591**	**2,579**	**27,041**

Notes: [a] Analysis area names are property names used by Teichert/Stonebridge and Granite.
+ = additional non-participant lands are included in the area.

Changes in use levels by species between existing conditions and conditions under the Master Plan are shown in Table 6-6. The results show that habitat values and resulting use is expected to decline under the Master Plan for 11 (79 percent) of the 14 potentially hazardous species and species groups. Species declines are consistent with the declines in amounts of the habitats that they prefer. All wetland and grassland-associated species would decline, including waterfowl (swans, geese, and ducks), other water birds (herons and egrets, gulls), and raptors (eagles, hawks, owls). The declines in habitat values for these species and groups are substantial, ranging from 20-58 percent.

Use by three potentially hazardous species groups is anticipated to increase following implementation of the Master Plan: Rock Pigeon and Eurasian Collared Dove, Cooper's and Red-shouldered Hawks, and American Crow and Yellow-billed Magpie. Except for the collared-dove, which tends to occur primarily around rural residential compounds, these species occur in residential and/or commercial development areas, so the increase in these land covers could result in population increases and resulting increased potential for aircraft collision hazards. We discuss these species' habitat uses in more detail to refine the evaluation of hazards and suggest opportunities to reduce such risks through mitigation.

6.2.1 Rock Pigeon and Eurasian Collared Dove

The Eurasian Collared-Dove is a non-native species that arrived in the early 2000s. It is generally found in rural residential farmsteads and low-density residential areas and not in denser residential and commercial areas (Pandolfino 2020a, Pandolfino et al. 2021). In contrast, the Rock Pigeon tends to mostly favor densely developed areas, although they also are found in rural areas, where they often use barns. Pigeons also often fly long distances to feed in grasslands and agricultural fields (see Section 9, Synergistic Effects). Because of their messy habits, pigeons can be, and often are, controlled through architectural designs that do not create nesting and roosting niches and by discouraging human feeding of pigeons in urban areas and parks.

6.2.2 Cooper's and Red-shouldered Hawks

These species occupy lower-density older urban forests, as well as oak and riparian habitats in the Sacramento Region (Pandolfino et al. 2021). Red-shouldered Hawks often prey on non-native squirrels in urban parks. Cooper's Hawks feed more on small and mid-sized birds, including species attracted to bird feeders. Both species tend to stay low, from beneath the tree canopy or slightly above, except in late winter and spring when they soar higher to display territoriality and attract mates. The tendency to use older forest indicates that these species likely will not occupy newly created urban forests in residential areas until at least 15-20 years after trees are established (Airola 2019).

6.2.3 Yellow-billed Magpie and American Crow

The crow and magpie both occupy urban forest areas and urban parks and schools with turf. The magpie has declined substantially since the mid-2000s as a result of the arrival of West Nile virus and, unlike some other affected species, has not recovered (Pandolfino 2020b). Remnant populations in urban Sacramento, which are concentrated around larger parks with substantial amounts (>10 ac) of irrigated turf, appear to be stable and healthy (Airola et al. 2021).

Table 6-6. Changes in Relative Use Levels (in Habitat Units) within Analysis Areas by Potentially Hazardous Species Resulting from Development of the Master Plan

Species/Groups	Analysis Area[a,b]																		% Change
	Aspen II+	Aspen III South +	Aspen III+	Aspen IV	Aspen IV South	Aspen IX+	Aspen V South+	Aspen V+	Aspen VI+ East	Aspen VI+ West	Aspen VII+	Aspen VIII	Fairbairn Machida	Granite I+	Happy Lane	Mayhew+	Vineyards	Total	
Mute Swan	(31)	(17)	(42)	(42)	(3)	(17)	(21)	(14)	(160)	(91)	(59)	(1)	(19)	(49)	(38)	(19)	(35)	(650)	-58%
Canada Goose	(45)	(33)	(97)	(42)	42	8	53	(21)	(155)	(81)	(104)	26	(23)	(42)	(32)	(2)	(52)	(575)	-31%
Ducks	(57)	(33)	(93)	(49)	(2)	(29)	(20)	(26)	(229)	(148)	(114)	6	(27)	(51)	(36)	(30)	(67)	(981)	-51%
Rock Pigeon and European Collared-Dove	(4)	(1)	(29)	28	38	31	10	16	70	102	(4)	3	13	30	22	(5)	2	301	12%
Gulls	(62)	8	(105)	(49)	8	(18)	(39)	(21)	(186)	(76)	(112)	(39)	(26)	(50)	(44)	(21)	(53)	(863)	-43%
Herons and Egrets	(61)	(48)	(102)	(48)	19	(28)	(53)	(36)	(271)	(152)	(171)	5	(34)	(43)	(26)	(54)	(99)	(1,135)	-46%
Turkey Vulture	2	(52)	1	(33)	48	(16)	(32)	(58)	(219)	(207)	(164)	99	(40)	(8)	2	(52)	(92)	(669)	-20%
Bald Eagle	(15)	(5)	(27)	(42)	(3)	(16)	(16)	(14)	(154)	(85)	(59)	–	(19)	(48)	(26)	(22)	(44)	(592)	-54%
White-tailed Kite and Northern Harrier	(84)	(81)	(161)	(40)	23	(52)	(83)	(59)	(351)	(219)	(283)	13	(44)	(18)	(2)	(87)	(155)	(1,548)	-43%
Cooper's and Red-shouldered Hawk	91	47	150	–	75	74	129	2	134	25	120	145	4	–	16	41	45	1,093	101%
Swainson's Hawk	(64)	(50)	(104)	(34)	73	7	(41)	(42)	(205)	(112)	(170)	53	(35)	(16)	(4)	(53)	(96)	(801)	-27%
Red-tailed hawk	(28)	(74)	(134)	(40)	109	23	100	(50)	(234)	(115)	(258)	59	(40)	(19)	(2)	(22)	(133)	(724)	-20%
Great Horned Owl and Barn Owl	(55)	(78)	(166)	(13)	80	(2)	(10)	(32)	(274)	(83)	(281)	30	(26)	4	14	(79)	(150)	(1,023)	-26%
Yellow-billed Magpie and American Crow	39	(8)	41	(20)	119	67	113	(30)	(32)	(59)	(44)	162	(21)	(6)	10	6	(33)	379	12%
Average Change for Species	(27)	(30)	(62)	(30)	45	2	6	(27)	(162)	(93)	(122)	40	(24)	(23)	(10)	(28)	(69)	(556)	–
No. Species with Decline in Habitat Value	11	12	11	13	3	8	9	12	12	12	14	2	14	12	9	12	12	11	–

Notes: [a] Analysis area names are property names used by Teichert/Stonebridge and Granite.
[b] Declines in use levels are color-coded in blue; increases are color-coded in pink.
+ = additional non-participant lands are included in the area.

The species nests in loose colonies in tall trees mainly in parks adjacent to streams or rivers and turf areas, but may use lower density residential areas where lot sizes are >0.5 ac. They generally fly short distances between feeding and nesting areas just above the height of the tree canopy.

Crows also breed and forage within residential areas, parks, and near schools. During the breeding season, they nest in mid-size to large trees. They forage close to nesting areas and fly mainly from below to just above tree canopy height. In the non-breeding season, however, they form large groups that commute daily at greater heights between urban roost areas and rural foraging areas in grassland and agricultural lands (see discussion under Section 9. Synergistic Effects).

7.0 EFFECTS OF CHANGES IN FLOOD MANAGEMENT ON BIRD USE AND COLLISION HAZARD

7.1 Flood Conditions and Changes under the Master Plan

7.1.1 Wetland Conditions under Existing Conditions

The Master Plan area includes a total of 238 acres of wetlands and other water features (Figure 2-2, Table 4-1). Existing wetland and other features were characterized in more detail by Madrone (2018) including, from highest to lowest existing acreages, vernal pools (natural and constructed), followed by channels, constructed channels and adjacent wetlands, seasonal wetlands, and seasonal wetland swales. Marshes, ditches, constructed depressions and constructed seasonal wetland swales, and ponds also occur (Figure 2-2). Notably, this characterization of wetlands and water bodies does not describe areas temporarily inundated under flood conditions, which is addressed in this Section.

Two other existing land covers that can result in surface water and are prominent in acreage are drying beds and industrial ponds, which occur as part of the aggregate mining operations but not recognized as jurisdictional wetlands. Drying beds are shallow basins used to dispose of sediment washed from aggregate that is delivered to the basins in slurry form in layers of approximately 12 inches (Madrone 2018). These drying beds are filled rotationally resulting in different states from shallow turbid ponds to mudflats or dry beds (Madrone 2018). Once dry, the slurry is turned by a tractor and compacted. This cover supports little biological activity due to its disturbed nature and high sediment concentration when flooded, and as a result is essentially unused by birds for foraging, although some roosting occurs there.

Twenty-one industrial ponds receive industrial wash water via pumps or flows from excavated drainage ditches (Madrone 2018). Teichert Aggregates conducts continual maintenance of the ponds and ditches, including the removal of vegetation (Madrone 2018). Irrigated areas are managed intensively through periodic cultivation, irrigation, hay harvest, and livestock use.

For purposes of the WHA, we combined vernal pools and associated seasonal wetlands with annual grassland into a single land cover type because these habitats comprise an interdigitated system.

7.1.2 Flooding under Existing Conditions and the Master Plan

Under existing conditions, 48 hours after the two-year storm event 944 acres would be flooded (Figure 7-1, Table 7-1). Under a 10-year event, flooding increases to 1031 acres with more acreage flooded in deeper water classes (Figure 7-2, Table 7-2). Under the Master Plan, flooding would decrease dramatically, by >80 percent under the 2-year and 10-year events (Figures 7-3 and 7-4) due to the construction of drainage improvements, detention facilities, and drainage pump stations (Wood Rodgers 2022, 2023) .

Table 7-1. Flooded Area (in acres) by Depth Class under 2-Year and 10-Year Storm Events under Existing Conditions and the West Jackson Highway Master Plan

Water Depth Class (feet)	2-Year Event			10-Year Event		
	Existing Condition	Master Plan	Percent Change	Existing Condition	Master Plan	Percent Change
0-1	566	102	-82%	548	105	-81%
>1-2	163	28	-83%	4	31	671%
>2-5	183	26	-86%	179	26	-85%
>5-10	30	1	-97%	206	1	-100%
>10	3	0	-100%	94	0	-100%
Total:	**944**	**157**	**-83%**	**1031**	**163**	**-84%**

7.2 Changes in Bird Use in Response to Flood Conditions

Only six of the potentially hazardous bird species/groups (Mute Swan, Canada Goose, ducks, gulls, and herons and egrets, and Bald Eagle) are expected to use flooded lands (Table 5-2). The substantial reduction in the amount and duration of flooding under the Master Plan, along with the conversion of non-flooded areas to land covers with lower value for these species shows clearly that the aircraft collision hazard associated with use of flooded lands would decline compared to existing conditions.

Figure 7-1.
Flooding under existing conditions 48 hours after the two-year storm event.

Map Features

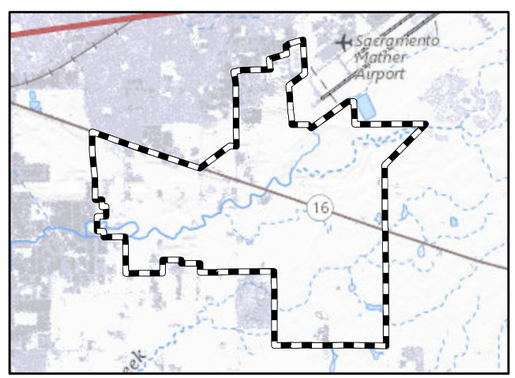
West Jackson Master Plan Area

Water Depth Class (ft)

- 0-1
- 1-2
- 2-5
- 5-10
- 10+

Note - Water depth is reflective of conditions 48 hours after the 24-hour storm event.

Source: ESRI USGS TOPO, World Street Map



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Map Date: 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

ECORP: N:\2022\2022-228 West Jackson Hwy SP BASH\MAPS\Hydro\WJHSP_2YR_Existing_Flooding_20230421.mxd (CCH)-chinkelman 4/29/2023

Figure 7-2.
Flooding under existing conditions 48 hours after the ten-year storm event.

Map Features

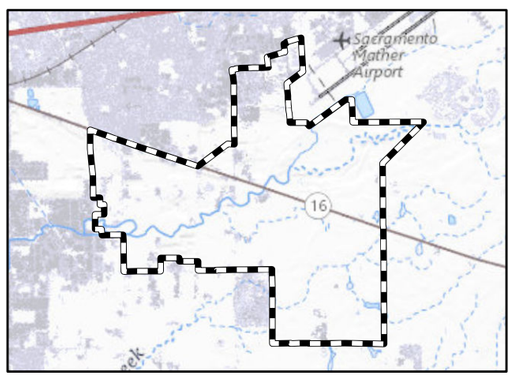
West Jackson Master Plan Area

Water Depth Class (ft)

- 0-1
- 1-2
- 2-5
- 5-10
- 10+

Note - Water depth is reflective of conditions 48 hours after the 24-hour storm event.

Source: ESRI USGS TOPO, World Street Map



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Map Date: 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
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Figure 7-3.
Flooding under Master Plan conditions 48 hours after the two-year storm event.

Map Features

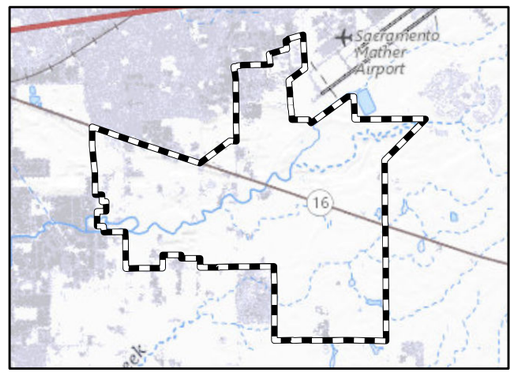
West Jackson Master Plan Area

Water Depth Class (ft)

- 0-1
- 1-2
- 2-5
- 5-10

Note - Water depth is reflective of conditions 48 hours after the 24-hour storm event.

Source: ESRI USGS TOPO, World Street Map



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2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

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Figure 7-4.
Flooding under Master Plan conditions 48 hours after the ten-year storm event.

Map Features

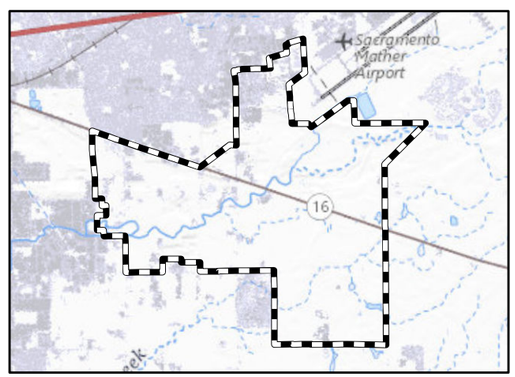
West Jackson Master Plan Area

Water Depth Class (ft)

- 0-1
- 1-2
- 2-5
- 5-10

Note - Water depth is reflective of conditions 48 hours after the 24-hour storm event.

Source: ESRI USGS TOPO, World Street Map



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Map Date: 4/29/2023

2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

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8.0 AIRCRAFT ACTIVITY, BIRD FLIGHT HEIGHTS, AND BIRD-AIRSTRIKE CHARACTERISTICS

8.1 Aircraft Flights over the Project Site

In total, aircraft associated with Mather Airport flew above the WJHMP Master Plan area during departures and arrival for a total of 27 flight hours (1,636 min) over the November 15 to December 15, 2022 reference period (Table 8-1). These data indicate that, on average, a plane is flying over the Master Plan area for 1:08 hours/day. Based on these data, no planes flew below 100 ft above the plan area, presumably because the end of the airport runway is about 1,800 ft from the closest boundary of the Master Plan area. Only 1 percent of flight time was spent between 100 and 500 ft, and roughly half of flights were at 500-1,500 ft over the plan area and the other half were above 1,500 ft.

Master Plan analysis areas adjacent to and in front of the Mather Airport runway that had the most flights at lower elevations were Aspen V+, Fairbairn-Machida, Aspen VI+ West, Granite 1, and Aspen V South+ (Figure 8-1). Of these areas, all of Machida and some of Fairbairn, Aspen V+ West, Granite 1, and Aspen South+ would be developed.

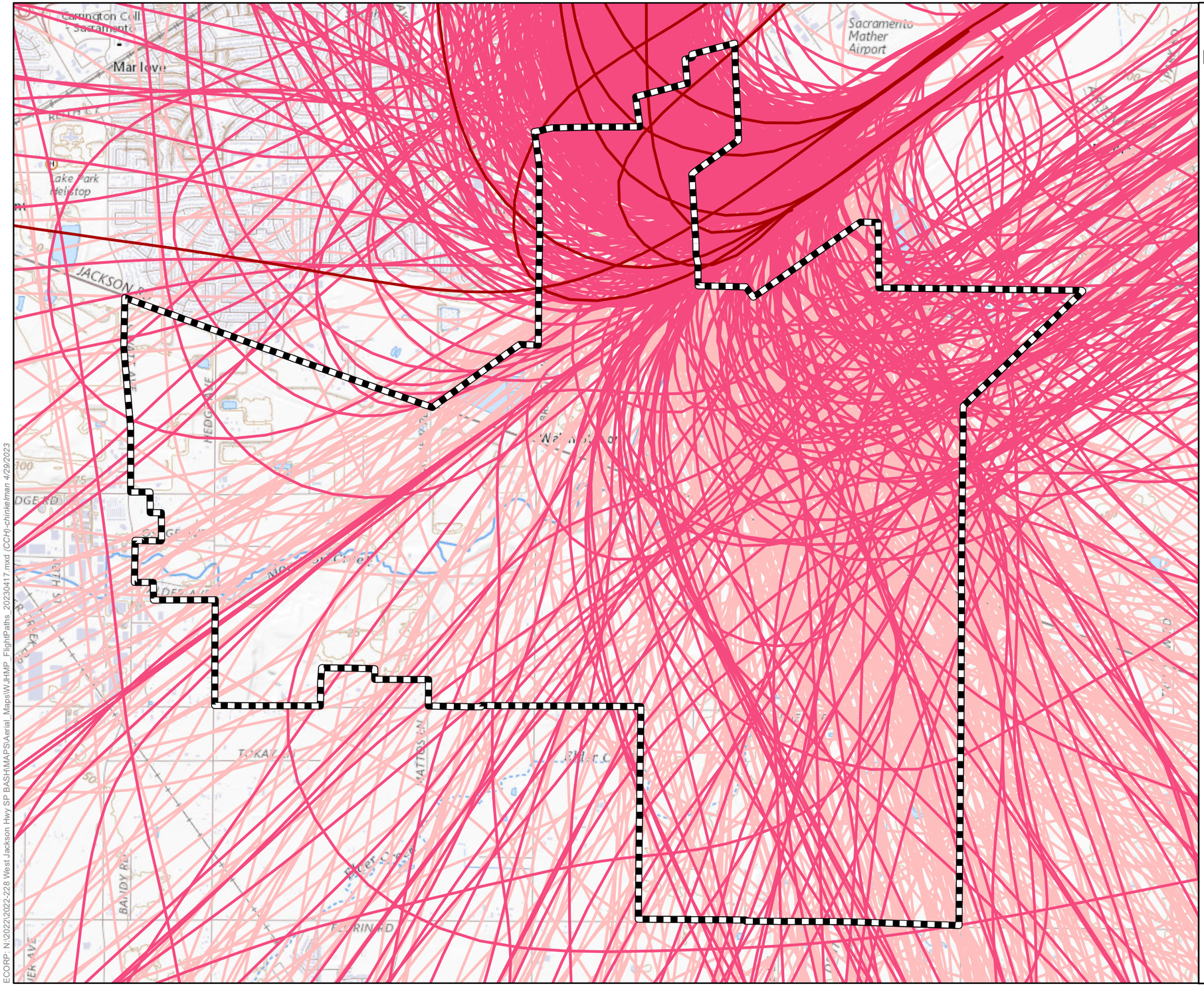


Figure 8-1.
Flight paths and heights from Mather Airport over the WJHMP area.

Map Features

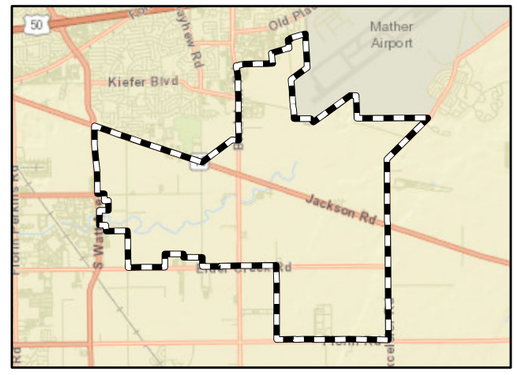
West Jackson Master Plan Area

Height Class

- 100-500 feet
- 500-1500 feet
- 1500-3000 feet

*all flights departing and incoming, every four seconds, between Nov 15-Dec 15 2022

Source: ESRI USGS TOPO, World Street Map



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Map Date: 4/29/2023

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2022-228 West Jackson Highway Master Plan

Scale in Feet
0 2,500

Table 8-1. Frequency of Aircraft Flights (Flight Minutes per Month) Over the West Jackson Highway Master Plan Wildlife Hazard Analysis Areas

Analysis Area[a]	Aircraft Flight Height (feet)[b]			Total	Percentage
	100-500	500-1,500	1,500-3,000		
Aspen II+	–	2.3	2.6	4.9	0
Aspen III South +	–	3.2	7.9	11.1	1
Aspen III+	–	4.7	19.1	23.8	1
Aspen IV	–	5.7	10.3	15.9	1
Aspen IV South	–	3.5	12.9	16.4	1
Aspen IX+	–	12.5	48.4	60.9	4
Aspen V South+	1.3	25.6	58.9	85.8	5
Aspen V+	8.4	40.4	18.0	66.8	4
Aspen VI+ East	0.1	112.4	108.3	220.8	13
Aspen VI+ West	2.6	49.3	68.9	120.8	7
Aspen VII+	–	28.5	142.1	170.6	10
Aspen VIII	–	16.1	71.3	87.3	5
Fairbairn Machida	5.3	249.1	17.5	271.8	17
Granite I+	1.6	128.4	71.6	201.6	12
Happy Lane	0.3	52.6	0.7	53.5	3
Mayhew+	–	6.5	10.9	17.4	1
Vineyard I+	–	4.4	21.2	25.6	2
Total:	**19.5**	**770.5**	**846.5**	**1,636.5**	**–**
Percentage of Flights:	**1%**	**47%**	**52%**	**–**	**–**

Notes: [a] Analysis area names are property names used by Teichert/Stonebridge and Granite.
[b] No aircraft flew at heights below 100 feet above the Master Plan area.
+ = additional non-participant lands are included in the area.
Source: Flight data were provided by SCDA for the period of November 15 – December 15, 2022

8.2 Mather Bird Airstrike Characteristics

The Mather collision database has several limitations for use in evaluating off-airport strike hazards. Most bird-aircraft collisions are known to occur at or near the ground during take-off and landing. For example, between 1990-2021, 71 percent of bird strikes occurred at or below 500 feet for both commercial transport and general aviation aircraft in the U.S. (Dolbeer et al. 2022). It is therefore likely that most of the reported collisions occurred at or immediately adjacent to the airport, and therefore the data are not

representative of collision risk over the Master Plan. Small sample sizes and imprecise identification of species involved in the collisions also hamper interpretation.

Characterization of patterns of bird strikes from data reported by Sacramento County Airports over 2012-2022 also are limited for several reasons. There is a relatively small sample size of 120 reports of bird strikes over an 11-year period (and average of 11 per year) and nearly one-third of the reported collisions are not identified to species (Table 8-2). Species identifications appear to have some inaccuracy, based on species reported that are not known to occur in the region (e.g., Gray-cheeked Thrush; Yellow-throated Warbler). Qualitative body sizes (small, medium, large) or birds involved in collisions are given, but without details on how these were determined and how much this varied based on who reported the strike.

In addition, only about half (62 out of 120) of the reports specify the height at which collisions occurred. Although most (but not all) reports include a description of where the strike occurred, many strike locations were deduced based on carcasses found on the ground during routine runway/taxiway inspections. The reports include species that were struck anywhere during flights by aircraft taking off from or landing at Mather Airport.

A total of 66,446 flights were reported to take off or land at Mather Airport during 2022. Therefore, collisions occurred during 0.017 percent (11/66,446) of flights. Only 72 birds involved in Mather-associated collisions were identified to species or species group. Species that typically spend most of their time on or just above the ground, including Horned Larks, sparrows, and the House Sparrow comprise 42 percent of collision reports, and many other primarily ground-foraging species (meadowlark, kestrel, thrush, Mourning Dove, and European Starling) comprise an additional 17 percent of collisions. Nearly one-third (32 percent) of collisions were reported to occur on the ground at Mather Airport, and an additional 25 percent occurred at heights below 100 ft.

Of 114 birds that Mather Airport personnel identified by size in collisions, 4 percent were large (>1,200 g; including one each of Snow Goose, Great Blue Heron, and Great Horned Owl and one identified species) and 20 percent were of medium size (500-1,200 g; gulls, hawks, owls). The remaining 76 percent were small (<500 g). All species that were involved in collisions that were identified as large and medium-sized by Mather Airport were included in this report as potentially hazardous species, except for the Snow Goose. Potentially hazardous species comprised 28 percent of reported collisions where species were identified (Table 8.2).

Table 8-2. Frequency of Reported Collisions by Bird Species with Aircraft Associated with Mather Airport, 2012-2022

Species[a,b]	Number of Reports	Percentage of Identified Species
Unidentified species	48	–
Horned Lark	17	24
Sparrows	11	15
Barn Owl	6	8
Western Meadowlark	6	8
Rock Pigeon	3	4
American Kestrel	3	4
Swallows	3	4
Great Blue Heron	2	3
White-tailed Kite	2	3
Swainson's Hawk	2	3
Hawk sp.	2	3
European Starling	2	3
House Sparrow	2	3
Great Horned Owl	1	1
Owl sp.	1	1
Red-tailed hawk	1	1
Red-shouldered Hawk	1	1
California Gull	1	1
Peregrine Falcon	1	1
Snow Goose	1	1
Mourning Dove	1	1
American Robin	1	1
Thrush Species	1	1
Western Sandpiper	1	1
Warbler sp.	1	1
Total	**120**	**–**

Notes: [a] Species in bold are treated as potentially hazardous species in this bird-airstrike hazard analysis.
[b] Underlined species are large (>1200 g).

8.3 Flight Heights of Potentially Hazardous Bird Species.

Relative frequencies of flights by potentially hazardous species in various height classes are shown in Table 8-3. All species spend the highest proportion of their time below 100 ft, a height at which no aircraft occur over the Master Plan area (Table 5.3-1). Use of areas within 100-500 ft, at which less than 1 percent of Mather Airport flight locations occur (Table 8-1), are used to a moderate extent by only about half of the species, mainly waterfowl, gulls, the Bald Eagle, buteo hawks, and crows, and at a low level by the other species. Bird use of areas at 500-1,500 ft, where nearly half of flights occur, was low or very low for all species. Heights above 1,500 ft, at which nearly half of flights occur, were considered unlikely to be used by half of the species and at a very low level by other species except the Turkey Vulture, where use at this height was rated as low.

Table 8-3. Relative Use of Various Height Classes by Potentially Hazard Bird Species for the West Jackson Highway Master Plan Wildlife Hazard Analysis

Species/Group	Flight Frequency at Various Heights (feet)				
	0-20	20-100	100-500	500-1,500	1,500-3,000
Mute Swan	High	Low	Low	Very Low	None
Canada Goose	High	High	Moderate	Low	Very Low
Ducks	High	High	Moderate	Low	Very Low
Rock Pigeon, Eurasian Collared Dove	High	High	Low	Very Low	None
Gulls	High	Moderate	Moderate	Low	Very low
Herons and Egrets	High	Moderate	Low	Very low	None
Turkey Vulture	High	High	Low	Low	Low
Bald Eagle	High	High	Moderate	Low	Very Low
White-tailed Kite, Northern Harrier	High	Moderate	Low	Very Low	None
Cooper's Hawk, Red-shouldered Hawk	High	High	Moderate	Very Low	None
Swainson's Hawk	High	High	Moderate	Low	Very Low
Red-tailed Hawk	High	High	Moderate	Low	Very Low
Great Horned Owl, Barn Owl	High	High	Low	Very Low	None
Yellow-billed Magpie, American Crow	High	High	Moderate	Low	None

Key to ratings:
High = Most of time spent at this height
Moderate = Regularly found at this height (i.e., daily)
Low = Infrequently found at this height
Very Low = Occurrence possible, but very rarely
None = Almost never expected to be seen at this height

8.4 Flight Height Hazard Analysis Conclusions

Interpreting the results of the aircraft collision and bird species flight height analyses is complicated by a lack of detailed collision reporting (see Section 8.2). However, several conclusions can be drawn. Nearly all aircraft flights associated with Mather Airport above the Master Plan area occur at heights above 500 ft, while most bird flight activity occurs below this height. Relatively few collisions (average of 9/yr) appear to occur with aircraft using Mather Field. Two-thirds of the species involved in collisions are small or medium sized (<150 g) and over half of the collision species forage on the ground and spend much of their time there. Thus, it is likely that many of the reported collisions occurred on or near Mather Airport where aircraft are flying close to the ground rather than over the Master Plan area or adjacent lands Also, as noted in the analyses of bird responses and to land use and flooding changes, most potentially hazardous species are likely to decline in abundance in the Master Plan area. Together, these factors suggest that collisions of avian species with aircraft above the Master Plan Area after plan buildout are likely to occur at low frequency and less often than under existing conditions.

9.0 SYNERGISTIC EFFECTS

Synergistic effects are defined by the FAA (2020) as hazards created as a result of project conditions, in combination with other offsite conditions (FAA Guideline 2.10, see Section 3.2). This section evaluates potential synergistic effects based on existing and post-project conditions created under the Master Plan in combination with surrounding lands, and how those changes could affect bird use patterns and potential bird-aircraft collision risk in and adjacent to the Master Plan area. Potential synergistic effects of project-related changes in land cover types or habitat elements (i.e., buildings, large trees, turf) could result in changes in attractiveness of the Master Plan area to birds that use surrounding lands. Birds using the site under post-project conditions also could be affected by future changes in external land uses, such that bird flights increase across aircraft flight paths. Synergistic effects are most likely to occur with species that travel between different breeding, roosting, and feeding sites, such as waterfowl, raptors, crows, and magpies.

9.1 Existing Regional Habitat Conditions

Regional habitat conditions and historical land-use provide a context for assessing the synergistic hazards associated with a project's land-use changes. Within a five-mile radius of the Mather Airport (i.e., the Airport Operations Area), major current land uses include:

- Mather Airport and airport development areas;
- Residential and commercial development and associated infrastructure;
- Major roadways including U.S. Route 50 to the north;
- Aggregate mining areas, industrial yards and ponds, and drying beds;
- The American River/American River Parkway and associated riparian areas, as well as other creeks and drainages and associated vegetation;

- Vernal pool grasslands and annual grasslands;
- Pastures irrigated for cattle grazing or hay production; and
- Agricultural fields and croplands.

The 5-mile area surrounding Mather Airport supports substantial areas of wetlands and other water features (Figure 2-2). These include channels and ditches; ponds and lakes; wetlands, swales and vernal pools; and riverine and riparian features (Figure 2-2).

9.2 Synergistic Effects

The potential for an increase in detrimental synergetic effects is based on evaluating species' uses of various land covers and other habitat elements for nesting, roosting, and foraging activities (Table 9-1). The assessment considered two factors that could result in movements among different land covers or habitats: the individual characteristics of the species (i.e., whether they move among different land covers for these activities) and whether the land covers that are used by these species increased or decreased under the Master Plan. Where changes in land uses in the Master Plan have the potential to create a synergistic concern, we then analyzed those effects by considering offsite conditions.

Table 9-1. Evaluation of Potentially Hazardous Species' Need for Consideration of Synergistic Effects, Based on Uses of Various Habitats for Nesting, Roosting, and Foraging

Species/Groups	Primary Habitats Used for Various Purposes			Synergy Components		Overall Synergy Concern Warranting Detailed Evaluation
	Nesting	Roosting	Foraging	Moves Regularly Between Different Habitats	Habitat Changes Under Master Plan (Table 6-6)	
Mute Swan	Ponds	Ponds	Ponds	No	Decrease	No
Canada Goose	Ponds	Ponds	Turf, grazed grassland	**Yes**	Decrease	No
Ducks	Ponds, ditches	Ponds	Ponds, rivers, agricultural fields	**Yes**	Decrease	No
Rock Pigeon and Eurasian Collared Dove	Buildings, trees	Developed Areas, farmlands	Developed Areas, farmlands	**Yes/No**	Increase	**Yes**
Gulls	Do not nest in Master Plan area	Ponds	Farmlands, grasslands, turf	**Yes**	Decrease	No
Herons and Egrets	Riparian Woodland	Riparian trees, wetlands	Wetlands, grassland	**Yes**	Decrease	No
Turkey Vulture	Do not nest in Master Plan area	Large trees	Grassland	**Yes**	**Increase**	**Yes**

Table 9-1. Evaluation of Potentially Hazardous Species' Need for Consideration of Synergistic Effects, Based on Uses of Various Habitats for Nesting, Roosting, and Foraging

Species/Groups	Primary Habitats Used for Various Purposes			Synergy Components		Overall Synergy Concern Warranting Detailed Evaluation
	Nesting	Roosting	Foraging	Moves Regularly Between Different Habitats	Habitat Changes Under Master Plan (Table 6-6)	
Bald Eagle	Do not nest in Master Plan area yet	Riparian trees	Ponds, rivers, grasslands	**Yes**	Decrease	No
Northern Harrier, White-tailed Kite,	Marsh, grassland (harrier) trees (kite)	Marsh, riparian trees	Grassland, wetland	**Yes**	Decrease	No
Red-shouldered Hawk, Cooper's Hawk,	Riparian Woodland, Residential (Urban Forest)	Riparian Woodland, Residential (Urban Forest)	Riparian Woodland, Residential (Urban Forest)	No	**Increase**	No
Swainson's Hawk	Residential (some in urban forest)	Residential (some urban forest)	Agriculture, grassland	**Yes**	Decrease	No
Red-tailed Hawk	Woodlands	Woodlands	grassland, agriculture	**Yes**	Decrease	No
Great Horned Owl and Barn Owl	Trees (Great Horned); Farm Buildings (Barn Owl)	Trees, Farm Buildings	Grassland, parks	**Yes**	Decrease	No
American Crow, Yellow-billed Magpie	Riparian Woodland, Residential (Urban Forest)	Urban Downtown (crow), Riparian Woodland, Urban Forest	Grassland, Turf, Residential	**Yes/No**	**Increase**	**Yes**

Of 14 potentially hazardous species and groups, 12 tend to move among different land covers or habitat elements during daily activities (i.e., breeding, roosting and/or foraging, Table 9-1). The Mute Swan, Eurasian Collared Dove, and Red-shouldered and Cooper's Hawks do not regularly use different land covers or habitat elements for daily activities. The Rock Pigeon can travel long distances from breeding and roosting areas to farm fields to forage. For the 12 species that exhibit daily movements, nine were considered to have reduced potential for synergistic effects under the Master Plan because the land covers and habitat elements that they use would be reduced (Tables 6-4, 6-5, 6-6, and 9-1). Application of these two factors to the list of potentially hazardous species indicates a potential for development of the Master Plan could have potential for adverse synergistic effects only for a few species: Rock Pigeon,

Turkey Vulture and American Crow. Potential synergetic effects for these species are analyzed in more detail below.

Synergistic effects depend on habitat characteristics both within and outside of the Master Plan area. Several Sacramento County guidance documents can be used to generally predict future land uses in the area surrounding the Master Plan area, and bird use patterns that result from the synergy between onsite and offsite lands. The Sacramento County General Plan was recently updated through the year 2030 (Sacramento County Planning and Community Development Department 2011). The draft General Plan identifies numerous adopted and pending development master plans in the Jackson Highway Planning Area. Under these plans, surrounding lands would consist of a variety of land uses, but overall, the intensity of developed uses and associated land cover can reasonably be expected to increase over existing conditions.

Creation of more developed area within the Master Plan area could create nesting opportunities for Rock Pigeons. The gradual growth of the urban forest could attract a variety of species for nesting and roosting (Table 6-6 and see Section 6-2), but species of greatest concern for synergistic effects are roosting Turkey Vultures and American Crows.

Rock Pigeons. The Rock Pigeon, characterized as a small species by SCDA, nests in both highly urbanized areas and in rural farmsteads, but generally avoids nesting in residential and suburban commercial areas. The species feeds in urban areas and open suburban areas (e.g., parks and schools), but also commutes long distances to feed on seeds in agricultural fields (especially wheat; Helix Environmental Planning 2019, D. Airola, pers. obs.). Potential for significant synergistic effects for this species is low for several reasons, besides its relatively small size. Breeding by Rock Pigeons can be discouraged through architectural design that avoids creating nesting habitat (see Section 10.5.2).

Turkey Vulture. Turkey Vultures nest primarily on cliffs and in boulder piles, and less often hollow logs, tree stumps, abandoned buildings A primary requirement is a low level of human disturbance. (Kirk and Mossman 1998). Vultures do not nest within the Master Plan area and would not be expected to do so under the conditions of the Master Plan. Vultures in the Sacramento Region tend to roost in woodlands, parks and some residential areas with many old (>80-years old) trees (Airola 2011). They are most abundant at roosts during fall migration but use roosts in smaller numbers during winter and during spring migration. Wintering birds move daily from roosts to grasslands where carrion is most abundant and then return in the evening.

The Master Plan area is unlikely to attract roosting vultures because roosts are a relatively rare phenomenon and used areas all have older, taller trees. As a result, the Master Plan development appears to be unlikely to create a synergistic hazard posed by Turkey Vultures movements. In fact, the reduction in grassland foraging habitat under the Master Plan is more likely to reduce synergistic effects compared to existing conditions. Measure to further reduce the potential for establishment of a vulture roost could include avoiding planting of trees that reach tall stature, especially at parks and schools, removing trees if they become attractive, and employing deterrence (e.g., drones) to discourage use.

American Crow. American Crows breed in natural riparian and oak woodlands and in residential areas. They feed in a variety of sites, including agricultural lands, grasslands, and residential areas. During the

breeding season, crows establish territories and remain within them to breed and feed young, so they do not travel extensively. During the non-breeding season, most of the region's crows (roughly estimated at 30-50,000) fly up to 10 miles from feeding areas to roost in Downtown Sacramento, presumably to avoid predators and take advantage of the "heat-island" effect (warmer night temperatures radiated from buildings and streets that heat during the daytime). Most of these roosting birds then leave the residential areas to feed in agricultural areas and grasslands.

The current morning and evening movements of crows would seem to pose a substantial hazard to aircraft, although no recent collisions have been reported (Table 8-2). Although creation of nesting habitat under the Master Plan could increase crow populations during the breeding season, this increase would not cause a synergistic hazard due to their site fidelity during this season. Importantly, the reduction of grassland habitat under the Master Plan would reduce the attraction to this area by wintering birds leaving the downtown Sacramento roost, thereby reducing a significant hazard. Some crows would be attracted to forage in turf areas under the Master Plan, but most of those birds would come from breeding areas within the Master Plan and would only partially offset the large decline in existing forging habitats in annual grasslands and seasonal wetlands.

10.0 OVERALL EVALUATION OF POTENTIAL CHANGES IN WILDLIFE HAZARDS TO AIRCRAFT UNDER THE MASTER PLAN

Overall hazards posed by bird-aircraft collisions are comprised of the effects of the four contributions to hazards addressed in this report. Those effects are summarized there, with an overall determination as to whether changes under the Master Plan would contribute to an increase or decrease in potential bird-aircraft collision hazard.

10.1 Changes in Land Cover under the Master Plan

Changes in land cover would reduce habitat value for, and expected use by, most potentially hazardous species. The two biggest drivers of this change would be the development of existing lands currently dominated by grassland and seasonal wetlands, and substantial reductions in amounts of wetlands and agriculture. Of the species that are predicted to increase, most (Cooper's and Red-shouldered hawk, American Crow, and Yellow-billed Magpie) would not increase for several decades until the urban forest matures. They generally remain at or below the canopy level except for the hawks, when they display in the spring. The Rock Pigeon can be managed to low population levels through architectural guidelines (to discourage nesting and roosting) and farm management practices to reduce their breeding and feeding there.

Given that most potentially hazardous species will decline, and those that will increase pose limited risk of collision, the change in land cover under Master Plan development is considered highly likely to *reduce* potential bird-aircraft collision hazards.

10.2 Changes in Bird Use as a Result of Changes in Flooding Regime

Development of the Master Plan and its intensified infrastructure to convey, concentrate, detain, and evacuate flood waters, will reduce the amount of area flooded 48 hours after the end of the 2-year and 10-year flood events by >80 percent from existing conditions. Only five of the potentially hazardous species/groups (swans, geese, ducks, gulls, and herons and egrets) are attracted to flooded conditions. Land use changes under the plan also will result in a decrease in aquatic bird species. Flood management and reduced flooding extent under the Master Plan therefore will substantially reduce potentially hazardous waterbird use of the Master Plan area compared to existing conditions. Thus, the flood-related bird-aircraft collision hazards is considered highly likely to decline under the Master Plan.

10.3 Aircraft and Bird Flight Analysis

Analysis of aircraft flight paths determined that no Mather-associated flight would occur below 100 ft over the Master Plan area, and only 1 percent of flights (representing an average of 32 sec/day of flight time) would occur between 100 and 500 ft. Nearly half of flights would occur at 500-1,500 ft and the other half at >1,500 feet. Collision data from Mather documented relatively few collisions (average of 9 per year) and most specie identified in collisions were mainly small ground dwelling and were struck on the ground (32 percent) or in the air below 100 ft (25 percent) during takeoff and landing. Evaluation of relative frequencies of bird flight heights showed that all species/groups of interest spend most of their time below 100 ft, and relatively few flights occurred above 500 ft. Those species that regularly fly at highest altitudes, such as Turkey Vultures, can be discouraged through urban forest management practices.

The flight and collision analysis suggests that collisions above the Master Plan area are likely few under current conditions and are unlikely to increase, and may even decrease, under conditions of the Master Plan.

10.4 Synergistic Effects

Eleven potentially hazardous species make movements between breeding, roosting and foraging habitats, creating the potential for synergistic effects (i.e., attractions that increase bird movements across aircraft flight paths). Use of the Master Plan area is expected to decline for nine of these species because of changes to less favorable habitat conditions.

Examination of the one of the two species, the American Crow, would increase in the breeding season when it is sedentary and thus poses no synergistic hazard, and the hazard of wintering birds commuting from downtown Sacramento roost to grassland foraging habitat would decrease under the Master Plan. Although establishment of wintering Turkey Vulture roosts in the maturing urban forest under the Master Plan could pose a hazard, suitable roosting habitat would not develop for decades and could be managed to eliminate use and resulting hazards.

In total, development of the Master Plan would reduce potential synergistic effects of hazardous bird species, primarily by replacing higher value habitats with lower quality habitats for most species.

10.5 Recommended Implementation Measures to Minimize Bird-Aircraft Collision Hazard

Notwithstanding the consistent conclusions that development under the Master Plan would reduce potential bird aircraft collision hazards, reasonable measures that could further reduce potential for collisions are warranted. The following measures are identified for consideration for incorporation into the Master Plan as project commitments.

10.5.1 Detention Basin Design and Management

Ensure that detention basins meet their design intent, to ensure that flood waters are capable of being evacuated within 48 hours of the end of flood events, subject to adequate capacity in receiving waters.

Design detention basins with steep sides to reduce the total area and the amount of shallow-flooded areas, which are most attractive to potentially hazardous waterbirds.

10.5.2 Architectural Design to Minimize Pigeon Nesting

Incorporate standard design elements into buildings that discourage nesting and roosting by pigeons, including avoiding flat surfaces (i.e., exposed beams) covered by eaves or roofing or niches that could serve as nesting sites. If nest sites are accidentally created in public buildings, install retrofitted measures to prevent nesting (e.g., netting, *spike-strips*).

If nesting areas are observed on public buildings, screen access to exclude pigeons and offer similar services to owners of private commercial buildings and residences.

Prohibit fountains and decorative small ponds in commercial areas, to avoid attracting Canada Geese and ducks.

10.5.3 Park and School Planning, Design, and Management

Although establishment of some irrigated turf at schools and parks is inevitable, minimize its use to the extent possible to discourage Canada Geese, crows and magpies, and other species.

Break up larger expanses of turf, such as at sports field, with trees to decrease their attractiveness to geese, gulls, and crows.

Preferentially locate sports fields and other areas with larger amounts of turf within the Master Plan area further from Mather Airport.

Do not construct any permanent or seasonal ponds within parks or other public use areas within 10,000 ft of the Airport, to avoid attracting Canada Geese and ducks (Helix 2019).

Avoid planting fruit bearing trees in schools, parks, road corridors, and residential areas, to avoid attracting crows and smaller fruit-eating species (i.e., robins, starlings, waxwings).

10.5.4 Urban Farm Management

Maintain, as intended, a diverse mixture of crops in urban farm areas, and avoid growing alfalfa, to avoid attracting concentrations of geese and raptors.

Design and manage barns and other farm buildings to avoid creating nesting areas for Rock Pigeons, Ravens, Barn Owls, and other structure-nesting birds.

10.5.5 Public Education and Outreach

The local Parks Department should establish regulations to discourage feeding of wildlife in parks to discourage use by Rock Pigeons and crows.

Local governments should provide educational information to residents and commercial to discourage and address pigeon nesting. Local code should prohibit the maintenance of homing pigeon lofts within 5 miles of the Airport.

10.5.6 Adaptive Management

Conditions that affect bird-aircraft collision hazards are bound to change over time. Aircraft and their flight patterns may change, and adjacent land use changes outside of the Master Plan cannot be fully anticipated. Bird populations will respond to development and the gradual maturation of the urban forest, as the WHA has addressed. Although the WHA considered the available information as carefully as possible, there is always some level of uncertainty. In addition, however, bird communities are dynamic and may change over time in response to new non-native species introductions, changes in geographic range and abundance in response to climate change and other factors, and adaptation of species to urban landscapes (e.g., Pandolfino et al. 2021). Therefore, a mechanism should be established to periodically review bird-aircraft collisions and to evaluate hazard conditions, and to adjust hazard minimization strategies as needed.

10.6 Final Conclusions Regarding Changes in Potential Bird Airstrike Hazard Resulting from the Master Plan

The risk of bird-aircraft collisions is not expected to significantly increase under the Master Plan. Changes in land use are expected to reduce the potential for hazards. Changes in resulting bird use are similarly expected to decrease. The flight and collision analysis demonstrated a relatively low risk with existing conditions, which may stay the same or decrease under the Master Plan. Synergistic effects are expected to decrease and or be mitigated by implementing minimization measures. Overall, the incidence of bird-aircraft collisions is not expected to increase, and rather is likely to decrease, as a results of the Master Plan buildout.

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LIST OF APPENDICES

Appendix A – Qualifications of Wildlife Hazard Assessment Preparers

Appendix B – List of Excluded Species with Rationale for Their Exclusion

APPENDIX A

Qualifications of Wildlife Hazard Assessment Preparers

This report was prepared by Angela Haas and Daniel Airola in cooperation and consultation with personnel from Sacramento County Department of Airports (SCDA) and their Wildlife Biologist/Avian Hazard Manager David Jernigan. The proposed methodology for the analysis was presented and discussed with SCDA and input was incorporated into the methods used here. Authors' qualifications are provided below.

Angela Haas

Angela Haas is an avian ecologist with eight years' experience in bird identification and behavior, surveying, and monitoring. Angela received an M.S. degree in Ecology, Evolution, and Conservation from California State University Sacramento, where she conducted a thesis on Central Valley avian communities and habitat associations on lands adjacent to the West Jackson Highway Master Plan Master Plan area. She later published her findings in the Journal of Urban Ecology (Haas et al. 2020). Angela has led and conducted surveys of numerous bird species in a variety of habitats. She also has served as a Project Manager assisting clients with local, state and federal regulatory compliance at the nexus of wildlife habitat and urban development. She has assisted with analyzing project impacts, permitting and CEQA processes, and has developed and implemented bird species management plans.

Angela also regularly participates in voluntary research efforts, including conducting Short-eared Owl surveys over three years for the Western *Asio flammeus* Landscape Study. She also served as Lead Biologist on a Burrowing Owl conservation project that included creating habitat and nest success monitoring. She currently assists with year-round avian population monitoring with a local nonprofit.

Daniel Airola

Daniel Airola is a Certified Wildlife Biologist, ornithologist, and conservation planner with extensive knowledge of the distribution, abundance, and ecology of birdlife in the Sacramento region. He has 43 years of professional experience, mostly as a biological consultant in the Sacramento region. He has conducted numerous wildlife surveys, analyzed project impacts for environmental documents and permits, and developed conservation and habitat restoration plans. His airport-related work has included conducting four Wildlife Hazard Analyses for mining and development projects along Jackson Highway, including some of the same properties included in the West Jackson Highway Master Plan area. He also conducted studies and analyzed impacts for a major project, which did not proceed, to redesign the runway configuration at San Francisco International Airport.

Dan also runs an extensive research program on bird ecology, habitat relationships, and conservation. He has published over 80 scientific papers, mostly on raptors and songbirds in the Sacramento region, including Swainson's Hawk, Turkey Vulture, Osprey, Yellow-billed Magpie, Tricolored Blackbird, corvids (jays, crows), Purple Martins, and other songbirds. He serves as the editor of the journal *Central Valley Birds*, which regularly publishes articles on local bird status, distribution, ecology, and conservation. Dan also is an avid field ornithologist, birding regularly throughout the Sacramento region.

APPENDIX B

List of Excluded Species with Rationale for Their Exclusion

Species/Group	Body Size (g)	Size Reference Species	FAA Relative Hazard Score	Hazard Score Reference Species	Criteria for Exclusion from Hazard Analysis				
					Uncommon in Area	Needs Larger Water Bodies	Mostly Non-Flocking	Small (<150 g)	Remains Mainly at or Below Canopy Height
California Quail, Wild Turkey	5,800	Wild Turkey (ave. female and male)	NR[a]	–	–	–	–	–	X
Mourning Dove	120	–	5	–	–	–	X	X	X
Hummingbirds	4.3	Anna's Hummingbird	NR	–	–	–	X	X	X
Grebes, Rails, Gallinule, and Coots	147	American Coot	25	American Coot		X	X	–	X
Killdeer	95	–	2				X	X	X
Shorebirds/peeps	40	Spotted Sandpiper	1	Pacific Golden Plover	–	X	X	X	–
Double-crested Cormorant	1,700	–	–	–	–	X	X	–	–
Osprey	1,600	–	NR	–	X	X	X	–	–
Small Owls	155	Burrowing Owl	1	Burrowing Owl	X	–	X	–	X
Woodpeckers	38	Nuttall's Woodpecker	NR	–	–	–	X	X	X
American Kestrel	117	–	2	–	–	–	X	X	X
Tyrranid Flycatchers	40	Western Kingbird	0	Western Kingbird	–	–	X	X	X
Vireos	11	Hutton's Vireo	NR	–	–	–	X	X	X
Common Raven	1,200		NR	–	X	–	X		
California Scrub-Jay	85	Western Scrub-Jay	NR	–	–	–	X	X	X
Horned Lark, American Pipit	32	Horned Lark	1	Horned Lark	–	–	–	X	X
Swallows	19	Barn Swallow	1	Barn Swallow, Tree Swallow	–	–	X	X	X

Species/Group	Body Size (g)	Size Reference Species	FAA Relative Hazard Score	Hazard Score Reference Species	Criteria for Exclusion from Hazard Analysis				
					Uncommon in Area	Needs Larger Water Bodies	Mostly Non-Flocking	Small (<150 g)	Remains Mainly at or Below Canopy Height
Oak Titmouse	17	–	NR	–	–	–	X	X	X
Bushtit and Kinglets	6	Ruby-crowned Kinglet	NR	–	–	–	–	X	X
Wrens	11	House Wren	NR	–	–	–	X	X	X
Western Bluebird	29	–	NR	–	–	–	X	X	X
American Robin	77	–	7	–	–	–	X	X	–
Thrushes	31	Hermit Thrush	NR	–	–	–	X	X	X
Cedar Waxwing	32	–	NR	–	–	–		X	
Northern Mockingbird	49	–	NR	–	–	–	X	X	X
Blackbirds, Meadowlark, and Starling	52	Red-winged Blackbird	6	European Starling	–	–	–	X	–
Sparrows	20	Savanna Sparrow	1	Savanna Sparrow	–	–	–	X	X
Finches	21	House Finch	NR	–	–	–	–	X	X
Warblers	12	Yellow-rumped Warbler	NR	–	–	–	X	X	X
Grosbeaks, buntings, tanager	28	Western Tanager	NR	–	–	–	X	X	X

Notes: [a]NR = Not rated by FAA; g = Grams.

Department of Airports
Cindy Nichol
Director

Divisions
Operations & Maintenance
Finance & Administrative Services
Commercial Development
Planning & Development

County of Sacramento

November 16, 2023

Mr. Mike Isle
Teichert Land Co./Stonebridge Properties
3500 American River Drive
Sacramento, CA 95864

Subject: West Jackson Highway Master Plan, Wildlife Hazard Assessment Review (corrected December 21, 2023)

The proposed West Jackson Highway Master Plan (WJHMP) consists of a 5,913-acre planning area to be developed, which occurs within 0.25-3.0 miles from Mather Airport. The Master Plan would result in construction of residential and commercial uses with associated flood control facilities, schools, parks, urban farming and other uses in an area that mostly supports grasslands, seasonal wetlands, and active and reclaimed aggregate mining lands. The development will reduce the amount of area flooded 48 hours after the end of the 2-year and 10-year flood events by >80 percent from the existing conditions.

Consistent with Federal Aviation Administration (FAA) regulations, StoneBridge and Granite commissioned preparation of the Wildlife Hazard Assessment (WHA) to evaluate whether the developed Master Plan would increase the risk of bird-aircraft collisions and determine what measures should be taken to minimize any increase. The analysis focused on 14 species and species groups considered to pose the greatest risk to aircraft ("potentially hazardous bird species"), selected based on 1) their size and resulting potential for aircraft damage, and 2) propensity to collide with aircraft determined from bird-aircraft collision data from Mather Airport, FAA's national collision data report and hazard assessment, and the authors' knowledge of species in the region.

The Sacramento County Department of Airports (SCDA) has completed a thorough review of the West Jackson Highway Master Plan, Wildlife Hazard Assessment.

SCDA appreciates the thorough WHA developed for the proposed Master Plan. Our Wildlife team has reviewed the data and personal observations along with your team's interpretation of the data. We agree with most of the interpretations and observations, but the assessment is missing a thorough evaluation of bird species

such as European Starling, Brewer's Blackbirds and Cliff Swallows. While these species don't seem like they are much of a threat to aircraft safety because of their small size, the fact that they typically fly in very large flocks or in dispersed flocks within a small area, they do pose a substantial threat to aircraft safety. Both Brewer's Blackbirds and European Starlings are attracted to developed areas for both nesting and roosting. Cliff Swallows are also attracted to large buildings and waterway concrete box culverts/structures for nesting.

The WHA has pointed out that as each development in the Master Plan is designed, they will use architectural guidelines to discourage nesting and roosting and farm management practices to reduce their breeding and feeding. We greatly appreciate the effort to reduce bird attractants by modifying development designs. SCDA would like to comment on each development under the Master Plan as they are designed. In addition to structures, we would also like to comment on planned landscaping designs as landscapes can potentially create major attracts, that by themselves may not pose much of an attractant, but because of the synergistic effect relative to other open fields or structures could create new flight paths across Mather Airport.

SCDA also requests that the Master Plan owners develop a Wildlife Hazard Management Plan (WHMP) for the overall development. We understand the complexity of our request at this time, since none of the planned areas have design specifics. Other smaller developments near Sacramento International Airport have created successful WHMP's and are evaluated annually to ensure the Plan is effective. We envision the WHMP for WJHMP to be a living document, which will also be evaluated annually to verify that measures in the plan are maintaining the planned effectiveness to reduce wildlife attractants when possible. The plan should include provisions for the continuity of collaboration between the SCDA and the appropriate development representative (HOA provision?) in the event changes in wildlife activity in the project area create new or worsen existing hazards or in the event an increase in the frequency or severity of wildlife strikes to aircraft can reasonably be traced to conditions in the WHMP plan area.

SCDA appreciates the consideration the WJHMP team has given to our concerns regarding potential hazardous wildlife attractants near Mather Airport and the efforts undertaken in your planning to minimize them. SCDA Wildlife staff remains fully available to consult or otherwise assist in your development and revision of any WHMP, so please feel free to reach out to us for any reason.

Sincerely,

J. Glen Rickelton
Senior Airport Manager, Planning and Development
Sacramento County Department of Airports

Cc: David Jernigan, SCDA Airport Wildlife Biologist

APPENDIX D

ASPEN VIII & IX PROJECT
BIOLOGICAL RESOURCES ASSESSMENT

Biological Resources Assessment

Aspen VIII & IX Project
Sacramento County, California

Prepared for:

County of Sacramento
Planning and Environmental Review
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~~December 2014~~
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1.0 INTRODUCTION

Teichert Materials (Teichert) conducted a biological resources assessment on approximately 682 acres of its Aspen VIII and IX Property (Property). Teichert proposes to mine approximately 357acres of the Property for aggregate (sand and gravel) resources (Project). Upon the completion of mining operations, the site will be reclaimed to open space annual grassland and/or irrigated pasture suitable for grazing. This report discusses the biological resources present on and potentially affected by the proposed Project. In addition, this report includes a summary of the applicable laws and regulations related to biological resources and the resource agencies responsible for their implementation.

Field surveys were conducted to identify existing biological resources present on the site and to determine if habitats present could support any special-status species. In addition, sensitive habitat areas (i.e., wetlands, riparian vegetation, trees, etc.) have been mapped and quantified using global positioning system (GPS) technology and aerial interpretation. Potential significant impacts that may occur to these resources as a result of the proposed Project are identified and mitigation measures are suggested to reduce impacts to less than significant.

1.1 PROJECT SITE LOCATION AND SETTING

The Property is located approximately 2 miles south of Mather Field and one-half mile east of Bradshaw Road in unincorporated Sacramento County (Figure 1). The site is located within a portion of the *Rio de Los Americanos Land Grant*, in Township 8 north, Range 6 east, Sections 27, 28, 33, and 34 of the USGS 7.5-minute series *Carmichael, California* quadrangle. Aspen VIII (Sacramento Co. Assessor's Parcel Numbers [APNs] 063-0180-005,-006 and 063-0160-001) consist of approximately 319 acres and Aspen IX (APNs 066-0020-006, 066-0030-001 and 066-0050-003) includes approximately 363 acres (Figure 2). The approximate center of the study area is located near Elder Creek Road at 38° 30' 39" North and 121° 19' 03" West within the Elder Creek Watershed. Elder Creek Road bisects the Property, with Aspen VIII to the north and Aspen IX to the south (Figures 2 and 3).

Existing habitat includes annual grasslands and irrigated pastures scattered with wetlands and other waters, including Elder Creek (Figure 3). The majority of the site is used as rangeland for livestock and irrigated pasture for forage production, interspersed with three separate rural residential homes. Current surrounding land uses include annual grasslands and grazing, rural residential homes, Bellevue and Arlington Cemeteries (a.k.a. Quiet Haven Memorial Park), a nursery facility (Village Nurseries), and a wastewater treatment facility (Vineyard Surface Water Treatment Plant).

1.2 PROJECT DESCRIPTION

Teichert is proposing to mine existing aggregate material (sand and gravel) on approximately 357 acres of the Property (Figure 4). The proposed Project will consist of aggregate removal and conveyance, as well as reclamation for agricultural (i.e., grazing and forage production) purposes (Teichert 2015a). The

Project is an extension of mining on Teichert's 'Aspen' properties, which have continuously supplied aggregate resources to Teichert's materials processing operations since the 1950s.

A timetable of 10 to 25 years is proposed to complete the Project, including all reclamation requirements. In general, mining will begin at the northern border of Aspen VIII and progress in a southerly direction toward Aspen IX. Two separate mine pits are proposed as part of the Project (Areas A and B) (Figure 4). The two areas are separated from Aspen IX by Elder Creek Road. Sequential activities in each area of operations include: removal of topsoil; removal of overburden; removal of aggregate material by scrapers, loaders, dozers and excavators; transport of material to Teichert's processing plant using an electrical conveyor system; and reclamation concurrent with mining.

Material mined from the site will be transported via conveyor belt to Teichert's Perkins processing plant, approximately 4 miles to the northwest (Figure 1). This conveyor will exit near the northwestern corner of Aspen VIII, where it will extend into the neighboring Aspen V-South Property to the north, before eventually tying into an existing conveyor system on a permitted mining area on Aspen V-South. As mining progresses southward, a conveyor tunnel will be constructed underneath Elder Creek Road to transport aggregate material mined from Area B (Aspen IX) (Figure 4). Once mining operations are completed, the conveyor line will be removed and its footprint reclaimed in accordance with the proposed reclamation plan for the Project. In addition to mining activities, Teichert proposes to improve an existing culvert that connects Elder Creek between the Aspen VIII and IX Properties from underneath Elder Creek Road (Figure 4). All ancillary elements and construction activities, including conveyor between Aspen VIII and Aspen V-South, tunnel under Elder Creek Road, and culvert replacement in Elder Creek, have been included as part of the Project (Figure 4).

1.3 PRESERVATION

The proposed Project would preserve approximately 90.63 acres, including 5.313 acres (or 8,368 linear feet) of Elder Creek (Figure 4). This preserve is intended to protect the entire stretch of Elder Creek on the Project Site. Much of Elder Creek is presently lacking riparian vegetation due to historic grazing pressures. Native trees have been proposed to be planted along a portion of the Preserve to mitigate for impacts to oaks and other trees as part of the Project (Teichert 2015c). Fencing of the preserve to restrict grazing, combined with additional planting of riparian vegetation, is intended to further protect and enhance existing conditions along Elder Creek.

1.4 RECLAMATION

The proposed end use for the Project Site after reclamation is open space annual grassland and/or irrigated pasture suitable for grazing (2015a). To achieve this end, overburden and topsoil will be placed and graded to provide an appropriate growing medium for the establishment of a protective vegetative cover and future forage use. Slopes will be reclaimed to no steeper than two feet horizontal to one foot vertical (2:1), with rounded edges in order to mimic surrounding landforms, and then seeded to prevent erosion. After reclamation slopes have been constructed, the pit floor will be completed and seeded

with an appropriate grassland or pasture seed mix selected for forage value. Reclamation of all mined areas will feature a total of approximately 66.3 acres of grassland slopes surrounding approximately 260.8 acres of annual grassland and/or irrigated pasture habitat within the reclaimed floor (Figure 5). Other areas, totaling approximately 32.7 acres, will also be restored back to grasslands (i.e., former stockpile areas, berms, future pads for road right-of-ways, etc.). In addition, approximately 14.2 acres of stormwater retention pond areas will be created on the pit floor to collect surface runoff, provide supplementary water sources for cattle, and protect surrounding land.

A Reclamation Plan (Plan) has been prepared for the Project pursuant to the California State Surface Mining and Reclamation Act (SMARA) of 1975 and associated regulations (updated January 2012) and the Sacramento County Code (Teichert 2015a). Included in the Plan are detailed descriptions of existing site conditions (including soils and hydrology), site-specific plans for soils removal/handling and erosion-control, protocols for vegetation establishment and protection (including noxious/invasive weed management), and specific monitoring and performance standards for revegetation success. The revegetation methods outlined in the Plan are intended to optimize the grazing quality of the Project Site and the aesthetic value of the area, while also providing foraging habitat for raptors and other species. In order to ensure long-term beneficial use of the site as proposed, a grazing management plan is also included in the Plan.

2.0 REGULATORY OVERVIEW

This section provides a brief summary of the federal, state, and local policies and regulations that are relevant to addressing the biological resources identified at the Project Site. Regulated or sensitive resources studied and analyzed herein include special-status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, and locally protected resources, such as native oak trees.

2.1 FEDERAL REGULATIONS

2.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) protects plants and animals that are listed as endangered or threatened by the National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS). In general, NMFS is responsible for the protection of listed marine species and anadromous fish species, while other listed species are under USFWS jurisdiction. Section 9 of the FESA prohibits the taking of threatened or endangered wildlife, where taking is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50CFR 17.3). The FESA prohibitions and requirements are different, however, for federally threatened or endangered plant species. For plants, the FESA prohibits the taking of threatened or endangered plants only from areas within federal jurisdiction, or if such take would result in a "knowing violation of any [State law or regulation]" (16 USC 1538). Therefore, in the absence of a federal nexus, a project does not require an incidental take permit pursuant to FESA for impacts to listed plants on private lands.

Under Section 7 of the FESA, federal agencies are required to enter into formal consultation with the USFWS and/or NMFS on proposed federal actions (i.e., actions authorized, funded, or carried out by federal agencies) if their actions could adversely affect a listed (or proposed) species or its critical habitat. Through consultation and the issuance of a biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity, provided the activity will not jeopardize the continued existence of the species. Section 10 of the FESA provides for issuance of incidental take permits where no other federal actions are necessary provided a Habitat Conservation Plan (HCP) is developed.

2.1.2 Federal Clean Water Act, Section 404

The purpose of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into Waters of the United States (Waters of the U.S.) under Section 404 of the CWA. The definition of "Waters of the U.S." includes all navigable waters; interstate waters and wetlands; all intrastate waters and wetlands that could affect interstate or foreign commerce; impoundments of the above-listed waters; tributaries of the above-listed waters; territorial seas; and wetlands adjacent to the above-listed waters. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency

and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.37b).

As part of the wetland delineation and verification process, the USACE will determine whether wetlands and other features in a Project Site are considered Waters of the U.S., and therefore regulated under Section 404 of the CWA. If a project would require the discharge of dredged or fill material into Waters, the proponent must seek a permit from the USACE. The USACE can issue an individual permit (for projects resulting in substantial impacts) or a general permit (i.e., Nationwide Permit [for those that result in only minimal individual or cumulative adverse effects]). The EPA also has authority over wetlands and may override a USACE permit.

2.1.2.1 Federal Clean Water Act, Section 401

Section 401 of the Clean Water Act requires any person applying for a Section 404 permit for activities resulting in a discharge into Waters of the U.S. to obtain a water quality certification from the Regional Water Quality Control Board (RWQCB). The goal of this program is to protect Waters of the U.S. by ensuring that waste discharged into these features meets state water quality standards. Because the water quality certification program is triggered by the need for a Section 404 permit and because both programs are a part of the Clean Water Act, the definition of "Waters of the U.S." under Section 401 is identical to the definition used by the Corps under Section 404 (above).

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds. The MBTA makes it unlawful to take any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit (i.e., rehabilitation, scientific collecting, etc.).

The list of migratory birds (50 CFR 10.13) includes nearly all bird species native to the United States. The Migratory Bird Treaty Reform Act of 2004 further defined species protected under the act and excluded all non-native species.

2.2 STATE REGULATIONS

2.2.1 California Fish and Game Code

2.2.1.1 California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code Sections 2050-2116) generally parallels the main provisions of the FESA, but unlike its federal counterpart, CESA pertains to state-listed endangered and threatened species. Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in

Section 86 of the Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

CESA requires state agencies to consult with the California Department of Fish and Wildlife (CDFW) to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species, or result in destruction or adverse modification of essential habitat. CESA allows CDFW to authorize exceptions to the state's prohibition against “take” of a listed species if the "take" of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish and Game Code Section 2081).

2.2.1.2 Fully Protected Species

California Fish and Game Code Sections 4700 (mammals), Section 3511 (birds), Section 5050 (reptiles and amphibians), and Section 5515 (fish) designate certain species as “fully protected.” The State of California first began to designate species as “fully protected” prior to the creation of the CESA and FESA. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Fully protected species, or parts thereof (e.g., feathers, wings, talons), may not be taken or possessed by any individual at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species. CDFW may issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

2.2.1.3 Migratory Bird Species and Birds of Prey (Raptors)

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nests or eggs of any bird, except as provided by this code or any regulation made pursuant thereto. Additionally, Subsection 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. These stipulations are similar to the federal MBTA and serve to protect nesting native birds. Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

2.2.1.4 Native Plant Protection Act

The Native Plant Protection Act (NPPA) prohibits the taking, possession, or sale within the state of any rare, threatened, or endangered plants as defined by the CDFW. The NPPA is administered by the CDFW and set forth in California Fish and Game Code Sections 1900-1913. The CESA (Fish and Game Code Sections 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the Fish and Game Code.

2.2.1.5 California Streambed Alteration Notification/Agreement

Section 1602 of the Fish and Game Code requires a Streambed Alteration Agreement (SAA) be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or

substantially change the bed, channel, or bank of any river, stream, or lake." CDFW must be notified prior to any such activities and will review the proposed action(s). If necessary, the CDFW will propose measures to protect affected fish and wildlife resources. The SAA is comprised of the final mitigation measure(s) and condition(s) mutually agreed-upon by the CDFW and the Applicant. Often, projects that require a SAA also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the SAA may overlap.

2.2.2 Porter-Cologne Water Quality Act

The State Water Resources Control Board (SWRCB) and the local RWQCB have jurisdiction over "waters of the State" pursuant to the Porter-Cologne Water Quality Act (Porter-Cologne). "Waters of the State" are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050 (e)).

Porter-Cologne requires any person discharging waste, or proposing to discharge waste, that could affect the quality of waters of the State to file a Report of Waste Discharge with the RWQCB. (Water Code 13260(a)). The RWQCB will either issue, or waive the issuance of, Waste Discharge Requirements (WDRs) for the proposed discharge which will include conditions on the discharge to ensure the protection of water quality. Through the WDR program, the RWQCB also regulates discharges to "isolated" water features which are not considered Waters of the U.S. under the Federal CWA. Porter-Cologne also requires compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of storm water runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

2.2.3 Species of Special Concern

Species of Special Concern (SSC) is a category used by the CDFW for those species which are considered to be indicators of regional habitat changes or are considered to be potential future protected species. SSC are defined by the CDFW as a species, subspecies, or distinct population of an animal native to California that are not legally protected under FESA, CESA, or the Fish and Game Code, but may be considered under CEQA Guidelines Section 15380.

2.2.4 California Rare Plant Ranks

The California Native Plant Society (CNPS) maintains the *Inventory of Rare and Endangered Plants of California* (CNPS 2014), which provides a list of plant species native to California that have low population numbers, limited distribution, or are otherwise threatened with extinction. Plant species meeting one of these criteria are assigned to one of six California Rare Plant Ranks (CRPRs). The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The California Rare Plant

Ranks are currently recognized in the California Natural Diversity Database (CNDDB). The following definitions of the CNPS California Rare Plant Ranks include:

- CRPR 1A – presumed extirpated in California and either rare or extinct elsewhere;
- CRPR 1B – rare, threatened, or endangered in California and elsewhere;
- CRPR 2A – presumed extirpated in California, but more common elsewhere;
- CRPR 2B – rare, threatened, or endangered in California but more common elsewhere;
- CRPR 3 – a review list of plants about which more information is needed; and
- CRPR 4 – a watch list of plants of limited distribution.

CRPR List 1A and 2A are presumed extirpated in California. In general, CRPR List 3 and 4 plants do not meet the definition of endangered, threatened, or rare pursuant to CEQA Section 15380; however, these species may be evaluated by the lead agency on a case by case basis to determine significance criteria under CEQA.

2.2.5 California Natural Diversity Data Base

The CDFW administers the California Natural Diversity Data Base (CNDDB), which maintains a list of special-interest plants, animals, and natural communities that occur within California. These particular species, natural communities, or habitat types are designated as sensitive because of their rarity (e.g., very localized distribution, few scattered occurrences) and/or because of some threat (e.g., development, off-road vehicles) to this specific habitat type. The purpose of these listings is solely informational; there is no regulatory protection of these species or communities afforded by these CNDDB listings. However, these species or communities may be evaluated by the lead agency on a case by case basis to determine significance criteria under CEQA.

2.2.6 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires evaluations of project effects on biological resources, including species not protected on a federal or state list but may be considered rare or endangered if the species meets certain specified criteria (CEQA Guidelines Section 15380). These criteria follow the definitions in FESA, CESA, and Sections 1900-1913 of the Fish and Game Code, which deal with rare or endangered plants and animals. Section 15380 allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (i.e., SSC) would occur. The public agency that takes the lead on a project (having review and approval authority over the project) is known as the Lead Agency. Other agencies involved in subsequent approvals or responsible for implementing mitigation identified in the environmental documents are called Responsible Agencies.

2.2.6.1 CEQA Significance Criteria

Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local content. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Other impacts are sometimes locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of an important resource on a population-wide or region-wide basis.

2.3 LOCAL REGULATIONS

2.3.1 Sacramento County Tree Preservation and Protection Ordinance

Sacramento County outlines requirements for the protection of oak trees in County Code 19.12. This policy and ordinance requires a project applicant to obtain authorization from the County for any project impacts which would encroach within the dripline of or destroy, kill or remove any “tree,” as defined, within the urban area of the unincorporated area of Sacramento County, or any property,

public or private. The ordinance defines "trees" as follows:

> "Any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half feet above the ground (dbh)."

2.3.2 Sacramento County General Plan

The County's Conservation Element of the General Plan contains goals and policies that provide direction regarding the conservation, maintenance, development, and utilization of natural resources. The Conservation Element addresses water resources, mineral resources, material recycling, soil resources, vegetation and wildlife, aquatic resources, terrestrial resources, and cultural resources. Most of these resources are protected and addressed in various federal, state, and local regulations and policies.

The General Plan does expand on the protection of other resources, including other native trees and riparian habitats. Specifically, Sacramento General Plan Policies CO-138 and CO-139 build on Sacramento County's Tree Preservation and Protection Ordinance by requiring that other native trees (e.g., California sycamore and California black walnut) also be protected or otherwise mitigated for in accordance with existing tree replacement policies and standards for native oaks. Sacramento General Plan Policy CO-140 further expands on tree protections by addressing tree canopy and other mitigation requirements for native oak woodlands, oak savannah and mixed riparian areas. Impacts to non-native tree canopy are addressed in the Urban Forest Management section of the General Plan under policies CO-145 and CO-146, which require mitigation for loss of non-native tree canopy as a result of development. Onsite mitigation for losses to tree canopy shall be carried out through the creation of mitigation areas equivalent to the acreage of canopy removed, with new tree canopy calculated using the 15-year shade values for tree species. If new tree canopy cannot be created onsite, a contribution may be made to the Greenprint fund in an amount proportional to the impacted tree canopy.

2.3.3 South Sacramento Habitat Conservation Plan

The South Sacramento Habitat Conservation Plan (SSHCP) is a regional approach to addressing development, habitat conservation, and agricultural lands within the south Sacramento County region, including the cities of Galt and Rancho Cordova. The specific geographic scope of the SSHCP includes U.S. Highway 50 to the north, Interstate-5 to the west, the Sacramento county line with El Dorado and Amador counties to the east, and San Joaquin County to the south. The SSHCP Study Area excludes the City of Sacramento, the City of Folsom and the Folsom Sphere of Influence, the City of Elk Grove, the Sacramento-San Joaquin Delta, and the Sacramento community of Rancho Murieta.

The SSHCP is currently in preparation and is undergoing environmental review (a working draft was released in 2010). The SSHCP will consolidate and enhance wetlands (primarily vernal pools) and upland habitats to provide ecologically viable conservation areas. It is also intended to minimize regulatory

hurdles and facilitate the permitting process for development projects. The SSHCP will cover 30 different species of plants and wildlife, including 10 that are state and/or federally-listed as threatened or endangered. The SSHCP will be an agreement between state/federal wildlife and wetland regulators and local jurisdictions, which will allow land owners to engage in the "incidental take" of listed species in return for conservation commitments from local jurisdictions. The options for securing these commitments are currently being developed and will be identified prior to adoption of the SSHCP. Sacramento County is partnering with the incorporated cities of Rancho Cordova, Galt, and Elk Grove, as well as the Sacramento Regional Sanitation District, Sacramento County Connector JPA (Joint Powers Authority), and Sacramento Water Agency to further advance the regional planning goals of the SSHCP.

2.3.4 Swainson's Hawk Mitigation Fee Program

During the environmental review process, the County Department of Planning and Environmental Review (PER) will determine whether a project impacts Swainson's hawk foraging habitat. If impact is determined, several options for mitigation will be suggested in the final environmental document. The Swainson's Hawk Mitigation program, administered by the Sacramento County Department of Planning and Community Development, is one of those options. The Ordinance (Chapter 16.130) was adopted by the Board of Supervisors in 1997. It allows projects which impact less than 40 acres of foraging habitat to pay a per-acre fee for those impacts. Projects impacting 40 acres or more of foraging habitat must provide land acceptable to the CDFW and the County. Land can be provided via fee title or conservation easement.

3.0 METHODS

The analysis presented in this document utilizes previously conducted wetland delineations, biological assessments, various published documents, personal communication with expert biologists, and recent on-site field surveys of the Project Site. The distribution of special-status species were primarily derived from the CNDDB records and various field survey efforts. The following provides a summary of existing documents related to the Project and describes the methodology for describing habitat communities and ascertaining likelihood of species occurrence.

3.1 WETLAND DELINEATION

A delineation of wetlands and other Waters on the Property was originally prepared by Foothill Associates in 2006. Following a site visit with the USACE in March 2009, ECORP Consulting, Inc. (ECORP) revised the delineation in November 2009 and March 2010. The USACE issued a preliminary jurisdictional determination (PJD) for the site on 28 June 2010. In April 2014, ECORP re-delineated portions of the site and submitted an updated delineation. Based on this recent delineation, the USACE issued a PJD on 03 June 2014. Areas outside the Property and within 250 feet were assessed by aerial determinations.

3.2 PRE-FIELD SURVEY INVESTIGATIONS AND LITERATURE REVIEW

A comprehensive literature review, based on the professional experience of contributing biologists within the region and elsewhere in California, has been conducted for the Project Site in order to develop the most accurate list of potentially-occurring special-status plant and animal species. In addition, using the Rarefind 5.0 (CDFW 2014) software program, a standard nine-quadrangle California Natural Diversity Data Base (CNDDB) report was generated for the study area (i.e., query of the U.S. Department of the Interior, Geological Survey 7.5-minute topographic quadrangle in which the study area is found as well as the immediate eight surrounding topographic quadrangles). The CNDDB contains extensive records for special-status species, as well as sensitive natural communities, which have been reported to the CDFW by a variety of sources, including researchers, landowners, field biologists and the public. Furthermore, because the CNDDB does not provide a comprehensive inventory of all sensitive species statewide, other sources of information on special-status species in California were also reviewed to determine if any special-status species not identified in the Rarefind 5.0 report have the potential to occur on the study area. These additional resources include:

U.S. Fish and Wildlife Service, Sacramento Field Office website – Official list of federal candidate, proposed, threatened, and endangered species having the potential to occur in the study area; generated on 15 March 2013 (USFWS 2013) and 07 April 2014 (USFWS 2014);

California Native Plant Society's Online Inventory of Rare and Endangered Plants of California – List of special-status species that may occur in the study area; generated on various dates between March 2013 (CNPS 2013) and August 2014 (CNPS 2014); and

eBird Data Base (http://ebird.org) (eBird 2014).

3.3 SPECIAL-STATUS SPECIES OCCURRENCE POTENTIAL

The potential for special-status plants and animals depends largely on the presence of specific habitat types on the Project Site. Habitat types identified in previous documents and recent field assessments were evaluated with known habitat requirements for each special-status species with potential to occur in the regional area. Each species' potential to occur on the Project Site was then assessed and ranked as either:

- Known to Occur – Taxon was observed at the Project Site during recent surveys.
- Likely to Occur – Taxon previously reported within or immediately adjacent to the site or otherwise expected to occur due to neighboring occurrences and substantial habitat on the Project Site.
- Could Occur – Suitable habitat is available at the site; however, there is little to no other indicators that the taxon might be present.
- Unlikely to Occur – Taxon is unlikely to be present due to poor habitat quality, lack of suitable habitat features, or known restricted current distribution that does not include the Project area.

A list of all special-status plant and animal species known or potentially known to occur within the Project vicinity is shown in Attachment A (Table A-1). For each species identified to have reasonable potential to occur (i.e., 'could occur') on the Project Site, additional biological data were provided to assist in field surveys and potential impact analyses. Information gathered included specific habitat requirements, known distribution, and regional occurrence(s).

3.4 FIELD SURVEY METHODS

Field surveys were conducted to document existing conditions of the site and assess the potential for habitats on-site to support special-status species (as listed in Table A-1). Surveys focused on rare plants (Teichert 2015b), but also included incidental observations of wildlife use and nesting species. Field surveys for special-status plants were conducted over a two-year period from March 2013 through August 2014 in accordance with the CNPS Botanical Survey Guidelines (CNPS 2001), the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 1996), and the Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2009). The survey study area was also extended outside the Project Site boundary to ensure all areas within 250-feet of the proposed mining footprint (i.e., proposed limits of disturbance) were examined to address potential indirect impacts to biological resources.

Specific survey dates were 25 March, 22 April, 06 and 27 May, and 20 June of 2013; and 14 March, 14, 23 and 24 April, 01 and 23 May, 19 June, and 14 July of 2014. The survey dates were established to focus on the range of flowering and identification periods for rare plants. Over the course of the 2-year survey period, Teichert's biologist B. Baba walked meandering transects across the entire Project Site.

Teichert's biologist J. Greer also accompanied B. Baba on some of the 2014 surveys. Survey transects were spaced at 15- to 50-foot intervals, depending upon the existing terrain, habitat types, vegetation cover, and structural complexity. Special attention was given where the habitat type was determined to be suitable and most likely to support special-status species (e.g., wetlands). Many areas consisted of irrigated pastures dominated by various pasture species and thus provided limited or no suitable habitat for most special-status plants.

3.5 ACCOMPANYING DOCUMENTS

3.5.1 *Special-Status Plant Species Survey Report, Teichert – Aspen VIII & IX (2014)*

A rare plant survey report was prepared for the Project Site, including a 250-foot setback area, by Teichert's biologist B. Baba (Teichert 2015b). The survey consisted of identifying all habitat types and vegetation communities, conducting protocol-level rare plant surveys, and compiling and inventory of all plant species observed at the site. Rare plants identified at the site were mapped using a GPS unit with sub-meter accuracy. Details of the rare survey methodology and data can be found in Attachment B of this document.

3.5.2 *Arborist Report, Teichert – Aspen VIII & IX (2014)*

An arborist survey of the Project Site was conducted by Teichert's biologist B. Baba and J. Greer (ISA Cert. #WE-10104A) on 23 April, 01 May, and 07 October 2014 (Teichert 2015c). The tree survey consisted of identifying, measuring, and mapping all trees 4 inches dbh or larger within and adjacent to (i.e., 150 feet) of the Project Site boundaries. Each tree was then assigned a unique identification number and evaluated for potential impacts as a result of the proposed Project. Details of the tree survey methodology and data can be found in Attachment C of this document.

4.0 EXISTING CONDITIONS

The Project Site consists of approximately 683 acres of land, including the conveyor alignment proposed in Aspen V-South. The majority of the site is utilized as rangeland for livestock and irrigated pasture for forage production. Some portions of the site have been dry farmed, primarily for wheat. Three separate rural residential houses and associated farm buildings also occur on the Project Site. Surrounding land uses include additional rangeland and rural residential homes, agricultural cropland, a nursery facility (Village Nurseries), two cemeteries (Arlington Memorial Cemetery and Bellevue Cemetery), and a wastewater treatment facility (Vineyard Surface Water Treatment Plant).

4.1 CLIMATE, TOPOGRAPHY, AND WATERSHED

Sacramento, as with the rest of California's Central Valley, is typical of a Mediterranean-type climate with hot, dry summers and cool, relatively wet winters. Average temperatures range from a low of 38°F in December to a high of 92°F in July (usclimatedata.com). Average annual precipitation is approximately 18.51 inches, with January usually the wettest month (usclimatedata.com).

The majority of the Project Site consists of historically leveled fields for both dryland grazing and irrigated pasture. Much of the remaining areas are characterized by relatively flat to rolling topography supporting comparatively undisturbed annual grasslands. The elevation of the site ranges from approximately 60 to 85 feet above mean sea level (MSL).

The Project Site is located within boundaries of the Morrison Creek and Elder Creek Watersheds (Figure 6). The Morrison Creek watershed encompasses approximately 200 acres in both Aspen VIII and IX, while the Elder Creek Watershed includes approximately 483 acres. Although Morrison Creek itself does not traverse the Project Site, its southern watershed boundary lies within the western portion of Aspen VIII and along the northwestern portion of Aspen IX before transitioning into the Elder Creek watershed to the south. Elder Creek occurs on both Aspen VIII and IX, whereby it enters Aspen VIII on the southeast and exits Aspen IX on the west (Figures 2 and 3). The creek is channelized throughout the Aspen VIII portion of the site, where it eventually enters an artificial expansion "pond" before flowing under Elder Creek Road and into Aspen IX. Once entering Aspen IX, the creek maintains its natural course before exiting the site on the west where it is once again channelized. Elder Creek originates near the intersection of Kiefer Boulevard and Eagles Nest Road and eventually discharges into Morrison Creek near Brookfield Drive in the City of Sacramento, approximately 8 miles west of the Project Site. Historically, Elder Creek was probably an ephemeral to intermittent watercourse, seasonally supported by winter precipitation and runoff from the surrounding uplands. Today, however, the majority of Elder Creek can be characterized as a semi-perennial creek fed primarily by runoff from ranches, residential areas, and irrigated pasture lands. Within the Project Site, Elder Creek is bordered by irrigated pastures, which are supported by a groundwater release and recycling system that provides year-round irrigation to fields. In this system, groundwater is first supplied to pastures during the early summer months and allowed to sheet across fields. This water eventually drains into a network of surrounding ditches and irrigation ponds for capture and reutilization, while excess irrigation runoff flows to Elder Creek.

4.2 SOILS

Natural Resources Conservation Service (NRCS) soil surveys for Sacramento County identifies six soil types within in the Project Site (NRCS 1993). The most predominant soil component is Red Bluff-Xerarents complex, 0 to 2 percent slopes, which is distributed throughout much the proposed mining area (Figure 7). Red Bluff loam, 0 to 2 percent slopes is the second-most predominant soil type on the Project Site (Figure 7). Other soil types include San Joaquin silt loam, 0 to 3 percent slopes; Kimball silt loam, 0 to 2 percent slopes; San Joaquin silt loam, leveled; and Hedge loam, 0 to 2 percent slopes (Figure 7). Detailed summaries of these soil types have been described in the original wetland delineation report prepared by Foothill Associates (2006).

4.3 HABITAT COMMUNITIES/VEGETATION

Presently, both annual grasslands and irrigated pastures dominate the landscape on the Project Site (Figure 3). Elder Creek appears on the USGS 7.5-minute series Carmichael and Elk Grove, California quadrangles as a solid blue line feature (perennial drainage) and traverses the Project area in a northeast to southwest direction (Figure 3). In addition, other wetland features are present at the site, including vernal pools, seasonal wetlands and swales, ephemeral drainages, freshwater marshes, ditches, and ponds (Figure 3). Scattered areas of riparian woodland habitat also exist along some of these wetlands (i.e., Elder Creek, ponds and ditches) (Figure 3). Other features on the Project Site include three rural residential homes and associated farm/equipment storage buildings. Dirt and graveled access roads to homes, farm buildings, and pastures are also present throughout the site.

4.3.1 Irrigated Pasture

Irrigated pastures, totaling 331 acres north of Elder Creek, are maintained by farming practices that supply irrigation to leveled areas via groundwater wells and recycled water from ponds and Elder Creek. These areas are both grazed by cattle and harvested for forage. A network of ditches and ponds are associated with the irrigated pastures (further discussed in Section 4.3.3.5). Common plant species occurring in irrigated pastures include tall fescue (*Festuca arundinacea*), Kentucky blue grass (*Poa pratensis* subsp. *pratensis*), ryegrass (*Festuca perennis*), dallis grass (*Paspalum dilatatum*), dense sedge (*Carex densa*), field sedge (*Carex praegracilis*), English plantain (*Plantago lanceolata*), white clover (*Trifolium repens*), shamrock (*Trifolium dubium*), cut-leaved geranium (*Geranium dissectum*), and yellow's owl's-clover (*Triphysaria versicolor* subsp. *faucibarbata*).

4.3.2 Annual Grassland

Annual grasslands on the Project Site are represented by both natural, undulating topography as well as historically leveled areas. This habitat community consists of 308 acres and includes grazing by cattle (Figure 3). Annual grasslands that maintain a natural topography and have not been leveled are generally located south of Elder Creek, within the southern and eastern portions of Aspen IX. Similar landscapes are also present near the northwestern corner and south-central portion of Aspen VIII. These areas consist of relatively flat to moderately rolling hills dominated by soft-chess brome (*Bromus*

hordeaceus), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum*), brome fescue (*Festuca bromioides*), longbeak filaree (*Erodium botrys*), perennial mustard (*Hirschfeldia incana*), winter vetch (*Vicia villosa* var. *varia*), common fiddleneck (*Amsinckia intermedia*), yellow star-thistle (*Centaurea solstitialis*), and bindweed (*Convolvulus arvensis*). Vernal pools and seasonal wetlands are common within these relatively undisturbed landscapes (further discussed in Sections 4.3.3.2 and 4.3.3.3.

Some grassland areas experience seepage from adjacent irrigated fields and ditches, contributing to semi-hydrophytic plants along these borders, including Mediterranean beard grass (*Polypogon maritimus*), toad rush (*Juncus bufonius*), Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum*), annual hairgrass (*Deschampsia danthonoides*), and pennyroyal (*Mentha pulegium*). Other areas that were historically leveled and farmed but that are no longer irrigated are present along the western portions of Aspen VIII and northwest corner of Aspen IX. These areas are generally dominated by Mediterranean barley, hare barley, and ryegrass.

Trees are largely absent in annual grassland communities except along borders where other features exist (i.e., roads, ditches, etc.). Most trees on site are the result of ornamental landscape plantings around roads and residential homes. In addition, a cluster of large red gum eucalyptus trees (*Eucalyptus camaldulensis*) occurs within the western section of Aspen VIII near an existing cemetery.

4.3.3 Wetlands and Waters of the U.S.

A delineation of wetlands and other Waters of the U.S. for the Project Site was prepared by Foothill Associates in 2006. ECORP revised the delineation in November 2009 and March 2010 and again in March 2014 (ECORP 2009, ECORP 2010, ECORP 2014) as part of continued work on the Project (Figure 3). The USACE issued a preliminary jurisdictional determination (PJD) on 03 June 2014. Table 1 summarizes acreages of Waters by wetland type.

TABLE 1. WETLANDS AND WATERS OF THE U.S

Wetland Type	Aspen VIII (acres)	Aspen IX (acres)	Conveyor (acres)	Totals
Perennial Stream	2.351	3.064	----	5.415
Vernal Pool	0.988	6.243	0.029	7.260
Seasonal Wetland	2.195	3.486	0.060	5.741
Seasonal Swale	0.299	0.959	----	1.258
Freshwater Marsh	2.017	2.735	----	4.752
Ephemeral Stream	0.001	0.005	----	0.006
Pond	0.920	----	----	0.920
Ditch	1.756	0.688	----	2.444
Totals	**10.527**	**17.180**	**0.089**	**27.796**

The Project Site includes a total of 27.796 acres of wetlands, including a perennial stream, vernal pools, seasonal wetlands, seasonal swales, freshwater marshes, ephemeral streams, ponds, and ditches. Each

of the aquatic vegetation communities/Waters, including associated common plant species, are summarized below.

4.3.3.1 Perennial Stream (Elder Creek)

A total of 5.415 acres of perennial stream have been delineated on the Project Site (Figure 3). This includes approximately 8,470 lineal feet of Elder Creek. The creek is often bordered by wetland vegetation communities of various composition and cover depending on flow rates, duration of flow rates, and water depth. Common plants occurring along Elder Creek include knotgrass (*Paspalum distichum*), dallis grass, tall fescue, Kentucky blue grass, waxy mannagrass (*Glyceria declinata*), annual beardgrass (*Polypogon monspeliensis*), tall flatsedge (*Cyperus eragrostis*), Australian rush (*Juncus usitatus*), cattails (*Typha domingensis* and *T. latifolia*), common tule (*Schoenoplectus acutus* var. *occidentalis*), and creeping water primrose (*Ludwigia peploides* subsp. *peploides*). Riparian woody vegetation is rather limited throughout much of the creek, probably due to present and past grazing pressures. Trees consisting of Fremont cottonwood (*Populus fremontii* subsp. *fremontii*), black willow (*Salix gooddingii*), walnut (*Juglans hindsii*), and weeping willow (*Salix babylonica*) are scattered along portions of Elder Creek, particularly within the Aspen VIII site. This area of the creek also supports dense stands of Himalayan blackberry (*Rubus armeniacus*). While Elder Creek presently supports a biological system indicative of a perennial stream, it should be noted that this creek is hydrologically sustained from late-spring through summer by groundwater pumping and irrigation runoff from adjacent pastures.

4.3.3.2 Vernal Pools

Vernal pools are characterized as shallow depressions underlain by an impermeable geomorphic layer that captures and stores seasonal rainfall in its basin, losing water primarily through evaporation rather than drainage. Numerous pools, totaling 7.260 acres, occur throughout the undisturbed grassland areas of the Project Site (Figure 3). These vernal pools vary in maximum water depth between a few inches to 20 inches deep, and range in size from 0.001 to 1.075 acres. They are similar to other isolated, depressional seasonal wetland features at the site, but typically support a predominance of native vernal pool plants such as slender popcornflower (*Plagiobothrys stipitatus* var. *micranthus*), Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), Fremont's goldfields (*Lasthenia fremontii*), smooth goldfields (*Lasthenia glaberrima*), Great Valley coyote thistle (*Eryngium castrense*), creeping spikerush (*Eleocharis macrostachya*), annual hairgrass, Mediterranean barley, white navarretia (*Navarretia leucocephala*), double-horned downingia (*Downingia bicornuta* var. *picta*), dwarf woolly-marbles (*Psilocarphus brevissimus*), field owl's-clover (*Castilleja campestris*), and Rosy Douglas' meadowfoam (*Limnanthes douglasii* ssp. *rosea*).

Vernal pool habitat supports breeding and foraging habitat for many aquatic invertebrates such as flatworms (Phylum Platyhelminthes), snails (*Helisoma* spp. and *Physa* spp.), dragonflies and damselflies (Order Odonata), predaceous diving beetles (Family Dytiscidae), aquatic beetles (Family Hydrophilidae), and various crustaceans (branchiopods, ostracods, copepods). These habitats also provide feeding areas and resting sites for migratory birds. The vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool

tadpole shrimp (*Lepidurus packardi*), listed as threatened and endangered, respectively, pursuant to the federal Endangered Species Act, are also known to occur within several vernal pools on the Project Site and adjacent areas (C. Rogers, pers. observ.).

4.3.3.3 Seasonal Wetlands, Swales, and Ephemeral Drainage

The Project Site also supports numerous seasonal wetlands, swales, and ephemeral drainages, totaling 7.004 acres (Figure 3). Some of these seasonal wetlands follow a natural hydrologic pattern, whereby they are saturated (and partially inundated) in winter, but remain dry through summer. These wetlands occur in grasslands and are usually underlain by clay or a heavy clay loam and are very similar to vernal pools, but lack the species associated with vernal pools. Instead, these wetlands are frequently dominated by non-native wetland generalist plants, including ryegrass, Mediterranean barley, Mediterranean beardgrass, common hawkbit (*Leontodon saxatilis* subsp. *longirostris*), and hyssop loosestrife (*Lythrum hyssopifolia*). Some native plants include slender popcorn flower, annual hairgrass, toad rush, baltic rush (*Juncus balticus*), and iris-leaved rush (*Juncus xiphioides*). These wetlands, if inundated for sufficient periods, may also support the venal pool fairy shrimp.

In other instances, seasonal wetlands and swales are associated within irrigated pastures and affected by summer irrigation, remaining saturated or inundated for prolonged periods throughout the summer. These wetlands are saturated perennially and dominated by tall flatsedge, creeping spikerush, spatulaleaf loosestrife (*Lythrum portula*), creeping water primrose, willow weed (*Persicaria lapathifolia*), Mediterranean beardgrass, and waxy mannagrass.

4.3.3.4 Freshwater Marsh

Freshwater marshes, totaling 4.752 acres, are present at various locations throughout the Project Site (Figure 3). These wetland features are inundated or saturated for prolonged periods, and occur in conjunction with Elder Creek and other ditches receiving irrigation runoff during the summer months. Due to an extended saturation period, these areas are frequently occupied by perennial hydrophytes, including creeping spikerush, tall flatsedge, waxy mannagrass, willow weed, and creeping water primrose. Other common annuals include water pygmy-weed (*Crassula aquatica*), spatulaleaf loosestrife, and Mediterranean barley.

4.3.3.5 Ditches and Ponds

A network of ditches (2.444 acres) and ponds (0.920 acre) are scattered throughout irrigated pastures (Figure 3). The ditches collect irrigation runoff from pastures and eventually drain to ponds, from which irrigation water is redistributed back to the pastures. Ditches are frequently lined with various wetland plants including smartweed (*Persicaria lapathifolia*, *P. maculosa*, *P. hydropiper*, and *P. punctata*), creeping water primrose, slender centaury (*Centaurium tenuiflorum*), cattails, common tule, tall flatsedge, creeping spikerush, tapered rush (*Juncus acuminatus*), rice cutgrass (*Leersia oryzoides*), tall

fescue, dallis grass, mannagrass, and annual beard grass. One ditch in Aspen VIII was dominated by Sanford's arrowhead (*Sagittaria sanfordii*) (Teichert 2015b).

Ponds on site are relatively deep, and thus tend to lack vegetation. Pond levels may also fluctuate considerably depending on irrigation schedules and patterns. The edges of ponds are frequently vegetated with tall flatsedge, dallis grass, annual beard grass and Australian rush. In addition, Himalayan blackberry, Fremont cottonwood, willows (*Salix gooddingii* and *S. babylonica*), and valley oak (*Quercus lobata*) are often associated with nearby upland areas.

4.3.4 Riparian Woodland

Riparian woodland vegetation is limited to patches of narrow bands along Elder Creek and around the perimeter of existing ponds (Figure 3). Most of these species consists of Fremont cottonwood, willows, Himalayan blackberry, and California wild rose. Most of Elder Creek lacks riparian woodland vegetation, probably due to past and present grazing pressures. Existing ditches also lack riparian woodland species due to routine maintenance activities.

4.3.5 Ruderal

Ruderal vegetation is frequently associated with various equipment storage areas and access roads. In addition, disposal areas along ditches from maintaining them are frequently lined with ruderal species. Common ruderal plants at the site include field mustard (*Brassica rapa*), perennial mustard, radish (*Raphanus sativus* and *R. raphanistrum*), yellow star-thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), pineapple weed (*Matricaria discoidea*), prickly lettuce (*Lactuca serriola*), English plantain, greenstem filaree (*Erodium moschatum*), and soft-chess brome.

5.0 SPECIAL-STATUS SPECIES AND SPECIES ACCOUNTS

Federal and State endangered species legislation gives special status to several plant and animal species known to occur in the vicinity of the Project Site. In addition, State resource agencies and professional organizations, whose lists are recognized by agencies when reviewing environmental documents (i.e., CRPR plants and SSC animals), have identified additional species as sensitive and occurring in the vicinity of the Project Site. Such species are referred to collectively as "special-status species." As provided in Attachment A (Table A-1), a list of special-status species known or potentially known to occur in the local region was compiled from records found in the literature review and database records in the CNDDB and CNPS Online Inventory. The table also contains specific information for each of the special-status species, including federal and State designations, biological and distribution information, survey (blooming or activity) period, and likelihood of occurrence on the Project Site. Figures 8 and 9 include the results of special-status species locations from the USGS 7.5-minute series *Carmichael, California* quadrangle and eight surrounding quadrangles. Sections 5.1 and 5.2 below further describe those species with potential to occur on the Project Site based on the presence of suitable habitat.

5.1 PLANTS

A number of special-status plants have been documented in the CNDDB to occur in the vicinity of the site, and habitat communities on-site represent potentially suitable habitat for a number of other regionally occurring special-status plants (Table A-1, Figure 8). Nine of those species were considered to have potential to occur on the Project Site. These include dwarf downingia (*Downingia pusilla*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii* subsp. *myersii*), slender Orcutt grass (*Orcuttia tenuis*), Sacramento Orcutt grass (*Orcuttia viscida*), and Sanford's arrowhead (*Sagittaria sanfordii*). One species was found during protocol-level plant surveys: Sanford's Arrowhead (Attachment A).

Dwarf Downingia (*Downingia pusilla*)

Dwarf downingia is not listed pursuant to either the federal or California Endangered Species Acts (ESAs); however, it is listed as a CRPR 2B species by the CNPS. Dwarf downingia is known from vernal pools and other seasonal wetlands. The species appears to occupy a range of pool sizes and depths, with most records indicating that the species prefers smaller and/or shallower vernal pools with comparatively 'flashy' hydrology (CNDDB 2014). The species will also frequently occupy ephemeral drainages and swales and the seasonally fluctuating vernal pool-like edges of stock ponds and seasonal marshes (Baba pers. obs.). Flowering typically occurs between March and May.

In California, the species' range extends from the northern San Joaquin Valley (Merced and Fresno counties) in the south through the Sacramento Valley to Tehama County in the north, generally below 500 feet elevation. It is also known from the Interior valleys on the Coast Range north of San Francisco (Napa and Sonoma counties). Most occurrences occupy a belt from Sonoma County to the southern

Sacramento Valley. Dwarf downingia, like some other members of the annual vernal pool flora, is also known from disjunct localities in Chile. There is one known occurrence of dwarf downingia within 5 miles of the Project Site (CNDDB Occurrence No. 54), approximately 4.9 miles to the south of the Project Site (CNDDB 2014). This population is located in vernal pools east of Waterman Road, between Sheldon Road and Bond Road in Elk Grove. The population is till presumed extant. Vernal pools, swales and hydrologically similar margins of seasonal marshes and ponds at the site are considered potential habitat for the species. Based on negative findings of protocol-level rare plant surveys conducted in March, April, and May 2013 and 2014 (Teichert 2015b), dwarf downingia is not expected to occur at the Project Site at this time.

Boggs Lake Hedge-Hyssop (*Gratiola heterosepala*)

Boggs Lake hedge-hyssop is listed as threatened by the California ESA. The CNPS also includes Boggs Lake hedge-hyssop as a CRPR 1B plant. The species blooms between April and June. The species occurs over a wide geographic area but is strictly associated with the vernal pool-type hydrologic cycle. Boggs Lake hedge-hyssop has been reported to grow in vernal pools and playa lakes, as well as seasonal stock ponds and fluctuating lake margins. Most occurrences are from well-developed large or deep vernal pools that exhibit more extreme, longer inundation periods, often where interspecies completion is lower.

Boggs Lake hedge hyssop was first collected in 1954 from Bogg's Lake in Lake County, California. Since that time, numerous additional occurrences have been recorded, ranging from the Modoc Plateau, through the Sacramento Valley, Inner North Coast Range, and central Sierra Nevada Foothills, south to Merced and Fresno Counties in the San Joaquin Valley Region. Most records are from Tehama and Modoc Counties and are associated with northern volcanic mudflow vernal pools of the northern Sacramento Valley and Modoc Plateau. There are six known occurrences of Boggs Lake hedge-hyssop within 5 miles of the Project Site (CNDDB 2014). The nearest known location is approximately 2.5 miles northwest of the site, at Mather Field (CNDDB Occurrence No. 84; CNDDB 2014). These plants were recorded growing in deeper vernal pools and still presumed extant. Vernal pools inundated for longer periods and the margins of seasonal marshes at the site are considered potential habitat for the species. Based on negative findings of protocol-level rare plant surveys conducted in April, May and June 2013 and 2014 (Teichert 2015b), Boggs Lake hedge-hyssop is not expected to occur at the Project Site at this time.

Hogwallow Starfish (*Hesperevax caulescens*)

Hogwallow starfish is not listed pursuant to either the federal or California ESAs; however, it is listed as a CRPR 4 species by the CNPS. Hogwallow starfish is typically associated with shallow vernal pools and seasonally saturated clay flats. The species has also been found from a fallow (formerly irrigated) pasture (LSA 2009).

Hogwallow starfish has a wide distribution throughout the Central valley and adjacent foothills from Tehama County south to Kern County. It has also been recorded in San Luis Obispo County. Flowering typically occurs between March and June. CRPR List 4 plants are not tracked by the CDFW, thus occurrence records for hogwallow starfish are not included in the CNDDB. A previous survey conducted by ECORP Consulting did identify a population of hogwallow starfish at the Piliken Ranch near Sloughhouse in eastern Sacramento County (ECORP 2007), approximately 10 miles southeast of the Project Site. This population was recorded growing in a rocky, sparsely vegetated upland area. B. Baba revisited this location in 2009 but only observed dwarf evax (*Hesperevax acaulis*). Some of the shallow vernal pools and seasonal wetlands at the Project Site are considered potential habitat for the species. Based on negative findings of protocol-level rare plant surveys conducted in March, April, May and June 2013 and 2014 (Teichert 2015b), hogwallow starfish is not expected to occur at the Project Site at this time.

Ahart's Dwarf Rush (*Juncus leiospermus* var. *ahartii*)

Ahart's dwarf rush is not listed pursuant to either the federal or California ESAs; however, it is listed as a CRPR 1B species by the CNPS. Ahart's dwarf rush grows in a variety of seasonal wetland type habitats, but appears to be restricted to acidic soils in vernal pool complexes. Although Ahart's dwarf rush has been recorded growing with more "deeply-adapted" vernal pool associates, most records indicate that the species prefers the margins of vernal pools or in swales and seasonal wetlands where hydrologic conditions are more "flashy." In addition, this species is also known to occur on gopher mounds along the margins of these wetlands (CNDDB 2014). Flowering generally occurs from late-March through May.

Presently, Ahart's dwarf rush is known from only 13 occurrences throughout the Great Central Valley. Populations are recorded from Tehama County in the north to Calaveras County in the south, with elevations ranging from 90 to 300 feet (CNDDB 2014). Most occurrences are from Butte and Sacramento County. The nearest known occurrence of Ahart's dwarf rush is approximately 1.8 miles northeast from the Project Site, at Mather Field just west of Eagles Nest Road (CNDDB Occurrence No. 8). These plants are located in shallow vernal pools and along vernal swales and still presumed extant (CNDDB 2014). Vernal pools inundated for longer periods and the margins of seasonal marshes at the site are considered potential habitat for the species. Considering the relatively close proximity of nearby populations and wide geographical range, Ahart's dwarf rush could be expected to occur at the site. Based on negative findings of protocol-level rare plant surveys conducted in March, April, and May 2013 and 2014 (2015b), Ahart's dwarf rush is not expected to occur at the Project Site at this time.

Legenere (*Legenere limosa*)

Legenere is not listed pursuant to either the federal or California ESAs; however, it is listed as a CRPR 1B species by the CNPS. Legenere grows in a variety of wetland habitats including vernal pools, seasonal marshes, floodplains of intermittent streams, and along the margins of cattle stock ponds. Legenere is associated with a wide range of physiographic/edaphic landscapes. Most records indicate that the species prefers the shallower areas of seasonal pools that are inundated for longer periods than average

and typically support at least some perennial species such as spikerush (*Eleocharis macrostachya*). Flowering typically occurs from April to June.

This species' range includes the northern Central Valley from Shasta to San Joaquin County and the Inland Coast Range from Lake to Santa Clara County. Populations are reported from 78 occurrences, ranging in elevation from less than 950 meters (CNDDB 2014). The majority of known extant records are concentrated in Solano and Sacramento counties, with other scattered occurrences in Alameda, Lake, Napa, Sonoma, San Mateo, Santa Clara, Placer, Yuba, and Shasta counties (Holland 1983; Platenkamp 1998; CNDDB 2014). The nearest known occurrence of Legenere is approximately 1.4 miles south of the Project Site (CNDDB Occurrence No. 29; CNDDB 2014). Two colonies were identified growing in vernal pools just south of Florin Road and 0.7 miles east of Excelsior Road. Vernal pools inundated for longer periods and the margins of seasonal marshes at the site are considered potential habitat for the species. Considering the relatively close proximity of nearby populations and wide geographical range, Legenere could be expected to occur within the Project Site. Based on negative findings of protocol-level rare plant surveys conducted in April, May and June 2013 and 2014 (Teichert 2015b), Legenere is not expected to occur at the Project Site at this time.

Pincushion Navarretia (*Navarretia myersii* subsp. *myersii*)

Pincushion navarretia is not listed pursuant to either the federal or California ESAs; however, it is listed as a CRPR 1B species by the CNPS. Pincushion navarretia is a strict vernal pool endemic, often occurring in pools with moderate to highly acidic soils (CNPS 2014). Based on known populations and those observed in eastern Merced County, the species was associated with the ancient, weathered alluvial terraces comprising the Valley Springs and Ione Geologic Formations (Dittes and Guardino 2001). Generally, pincushion navarretia is presumed to occupy smaller and/or shallower pools where hydrologic conditions may be more 'flashy.' The species may be seen flowering from mid-April through May (Dittes and Guardino 2001, CNPS 2014).

Presently, pincushion navarretia is known from 14 occurrences along the eastern portion of the Central Valley and adjacent Sierra Nevada Foothill from Placer County south to Merced County, between 60 and 1,100 feet elevation (CNDDB 2014). The nearest known location of this species is approximately 10.6 miles northeast of the Project Site, in the Department of Fish and Wildlife Phoenix Field Ecological Reserve (CNDDB Occurrence No. 3; CNDDB 2014). The species occurs in two pools within the south half of the Preserve and are still presumed extant. The smaller, shallow pools at Aspen VIII & IX are considered potential habitat for pincushion navarretia. Considering the relatively close proximity of nearby populations, this species could be expected to occur within the Project Site. Based on negative findings of protocol-level rare plant surveys conducted in April and May 2013 and 2014 (Teichert 2015b), pincushion navarretia is not expected to occur at the Project Site at this time.

Slender Orcutt Grass (*Orcuttia tenuis*)

Slender Orcutt grass is listed as threatened under the federal ESA and endangered under the California ESA. The CNPS also includes slender Orcutt grass as a CRPR 1B species. Slender Orcutt grass is found primarily in vernal pools on substrates of volcanic origin, but have also been found in places such as stock ponds and borrow pits. Orcutt grasses are strongly adapted to deeper vernal pools with more extreme hydrologic regimes. Interestingly, this species appears to be the least specific of Orcutt grasses with regard to specific habitats niches. This is confirmed by its occupation of a wider range of vernal pool sizes and vernal wetland types, as well as occurrences over a wider geographical range and landform types. Flowering may occur between May and September (usually May or June in the Central Valley), and sometimes October, making it one of the latest blooming members of the Orcutt grasses.

Slender Orcutt grass has been documented from 96 occurrences, which includes a wide range of elevations corresponding to its broad geographical range (CNDDB 2014). The lowest reported elevation is 88 feet in Sacramento County and the highest is 5,760 feet in Plumas County. The species is found from Modoc County south to Sacramento County, with large concentrations occurring in Tehama County and the Modoc Plateau Vernal Pool Region. The nearest documented occurrence of Slender Orcutt grass is approximately 2 miles south of the Project Site (CNDDB Occurrence No. 16), in a narrow vernal pool west of Laguna Creek (CNDDB 2014). The population is till presumed extant. The larger, deeper pools that remain inundated for extended periods at the site are considered potential habitat for Sacramento Orcutt grass. Considering the relatively close proximity of nearby populations, this species could be expected to occur at Aspen VIII & IX. Based on negative findings of protocol-level rare plant surveys conducted in May and June 2013 and May, June and July 2014 (Teichert 2015b), slender Orcutt grass is not expected to occur at the Project Site at this time.

Sacramento Orcutt Grass (*Orcuttia viscida*)

Sacramento Orcutt grass is listed as endangered under both the federal and California ESAs. The CNPS also includes Sacramento Orcutt grass as a CRPR 1B species. Sacramento Orcutt grass occurs primarily in large vernal pools that remain inundated for prolonged periods. Soils associated with this species tend to be strongly acidic and support a well-developed silica-iron hardpan layer approximately 2 to 10 feet below the surface. Many plants may only grow in years when seasonal rainfall is sufficient, particularly when rains begin in November and continue through the end of April. This plant is less likely to germinate in years of below-normal precipitation than other members of the Orcuttieae grasses. Flowering typically occurs in May and June.

Sacramento Orcutt grass is endemic to the southeastern Sacramento Valley, and has always been restricted to Sacramento County. It is known from only 12 occurrences, most of which are still presumed extant (CNDDB 2014). The recorded range of the species extends in a narrow band from just north of the American River near Orangevale to the vicinity of Rancho Seco Lake on Arroyo Seco Mesa, approximately 26 miles to the south. The nearest documented occurrence of Sacramento Orcutt grass is approximately 0.8 mile southeast of the Project Site (CNDDB Occurrence No. 20); however, this

population is presumed extirpated (CNDDB 2014). This occurrence was last observed in 1998 in a pool that is now a permanent marsh due to runoff from an adjacent nursery (CNDDB 2014). The nearest possible extant location is approximately 3.6 miles northeast of the Project Site (CNDDB Occurrence No. 17), in vernal pools on the Anatolia Preserve east of Sunrise Boulevard and north of Kiefer Boulevard (CNDDB 2014). The larger, deeper pools that remain inundated for extended periods at the site are considered potential habitat for Sacramento Orcutt grass. Considering the relatively close proximity of nearby populations, this species could be expected to occur at Aspen VIII & IX. Based on negative findings of protocol-level rare plant surveys conducted in May and June 2013 and 2014 (Teichert 2015b), Sacramento Orcutt grass is not expected to occur at the Project Site at this time.

Sanford's Arrowhead (*Sagittaria sanfordii*)

Sanford's arrowhead is not listed pursuant to either the federal or California ESAs; however, it is listed as a CRPR 1B.2 species by the CNPS. Sanford's arrowhead is associated with the shallow margins of small lakes and ponds and slow-moving sloughs, creeks, rivers, and canals. Numerous populations have also naturalized in ditches associated with irrigation and other drainage systems. Little is known regarding the biology or ecology of the species, although it appears to tolerate a wide range of freshwater marsh environments. Flowering typically occurs between May and August.

This species is widely distributed throughout the Central Valley between 0 and 2,200 feet. Sanford's arrowhead is documented from 93 occurrences and is presently known from Shasta to Kern County, with the majority of records occurring in Sacramento County (CNDDB 2014). A disjunct population also occurs near Crescent City in Del Norte County. The species is presumed to have been extirpated from much of its historic range in southern California (Orange and Ventura counties). A nearby population of Sanford's arrowhead occurs approximately 1.8 miles northwest of the Project Site (CNDDB Occurrence No. 25) (CNDDB 2014). Sanford's arrowhead was recorded at the Project Site during protocol-level surveys conducted in May and July 2014 (Teichert 2015b). Large populations of this species (2,000+ individuals) were observed growing within an irrigation ditch in Aspen VIII, near the western portion of the property (Figure 10). This ditch is fed by irrigation runoff from irrigated pastures to the east, before eventually emptying into a large irrigation pond on the northern project boundary (Teichert 2015b).

5.2 ANIMALS

A number of special-status animals have been documented in the CNDDB within the USGS 7.5-minute series *Carmichael, California* topographic quadrangle as well as the immediate eight surrounding quadrangles, and the habitats and vegetation communities found on-site represent potentially suitable habitat for a number of other special-status animal species (Table A-1, Figure 9). A total of nine invertebrates, one amphibian, one reptile, and nine birds were considered to have potential to occur on the Project Site. These include the blennosperma vernal pool andrenid bee (*Andrena blennospermatis*), an andrenid bee (*Andrena subapasta*), vernal pool fairy shrimp, mid-valley fairy shrimp (*Branchinecta mesovallensis*), hairy water flea (*Dumontia oregonensis*), Ricksecker's hydrochara (*Hydrochara rickseckeri*), venal pool tadpole shrimp, California linderiella (*Linderiella occidentalis*), valley elderberry

longhorn beetle (*Desmocerus californicus dimorphus*), western spadefoot toad (*Spea hammondii*), western pond turtle(*Emys marmorata*), white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), Ferruginous hawk (*Buteo regalis*), merlin (*Falco columbarius*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), yellow-billed magpie (*Pica nuttallii*), and tricolored blackbird (*Agelaius tricolor*). Five species were observed during various field surveys in 2013 and 2014: white-tailed kite (perched in willow tree), northern harrier (foraging), Swainson's hawk (flyover), yellow-billed magpie (foraging), and tricolored blackbird (nesting in Himalayan blackberries).

5.2.1 Invertebrates

Blennosperma Vernal Pool Andrenid Bee (*Andrena blennospermatis*)

The blennosperma vernal pool andrenid bee is not listed pursuant to either the federal or California ESAs; however, it is tracked by the CNDDB due to its restricted habitat. The species is a solitary, ground-nesting bee that inhabits upland areas near vernal pools and specializes on the flowers in the *Blennosperma* genus (yellow carpet) (Leong, et al. 1995). Presence of this bee is reported in scattered locations where *Blennosperma* is found, along the edges of the Central Valley in Yolo, Solano, El Dorado, Sacramento and Tehama Counties, as well as near the base of the Coast Ranges in Contra Costa, Lake and Sonoma Counties (CNDDB 2014). The female bee collects and provisions *Blennosperma* pollen into ground nests, forming it into a ball onto which she lays a single egg. Bees are active through the bloom period of yellow carpet (late February through April), allowing a female to produce multiple ground nests. The next spring, adults emerge around the same time that *Blennosperma* begins blooming and the cycle repeats.

The blennosperma andrenid bee is dependent upon the presence of *Blennosperma* flowers, which occur in grasslands associated with vernal pools. The nearest occurrence for this species is approximately 10 miles to the southeast of the study area (CNDDB Element Occurrence No. 08), in a vernal pool complex near Sloughhouse (CNDDB 2014,). *Blennosperma* plants were not identified through any of the comprehensive spring surveys in the vernal pool and grassland habitats of the study area (Teichert 2015b); therefore, the blennosperma vernal pool andrenid bee is not considered to occur at the Project Site at this time.

Andrenid Bee (*Andrena subapasta*)

Similar to other andrenid bees, *Andrena subapasta* is a solitary, ground-nesting bee that specializes on native flowers endemic to vernal pool grassland habitats. It is not listed pursuant to federal or California ESAs, but is tracked by the CNDDB, as very little is known about this species. Records exist from the Sacramento Valley and foothill regions in Sacramento, San Joaquin, Placer and El Dorado Counties (CNDDB 2014). It is known to forage on a variety of native forbs, and has been observed to collect pollen from the flowers of sandwort (*Minuartia californica*), Johnny-tuck (*Triphysaria eriantha*) and California goldfields (*Lasthenia* spp.) (Rogers, pers. obs.; CNDDB 2014).

The nearest occurrence for this species is more than 5 miles north of the study area and is from 1954 (CNDDB Element Occurrence No. 03), in what is now a developed area of Fair Oaks near the American River (CNDDB 2014). The annual grassland habitat surrounding vernal pools within the study area may provide suitable habitat for *A. subapasta*, as several pools were noted to contain *Lasthenia fremontii* and *L. glaberrima* and other native flowering forb species during spring plant surveys (Teichert 2015b). Therefore, *A. subapasta* could occur within the study area.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

The vernal pool fairy shrimp is listed as threatened under the federal ESA. This species is usually found in vernal pools, but can also occur in association with other ephemeral wetlands including alkali pools, seasonal swales, and rock outcrops. Vernal pool fairy shrimp act as filter-feeders and are present in seasonal pools during the wet stage, hatching from cysts as soon as ponding occurs. Vernal pool fairy shrimp develop rapidly into adults, reaching sexual maturity in as little as 18 days (Helm 1998); although, Rogers (pers. obs.) observed this species reaching maturity in as little as 6 days under high temperatures. Maturation and reproduction rates of vernal pool crustaceans are controlled by water temperature and can vary greatly (C. Rogers, pers. obs.). Three to six hatches may occur within a season if rainfall patterns and conditions are favorable (Gallagher 1996; Helm 1998). Cysts typically remain dormant until the next rainy season, but can last in vernal pool substrate for many years. The species is an important food source for many other vernal pool animals, from aquatic beetles to toads and ducks.

The vernal pool fairy shrimp is distributed throughout the Central Valley, as well as at a small number of locations in the central Coast Ranges from Monterey County south to Santa Barbara County and in the South Coast Mountains in Riverside County (CNDDB 2014). There are 26 records for this species within 5 miles of the Project Site, with the nearest record existing approximately 0.6 mile to the east of the study area (CNDDB Element Occurrence No. 228) within natural vernal pools surrounded by grazed grassland (CNDDB 2014). Vernal pool fairy shrimp have also been observed from reconnaissance level special-status shrimp surveys conducted on Aspen IX by C. Rogers (EcoAnalysts 2006). Therefore, vernal pools and other seasonal wetlands and swales within the study area are considered to likely support vernal pool fairy shrimp.

Mid-valley Fairy Shrimp (*Branchinecta mesovallensis*)

The mid-valley fairy shrimp is not listed pursuant to the federal or California ESAs, but is tracked by the CNDDB. The species is closely related to the federally-listed vernal fairy shrimp and is limited to vernal pools, swales, and other ephemeral freshwater habitats in the Central Valley. Similar to the vernal pool fairy shrimp, the mid-valley fairy shrimp is a small, filter-feeding crustacean that experiences a rapid life cycle adapted to the filling and drying of its astatic seasonal wetland habitat, complete with the formation of cysts that are capable of lying dormant for many years until the return of appropriate hydrological conditions. Data from laboratory experiments indicate that the young of this species may have a higher tolerance for elevated water temperatures than other *Branchinecta* species (Helm 1998).

Mid-valley fairy shrimp have been found in habitats ranging from 0.001 to 0.5 acre in size, and typically utilize habitats shorter in duration than other *Branchinecta* species (Rogers, pers. obs.).

Records of this species are scattered from Sacramento, Solano, Contra Costa, Merced, Madera and Fresno Counties. There are eight known occurrences for this species within 5 miles of the study area. The nearest record is less than one mile to the northeast (CNDDB Element Occurrence No. 28), within a vernal pool/annual grassland complex south of Mather Regional Park and north of Jackson Road (CNDDB 2014). The vernal pools, swales, and other seasonal wetland habitats on site are considered suitable habitat for this species; thus, the species is considered to have potential to occur.

Hairy Water Flea (*Dumontia oregonensis*)

The hairy water flea is not listed pursuant to the federal or California ESAs, but is tracked by the CNDDB due to a restricted range and lack of specific habitat requirements. In general, the hairy water flea is described as a branchiopod crustacean found in vernal pools and similarly seasonally astatic wetlands. Three populations have been found in vernal pools in Jackson County, Oregon and two in California (Travis AFB, Solano County, and Sacramento County) (Santos-Flores and Dodson 2003; Van Damme & Dumont 2008; CNDDB, 2014; Rogers, pers. obs.). Vernal pools within the study area may provide suitable habitat for the hairy water flea. The only known record for this species in Sacramento County is located approximately one mile north of the study area (CNDDB Element Occurrence No. 01), from a vernal pool at Mather Field (CNDDB 2014). Therefore, the species is considered to have potential to occur at the Project Site.

Ricksecker's Hydrochara (*Hydrochara ricksecker*i)

Ricksecker's hydrochara is a relatively newly-discovered species and is currently not listed pursuant to the federal or California ESAs. Because there is very little information about this species and so few populations are known, it is tracked by the CNDDB. Ricksecker's hydrochara is entirely dependent upon vernal pool-type wetland ecosystems. Records suggest that this species occupies a variety of vernal pools, seasonal wetlands, and other ephemeral habitats below 1,000 feet, but may prefer deeper, long-lasting pools (Rogers, pers. obs.). Like the majority of Hydrophilid beetles, the Ricksecker's hydrochara is predatory in the larval stage and omnivorous as an adult. The larvae of this species will consume other insects, crustaceans, or amphibian larvae (Rogers, pers. obs.). Adults have been seen feeding on common frog-fruit (*Phyla nodiflora*), and dead insects and tadpoles (Rogers, pers. obs.).

This species was originally reported as endemic to the San Francisco Bay region, occurring in Alameda, Marin, San Mateo, and Sonoma Counties (Smetana, 1980). Recent collections have been made in Solano County at the Jepson Prairie Preserve, and from vernal pools in Sacramento, San Joaquin and Placer Counties (Rogers pers. obs.; CNDDB 2014). Larger vernal pools within the study area may provide suitable habitat for this species. The nearest occurrence record for this species is from an aquatic habitat located within a mile north of the study area at Mather Field (CNDDB Element No. 05; CNDDB 2014). Therefore, Ricksecker's hydrochara is considered to have potential to occur at the Project Site.

Venal Pool Tadpole Shrimp (*Lepidurus packardi*)

The vernal pool tadpole shrimp is listed as endangered by the federal ESA. This species inhabits a wide variety of seasonal wetlands, including vernal pools, ponded clay flats, alkaline pools, ephemeral stock ponds, and roadside ditches (Helm 1998; Rogers 2001; CNDDB 2014). Wetlands supporting vernal pool tadpole shrimp have included small (<25 square feet), clear, vegetated pools to highly turbid alkali scald pools to large (>100 acre) winter lakes (Helm 1998; Rogers 2001). These wetlands must dry out and be inundated again for their cysts to hatch. Most records are from larger, deeper vernal pools. Although maturation and reproduction rates of vernal pool crustaceans are controlled by water temperature and can vary greatly (Rogers, pers. obs.), it is estimated that the vernal pool tadpole shrimp take between 3 and 4 weeks to mature (Ahl 1991; King et. al. 1996). This species is relatively large in contrast to fairy shrimp, and covered in an oblong-shaped carapace that is molted as the crustacean grows. Due to their large size, the vernal pool tadpole shrimp is a favorite food source among a variety of animals, from frogs to herons. They are very active hunters, burrowing and swimming in pursuit of various prey items, such as rotifers, fairy shrimp, and tadpoles (C. Rogers, pers. obs.).

Vernal pool tadpole shrimp is a California Central Valley endemic species, with the majority of populations in the Sacramento Valley. There are 51 occurrences that have been recorded for this species within 5 miles of the study area (CNDDB 2014). The nearest record for this species is located approximately 0.5 mile to the north of the study area at Mather Field (CNDDB Element Occurrence No. 25), within natural vernal pools surrounded by annual grassland (CNDDB 2014). Vernal pools within the study area are considered suitable habitat for the vernal pool tadpole shrimp. Vernal pool tadpole shrimp have also been observed from reconnaissance level special-status shrimp surveys conducted on Aspen IX by C. Rogers (EcoAnalysts 2006). Therefore, vernal pool habitats within the study area are considered to likely support this species.

California Fairy Shrimp (*Linderiella occidentalis*)

The California fairy shrimp is the most widely distributed fairy shrimp in California. The species is not currently listed pursuant to federal or California ESAs, but, given continued threats to habitat, is tracked by the CNDDB. This species has been found on most land forms, geologic formations, and soil types supporting vernal pools and other seasonal wetlands throughout California, but tends to occupy relatively deep pools (Eriksen & Belk 1999). Similar to the vernal pool fairy shrimp, the California fairy shrimp is a filter-feeding Branchiopod that hatches from cysts in large numbers within vernal pool habitats.

Within the Central Valley, records for California fairy shrimp come from Shasta, Tehama, Butte, Yuba, Placer, Sacramento, and San Joaquin Counties. There are 38 known occurrences for this species within 5 miles of the study area, with the majority of these occurrences located immediately north of the site at Mather Field (CNDDB 2014). The nearest record for this species exists 0.6 mile to the east of the study area (CNDDB Element Occurrence No. 258), within natural vernal pools surrounded by grazed grassland (CNDDB 2014). This species has also been observed from reconnaissance level special-status shrimp

surveys conducted on Aspen IX by C. Rogers (EcoAnalysts 2006). Therefore, vernal pool and seasonal wetland habitats within the study area are considered to likely support California fairy shrimp.

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

The valley elderberry longhorn beetle (VELB) is listed as threatened by the federal ESA. The VELB is entirely dependent upon its host plant, elderberry (i.e., *Sambucus* spp.). The elderberry shrub is primarily associated with riparian areas, but also occurs in grasslands, dredge tailings, and as isolated roadside shrubs. Most records indicate that the VELB occupies elderberry shrubs in association with other riparian vegetation. The VELB life cycle consists of four stages: egg, larva, pupa, and adult. Eggs are typically deposited within the bark crevices of live elderberry shrubs. Upon hatching, the larvae bore through the bark where they tunnel and feed in the pith of the stem for up to 2 years. Prior to pupating, the larvae bore back out of the stem (thereby creating the "exit hole") and then return into the stem to enter the pupil stage. Exit holes are more frequently found in trunks or branches between 2 and 7 inches in diameter, or at least 1.0 inch or greater in diameter at ground level (USFWS 1984). Between March and early June, about the same time the elderberries flower, VELB adults emerge from the exit holes. Adults feed on the leaves of elderberry shrubs and possibly the flowers. The life span of adults is unknown, but they are presumed to die after reproducing.

This taxon occurs at scattered locations in the Central Valley and adjacent foothills of the Sierra Nevada and Coast Ranges. At the time the VELB was federally listed, it was known from less than 10 locations along the American and Merced Rivers, and along Putah Creek (USFWS 1980). The known range now extends from southern Shasta County to Fresno County and across the Central Valley, with approximately 204 records (mostly based on exit holes) in existence (CNDDB 2014). The nearest occurrence record for this taxon is approximately 5.6 miles north of the Project Site (CNDDB Element Occurrence No. 01; CNDDB 2014). This occurrence is described as being located on elderberry shrubs within dense riparian habitat along the American River Parkway from River Bend Park up to the lower southeast shore of Lake Natoma. Considering the relatively close proximity of nearby populations and wide geographical range of elderberry shrubs, the VELB could be expected to occur within the study area. Focused surveys for elderberry shrubs were conducted on the Project Site as part of a rare plant survey, carried out over a two year period from March 2013 through August 2014 (Teichert 2015b). No elderberry shrubs were present on the Project Site (Teichert 2015b); therefore, the species is considered to have no potential to occur within the study area due to a lack of required habitat.

5.2.2 Amphibians

Western Spadefoot Toad (*Spea hammondii*)

The western spadefoot is not listed pursuant to the federal or California ESAs, but is designated by the CDFW as a California Species of Special Concern. The species primarily occurs in lowland habitats below 3,000 feet in elevation within or adjacent to washes, floodplains of rivers, alluvial fans, playas, and alkali flats. However, it also occurs in the foothills and mountains at a few locations at elevations up to 4,500

feet (Stebbins 1985, Morey 1988). Associated vegetative communities, where it occurs, include annual and perennial grasslands, open chaparral, pine-oak woodland, and lower montane conifer and mixed conifer forest with open areas comprised of short grasses and sandy or gravelly soil. Western spadefoot toads breed from February to May in temporary pools and drainages that form following winter or spring rains. Their eggs and larvae have been observed in a variety of temporary wetlands (CNDDB 2014). They have also been found in altered wetlands including vernal pools that have been disturbed by activities such as earthmoving, disking, intensive livestock use, and off-road vehicle use, and man-made wetlands such as artificial ponds, livestock ponds, sedimentation and flood control ponds, irrigation and roadside ditches, roadside puddles, tire ruts, and borrow pits (Fisher and Shaffer 1996, CNDDB 2014).

The species occurs in Sacramento County, but is largely localized to the southeastern portion of the County (south of Rancho Murieta) (CNDDB 2014). There are four records for this species within 5 miles of the study area. The nearest known occurrence to the Project Site is less than 4 miles away and near the intersection of Zinfandel Drive and Kiefer Boulevard (CNDDB Element Occurrence No. 167; CNDDB 2014). Western spadefoot was found in three vernal pools at this location, surrounded by annual grassland within Mather Field. Given potentially suitable breeding sites (e.g., vernal pools) and surrounding upland, it is considered to have potential for occurring within the Project Site.

5.2.3 Reptiles

Western Pond Turtle (*Emys marmorata*)

Western pond turtle is not listed pursuant to either the federal or California ESAs, but is designated by the CDFW as a California Species of Special Concern. This species is discontinuously distributed from western Washington State south to northwestern Baja California, but exists at numerous localities in the Central Valley of California. It occurs in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow moving streams (Jennings and Hayes 1994). Although primarily aquatic, the western pond turtle will leave its aquatic habitats to reproduce, aestivate, or overwinter (Jennings and Hayes 1994). Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops appears to be the preferred aquatic habitat of the species. Although adults are habitat generalists, hatchlings and juveniles require shallow water habitat with relatively dense submergent or short emergent vegetation in which to forage. Western pond turtles are typically active between March and November. Mating generally occurs from late April to early May and eggs are deposited between late April and early August (Jennings and Hayes 1994). Eggs are deposited within excavated nests in upland areas, within substrates that typically have high clay or silt fractions, usually in the vicinity of aquatic habitats (Jennings and Hayes 1994). The majority of nesting sites are located within 650 feet of the aquatic habitat. However, sites have been documented as far as 1,310 feet from aquatic habitat. Nests are typically located on a slope that is unshaded and at least partly south-facing. The slope of nest sites ranges up to 60˚, but is typically less than 25˚.

The pond within the northern portion of the Project Site may provide suitable seasonal or perennial aquatic habitat for western pond turtle. Furthermore, individuals may occasionally occur in Elder Creek. Most of the upland habitat within the study area is unsuitable for nesting given that it is in active agricultural use (including flood irrigation) each year. However, nesting may occur in small areas that are relatively undisturbed. This species has occasionally been observed at locations hydrologically connected to the lower Elder Creek watershed (Bumgardner pers. obs.) and occasionally in the adjacent Morrison Creek watershed (i.e., south of Mather Airport) (CNDDB 2014). There are two records within 5 miles of the project area, with the nearest occurrence located approximately one mile to the northwest of the site in Morrison Creek, below the confluence with the Mather Field drain (CNDDB Element Occurrence No. 433; CNDDB 2014). Therefore, it is considered to have potential to occur within the Project Site.

5.2.4 Birds

White-tailed Kite (*Elanus leucurus*)

White-tailed kite is not listed pursuant to either the federal or California ESAs. However, the species is fully protected pursuant to Section 3511 of the California Fish and Game Code. The species is a common resident in the Central Valley as well as most of the California coast (Dunk 1995). In northern California, white-tailed kites typically nest from March through June. Nesting occurs in large, dense-topped trees within riparian, oak woodland, savannah, and agricultural communities that are near suitable foraging areas (i.e., open grassland, oak savannah, emergent wetlands, and some row and field crops). The species has been observed regularly in small numbers throughout Sacramento County (Bumgardner pers. obs.).

A total of six occurrences exist within 5 miles of the study area for this species, with one occurrence recorded within the study area along Elder Creek (CNDDB Element Occurrence No. 27; CNDDB 2014). This occurrence is described as a nest located in a tree between pastures and fields. In addition, there are several eBird records for the species within 2 miles or less from the Project Site (eBird 2014). Therefore, white-tailed kite is considered to have potential for nesting within or immediately adjacent to the study area.

Northern Harrier (*Circus cyaneus*)

Northern harrier (*Circus cyaneus*) is not listed in accordance with either the federal or California ESAs. However, it is designated as a California Species of Special Concern by the CDFW (when nesting). It occurs from sea level to the mid-elevations of the Sierra Nevada where there is grassland, open rangeland, desert flats, or fresh or saltwater marsh. The species nests from April to September with peak activity occurring June through July. Nests are typically located on the ground in grassland, weedy fields, grain fields, or emergent marsh.

No nesting occurrences of this species in Sacramento County have been reported in the CNDDB; the nearest occurrence is at the Beale Air Force Base, approximately 40 miles to the north of the study area (CNDDB 2014). However, it has been observed to occur in small numbers throughout Sacramento County during the nesting season and there are multiple eBird records from June and July in Sacramento County (Bumgardner pers. obs.; eBird 2014). The species was also recently observed nesting in a grain field approximately one mile northwest of the site, just north of Morrison Creek (Baba and Bumgardner, pers. observ. 2015). Consequently, the species is considered to have potential to nest within the study area, particularly in fallow pastures with tall grass.

Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species pursuant to the California ESA. The species nests in western North America (i.e., Canada, western United States, and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta (England et al. 1997). In California, the nesting season for Swainson's hawk ranges from mid-March to late August. In the Central Valley, Swainson's hawks are known to nest within tall trees in a variety of wooded communities including, but not limited to, riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas.

Swainson's Hawks have an unusual raptor diet, in that they are predominantly insectivorous, feeding on grasshoppers, dragonflies and crickets. During the breeding season, insects become less important and larger prey, such as rabbits, rodents and small reptiles, are incorporated as the main source of protein. Foraging habitat includes open grassland, savannah, low-cover row and field crops, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*), California ground squirrel (*Otospermophilus beecheyi*), ring-necked pheasant (*Phasianus colchicus*), passerine birds, and grasshoppers (*Melanopulus* spp.). The species is an opportunistic forager and will readily forage in association with agricultural mowing, harvesting, disking, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for the species. According to a recent study by Swolgaard, et al. (2008), the most frequently used foraging habitats within the Sacramento-San Joaquin Delta region are irrigated hay fields, ruderal areas, and dryland grain fields, with the heaviest usage immediately after mowing, likely due to a temporal increase in prey availability due to the loss of vegetative cover. The least frequently used habitats were oak woodland, irrigated field crops, urban environments, and riparian and lacustrine areas. Habitat loss and degradation are often cited as likely factors contributing to declines in Swainson's hawk populations in California. Threats include loss of riparian forest as nesting substrate, together with similar losses of grassland and other open habitats (such as a vernal pool/seasonal wetland complexes), as well as conversion of field crops to unsuitable foraging cover (such as cotton, vineyard and orchard).

Tall trees along the boundaries of the study area provide potential nesting habitat for Swainson's hawk, and the annual grasslands and irrigated pastures provide potential foraging habitat for the species. The grazed, annual grassland habitat within the study area is considered to be of the highest foraging habitat

quality, as the vegetative cover here is maintained at relatively short levels (Swolgaard, et al. 2008). Though neither foraging Swainson's Hawks nor nests have been reported within the study area, nine nests have been reported to the CNDDB within 5 miles of the site, with the nearest record located approximately 2 miles southeast of the study area near Bradshaw Road (CNDDB Element Occurrence 2244; CNDDB 2014). This record is described as an active nest in a 40-foot tall native tree surrounded by fallow land. Therefore, the species is considered to have potential for nesting within or immediately adjacent to the study area.

Ferruginous Hawk (*Buteo regalis*)

The winter distribution of ferruginous hawks historically included Kansas, Colorado, California, and Nevada south to New Mexico. Wintering ferruginous hawk is not listed in accordance with either the federal or California ESAs, but is currently tracked by the CNDDB. The historic nesting distribution of the ferruginous hawk in North America included eastern Washington, southern Saskatchewan, southwestern Manitoba, and western North Dakota south to eastern Oregon, Nevada, northern and southeastern Arizona, northern and southwestern New Mexico, northwestern Texas, western Oklahoma, western Kansas, western Nebraska, and rarely northeastern California. Currently, ferruginous hawks occupy much of their former breeding distribution. However, they are now gone from southwestern Manitoba, southeastern Arizona, southwestern New Mexico, and northwestern Texas. Historically, a few pairs of ferruginous hawks were known to nest in extreme northeastern California in Modoc County (Grinnell and Miller, 1944), and a few pairs still nest in this region of the State (particularly the Fall River Valley of Shasta County). Ferruginous hawks begin to migrate into California in August or September and return to their breeding habitat in late February or early March. Expansive, open grassland is the primary wintering habitat of the species. The wintering distribution of the ferruginous hawk in California extends from the Oregon state line to the Mexican border, west of the Colorado Desert and east of the northern humid coastal belt. Though no ferruginous hawks have been reported within the study area, there are multiple winter eBird records for the species in Sacramento County (eBird 2014). Though most CNDDB occurrence records are from the far eastern portions of the County, records of this species exist within 5 miles of the Project Site (near Mather Airport). The nearest occurrence is located approximately one mile north of the study area, within annual grassland at Mather Field (CNDDB Element Occurrence No. 31; CNDDB 2014). Consequently, the species is considered to have potential to winter at the Project Site.

Merlin (*Falco columbarius*)

Merlin is not listed in accordance with either the federal or California ESAs, but the wintering distribution of this species is currently tracked by the CNDDB. The species breeds in Canada and Alaska and occurs in California as an uncommon migrant and winter resident (August through April). Suitable foraging habitat includes a wide range of open environments including sea coast estuaries, desert, open grasslands, and semi-open woodlands within which it can hunt from low perches. It feeds primarily on small birds (e.g., horned lark [*Eremophila alpestris*]). Consequently, the irrigated pastures and annual grasslands provide potential foraging habitat for the species.

There are no CNDDB records for this species in the vicinity of the study area, with the nearest record reported approximately 8.5 miles southeast at the Sacramento Regional Wastewater Treatment Plant Bufferlands, near Laguna Creek (CNDDB Element Occurrence No. 20; CNDDB 2014). This occurrence is described as open habitat, dominated by annual grassland and seasonal wetlands, interspersed with vernal pools and some riparian vegetation. In addition, there are multiple winter eBird records for the species in Sacramento County (eBird 2014). The nearest eBird records are from the Rosemont area of Sacramento County (less than 4 miles from the Project Site). Therefore, it is considered to have a potential for wintering within the Project Site.

Burrowing Owl (*Athene cunicularia*)

Burrowing owl is not listed pursuant to either the federal or California ESAs. However, it is designated as a California Species of Special Concern by the CDFW. It is a year-round resident in annual and perennial grasslands or other vegetation communities that support sparse or non-existent tree or shrub canopies, such as rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds (Haug et al. 1993). The species typically uses burrows created by fossorial mammals, most notably the California ground squirrel, but may also use man-made structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (CDFG 2012). It has even been observed wintering in boulder piles (Bumgardner pers. obs.). The breeding season extends from approximately February 1 through August 31 (CBOC 1993; CDFG 2012).

Though no occurrences of this species have been recorded within the study area, multiple occurrences have been recorded in the CNDDB and eBird for the vicinity of the Project Site (CNDDB 2014, eBird 2014). The nearest of these occurrences is at Mather Field, approximately one mile north of the study area (CNDDB Element Occurrence No. 487), and is described as being grazed annual grassland with 16 active burrows and several individual birds observed over three different dates (CNDDB 2014). Though use of much of the study area for active agricultural operations (particularly irrigated grassland) precludes occupation by burrowing owls, California ground squirrel burrows are present within the site at scattered locations and could provide suitable roosting or nesting habitat for individuals. In addition, most of the study area (even the irrigated grasslands) is suitable as foraging habitat for the species. Consequently, it is considered to have potential to occur within the Project Site.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is not listed pursuant to either the federal or California ESAs, but is considered a California Species of Special Concern by the CDFW (when nesting). The species generally occurs in a variety of open grassland, oak savannah, shrubland, and other similar habitats where it feeds primarily on large insects (e.g., grasshoppers). However, the species may also occasionally take small reptiles, birds, and mammals. It nests in small trees and shrubs in open country with short vegetation such as pastures, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas,

and open woodlands (Yosef 1996). It has even been observed nesting in cattails (Bumgardner pers. obs.). Nesting typically occurs during March to June with young becoming independent during July or August. The nest is generally well-concealed on a stable branch in a densely-foliaged shrub or tree. Nest territories have been found to range in size from 11 to 40 acres (Miller 1931). In areas of year-round residence (such as much of lowland California) members of a pair are known to defend adjoining territories during the non-breeding season and then defend a single nesting territory comprised of the adjoining winter territories during the breeding season (Lefranc 1997).

The nearest CNDDB record for this species is in Alameda County (CNDDB 2014). Though no nesting occurrences of loggerhead shrike have been reported within the vicinity of the study area (CNDDB 2014), it has been observed nesting elsewhere in Sacramento County (Bumgardner pers. obs.). In addition, there are eBird records for the species for the peak nesting season in the County (eBird 2014). The nearest of these records are from the Rancho Cordova Golf Course (less than 2 miles from the Project Site) and areas immediately west of Sunrise Boulevard (eBird 2014). Clumps of landscape trees, as well as that of riparian scrub habitat along Elder Creek, may provide suitable nesting habitat, especially considering that existing annual grassland provides ideal foraging conditions. Therefore, it is considered to potentially nest within the Project Site.

Yellow-Billed Magpie (*Pica nuttallii*)

Yellow-billed magpie is not listed in accordance with either the federal or California ESAs, but is currently tracked by the CNDDB (when nesting or communally roosting). This endemic species is a year-long resident of the Central Valley and Coast Ranges from San Francisco Bay to Santa Barbara County. It builds large, bulky nests in trees in a variety of open woodland habitats, typically near grasslands, pastures, or croplands. Nesting occurs from February through July (CDFG 2005). It has shown to be particularly susceptible to West Nile Virus, which may have been the cause of death for thousands of individuals during the last decade.

Large trees along Elder Creek and associated with nearby residences provide potential nest and roost sites for the species. Though no occurrences of yellow-billed magpie are known from within the study area, there are many eBird records for the species from throughout Sacramento County. The nearest of these records is from the intersection of Elder Creek Road and Excelsior Road (less than one mile from the study area) (eBird 2014). Several yellow-billed magpies were observed to be foraging in the understory of landscape trees along Elder Creek Road during the 2014 rare plant surveys. Therefore, it could nest within the study area.

Tricolored Blackbird (*Agelaius tricolor*)

Tricolored blackbird (*Agelaius tricolor*) is listed as an endangered species pursuant to the California ESA. It was emergency listed by the California Fish and Game Commission on December 3, 2014. The emergency listing provides the full protection of the California ESA to the species immediately. This unheralded step (i.e., first emergency listing by the Commission) was considered necessary due to the

species precipitous decline (41% since 2011) and provides time for the Commission to consider a formal listing petition sometime in spring 2015. The emergency listing is valid for six months and can be renewed for six months if necessary. The basis for an emergency listing under California Fish and Game Code section 2076.5 is an "emergency posing a significant threat to the continued existence of the species."

The tricolored blackbird has one of the smallest ranges of any bird species in North America. Almost the entire population occurs year-round in cismontane California, with the Central Valley supporting the largest populations. However, small numbers occur in transmontane California (i.e., deserts and Great Basin), Oregon, western Nevada, Washington, and northern Baja California. Tricolored blackbird is not migratory over most of its range, but leaves northeastern California in fall and winter. Flocks become nomadic in fall seeking food. In winter flocks become more widespread from Marin to Santa Cruz counties and in the Sacramento River Delta. The breeding season for this species generally extends from mid-April into late July. Prospecting (i.e., searching for and visiting potential nest sites) typically occurs between early April and early June in the Sacramento area. Nesting colonies vary in size from about 50 nests to over 20,000 nests. Historically, tricolored blackbirds were found nesting in large to very large colonies (some estimated at over 100,000 nests) in areas with cattail or tule marsh habitats. However, with the decline in such habitats, the species now also nests in thickets of willow, Himalayan blackberry, grain fields, and tall herbs (especially species with spines or stinging hairs such as milk thistle and stinging nettle respectively). Foraging habitats are generally associated with open grassland, fields, and farm lands that provide high densities of prey species such as grasshoppers and butterfly larvae during the nesting seasons. Such foraging habitats are typically within 3 miles or less of the nesting colony. The species has been recorded as a nesting species in the CNDDB (2014) at several locations close to the Project Site. The nearest of these locations is less than 900 feet east of the eastern boundary of Aspen VIII. In addition, there are four existing colonies associated with small Himalayan blackberry stands located in the central and southeastern portions of Aspen VIII (Figure 10). As such, the species is known to nest on and immediately adjacent to the project site.

5.3 BIRDS OF PREY (RAPTORS)

All raptors including those species that are not considered as special-status species are protected under Section 3503.5 of the California Fish and Game Code. This latter section of the California Fish and Game Code provides protection to the nests and eggs of such species as well as individuals. Raptor species that are not considered as "special-status species" by CDFW but that occur in the vicinity of the Project Site include American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), and red-shouldered hawk (*Buteo lineatus*) in the order Falconiformes, and great-horned owl (*Bubo virginianus*) and barn owl (*Tyto alba*) in the order Strigiformes (Bumgardner pers. obs.). It should be noted that American kestrel and barn owl are cavity or crevice nesters, whereas each of the other raptor species build stick nests. Nonetheless, suitable nesting locations for each of these species are limited to the larger trees in and immediately adjacent to the Project Site (typically with DBH larger than 15 inches). Though there is no evidence of nesting by raptors on the Project Site, nests are known from throughout this portion of Sacramento County. Consequently, given the presence of suitable nesting structure

within and immediately adjacent to the Project Site and known occurrences of other nesting raptors within the site vicinity, these species are considered to have potential for nesting at the site.

6.0 POTENTIAL IMPACTS TO BIOLOGICAL RESOURCES AND RECOMMENDED MITIGATION MEASURES

This section of the document addresses changes in the existing environmental baseline for biological resources (i.e., impacts) that may result from implementation of the Project and are considered significant consistent with Section 15065 and Appendix G of the CEQA Guidelines. Figure 10 shows the locations of sensitive species identified at the site, the various habitat communities, as well as the proposed boundaries of the mining and limits of disturbance. Also depicted in Figure 10 is the proposed area of preservation, totaling 90.63 acres, including Elder Creek. Figure 5 illustrates existing features upon completion of reclamation. Mitigation measures are provided to avoid, minimize, or otherwise compensate for the identified impacts where such measures are available.

It should be noted that no potential impacts are associated with the following criteria:

- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Consequently, impacts associated with the above criteria are not analyzed in this document.

6.1 WETLANDS AND WATERS OF THE U.S.

A total of 27.796 acres of jurisdictional wetlands and Waters of the U.S. have been mapped within the Project Site (Table 2, Figures 3). The proposed Project will result in the loss of 5.282 acres of wetlands, including vernal pool, seasonal wetland, seasonal swale, freshwater marsh, perennial stream, ephemeral stream, pond, and ditch wetland habitats (Table 2, Figure 10).

TABLE 2. WETLAND IMPACTS SUMMARY

Wetland Type	Total Acres (Aspen VIII/IX)	Total Acres Impacted
Vernal Pool	7.260	0.597
Seasonal Wetland	5.741	1.500
Seasonal Swale	1.258	0.383
Freshwater Marsh	4.752	0.487
Perennial Stream	5.415	0.043
Ephemeral Stream	0.006	----
Pond	0.920	0.185
Ditch	2.444	2.178
Totals	**27.795**	**5.373**

Impacts to wetlands and other Waters of the U.S. that would occur with project implementation would result in a substantial adverse effect on federally jurisdictional Waters of the U.S., including wetlands, as defined by Section 404 of the CWA. These impacts would also constitute an adverse effect on waters of the State subject to the RWQCB jurisdiction. Additionally, these areas may be regulated by the CDFW and protected under the Sacramento County General Plan. Therefore, impacts to wetlands and other Waters are considered to be *significant.*

Mitigation Measures

Implementation of the following mitigation measures would reduce impacts from the proposed Project to a *less-than-significant* level.

MM-1 *Before conducting any grading, clearing, or excavation activity associated with the Project, Teichert shall obtain all necessary permits under Sections 401 and 404 of the CWA or the state's Porter-Cologne Act. Any wetlands or waters that would be lost or disturbed shall be replaced or created, restored, or enhanced on a "no-net-loss" basis in accordance with the USACE and the RWQCB policies. Any wetland creation or restoration proposed shall be at an acreage and location and by methods agreeable to the USACE, the RWQCB, and the County, as determined during the Section 401 and Section 404 permitting process. Alternatively, Teichert may choose to purchase wetland mitigation credits from a wetland mitigation bank that is authorized by the USACE.*

MM-2 *Water quality concerns during construction will also be addressed in a Section 401 water quality certification from the RWQCB. A Storm Water Pollution Prevention Plan (SWPPP) will also be required during construction activities. SWPPPs are required in issuance of a National Pollutant Discharge Elimination System (NPDES) construction discharge permit by the U.S. Environmental Protection Agency. Implementation of Best Management Practices (BMPs) during construction is standard in SWPPPs and water quality certifications. Examples of BMPs include stockpiling of debris away from regulated wetlands and waterways; immediate removal of debris piles from the site during the rainy season; use of silt fencing and construction fencing around regulated waterways; and use of drip pans under work vehicles and containment of fuel waste throughout the site during construction.*

MM-3 *In addition, a Streambed Alteration Agreement will be obtained from CDFW, pursuant to Section 1602 of the CDFW Code, for the installation of the culvert under Elder Creek Road, and any other activities affecting the bed, bank, or associated riparian vegetation of the stream. Teichert will coordinate with CDFW in developing appropriate mitigation, and should abide by the conditions of any executed permits.*

6.2 SPECIAL-STATUS SPECIES

Implementation of the proposed Project would result in both temporary (with reclamation), direct, and/or indirect impacts on a number of special-status plant and animal species. A discussion of those

species is provided below.

6.2.1 Loss of Habitat for and Individuals of Sanford's Arrowhead

Sanford's arrowhead was identified at the site through protocol-level rare plant surveys performed in 2014 (Teichert 2015b). Colonies were observed growing in two irrigated ditches near the western portion of the Aspen VIII property (Figure 10). A large population (2,000+ plants) occurs within an irrigated ditch, extending approximately 2,779 lineal feet in a south to north direction. A few additional plants were identified in a connected ditch running east to west along the northern border of an adjacent cemetery. The majority of Sanford's arrowhead would be directly impacted by the proposed Project, including approximately 2,278 linear feet of irrigation ditch supporting the plants. Other portions of the ditch not proposed to be disturbed by the Project would also expect to be indirectly impacted, since irrigation to existing pastures would likely cease through implementation of the Project. For these reasons, Project-related impacts to Sanford's arrowhead would be considered *significant*.

Mitigation Measures

Implementation of the following mitigation measures would reduce impacts from the proposed Project to a *less-than-significant* level.

MM-4 *Because all current populations of Sanford's arrowhead are supported through irrigation and farming practices at the site, no preservation of Sanford's arrowhead is proposed. Instead, Teichert shall transplant no less than 40 plugs (1ft x 1ft x 1ft), with no fewer than three individual Sanford's arrowhead plants per plug, to a preserved portion of Morrison Creek associated with the Granite Vineyard-Aspen III-South project area located approximately 1.5 miles west of the Project. Morrison Creek presently supports a similar hydrological regime to that where Sanford's arrowhead is currently growing and new occurrences of the species have been observed within a portion of the Morrison Creek channel approximately 2.5 miles northeast of the proposed transplant site (B. Baba, pers. obs.). The locations from which plugs are taken shall be selected randomly to assure the greatest potential genetic diversity of the source plants.*

MM-5 *Teichert shall monitor the transplanted Sanford's arrowhead to evaluate the efficacy of such transplantation as it relates to future mitigation efforts for this species. Monitoring shall occur for five consecutive years after transplantation and a final report submitted to Sacramento County PER and CDFW by October of the final year of monitoring. Teichert shall not be bound by any survivorship monitoring standards nor additional transplantation requirements given that all occupied habitat within Aspen VIII will be removed or impacted and no source material for additional transplantation will be available upon loss of the occupied onsite habitat.*

6.2.2 Impacts to and Loss of Habitat for Vernal Pool Invertebrates

An andrenid bee, vernal pool fairy shrimp, mid-valley fairy shrimp, hairy water flea, Rickesecker's hydrochara, vernal pool tadpole shrimp, and California linderiella occur in or utilize seasonally inundated depressions such as vernal pools, seasonal wetlands, and seasonal wetland swale. The vernal pool fairy shrimp, vernal pool tadpole shrimp, and California fairy shrimp have been observed from numerous vernal pools and seasonal wetlands at the Project Site (EcoAnalysts 2006). Based on these previous observations, Teichert has assumed that all suitable habitat (i.e., non-irrigated) for special-status vernal pool invertebrates within the affected area is occupied by vernal pool invertebrates.

Table 3 below summarizes the total acreage of habitat that the Project would affect, including potential indirect impacts. It should be noted that several seasonal wetlands are located in irrigated pastures and continuously affected by summer irrigation, remaining saturated or inundated for prolonged periods. These irrigated seasonal wetlands do not provide habitat for the special-status species invertebrates discussed above due to their extended hydroperiods.

TABLE 3. DIRECT AND INDIRECT EFFECTS ON SPECIAL-STATUS VERNAL POOL INVERTEBRATES

Potential Habitat	Total Acres (Aspen VIII/IX)	Direct Impacts (acres)	Indirect Impacts (acres)
Vernal Pool (non-irrigated)	*6.964	0.301	0.031
Seasonal Wetland (non-irrigated)	3.524	0.572	0.182
Seasonal Swale (non-irrigated)	0.362	0.021	0.047
Totals	**11.146**	**0.894**	**0.260**

*Note: 0.296 acre of vernal pools were field confirmed as irrigated based on recent observation with the USFWS

Implementation of the proposed Project would result in the loss of 0.894 acre of special-status vernal pool invertebrates, including the vernal pool fairy shrimp and vernal pool tadpole shrimp. There is also the potential for indirect loss of 0.260 acre of habitat. The direct and potential indirect impacts to 1.154 acres of habitat and potential mortality of these vernal pool invertebrates are considered to be *significant.*

Mitigation Measures

Implementation of the following mitigation measures would reduce impacts from the proposed Project to a *less-than-significant* level.

MM-6 *Teichert shall purchase vernal pool fairy shrimp and vernal pool tadpole shrimp conservation/mitigation credits from a USFWS-authorized conservation bank whose service area includes the Project. The purchase of conservation/mitigation credits shall be consistent with the requirements of the Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans within the Jurisdiction of the Sacramento Field Office, California (1-1-96-F-1). As such, preservation credits for vernal pool fairy shrimp and vernal pool tadpole*

shrimp shall be acquired at a compensation ratio of two vernal pool credits for every acre of suitable habitat directly or indirectly affected. Furthermore, creation credits for vernal pool fairy shrimp and vernal pool tadpole shrimp shall be acquired at a compensation ratio of one vernal pool credit for every acre of suitable habitat directly affected. All other provisions of the programmatic biological opinion also apply. Note that no compensation for seasonal wetlands created or affected by irrigation runoff is required given that these aquatic features are not considered suitable habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp. The final acreage of affected suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp will be determined by the USFWS in the agency's determination that the Project can be addressed by the programmatic biological opinion. The above compensation will also address other special-status vernal pool invertebrates that have been determined to have some potential to occur on the Project Site (e.g., an andrenid bee, the mid-valley fairy shrimp, hairy water flea, Rickesecker's hydrochara, and California fairy shrimp).

Alternatively, Teichert may participate in a regional planning/conservation process, such as the proposed SSHCP that provides a mechanism to mitigate all biological impacts based on a standardized formula. Preparation of the SSHCP, a regional conservation plan, is currently in progress pursuant to Section 10 of the federal Endangered Species Act and Section 2800 of the California Fish and Game Code (Natural Communities Conservation Act of 1991).

6.2.3 Loss of Habitat for and Disturbance to Western Spadefoot

Western spadefoot has a patchy and localized distribution in Sacramento County, but is known from similar habitats less than 4 miles away at the Mather Field Vernal Pool Complex. Aquatic sites on the Project Site that are potentially suitable as breeding sites for western spadefoot include vernal pools, seasonal wetlands, and ponds. There are a total of 19.936 acres of such aquatic sites on the property. The Project would result in the permanent loss of 3.034 acres of these aquatic sites. Thus, the Project would reduce the reproductive potential and recruitment from these aquatic sites for western spadefoot (if utilized by the species).

The Project Site also supports 308.5 acres of annual grassland that could be occupied by western spadefoot during the non-breeding season (note that irrigated pasture/hay is not considered to be suitable terrestrial habitat). The Project would result in the temporary loss of 96.2 acres of such habitat. This loss is considered temporary given that reclamation activities would eventually restore those acres, in addition to potentially providing more acres of annual grassland through the conversion of irrigated to non-irrigated grasslands.

Lastly, an unknown number of western spadefoots could be disturbed, killed, or injured during earth-moving activities associated with the Project. The loss of individuals would also reduce the reproductive potential and recruitment of the species in the Project vicinity. The loss of suitable western spadefoot habitat and individuals is considered to be *potentially significant*.

Mitigation Measures

Implementation of the following mitigation measures would reduce impacts from the proposed Project to a *less-than-significant* level.

MM-7 *Teichert shall retain a qualified biologist to conduct focused surveys for western spadefoot in the potentially suitable aquatic sites on the Project Site (i.e., vernal pools, seasonal wetlands, and ponds) that could be directly affected by the Project. The surveys shall be conducted prior to each discrete phase of mining and include a minimum of three nighttime surveys for calling adults during the early breeding season and a minimum of three surveys for egg masses and larvae throughout the remainder of the breeding season (mid-February to mid-May). If no evidence of western spadefoot is found during the surveys, no further mitigation shall be required.*

If western spadefoot is found on the Project Site, Teichert shall purchase mitigation credits at a 1:1 compensation ratio for the total acreage of occupied western spadefoot aquatic habitat that would be permanently lost as a result of the Project. The mitigation credits shall be purchased from an authorized mitigation bank that includes the Project within its service area or is otherwise authorized by the CDFW to sell mitigation credits to Teichert for the Project.

6.2.4 Loss of Habitat for and Disturbance to Western Pond Turtle

Western pond turtle typically occurs in natural or semi-natural still or slow-moving aquatic sites. As such it sometimes appears in ponds, marshes, and slow-moving perennial drainages where there is water, basking sites, and food. The Project would result in the permanent loss of 0.676 acres of pond, marsh, and perennial drainage. However, this impact is considered to be *less-than-significant* given that reclamation on the Project Site would eventually create up to 14.2 acres of stormwater retention pond that could be occupied by the species and the entire reach of Elder Creek within the property will be within the proposed preservation area for the Project.

Given that the majority of western pond turtle nesting sites are located within 650 feet, and up to 1,310 feet, from aquatic habitat, much of the annual grassland within the Project Site is considered suitable nesting habitat. Thus, earth-moving activities within the Project Site could then result in the destruction of eggs or neonate turtles. It should be noted that neonate western pond turtles may overwinter in the nest, as individuals have almost never been observed in early fall (Holland 1985). They are believed to exit the nest during the following spring (Buskirk 1992). Therefore, a limited operating period (i.e., period when eggs or neonates could not be affected by ground disturbance) is not available for this species. The loss of eggs, neonates, or adults is considered to be *potentially significant.*

Mitigation Measures

The following mitigation measures would reduce the above potential impacts to a *less-than-significant* level.

MM-8 *Teichert shall retain a qualified biologist to conduct focused surveys for western pond turtle in the potentially suitable aquatic sites on the Project Site (i.e., ponds, marshes, and perennial drainages). The survey shall be conducted prior to each discrete phase of mining, be conducted no more than five days prior to the initiation of site preparation activities, and be focused on water bodies that are within 300 feet or less of the proposed activities. If western pond turtles are observed during the pre-construction survey, and a qualified wildlife biologist determines site preparation activities could harm the turtles, the biologist shall conduct salvage and relocation of the turtles downstream to suitable perennial aquatic habitat during the same day of their capture. The aquatic habitat to which the turtles are relocated shall be no less than one mile of the Project Site.*

MM-9 *All construction staff shall be aware of the potential to uncover western pond turtle nests during grading and earthmoving activities. Construction staff shall be advised, if turtle eggs are discovered during such activities, construction shall temporarily be halted and a qualified wildlife biologist contacted to salvage the eggs. Prior to arrival of the biologist, the outer boundaries of the egg scatter shall be flagged. The eggs shall then be covered with a small layer of sand or soil over the eggs (to prevent damage or overheating). The qualified wildlife biologist shall then salvage the eggs and transport them to a nearby wildlife rehabilitation center that has been approved in advance by the USFWS and CDFW. Release of any hatchling turtles from the wildlife rehabilitation center shall occur downstream within suitable perennial aquatic habitat that is no less than one mile downstream of the Project.*

6.2.5 Disturbance to Nesting White-tailed Kite or Swainson's Hawk

White-tailed kite and Swainson's hawk are both known to nest in the vicinity of the Project Site. Though there is no evidence to suggest that either of these species have nested within the Project Site, it is possible that nests could be sited in the larger trees on and adjacent to the site in the future. Consequently, should tree removal, as proposed for the Project, occur during the nesting season of these species (i.e., mid-March to late August), there is the potential for the loss of eggs or juveniles during the removal activities.

In addition, nesting pairs located within up to 0.25 miles of the Project Site could be adversely affected during mining-related vegetation removal or earthmoving associated with the Project. Such adverse effects are typically associated with noise and visual changes that distract individuals from being properly attentive to eggs or juveniles. As such, there is some potential for nesting pairs to be sufficiently disturbed that eggs or juveniles are abandoned or otherwise lost. These impacts are considered to be *potentially significant*.

Mitigation Measures

The following mitigation measure would reduce the above potential impacts to a *less-than-significant* level.

MM-10 *To avoid and minimize impacts to nesting white-tailed kite or Swainson's hawk, Teichert shall not initiate mining-related vegetation removal or earthmoving during the nesting season (February 15 through August 31). All initial vegetation removal and earthmoving shall occur between September 1 and February 14 to the extent feasible.*

Alternatively, if Teichert initiates mining-related vegetation removal or earthmoving between February 15 and August 31, surveys shall be conducted for nesting white-tailed kite and Swainson's hawk in all suitable trees that are within and out to 0.25 miles from the Project boundaries. The surveys shall be conducted by a qualified biologist immediately preceding initiation of each phase of mining-related vegetation removal or earthmoving on the Project site according to the following schedule: the first visit shall occur within 14 days prior to vegetation removal or earthmoving and the second visit shall occur within 3 days prior to vegetation removal or earthmoving.

If nesting individuals are found prior to initiation of mining-related vegetation removal or earthmoving in the year of the survey, a mining exclusion zone shall be established within 0.25 miles of the active nest(s) until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest.

Alternatively, Teichert may retain a qualified biologist to monitor any active nests that are within 0.25 miles or less from mining-related vegetation removal or earthmoving to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 0.25 miles of the nest will be terminated until the young-of-the-year are no longer reliant upon the nest.

Under no circumstances shall mining-related vegetation removal or earthmoving be initiated within less than 500 feet of an active nest once nesting has begun. Note that no restrictions on mining-related vegetation removal or earthmoving are required in relation to active nests beyond 500 feet if nesting is initiated after active mining has begun.

6.2.6 Disturbance to Nesting Northern Harrier

Northern harrier is known to nest in grassland, weedy fields, grain fields, and emergent marsh. It is strongly suspected to nest in Sacramento County given the prevalence of sitings each year during the peak nesting season, and has recently been observed nesting in a nearby grain field northwest of the Project Site (Baba and Bumgardner, pers. observ. 2015). As such, it may nest in suitable habitat on the

Project Site (e.g., taller, denser grasses). Consequently, should mining-related vegetation removal or earth-moving associated with the Project occur during the nesting season of the species (i.e., mid-March to late August), there is the potential for the loss of eggs or juveniles during these activities.

In addition, nearby mining-related vegetation removal or earthmoving could result in noise and visual changes that distract individuals from being properly attentive to eggs or juveniles. As such, there is some potential for nesting pairs to be sufficiently disturbed that eggs or juveniles are abandoned or otherwise lost. These impacts are considered to be *potentially significant*.

Mitigation Measures

The following mitigation measure would reduce the above potential impacts to a *less-than-significant* level.

MM-11 *To avoid and minimize impacts to nesting northern harrier, Teichert shall not initiate mining-related vegetation removal or earthmoving during the nesting season (February 15 through August 31). All initial mining-related vegetation removal and earthmoving removal shall occur between September 1 and February 14 to the extent feasible.*

Alternatively, if Teichert initiates mining-related vegetation removal or earthmoving between February 15 and August 31, surveys shall be conducted for northern harrier in suitable nesting habitat within and out to 500 feet from the Project boundaries. The surveys shall be conducted by a qualified biologist immediately preceding initiation of each phase of mining-related vegetation removal or earthmoving on the Project site according to the following schedule: the first visit shall occur within 14 days prior to vegetation removal or earthmoving and the second visit shall occur within 3 days prior to vegetation removal or earthmoving.

If nesting individuals are found prior to initiation of mining-related vegetation removal or earthmoving in the year of the survey, a mining exclusion zone shall be established within 500 feet of the active nest(s) until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest. All exclusion zones shall be demarcated by security fencing.

Alternatively, Teichert may retain a qualified biologist to monitor any active nests that are within 500 feet or less from mining-related vegetation removal or earthmoving to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 500 feet of the nest will be terminated until the young-of-the-year are no longer reliant upon the nest. Under no circumstances shall mining-related vegetation removal or earthmoving be initiated within less than 200 feet of an active nest once nesting has begun.

6.2.7 Disturbance to Other Nesting Raptors

Common raptors (i.e., species not designated as special-status species) that are known to nest near the Project Site include red-tailed hawk, red-shouldered hawk, American kestrel, great-horned owl, and barn owl. Most of these species nest in larger tree stands in the Project vicinity, but some individuals (especially red-tailed hawk and great-horned owl) may occasionally nest in "stand alone" trees. Consequently, should tree removal, as proposed for the Project, occur during the nesting season of these species (i.e., early February to late August), there is the potential for the loss of eggs or juveniles during the removal activities.

In addition, nearby mining-related vegetation removal or earthmoving could result in noise and visual changes that distract individuals from being properly attentive to eggs or juveniles. As such, there is some potential for nesting pairs to be sufficiently disturbed that eggs or juveniles are abandoned or otherwise lost. These impacts are considered to be *potentially significant*.

Mitigation Measures

The following mitigation measure would reduce the above potential impacts to a *less-than-significant* level.

MM-12 *To avoid and minimize impacts to other nesting raptors, Teichert shall not initiate mining-related vegetation removal or earthmoving during the nesting season (February 15 through August 31). All initial mining-related vegetation removal and earthmoving shall occur between September 1 and February 14 to the extent feasible.*

Alternatively, if Teichert initiates construction between February 15 and August 31, surveys shall be conducted for other nesting raptors (species not designated as special-status) in suitable nesting habitat within and out to 500 feet from the Project boundaries. The surveys shall be conducted by a qualified biologist immediately preceding initiation of each phase of mining-related vegetation removal or earthmoving on the Project site according to the following schedule: the first visit shall occur within 14 days prior to vegetation removal or earthmoving and the second visit shall occur within 3 days prior to vegetation removal or earthmoving.

If nesting individuals are found prior to initiation of mining-related vegetation removal or earthmoving in the year of the survey, a mining exclusion zone shall be established within 300 feet of the active nest(s) until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest. All exclusion zones shall be demarcated by security fencing.

Alternatively, Teichert may retain a qualified biologist to monitor any active nests that are within 300 feet or less from mining-related vegetation removal or earthmoving to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could

occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 300 feet of the nest will be terminated until the young-of-the-year are no longer reliant upon the nest. Under no circumstances shall mining-related vegetation removal or earthmoving be initiated within less than 200 feet of an active nest once nesting has begun.

6.2.8 Disturbance to Nesting or Roosting Burrowing Owl

Burrowing owl has not been documented within the Project Site. Nonetheless, potentially suitable nesting and roosting habitat for burrowing owl is provided by California ground squirrel burrows that are scattered throughout the Project Site and the species is known from other locations in the Project vicinity. As such, the species is could occur on the Project Site.

If burrowing owl occurs on the Project Site, individuals could be subject to entombment and mortality during mining-related vegetation removal or earthmoving. Adults may be able to escape such impacts, but eggs and juveniles could still be lost since they are unable to leave the nest burrow. Even if adults are not lost directly due to ground-disturbing activities, individuals could abandon eggs or juveniles in the nest burrow due to adjacent disturbances. This impact is considered to be *potentially significant*.

Mitigation Measures

The following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

MM-13 *A pre-construction burrowing owl survey shall be conducted by a qualified wildlife biologist prior to any mining-related vegetation removal or earthmoving (including rough grading conducted between January 1 and February 14 that is associated with implementation of MM-12).*

The pre-construction survey shall be conducted by a qualified biologist within 500 feet or less of proposed mining-related vegetation removal or earthmoving according to the methodology provided in the CDFG Staff Report on Burrowing Owl Mitigation (2012). All burrows or atypical refugia showing evidence of occupation by burrowing owls that are found during the survey shall be geo-referenced with a global positioning system (GPS) unit and mapped on an appropriate scale map of the Project Site (no smaller than 1 inch = 100 feet).

The results of the survey, including negative findings, shall be submitted to CDFW within three days of their conclusion. If burrowing owls are found during the nesting season (i.e., during February 15 through August 31), no ground disturbance shall occur within 250 feet of occupied burrows until a qualified biologist determines that fledging has occurred (i.e., the juveniles are no longer dependent upon the nest burrows). If burrowing owls are found

during the non-nesting season (i.e., September 1 through February 14) no ground disturbance shall occur within 160 feet of occupied burrows.

Alternatively, Teichert may retain a qualified biologist to conduct passive relocation of individuals from occupied burrows utilizing one-way doors for a minimum of three consecutive days (only during the non-nesting season). Once the occupied burrows have been cleared, Teichert may backfill the burrows. If passive relocation is utilized, Teichert shall also provide alternate natural or artificial burrows that are beyond 160 feet from the impact area and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated burrowing owls. One alternate natural or artificial burrow should be provided for each burrow that will be excavated in the Project impact area. Artificial burrow creation, if utilized, shall follow the guidelines in Trulio (1995) and the CDFG Staff Report on Burrowing Owl Mitigation (2012). Teichert shall be responsible for reporting all observations of burrowing owl to the CNDDB within ten (10) days of sighting.

6.2.9 Disturbance to Nesting Birds Protected Under the Migratory Bird Treaty Act

Other nesting birds have not been documented within the Project Site, but are to be expected. Most of these species, with the exception of introduced species, are afforded protection under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (particularly while nesting). Some of these species would nest in the onsite woody vegetation (i.e., trees and shrubs), but other species would nest on or near the ground (mostly in the non-irrigated, annual grassland). Consequently, should tree or other vegetation removal, as proposed for the Project, occur during the nesting season of these species (i.e., mid-February to late August), there is the potential for the loss of eggs or juveniles during these activities.

In addition, mining-related vegetation removal or earthmoving could result in noise and visual changes that distract adjacent nesting individuals from being properly attentive to eggs or juveniles. Consequently, there is some potential for nesting pairs to be sufficiently disturbed that eggs or juveniles are abandoned or otherwise lost. These impacts are considered to be *potentially significant*.

Mitigation Measures

The following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

MM-14 *Teichert shall rough grade all irrigated pasture/hay and non-irrigated, annual grassland within the mining boundary of the Project between September 1 and February 14 of the year in which mining starts to ensure that there is no available nesting habitat for species protected by the Migratory Bird Treaty Act in these onsite habitats (see restrictions associated with burrowing owl in MM-13).*

Alternatively, if mining-related vegetation removal or earthmoving is initiated between February 15 and August 31, a pre-construction nesting bird survey shall be conducted by a qualified wildlife biologist prior to any mining-related vegetation removal or earthmoving.

The surveys shall be conducted by a qualified biologist immediately preceding initiation of each phase of mining-related vegetation removal or earthmoving on the Project site according to the following schedule: the first visit shall occur within 14 days prior to vegetation removal or earthmoving and the second visit shall occur within 3 days prior to vegetation removal or earthmoving. The survey shall be conducted within all onsite habitats that could support nests and are within 120 feet or less of proposed mining-related vegetation removal or earthmoving. All active nests that are found during the survey shall be geo-referenced with a GPS unit and mapped on an appropriate scale map of the Project Site (no smaller than 1 inch = 40 feet). Data shall be collected for each active nest site and at a minimum shall include: (1) identification of nesting species; (2) description of nest site; (3) estimated nesting cycle status (i.e., time to nest completion, egg-laying, fledging, etc.); and (4) likelihood of nest failure from adjacent mining-related vegetation removal or earthmoving.

The results of the surveys, including negative findings, shall be submitted to CDFW within three days of their conclusion. If any active non-raptor bird nests are found onsite, Teichert shall develop and implement a plan for the protection of these nests, to be approved by CDFW, in a timely manner. The results of any protective measures instituted as a part of the protection and monitoring plan shall be provided to CDFW in electronic format within one week of implementation. Teichert shall be responsible for reporting all observations of threatened/endangered species or species of special concern to the CNDDB within ten (10) days of sighting.

All active nests found during the pre-construction survey shall be monitored at least twice per week to assess whether adjacent mining-related vegetation removal or earthmoving are adversely affecting the nest. If adverse effects are observed, all project-related activities within 120 feet of the nest shall be temporarily halted until fledging occurs (i.e., the juveniles are no longer dependent upon the nest).

No pre-construction nesting bird survey is required in areas within 120 feet of mining-related vegetation removal or earthmoving, if the activities are initiated prior to February 15 or after August 31.

6.2.10 Loss of Foraging Habitat for White-tailed Kite and Swainson's Hawk

White-tailed kite and Swainson's hawk are both known to nest in the vicinity of the Project Site. Consequently, foraging habitat associated with nearby nest territories for these species may include the

Project Site. Swainson's hawk utilizes both annual grasslands and irrigated pasture/hay as suitable foraging habitat. Approximately 331.1 acres of the Project Site was dedicated to irrigated pasture/hay in 2015, while 308.5 acres of the Project Site supported non-irrigated annual grassland. Another 14.265 acres of seasonal wetlands (i.e., vernal pool, seasonal wetland, and seasonal swale) occur on the Project Site and are suitable Swainson's hawk/white-tailed kite foraging habitat later in the breeding season (i.e., after dry-down). The Project would impact a total of 371.2 acres of potential Swainson's hawk/white-tailed kite foraging habitat, including 95.8 acres of annual grassland, 273.0 acres of irrigated pasture, and 2.4 acres of seasonal wetlands/vernal pools. The proposed reclamation includes restoring 359.8 acres to annual grassland and/or irrigated pasture. Furthermore, the proposed Project will mitigate for vernal pool and seasonal wetland habitats through the requirements of 404 permits.

White-tailed kite is a rodent specialist with 95 percent of the diet consisting of small rodents (especially California vole [*Microtus californicus*]). This latter prey species is abundant in both non-irrigated annual grassland and irrigated pasture/hay. As such, there is near 100 percent overlap in the suitable foraging habitat for Swainson's hawk and white-tailed kite on the Project Site. Impacts associated with the loss of suitable foraging habitat for Swainson's hawk are therefore similar for white-tailed kite. These impacts are considered to be *significant*.

Mitigation Measures

The following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

MM-15 *Reclaim disturbed areas to suitable Swainson's hawk/white-tailed kite foraging habitat. Prior to commencing any site disturbing activities, Teichert will acquire temporary easement(s) over sufficient acreage to mitigate at a 1:1 ratio for the temporary loss of foraging habitat within a mining phase during the period between initial disturbance and final reclamation of that phase. The location of the temporary easement(s) and the management activities to be included therein shall be determined in coordination with Sacramento County PER and CDFW, and shall be based on the best available data for Swainson's hawk and white-tailed kite in Sacramento County. The acreage to be temporarily protected shall be, at a minimum, equal to that proposed to be disturbed for a particular phase(s). The temporary easement(s) for any given Project phase shall remain in place until onsite reclamation activities have fully reestablished, to the satisfaction of PER, suitable Swainson's hawk/white-tailed kite foraging habitat for the Project phase. If Teichert is unsuccessful in reestablishing suitable Swainson's hawk/white-tailed kite foraging habitat for any part of the Project, Teichert shall mitigate for the acreage that could not be re-established through one of the following approaches: (a) converting the temporary easement(s) to a permanent easement(s), (b) acquiring alternative lands to place into permanent easement(s) at a 1:1 ratio, (c) purchasing mitigation credits at a County-approved mitigation bank at a 1:1 ratio, or, (d) if the total acreage of Swainson's hawk/white-tailed kite foraging habitat that is permanently lost upon final reclamation is less than 40 acres, Teichert may choose to pay the per-acre impact fees as outlined in the Sacramento County Swainson's Hawk Mitigation Program. Teichert shall only be responsible for establishing a permanent easement(s)*

over acreage equal to the acreage on which suitable Swainson's hawk/white-tailed kite foraging habitat could not be reestablished upon final reclamation.

OR *Prior to commencing any site disturbing activities purchase permanent easement(s) over suitable Swainson's hawk foraging lands (1:1 ratio to account for any permanent loss of foraging habitat). The location of the easement(s) and the management activities to be included therein shall be determined in coordination with Sacramento County PER and CDFW, and shall be based on the best available data for Swainson's hawk and white-tailed kite in Sacramento County. Alternatively, Teichert may purchase credits for permanent loss of foraging habitat from an established mitigation bank authorized to sell Swainson's hawk foraging habitat credits and whose service area includes the Project. Any future projects occurring on Project Site shall be exempt from any additional mitigation pertaining to the loss of Swainson's hawk or white-tailed kite foraging habitat.*

6.2.11 Loss of Winter Foraging Habitat for Merlin and Ferruginous Hawk

Merlin and ferruginous hawk are known to winter throughout the Central Valley in small numbers (including in the vicinity of the Project Site). The loss of irrigated pasture/hay and non-irrigated annual grassland associated with the Project Site would result in a net decrease in the local foraging habitat for these species. Most of this net decrease in local foraging habitat would be temporary given that final reclamation associated with the Project would result in 359.8 acres of suitable habitat (i.e., annual grassland and/or irrigated pasture). In addition, merlin is a wide-ranging species and feeds primarily on various small avian species that tend to move over large areas (e.g., horned lark). Consequently, there is a substantial amount of suitable foraging habitat for the species within the Project vicinity and elsewhere each winter. Ferruginous hawk is also a wide-ranging species, and feeds mostly on small to medium-sized mammals (up to the size of black-tailed jackrabbit). There is also a substantial amount of suitable foraging habitat for this latter species within the Project vicinity and elsewhere each winter. Consequently, this impact is considered to be *less-than-significant*.

Mitigation Measures

No additional mitigation is required.

6.2.12 Disturbance to Nesting Loggerhead Shrike

Loggerhead shrike has not been documented nesting within the Project Site. However, it has been documented at nearby locations in Sacramento County during the nesting season. In addition, potentially suitable nesting and adjacent foraging habitat occurs on and immediately adjacent to the Project Site. Dense, woody vegetation (i.e., shrubs and trees) on the site could be used for nesting by the species, while the adjacent irrigated pasture/hay and non-irrigated annual grassland provides suitable foraging habitat. Adults are unlikely to be substantially disturbed from ground disturbing activities associated with the Project at any time other than the nesting season. However, during the nesting season, eggs or juveniles could be abandoned or otherwise lost due to adjacent disturbances

associated with mining-related vegetation removal and earthmoving. This impact is considered to be *potentially significant*.

Mitigation Measures

The following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

MM-16 *To avoid and minimize impacts to nesting loggerhead shrike, Teichert shall not initiate mining-related vegetation removal or earthmoving during the nesting season (February 15 through August 31). All initial mining-related vegetation removal and earthmoving shall occur between September 1 and February 14 to the extent feasible.*

Alternatively if Teichert initiates mining-related vegetation removal or earthmoving between February 15 and August 31, surveys shall be conducted for nesting loggerhead shrikes in all suitable shrubs and trees that are within and out to 200 feet from the Project boundaries. The surveys shall be conducted by a qualified biologist immediately preceding initiation of each phase of mining-related vegetation removal or earthmoving on the Project site according to the following schedule: the first visit shall occur within 14 days prior to vegetation removal or earthmoving and the second visit shall occur within 3 days prior to vegetation removal or earthmoving.

If nesting individuals are found prior to initiation of mining-related vegetation removal or earthmoving in the year of the survey, a mining exclusion zone shall be established within 200 feet of the active nest(s) until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest.

Alternatively, Teichert may retain a qualified biologist to monitor any active nests that are within 200 feet or less from mining-related vegetation removal or earthmoving to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 200 feet of the nest will be terminated until the young-of-the-year are no longer reliant upon the nest. Under no circumstances shall mining-related vegetation removal or earthmoving be initiated within less than 100 feet of an active nest once nesting has begun.

6.2.13 Disturbance to Nesting or Roosting Yellow-billed Magpie

Yellow-billed magpie has not been documented nesting or communally roosting within the Project Site. However, it has been documented at many locations throughout Sacramento County (as close as one mile from the Project Site). In addition, large trees along either Elder Creek or at nearby residences provide potential nest sites for the species. Therefore, the species could occur on the Project Site as a nesting species. Yellow-billed magpies prefer groves of trees (often near water) for communal roost

sites (typically in riparian woodland or forest). Given the lack of such habitat on or adjacent to the Project Site, the species is considered to have no potential to be impacted by the Project while communally roosting. However, during the nesting season, eggs or juveniles could be abandoned or otherwise lost due to adjacent disturbances. This impact is considered to be *potentially significant*.

Mitigation Measures

The following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

MM-17 *To avoid and minimize impacts to nesting yellow-billed magpie, Teichert shall not initiate mining-related vegetation removal or earthmoving during the nesting season (February 15 through August 31). All initial vegetation removal or earthmoving shall occur between September 1 and February 14 to the extent feasible.*

Alternatively, if Teichert initiates mining-related vegetation removal or earthmoving between February 15 and August 31, surveys shall be conducted for nesting yellow-billed magpies in all suitable trees that are within 200 feet of the Project boundaries. The surveys shall be conducted by a qualified biologist immediately preceding initiation of each phase of mining-related vegetation removal or earthmoving on the Project site according to the following schedule: the first visit shall occur within 14 days prior to vegetation removal or earthmoving and the second visit shall occur within 3 days prior to vegetation removal or earthmoving.

If nesting individuals are found prior to initiation of mining-related vegetation removal or earthmoving in the year of the survey, a mining exclusion zone shall be established within 200 feet of the active nest(s) until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest.

Alternatively, Teichert may retain a qualified biologist to monitor any active nests that are within 200 feet or less from mining-related vegetation removal or earthmoving to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 200 feet of the nest will be terminated until the young-of-the-year are no longer reliant upon the nest. Under no circumstances shall mining-related vegetation removal or earthmoving be initiated within less than 100 feet of an active nest once nesting has begun.

6.2.14 Disturbance to Nesting Tricolored Blackbird

Tricolored blackbird nests as a colonial species at scattered locations throughout Sacramento County where there is suitable nesting habitat (e.g., stands of cattail, tule, willow, California blackberry, Himalayan berry, wild rose, grain fields, milk thistle, stinging nettle, etc., that provide protection from

nest predators) adjacent to large open expanses of non-irrigated, annual grassland; irrigated pasture/hay; or alfalfa that support large numbers of prey species (e.g., grasshopper, butterfly larvae, etc.). The species is known to nest in four small Himalayan blackberry stands in the central and southeastern portions of Aspen VIII on the Project Site. It also has been documented nesting approximately 900 feet east of the eastern boundary of Aspen VIII and several other locations within 4 miles or less of the Project Site. Because tricolored blackbirds vacate nest sites at the end of the breeding season, adults are unlikely to be substantially disturbed from ground disturbing activities associated with the Project at any time other than the nesting season. However, during the nesting season, eggs or juveniles could be abandoned or otherwise lost due to disturbances associated with mining-related vegetation removal and earthmoving. This impacts are considered to be *significant*.

Mitigation Measures

The following mitigation measure would reduce the above impact to a *less-than-significant* level.

MM-18 *To avoid and minimize impacts to nesting tricolored blackbird, Teichert shall not initiate mining-related vegetation removal or earthmoving during the nesting season (February 15 through August 31). All initial mining-related vegetation removal and earthmoving shall occur between September 1 and February 14 to the extent feasible.*

Alternatively if Teichert initiates mining-related vegetation removal or earthmoving between February 15 and August 31, surveys shall be conducted for prospecting or nesting tricolored blackbird colonies in all potentially suitable Himalayan blackberry stands that are within and out to 250 feet from the Project boundaries. The surveys shall be conducted by a qualified biologist immediately preceding initiation of each phase of mining-related vegetation removal or earthmoving on the Project site according to the following schedule: the first visit shall occur within 14 days prior to vegetation removal or earthmoving and the second visit shall occur within 3 days prior to vegetation removal or earthmoving.

If nesting colonies are found prior to initiation of mining-related vegetation removal or earthmoving in the year of the survey, a mining exclusion zone shall be established within 250 feet of each active nesting colony until a qualified biologist determines that the young-of-the-year are no longer reliant upon the nest.

Alternatively, Teichert may retain a qualified biologist to monitor any active nesting colonies that are within 250 feet or less from mining-related vegetation removal or earthmoving to determine if the individuals are exhibiting any behaviors that would suggest that nest failure could occur. If the qualified biologist determines that disturbance is sufficient to cause nest failure, all activities within 250 feet of the nesting colony will be terminated until the young-of-the-year are no longer reliant upon the nest. Under no circumstances shall mining-related vegetation removal or earthmoving be initiated within less than 150 feet of an active nest colony once prospecting or nesting has begun.

6.3 PROTECTED TREES AND TREE CANOPY

The Aspen VIII and IX Arborist Report (Teichert 2015c, Attachment C) identifies a total of 102 trees, representing 17 species, within the Project boundaries or that could potentially be affected (i.e., dripline) by the proposed Project. A total of 3 valley oak and 9 California black walnut, representing 22.3 and 156.3 inches in diameter at breast height (dbh), respectively, were found to be of sufficient size to be protected by the Sacramento County Tree Ordinance (Chapter 19.12) and are proposed for construction removal.

In addition to native trees, the Sacramento County General Plan affords protections to mixed riparian and non-native tree canopy. A total of 1.814 acres of tree canopy, excluding invasive species (as identified and listed by the California Invasive Plant Council as 'Moderate' [Cal-IPC 2006]), were mapped within the survey study area. The majority of canopy consists of non-native, ornamental landscape trees (i.e., Modesto Ash, mulberry, red gum, etc.), with a small portion (0.469 acre) representing native mixed riparian forest. Approximately 1.574 acres (0.229 riparian forest and 1.345 other canopy) of the total tree canopy would be potentially impacted by the Project. The native mixed riparian canopy is dominated by Goodding's black willow and Fremont cottonwood trees, occasionally intermixed with valley oak or Northern California black walnut. Moreover, riparian areas were observed to host dense thickets of Himalayan blackberry and edible fig, both of which are classified as invasive weeds and were therefore excluded from canopy totals. Impacts to native trees (valley oak and California black walnut) and tree canopy are considered to be significant.

Mitigation Measures

Implementation of the following mitigation measures would reduce project-related impacts to protected trees and tree canopy to a *less-than-significant* level.

MM-19 *All potentially impacted native trees currently protected by Sacramento County's Tree Preservation Ordinance and policy CO-139 of the Sacramento County General Plan (i.e., locally native oaks and black walnuts) will be compensated for via the planting of one replacement seedling for every inch of trunk diameter removed within the preserved portions of Elder Creek. To mitigate for potential losses to native and non-native tree canopy, the resulting mitigation planting area shall meet or exceed the acreage of tree canopy removed. Teichert shall prepare a detailed tree mitigation planting plan to the Sacramento County PER prior to the removal of any trees on site. The tree mitigation plan shall illustrate planting locations and provide detailed descriptions on planting densities, species type, maintenance activities, and performance standards.*

MM-20 *In order to ensure no net loss of mixed riparian forest, project impacts to riparian canopy will be compensated for via the provision of native tree mitigation plantings (as described in MM-19) contiguous with Elder Creek, such that the tree mitigation planting areas meet or exceed the acreage of riparian canopy removed as a result of the Project*.

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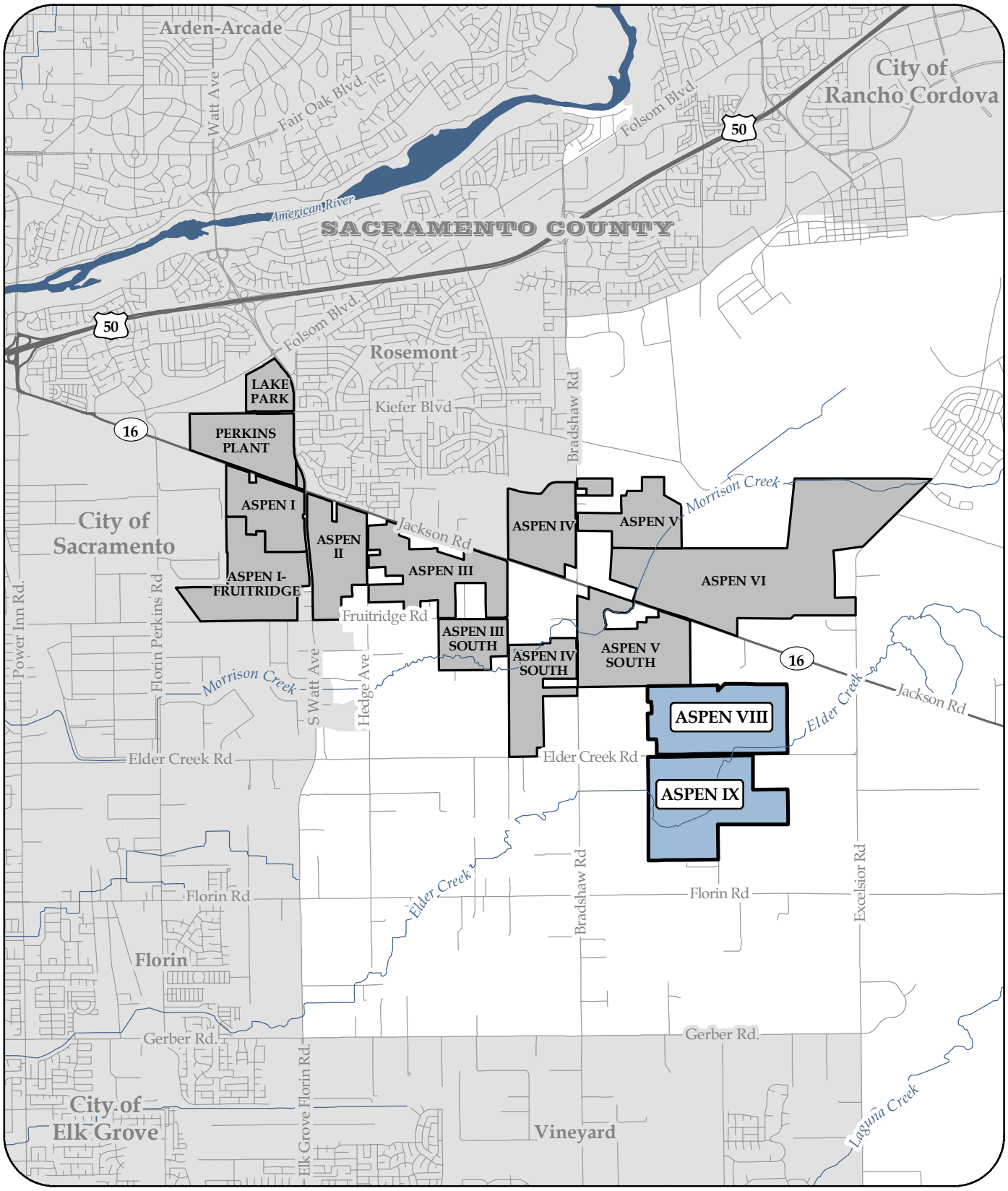


LEGEND:

- Teichert Aggregates Aspen VIII & IX Property Boundary
- Teichert Aggregates Aspen Property Boundaries

0 0.5 1 Miles

DISCLAIMER:

The data was mapped for assessment purposes only. No liability is assumed for the accuracy of the data shown.

TEICHERT MATERIALS

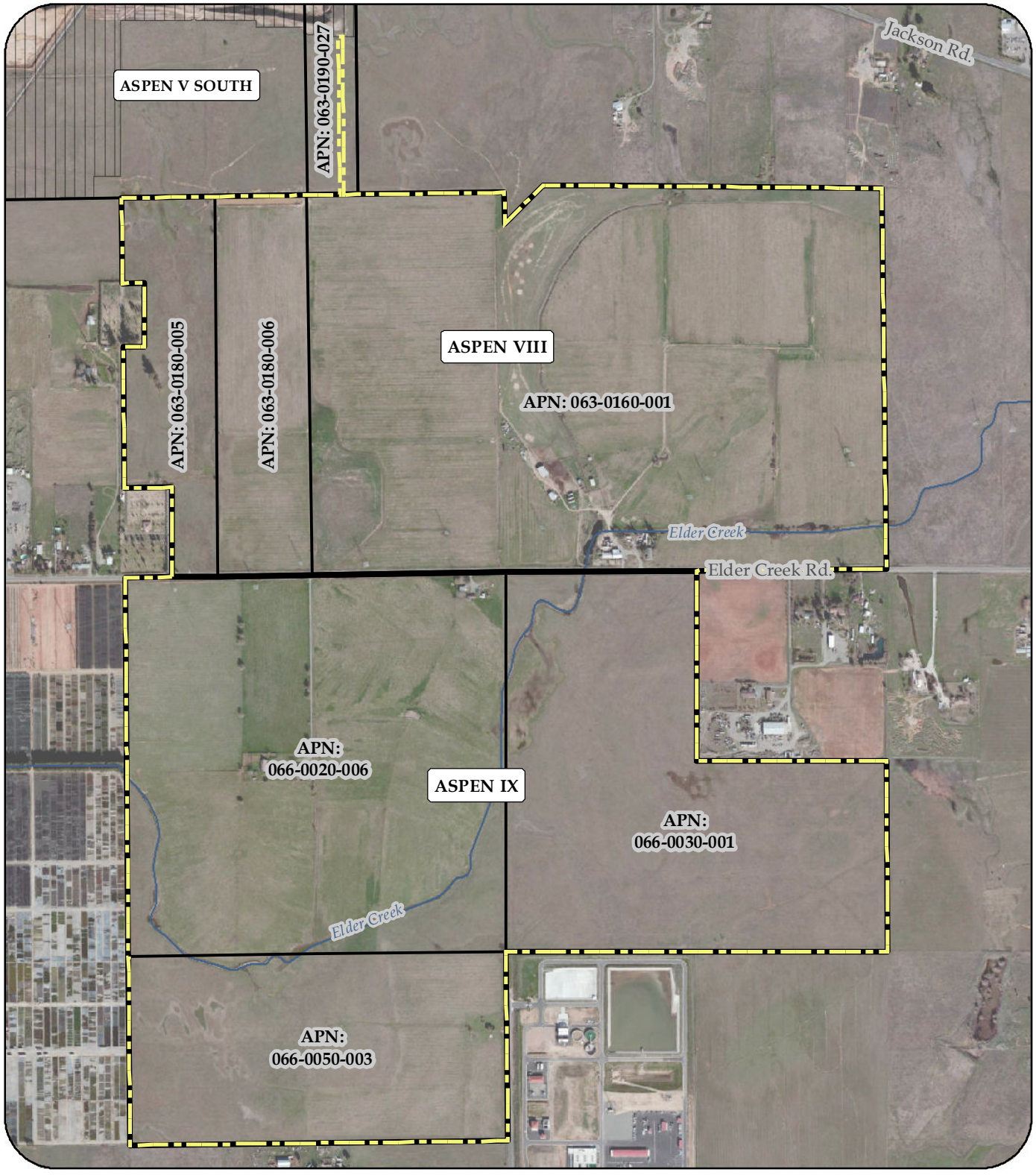
FIGURE 1

SITE VICINITY

BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/22/2014 AS8_AS9_BRA_Fig1_Vicinity_201410.mxd



TEICHERT MATERIALS

LEGEND:

- Project Parcel Boundaries
- Project Boundary
- Aspen VIII & IX Property Boundary
- Aspen V South Approved Mining Boundary

0 500 1,000 Feet

SOURCE:

- Orthophoto Provided by Digital Globe (Feb. 2012)

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

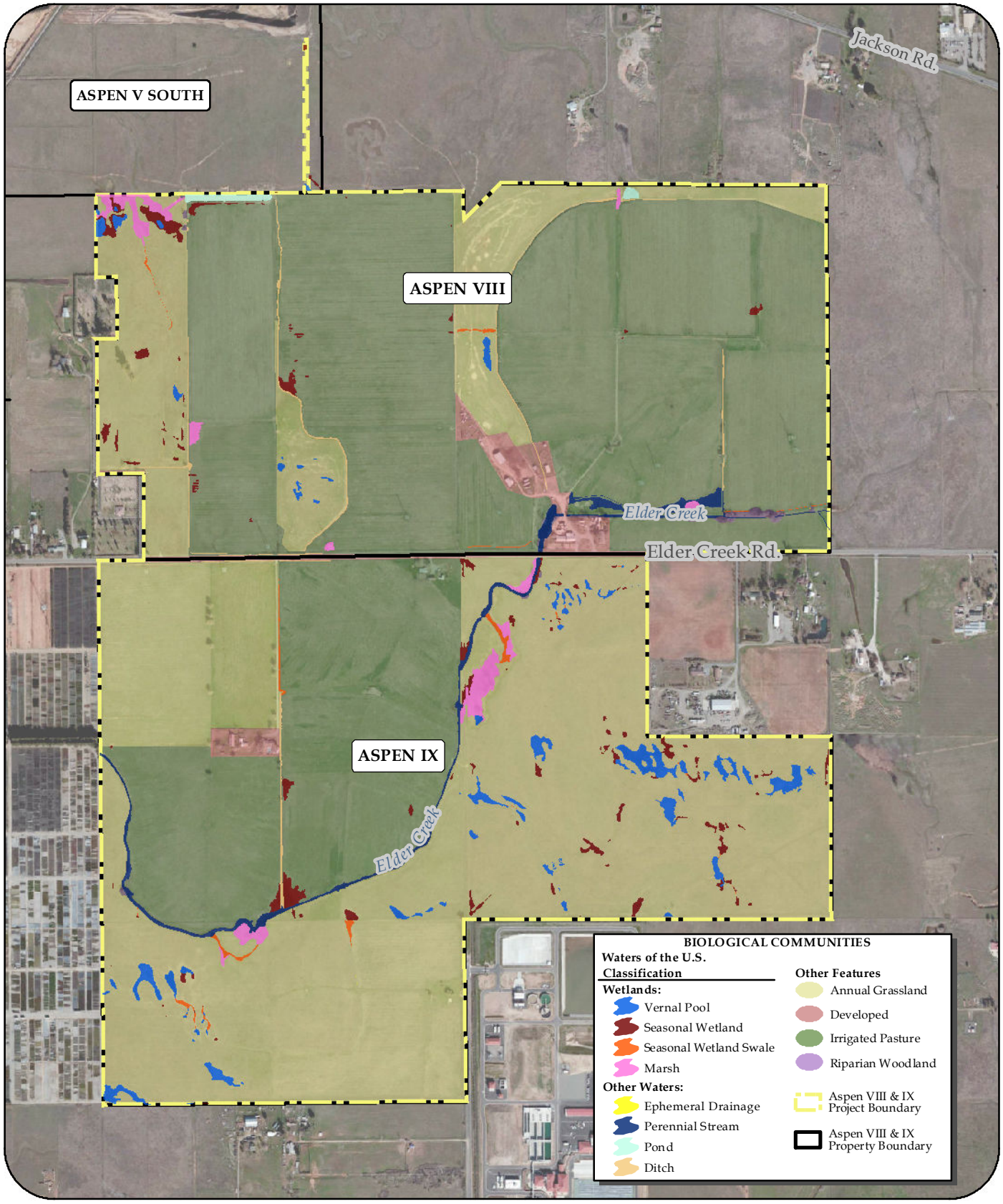
FIGURE 2

PROJECT SITE MAP

BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/22/2014 AS8_AS9_BRA_Fig2_Site_201410.mxd



TEICHERT MATERIALS

SOURCE:

- Wetland Delineation Provided by ECORP (April 02, 2014)
- Orthophoto Provided by Digital Globe (Feb. 2012)

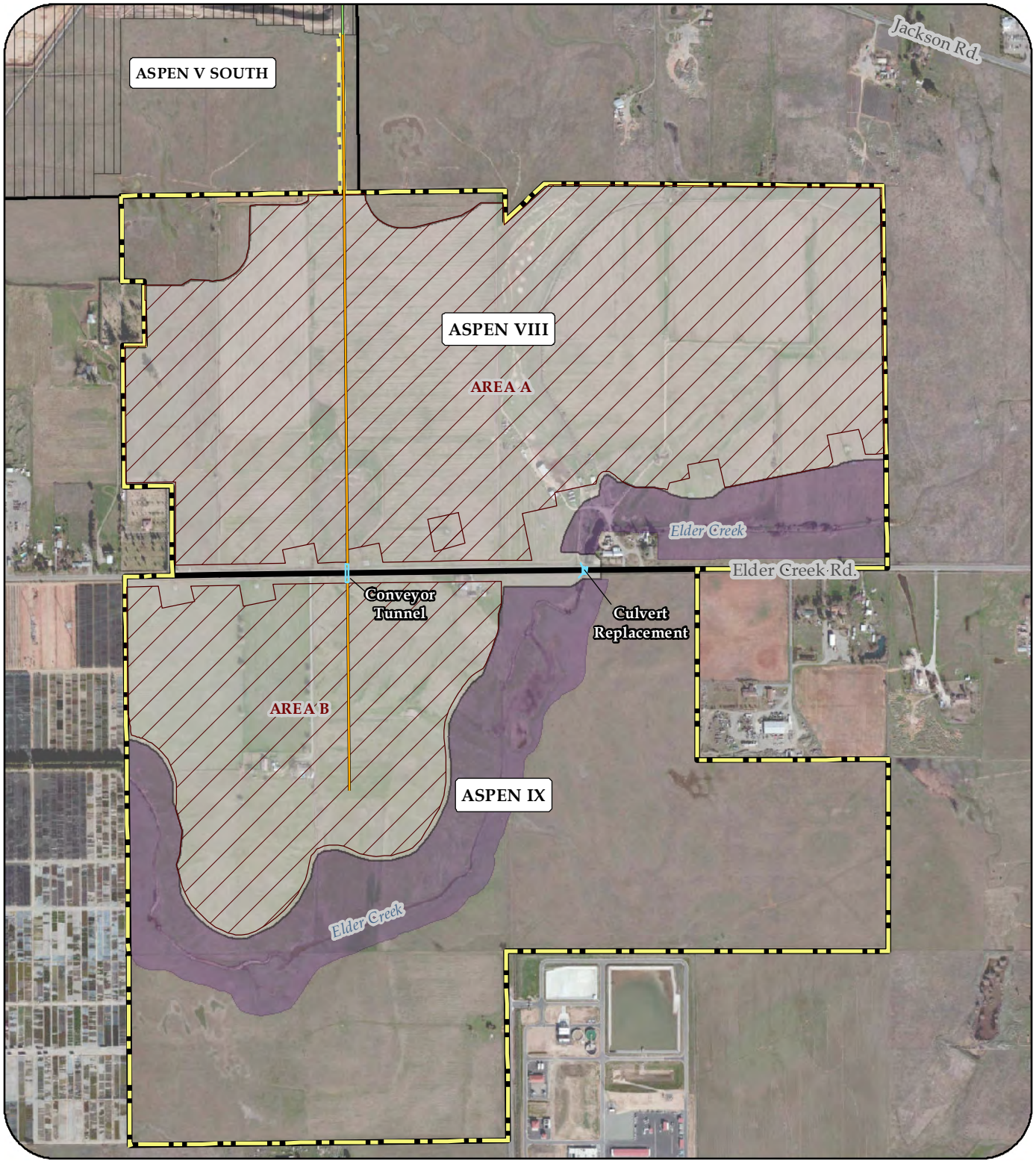
0 500 1,000 Feet

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 3
EXISTING HABITATS AND WETLAND COMMUNITIES
BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS
SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/25/2014 AS8_AS9_BRA_Fig3_Bio_201410.mxd



TEICHERT MATERIALS

LEGEND:

- Existing Conveyor Alignment
- Proposed Conveyor Alignment
- Proposed Conveyor Tunnel/ Culvert Replacement
- Proposed Mining Boundary
- Proposed Preserve Boundary
- Limits of Disturbance
- Project Boundary
- Aspen VIII & IX Property Boundary
- Aspen V South Approved Mining Boundary

0 500 1,000 Feet

SOURCE:

- Orthophoto Provided by Digital Globe (Feb. 2012)

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

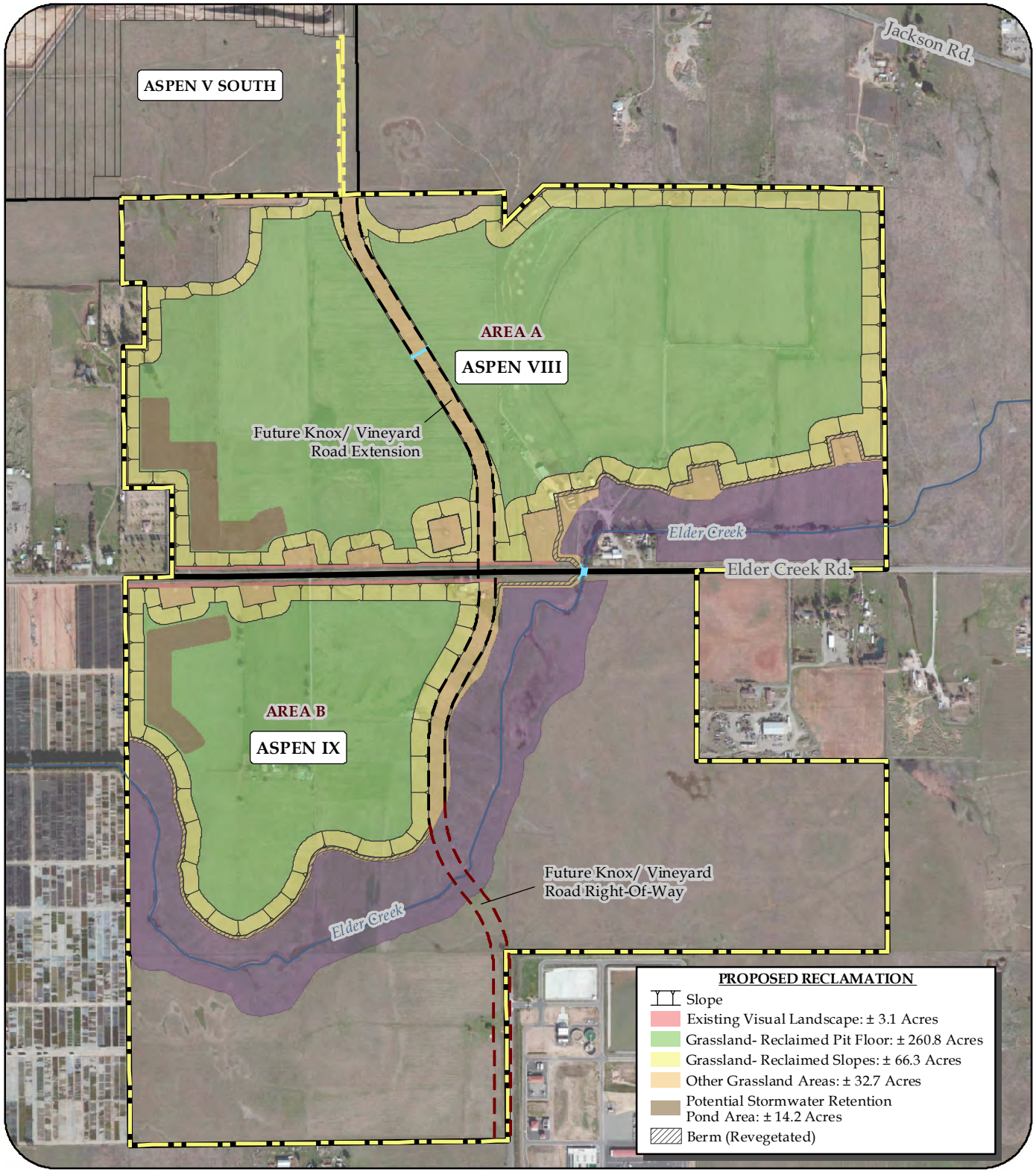
FIGURE 4

PROPOSED MINING AREAS AND PRESERVE

BIOLOGICAL RESOURCES ASSESSMENT ASPEN VIII & IX TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 6/11/2015 AS8_AS9_BRA_Fig4_MiningAreas_201506.mxd



TEICHERT MATERIALS

LEGEND:

- Culverts
- Future Knox/ Vineyard Road Extension
- Future Knox/ Vineyard Road Right-Of-Way
- Preserve Boundary
- Project Boundary
- Aspen VIII & IX Property Boundary
- Aspen V South Approved Mining Boundary

0 500 1,000 Feet

SOURCE:

- Orthophoto Provided by Digital Globe (Feb. 2012)

DISCLAIMER:

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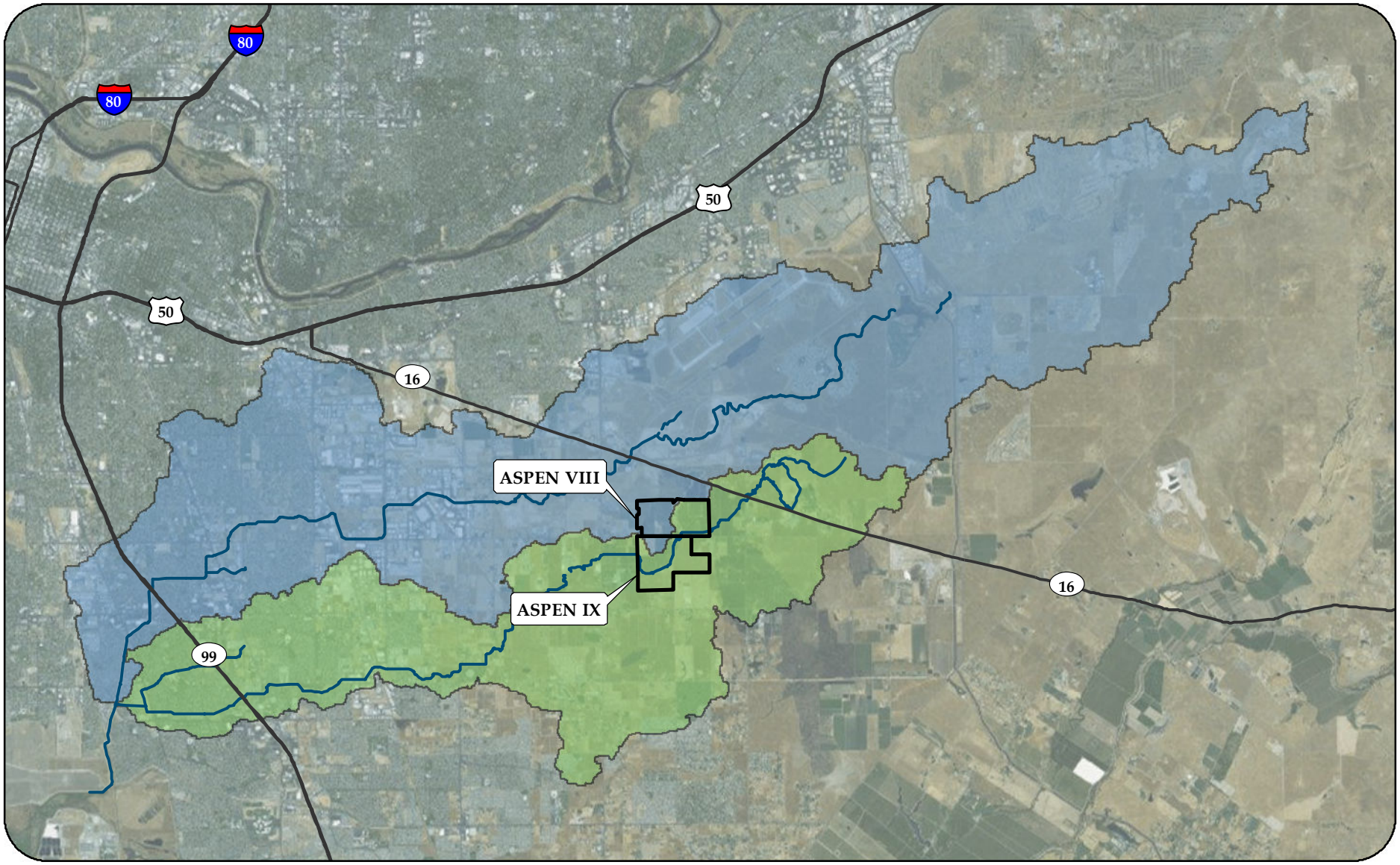
FIGURE 5

PROPOSED RECLAMATION PLAN

BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 6/15/2015 AS8_AS9_BRA_Fig5_ProposedRec_201506.mxd



TEICHERT MATERIALS

LEGEND:

- Morrison Creek & Elder Creek
- Morrison Creek Watershed
- Elder Creek Watershed
- Aspen VIII & IX Property Boundaries

SOURCE:

- Watersheds Provided by Foothill & Associates (2010)
- Aerial Photography Provided by ESRI Basemaps & Affliates (Feb. 2012)

0 1 2 Miles

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 6
MORRISON CREEK/ELDER CREEK WATERSHED MAP
BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS
SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/22/2014 AS8_AS9_BRA_Fig6_Watershed_201410.mxd

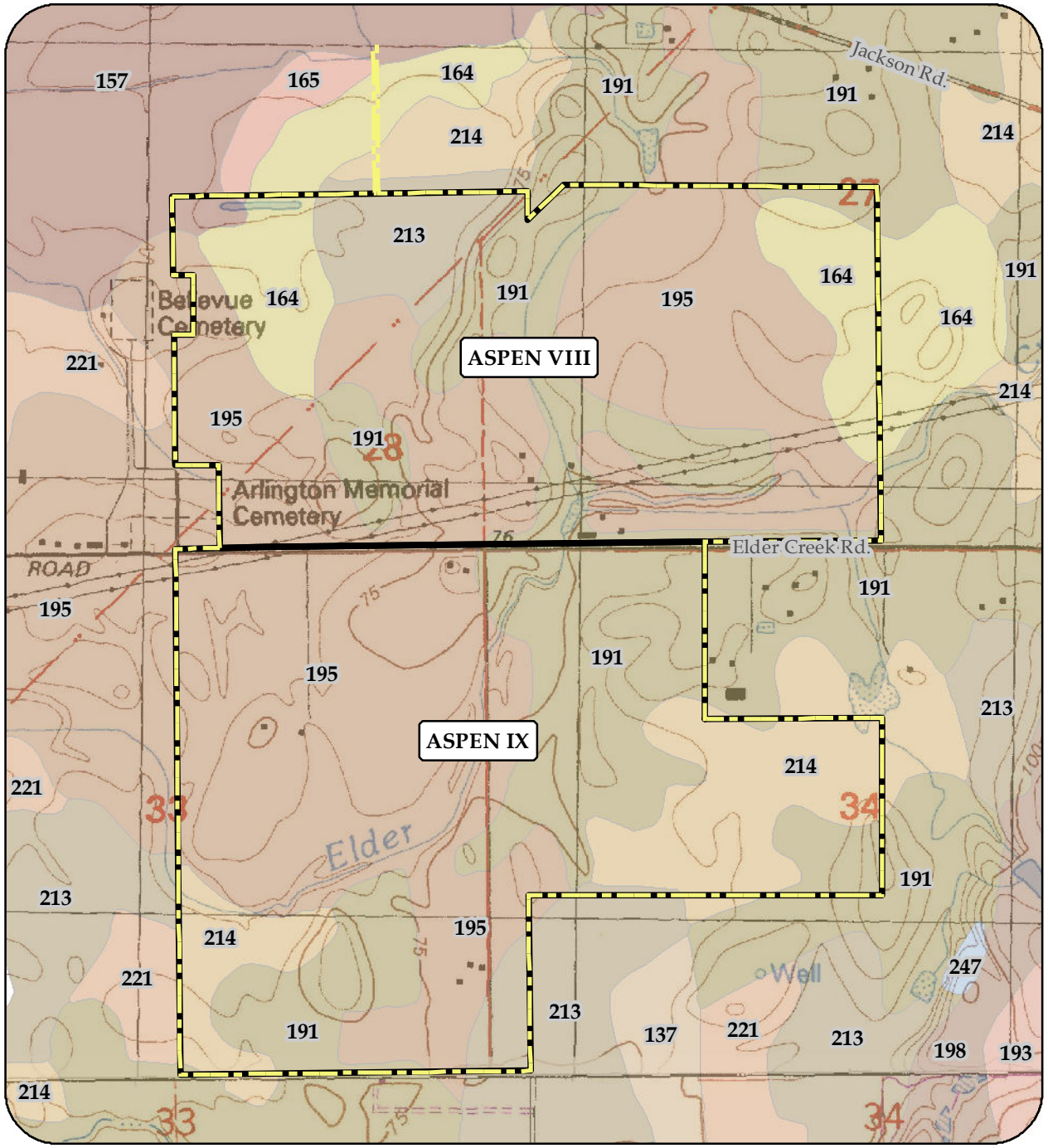


FIGURE 7

NATURAL RESOURCES CONSERVATION SERVICE SOIL TYPES

BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

LEGEND:

NATURAL RESOURCES CONSERVATION SERVICE SOIL TYPES:

- 137- Durixeralfs, 0 to 1 percent slopes
- 157- Hedge loam, 0 to 2 percent slopes
- 164- Kimball silt loam, 0 to 2 percent slopes
- 165- Kimball silt loam, 2 to 8 percent slopes
- 191- Red Bluff loam, 0 to 2 percent slopes
- 193- Red Bluff-Redding complex, 0 to 5 percent slopes
- 195- Red Bluff-Xerarents complex, 0 to 2 percent slopes
- 198- Redding gravelly loam, 0 to 8 percent slopes
- 214- San Joaquin silt loam, 0 to 3 percent slopes
- 213- San Joaquin silt loam, leveled, 0 to 1 percent slopes
- 221- San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes
- 247- Water
- Project Boundary
- Aspen VIII & IX Property Boundaries

0 600 1,200 Feet

SOURCE:

Soil Survey Provided by NRCS (Nov. 26, 2013)
USGS 7.5' Quads: Carmichael & Elk Grove
Property Boundary Provided by RFE Engineering (Mar. 2014)

DISCLAIMER:

The data was mapped for planning purposes only.
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TEICHERT MATERIALS

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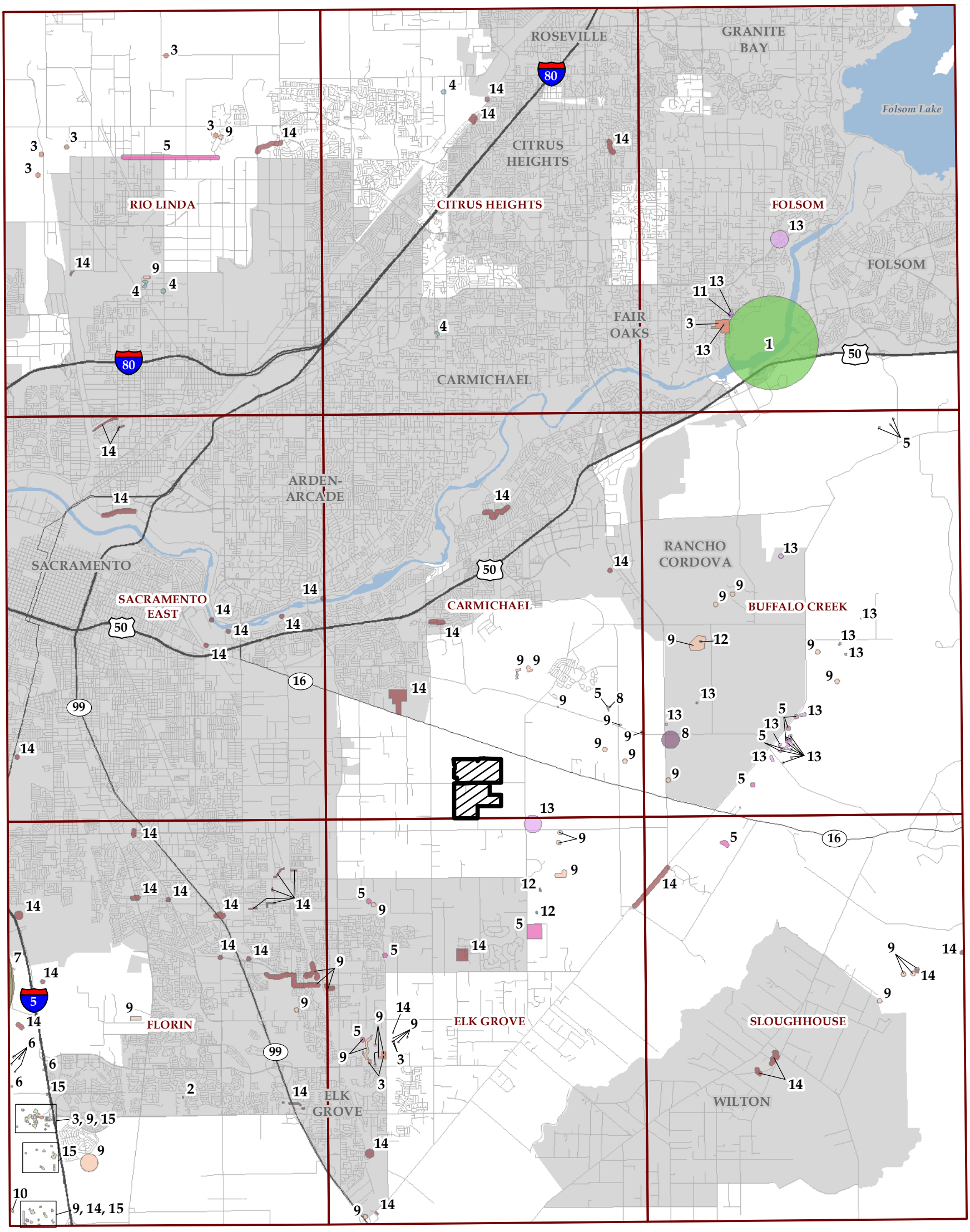


CNDDB RARE PLANT SPECIES:

1 - Clarkia biloba ssp. brandegeeae
2 - Cuscuta obtusiflora var. glandulosa
3 - Downingia pusilla
4 - Fritillaria agrestis
5 - Gratiola heterosepala
6 - Hibiscus lasiocarpos var. occidentalis
7 - Juglans hindsii
8 - Juncus leiospermus var. ahartii
9 - Legenere limosa
10 - Lepidium latipes var. heckardii
11 - Navarretia myersii ssp. myersii
12 - Orcuttia tenuis
13 - Orcuttia viscida
14 - Sagittaria sanfordii
15 - Trifolium hydrophilum

TEICHERT MATERIALS

LEGEND:

Aspen VIII & IX Property Boundary

7.5' USGS Quad Boundaries

0 6,000 12,000 Feet

SOURCE:
CNDDB Provided by CDFW (August 2014)

DISCLAIMER:
The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

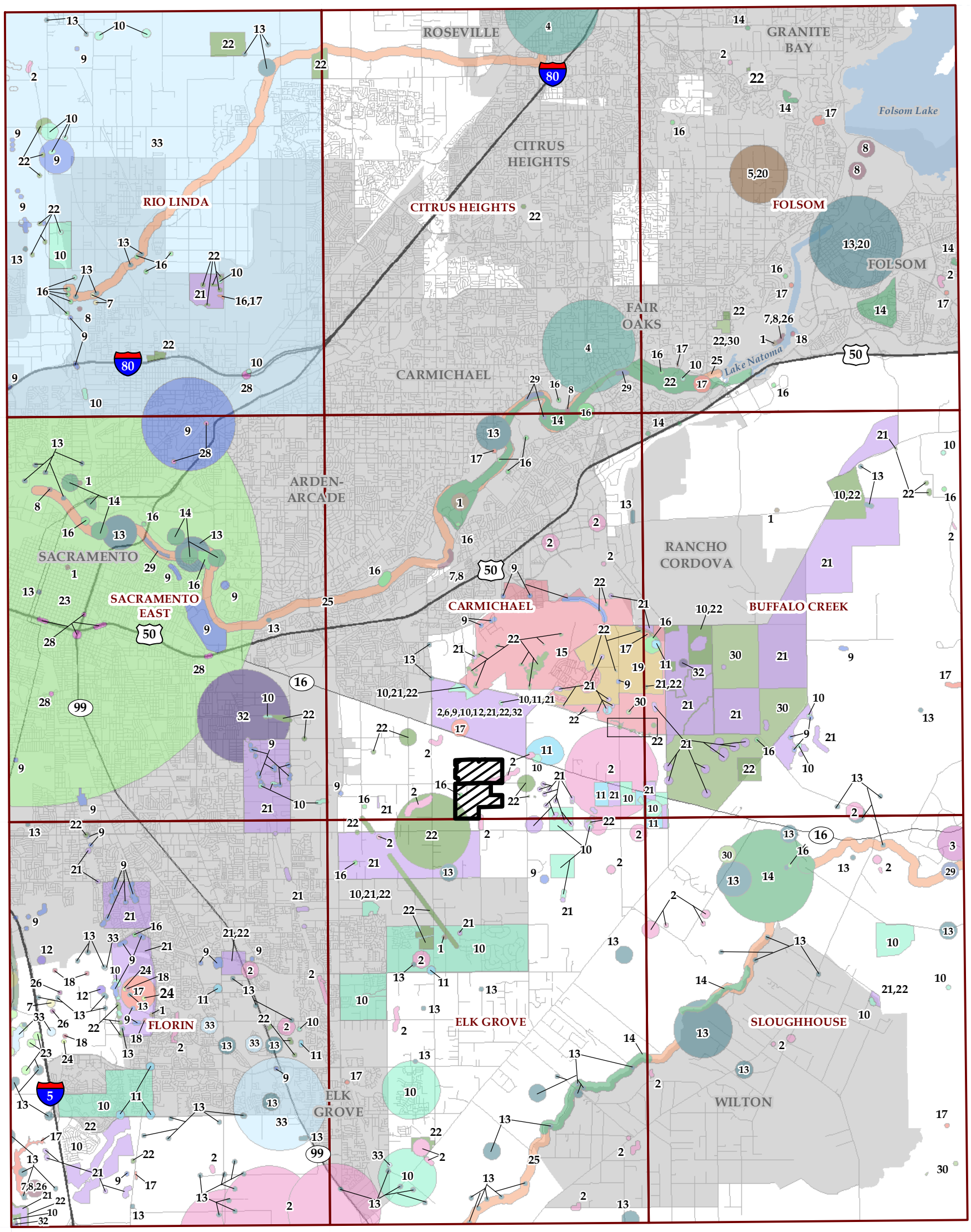
FIGURE 8

CNDDB RARE PLANT LOCATIONS

BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/24/2014 AS8_AS9_BRA_Fig8_CNDDB_Plants_201410.mxd



CNDDB RARE ANIMAL SPECIES:

1- Accipiter cooperii
2 - Agelaius tricolor
3 - Andrena blennospermatis
4 - Andrena subapasta
5 - Antrozous pallidus
6 - Aquila chrysaetos
7 - Ardea alba
8 - Ardea herodias
9 - Athene cunicularia
10 - Branchinecta lynchi
11 - Branchinecta mesovallensis
12 - Buteo regalis
13 - Buteo swainsoni
14 - Desmocerus californicus dimorphus
15 - Dumontia oregonensis
16 - Elanus leucurus
17 - Emys marmorata
18 - Falco columbarius
19 - Hydrochara rickseckeri
20 - Lasionycteris noctivagans
21 - Lepidurus packardi
22 - Linderiella occidentalis
23 - Melospiza melodia
24 - Nycticorax nycticorax
25 - Oncorhynchus mykiss irideus
26 - Phalacrocorax auritus
27 - Pogonichthys macrolepidotus
28 - Progne subis
29 - Riparia riparia
30 - Spea hammondii
31 - Spirinchus thaleichthys
32 - Taxidea taxus
33 - Thamnophis gigas
34 - Xanthocephalus xanthocephalus

TEICHERT MATERIALS

LEGEND:

Aspen VIII & IX Property Boundary

7.5' USGS Quad Boundaries

0 6,000 12,000 Feet

SOURCE:
CNDDB Provided by CDFW (August 2014)

DISCLAIMER:
The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

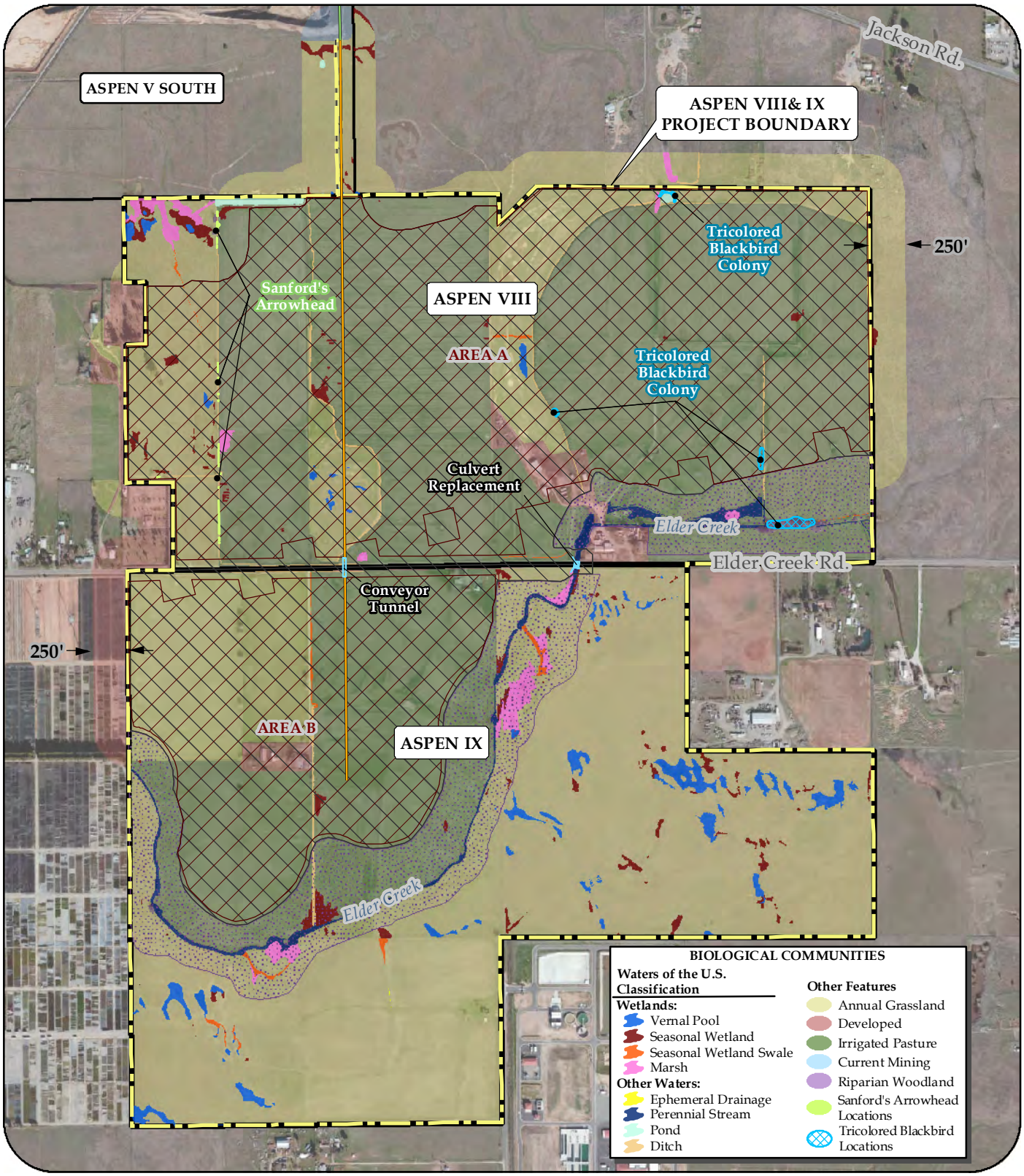
FIGURE 9

CNDDB RARE ANIMAL LOCATIONS

BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/24/2014 AS8_AS9_BRA_Fig9_CNDDB_Animals_201410.mxd



TEICHERT MATERIALS

LEGEND:

- Existing Conveyor Alignment
- Proposed Conveyor Alignment
- Proposed Conveyor Tunnel/ Culvert Replacement
- Survey Study Area
- Proposed Mining Boundary
- Limits of Disturbance
- Proposed Preserve
- Project Boundary
- Aspen VIII & IX Property Boundary

SOURCE:

- Wetland Delineation Provided by ECORP (April 02, 2014)
- Orthophoto Provided by Digital Globe (Feb. 2012)

0 500 1,000 Feet

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 10

BIOLOGICAL RESOURCES AND IMPACTS

BIOLOGICAL RESOURCES ASSESSMENT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 6/16/2015 AS8_AS9_BRA_Fig10_BioImpacts_201506.mxd

ATTACHMENT A

Teichert – Aspen VIII & IX Biological Resources Assessment
Special-Status Species Known or Potentially Known to Occur within the Project Vicinity

Table A-1
Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
PLANTS				
FERRIS' MILKVETCH *Astragalus tener* var. *ferrisiae*	— / — / 1B	Vernally moist meadows, alkaline flats & fallow rice fields. Scattered throughout the Sacramento Valley region from Butte Co. south to Solano Co. Elev. <75 m.	April - May	Unlikely to Occur
ALKALI MILKVETCH *Astragalus tener* var. *tener*	— / — / 1B	Alkali meadows, vernal pools & playas, edges of salt marshes, & moist grassy flats. Western portion of Central Valley & San Francisco Bay area from Yolo Co. south to Merced, San Benito & Monterey Cos. Elev. < 60 m.	March - June	Unlikely to Occur
HEARTSCALE *Atriplex cordulata* var. *cordulata*	— / — / 1B	Generally alkali grassland, alkali meadow & alkali scrub. Occasional on margins of alkali pools. Western Central Valley from Glenn Co. south to Tulare & San Luis Obispo Cos. Elev. < 200 m.	April - Oct	Unlikely to Occur
BRITTLESCALE *Atriplex depressa*	— / — / 1B	Alkali flats, alkali scrub, alkali grassland & playas. Mostly western regions of Sacramento Valley from Glenn & Butte Cos. south throughout the San Joaquin Valley (Kern Co.). Elev. < 320 m.	May - Oct	Unlikely to Occur
SAN JOAQUIN SALTBUSH *Atriplex joaquiniana*	— / — / 1B	Alkali flats, alkali scrub, alkali grassland & playas. Western Central Valley & Inner South Coast Range from Glenn Co. south to San Luis Obispo Co. Elev. < 835 m.	April - Oct	Unlikely to Occur
VERNAL POOL SMALLSCALE *Atriplex persistens*	— / — / 1B	Deeper portions of large, alkaline vernal pools. Central Valley from Glenn Co. south to Tulare Co. Most occurrences in San Joaquin Valley. Elev. < 115 m.	June - Oct	Unlikely to Occur
HISPID BIRD'S-BEAK *Cordylanthus mollis* ssp. *hispidus*	— / — / 1B	Saline marshes, alkali flats & alkali vernal pools. Scattered locations throughout San Joaquin Valley. Also Solano & Alameda Cos. & near Rocklin in Placer Co. Elev. < 150m.	June - Sept	Unlikely to Occur
PALMATE BIRD'S-BEAK *Cordylanthus palmatus*	FE / SE / 1B	Saline alkali flats, alkali scrub & alkali grassland. Scattered locations in the Central Valley from Glenn Co. south to Fresno Co. Also Livermore Valley in Alameda Co. Elev. < 150 m.	May - Oct	Unlikely to Occur
DWARF DOWNINGIA *Downingia pusilla*	— / — / 2B	Vernal pools & swales, ephemeral drainages & margins of other seasonal wetlands. Central Valley from Tehama Co. south to Fresno Co. Also in valleys north of S.F. in Napa & Sonoma Cos. Elev. < 450 m.	March - May	Could Occur
TUOLUMNE BUTTON-CELERY *Eryngium pinnatisectum*	— / — / 1B	Swales, vernal pools, moist flats & ephemeral drainages. North-central Sierra Nevada Foothill & adjacent valley from Sacramento Co. south to Tuolumne Co. Elev. 70-900 m.	May - August	Unlikely to Occur
BOGGS LAKE HEDGE-HYSSOP *Gratiola heterosepala*	— / SE / 1B	Marshy lake margins, cattle ponds & in vernal pools. Central Valley & foothills from Shasta to Tulare Co. Also occurs in Lake Co., Modoc Plateau, & Oregon. Elev. < 1200 m.	April - Aug.	Could Occur
HOGWALLOW STARFISH *Hesperevax caulescens*	— / — / 4.	Vernal pools & seasonally saturated clay flats. Central Valley & adjacent foothills from Tehama Co. south to Kern Co. Also reported in San Luis Obispo Co. Elev. < 500 m.	March - June	Could Occur

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Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
AHART'S DWARF RUSH *Juncus leiospermus* var. *ahartii*	— / — / 1B	Vernal pools, swales & ephemeral drainages. Eastern Sacramento Valley from Tehama Co. south to Sacramento Co. Also found in Calaveras Co. Elev. 30-100 m.	March - May	Could Occur
LEGENERE *Legenere limosa*	— / — / 1B	Vernal pools, seasonal wetlands, drainages, & along margins of cattle ponds. Northern Central Valley (Shasta to San Joaquin Co.) & Inland Coast Range (Sonoma to Santa Clara Co.). Elev. < 880 m.	April - June	Could Occur
HECKARD'S PEPPERGRASS *Lepidium latipes* var. *heckardii*	— / — / 1B	Alkali flats and alkali grassland near the margins of vernal pools. Western Sacramento Valley from Glenn Co. south to Solano Co. Elev. < 200 m.	March - May	Unlikely to Occur
HOARY NAVARRETIA *Navarretia eriocephala*	— / — / 4	Seasonally wet flats, usually in heavy soil. Southeastern Sacramento Valley & northern & central Sierra Nevada Foothill from Yuba to Tuolumne Co. Elev. 100-400 m.	May - June	Unlikely to Occur
TEHAMA NAVARRETIA *Navarretia heterandra*	— / — / 4	Typically growing heavy soils, vernal pools, & drying flats. Scattered throughout northern California & southern Oregon. Elev. 30-1000 m.	April - June	Unlikely to Occur
BAKER'S NAVARRETIA *Navarretia leucocephala* ssp. *bakeri*	— / — / 1B	Vernal pools and ephemeral drainages. Western Sacramento Valley & northern Inland Coast Range from Glenn & Mendocino Cos. to Solano Co. Elev. < 1700 m.	April - July	Unlikely to Occur
MYER'S PINCUSHION NAVARRETIA *Navarretia myersii* ssp. *myersii*	— / — / 1B	Vernal pools, usually with acidic soils. E. Central Valley & adjacent Sierra Nevada Foothill from Placer Co. south to Merced Co. Elev. 20-330 m.	April - May	Could Occur
ADOBE NAVARRETIA *Navarretia nigelliformis* ssp. *nigelliformis*	— / — / 4	Vernal pools & vernally moist swales. Scattered locations from the Sierra Nevada Foothills, Central Valley & Inner South Coast Range. Elev. 90-1000 m.	April - June	Unlikely to Occur
SLENDER ORCUTT GRASS *Orcuttia tenuis*	FT / SE / 1B	Generally restricted to deeper vernal pools & other ephemeral wetlands with clay soils. Scattered from the Sacramento Valley north to the Modoc Plateau area. Also occurs in Lake Co. Elev. 30-1700 m.	May - Oct	Could Occur
SACRAMENTO ORCUTT GRASS *Orcuttia viscida*	FE / SE / 1B	Generally found in larger, deeper vernal pools. Known only in Sacramento County (from about Phoenix Field to approximately Rancho Seco). Elev. 30-100 m.	April - Sept	Could Occur
SANFORD'S ARROWHEAD *Sagittaria sanfordii*	— / — / 1B	Margins of small lakes and ponds and slow-moving sloughs, creeks, rivers, ditches, and canals. Widely distributed throughout the Central Valley from Shasta Co. to Kern Co. Elev. < 650m.	May - Aug	Known to Occur
SALINE CLOVER *Trifolium depauperatum* var. *hydrophilum*	— / — / 1B	Salt marshes, alkali meadows, & vernal pools. Central Western California (Sonoma Co. to San Luis Obispo Co.) & southwestern Sacramento Valley. Elev. < 300 m.	April - June	Unlikely to Occur
INVERTEBRATES				
ANDRENID BEE *Andrena subapasta*	— /—/CNDDB	Inhabits upland areas near vernal pools. Females collect pollen primarily from *Arenaria*, but also *Triphysaria eriantha* and *Lasthenia* flowers. Occurs in vernal pool grassland habitats in El Dorado, Placer, Sacramento and San Joaquin Cos.	Late Feb - early May	Could Occur

Table A-1
Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
BLENNOSPERMA VERNAL POOL ANDRENID BEE *Andrena blennospermatis*	— /—/CNDDB	Bee is oligolectic on *Blennosperma*. Occurs in vernal pool grassland habitats where *Blennosperma* is found. Records include scattered locations along the edges of the Central Valley in Yolo, Solano, El Dorado, Sacramento & Tehama Cos., & near the base of the Coast Ranges in Contra Costa, Lake & Sonoma Cos.	Late Feb - April	Unlikely to Occur
CONSERVANCY FAIRY SHRIMP *Branchinecta conservatio*	FE/ — / —	Alkaline pools, vernal lakes & vernal pools that are typically large and/or relatively deep and moderately turbid. Known from several disjunct locations in the Central Valley from Tehama Co. south to Ventura Co.	Nov - May	Unlikely to Occur
VERNAL POOL FAIRY SHRIMP *Branchinecta lynchi*	FT/—/—	Vernal pools and swales from Jackson County near Medford, Oregon, throughout the Central Valley, and west to the central Coast Ranges.	Nov - May	Known to Occur
MID-VALLEY FAIRY SHRIMP *Branchinecta mesovallensis*	— /—/CNDDB	Vernal pools, swales, and other ephemeral freshwater habitats throughout southeastern Sacramento, Southern Sierra Foothill, San Joaquin, and Solano-Colusa regions.	Nov - May	Likely to Occur
Hairy water flea *Dumontia oregonensis*	—/—/CNDDB	First described in 2003 from three pools in Oregon, this species has since been reported from southern Sacramento Co., as well as from Solano Co. Little information exists regarding the species' habitat or life history requirements.	Nov - May	Could Occur
RICKSECKER'S HYDROCHARA *Hydrochara rickseckeri*	—/—/CNDDB	Known historically from pond habitats around the San Francisco Bay area. Vernal pools and other large seasonally inundated wetlands.	Nov - May	Could Occur
VERNAL POOL TADPOLE SHRIMP *Lepidurus packardi*	FE/—/—	Vernal pools, swales, and other ephemeral freshwater habitats from Shasta to Merced County, with the majority of populations occurring in the Sacramento Valley.	Nov - May	Likely to Occur
CALIFORNIA LINDERIELLA *Linderiella occidentalis*	—/—/CNDDB	Vernal pools, swales, and other ephemeral freshwater habitats from Shasta County south to Fresno County, across the Central Valley and some of the coast ranges.	Nov - May	Likely to Occur
VALLEY ELDERBERRY LONGHORN BEETLE *Desmocerus californicus dimorphus*	FT/—/—	The subspecies occurs at scattered locations in the Central Valley & adjacent foothills of the Sierra Nevada & Coast Ranges. The subspecies is entirely dependent upon its host plant (i.e., *Sambucus* spp.) and is only found where this shrub occurs (typically in riparian vegetation associations, but occasionally in isolated shrubs or stands of the plant).	Year-round (exit holes)	Could Occur
AMPHIBIANS				
CALIFORNIA TIGER SALAMANDER *Ambystoma californiense*	FT / ST / —	Restricted to large vernal pools, seasonal ponds, or stock ponds that hold water for at least 4 months during spring for breeding & larval development. Adult non-breeding habitat is generally grasslands & oak savannah. In Sacramento Co. known only from southeastern county (south of the Cosumnes River).	March - May	Unlikely to Occur

Table A-1
Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
WESTERN SPADEFOOT *Spea hammondii*	—/—/ SSC	Restricted to vernal pools, seasonal wetlands, stock ponds, & quiet in-channel pools for breeding & larval development. Adult non-breeding habitat is generally grasslands. Known to occur within the Central Valley & surrounding foothills from Colusa Co. to Tulare Co. In Sacramento Co., known from southeastern county (mostly south of the Cosumnes River), but also at Mather Field vernal pool complex.	March - May	Could Occur
CALIFORNIA RED-LEGGED FROG *Rana draytonii*	FT/—/ SSC	Found mainly near ponds in humid forests, woodlands, grasslands, coastal scrub, and stream-sides with plant cover. Most common in lowlands or foothills along the California coast and surrounding the Central Valley. Only a handful of scattered populations within the Central Valley.	Jan – Feb	Unlikely to Occur
REPTILES				
WESTERN POND TURTLE *Emys marmorata*	—/—/ SSC	Found in ponds, reservoirs, or other slow-moving perennial aquatic habitats (e.g., sloughs, streams, and rivers). Loose soils in adjacent banks, grasslands, and open woodland for nesting.	March - Oct	Could Occur
GIANT GARTER SNAKE *Thamnophis gigas*	FT / ST / —	Found in marshes, low gradient streams and adjacent rice fields supported by perennial fresh water in the Central Valley. All credible occurrences in Sacramento County are west of State Route 99.	April - Sept	Unlikely to Occur
BIRDS				
AMERICAN WHITE PELICAN *Pelecanus erythrorhynchos* (nesting colony)	—/—/ SSC	California's nesting pelicans have been confined mainly to the Klamath Basin, within Siskiyou, Modoc and Lassen Cos. Historic breeding range includes the Central Valley, prior to large-scale urban and agricultural development. No nesting records exist for this species within Sacramento Co.	March - July	Unlikely to Occur
LEAST BITTERN *Ixobrychus exilis* (nesting)	—/—/ SSC	Breeds in tall emergent vegetation in marshes, primarily freshwater, less commonly in coastal brackish marshes and mangrove swamps. Breeding populations known from throughout California, including the Central Valley. In Sacramento Co., only known to occur in far eastern portion of county.	May – July	Unlikely to Occur
WHITE-FACED IBIS *Plegadis chihi* (nesting colony)	—/—/ CNDDB	This species nests at scattered locations in the Central Valley as well as elsewhere in California where there are dense, freshwater emergent wetlands. No breeding colonies known from Sacramento Co.	May – July	Unlikely to Occur
DOUBLE-CRESTED CORMORANT *Phalacrocorax auritus* (nesting colony)	—/—/ CNDDB	Breeding colonies are typically formed in clusters of large trees near water. Require aquatic bodies (lakes, ponds) large enough to support a mostly fish diet. Only records from Sacramento Co. are from the American River & the Delta region.	April – Aug	Unlikely to Occur

Table A-1
Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
WHITE-TAILED KITE *Elanus leucurus* (nesting)	—/—/ CFP	Found throughout the lower elevation portions of California in low rolling grasslands with scattered oaks and river bottomlands or marshes adjacent to deciduous woodland. Requires grasslands, meadows, or marshes (for foraging) located near dense-topped trees (for nesting and roosting). Occurs throughout Sacramento County.	Year-round	Could Occur
NORTHERN HARRIER *Circus cyaneus* (nesting)	—/—/ SSC	Nests in tall grasses, marshes, and grain fields. Forages in open vegetation communities. Occurs throughout Sacramento County.	Year-round	Could Occur
BALD EAGLE *Haliaeetus leucocephalus* (nesting & wintering)	FD/ SE / CFP	Nests near large lakes, reservoirs, and rivers. Wintering occurs near these latter habitats as well as in rangelands and coastal wetlands. Occasional winter visitor in Sacramento County.	Oct - March	Unlikely to Occur
GOLDEN EAGLE *Aquila chrysaeto* (nesting & wintering)	—/—/ CFP	Nests on secluded cliffs, but may also use large, isolated trees. Hunts widely over open areas. Most records in Sacramento County are winter occurrences from the far eastern portions of the county.	Year-round	Unlikely to Occur
COOPER'S HAWK *Accipiter cooperii* (nesting)	—/—/CNDDB	Nests in dense riparian or oak woodland. Hunts and winters in wide variety of woodland and forest vegetation communities. Most nesting occurrences in Sacramento County are associated with riparian habitat along the larger rivers or large urban stands of trees.	May - July	Unlikely to Occur
SHARP-SHINNED HAWK *Accipiter striatus* (nesting)	—/—/ CNDDB	Nests in dense pole and small-tree stands of riparian and coniferous forest near water. Hunts and winters in wide variety of woodland and shrub vegetation communities. No nesting occurrences in Sacramento County have been documented.	May - July	Unlikely to Occur
SWAINSON'S HAWK *Buteo swainsoni* (nesting)	— /ST / —	Nests in large trees in riparian and oak woodland (sometimes single large oaks) adjacent to large open areas for hunting. Scattered throughout Sacramento County.	April - Sept	Could Occur
FERRUGINOUS HAWK *Buteo regalis* (wintering)	—/—/ CNDDB	Nests are usually built in tall trees along streams or rivers, or in junipers with a view of surrounding grassland. Cliffs, hills, boulders, and man-made structures are occasionally used as nest sites. Hunts in expansive, open vegetation communities. Winter visitor in small numbers throughout Sacramento County.	Oct - April	Could Occur
PRAIRIE FALCON *Falco mexicanus* (nesting)	—/—/ SSC	Nests on secluded cliffs, bluffs, or rock outcrops (particularly with southeastern exposure). Hunts in open terrain (grassland, oak savannah, and early succession stages of shrub and woodland habitats). Most records in Sacramento County are winter occurrences from the far eastern portions of the county.	April - Aug	Unlikely to Occur

Table A-1
Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
American Peregrine Falcon *Falco peregrinus anatum* (nesting)	FD/ SD / CFP	Species occurs all over the world; in North America, breeds in open landscapes with cliffs (or skyscrapers) for nest sites. Can be found nesting at elevations up to 12,000 feet, as well as along rivers, coastlines, or in cities. Known from mountain & coastal regions throughout the state. No records for this species from the Central or Sacramento Valleys.	March – Aug	Unlikely to Occur
Merlin *Falco columbarius* (wintering)	—/—/ CNDDB	Occurs in a variety of low elevation, relatively flat habitats that include wooded areas, coastlines, open grasslands, savannah, and the periphery of lakes. It is less often found in open desert. It typically requires dense stands of trees for cover and roosting. It is most often found where there are substantial populations of small birds (the primary prey item). It is a regular winter visitor to Sacramento County.	Oct - March	Could Occur
Great Blue Heron *Ardea herodias* (nesting colony)	—/—/ CNDDB	Breeding colonies are located in trees near isolated swamps or on islands, or near lakes and ponds bordered by forests. Foraging habitat includes freshwater and saltwater wetlands/water bodies, as well as grasslands and agricultural fields. Known to breed in Sacramento Co. only along the American & Cosumnes Rivers & the Delta region.	March – May	Unlikely to Occur
Great Egret *Ardea alba* (nesting colony)	—/—/ CNDDB	Nesting colonies are located in large trees adjacent to bodies of water, such as lakes, ponds, marshes and estuaries. Foraging habitat includes a variety of wetland habitats. Known to breed in Sacramento Co. only along the American & Cosumnes Rivers & the Delta region.	April - May	Unlikely to Occur
Mountain Plover *Charadrius montanus* (wintering)	—/—/ SSC	Found patchily distributed as a wintering species in California where it occurs on relatively level lands with short grass, plowed or burned agricultural fields, and sprouting grain or alfalfa fields. Species tends to show high site fidelity and has never been recorded in Sacramento County.	Oct - March	Unlikely to Occur
Short-eared Owl *Asio flammeus* (nesting)	—/—/ SSC	Suitable nesting habitat is provided by freshwater and coastal marshes, coastal prairie and dunes, wet meadows, and dense grasslands. There is only a single nesting season record for Sacramento County (along Desmond Road in the south county).	April - July	Unlikely to Occur
Long-eared Owl *Asio otus* (nesting)	—/—/ SSC	Species requires grassland or other open spaces for foraging, as well as dense tall shrubs or trees for nesting and roosting. Scattered populations exist in the mountain and coastal regions of the state; no records exist for this species within Sacramento Co.	Feb - July	Unlikely to Occur
Burrowing Owl *Athene cunicularia* (burrow sites & some wintering sites)	—/—/ SSC	Nests and winters in low open grassland or other low, open habitats with abundant small mammal burrows. Forages in similar habitats.	Year-round	Could Occur

Table A-1
Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
LOGGERHEAD SHRIKE *Lanius ludovicianus* (nesting)	—/—/ SSC	Utilizes shrubs and other dense, woody vegetation for nesting. Uses adjacent open vegetation communities for foraging. Occurs throughout Sacramento County in small numbers.	April - July	Could Occur
CALIFORNIA GULL *Larus californicus* (nesting colony)	—/—/ CNDDB	Breeds on islands in lakes or rivers in the Sierra Nevada & Cascade Ranges, & on the coast. Forages in a variety of habitats, from parking lots to farm fields to the open ocean. No nesting season records exist for this species in the Central or Sacramento Valleys.	May - July	Unlikely to Occur
WESTERN YELLOW-BILLED CUCKOO *Coccyzus americanus occidentalis* (nesting)	FT / SE / —	Species is restricted to cottonwood & willow-dominated riparian forests along large rivers. The majority of breeding population currently concentrated along upper Sacramento River. Extirpated from Sacramento Co. Only one historic record in the County, from the Sacramento River near the Delta.	June - Aug	Unlikely to Occur
YELLOW-BILLED MAGPIE *Pica nuttalli* (nesting & communal roosts)	—/—/ CNDDB	Found as a resident & wintering species throughout the lower elevation portions of California in grasslands, saltbush scrub, chaparral, oak savannah, & other open woodland types near water (generally where there are large trees with dense cover for nesting and roosts). Scattered throughout Sacramento County.	Year-round	Likely to Occur
PURPLE MARTIN *Progne subis* (nesting)	—/—/ SSC	Extremely localized & limited distribution along Central to North Coast, Sierra Nevada and Cascades, southern California mountains, & Sacramento. Nests mostly in old woodpecker cavities in tall, old, isolated trees or snags. However, the small population in Sacramento County appears to be limited to the drainage holes on the underside of bridges (mostly along the I-5, US 50, and I-80 corridors).	April - Sept	Unlikely to Occur
BANK SWALLOW *Riparia riparia* (nesting)	— / ST / —	Formerly found as a summer nesting species within a larger California distribution along the coast & adjacent to larger streams & rivers. Range is now concentrated along Central Valley streams & rivers. Species nests in vertical banks & cliffs with fine-textured sandy soils. No existing nesting habitat for the species occurs on the project site, but mining activities can create habitat that is sometimes then used by the species. There have been no occurrences of nesting in mining sites in Sacramento Co.	April - July	Unlikely to Occur
WILLOW FLYCATCHER *Empidonax traillii* (nesting)	— / SE / —	Breeds from southern British Columbia, Alberta, North Dakota, New York, & Maine south to central California, Nevada, Arkansas, & Virginia. Nests in riparian brush dominated by deciduous willows/shrubs. Nesting season records for the state limited to the Sierra Nevada & Cascades; no records exist within Sacramento Co.	May - Aug	Unlikely to Occur

Table A-1
Special-Status Species Known or Potentially Known to Occur within the Aspen VIII/IX Project Vicinity

Common Name *Scientific Name*	Status Fed/State/ Other	Habitat and Distribution	Survey Period	Potential For Occurrence
GRASSHOPPER SPARROW *Ammodramus savannarum* (nesting)	—/—/ SSC	Nests in dense, dry, expansive grasslands (sometimes with scattered shrubs). Forages in similar habitat. Species exhibits extreme site fidelity. In Sacramento Co. known only from southeastern county (mostly along Meiss Road).	April - July	Unlikely to Occur
SONG SPARROW (MODESTO POPULATION) *Melospiza melodia* "Modesto" (nesting)	—/—/ SSC	The Modesto Song Sparrow is found in areas containing extensive wetlands, such as the Sacramento-San Joaquin Delta. Prefers freshwater marsh & riparian forest habitats with available water, open areas for foraging & moderately dense vegetation cover for nesting. Known to occur in Sacramento Co. only from the Sacramento River & Delta region.	March - Aug	Unlikely to Occur
TRICOLORED BLACKBIRD *Agelaius tricolor* (nesting)	—/ SE / —	Nests in dense stands of emergent freshwater marsh, willow, blackberry, thistle, nettles, or grasses. Forages in grassland or rangeland providing an abundant source of food (e.g., grasshoppers or butterfly larvae) - often within at least three miles of the nest colony. Nesting colonies are scattered throughout Sacramento Co.	April - July	Known to Occur
MAMMALS				
PALLID BAT *Antrozous pallidus*	—/—/ SSC	Found as a resident in all desert, grassland, shrub, woodland, & forest habitats from sea level to approximately 6,000 feet. Day roosts are typically found in buildings, bridges, rocky outcrops, mines, caves, & trees. Night roosts are generally provided by bridges, mines, & caves. Only a small number of occurrences are known for Sacramento Co.	April - Sept	Unlikely to Occur
WESTERN RED BAT *Lasiurus blossevillii*	—/—/ SSC	Occurs at scattered locations throughout the lowland portions of California west of the Sierra Nevada crest and desert regions (typically in riparian forest or orchards). Roosting sites are found in tree or shrub foliage between 2 - 40 ft above ground (typically in large cottonwoods, sycamores, walnuts, and willows). In Sacramento County known from scattered occurrences throughout the county.	April - Sept	Unlikely to Occur
YUMA MYOTIS *Myotis yumanensis*	—/—/ CNDDB	Found in a variety of habitats (including coastal vegetation communities & urban areas) with nearby sources of water over which the species forages. Day roosts are found in caves, mines, buildings, or crevices. Night roosts are typically associated with bridges, buildings, & other man-made structures. In Sacramento Co. known from scattered occurrences throughout the county.	April - Sept	Unlikely to Occur
AMERICAN BADGER *Taxidea taxus*	—/—/ SSC	Found as a resident species at scattered localities throughout California (except in the coastal redwood region). Generally occurs in extensive, open habitats in the vicinity of abundant rodent populations. In Sacramento Co. known mostly from the far eastern portions of the county.	Year-round	Unlikely to Occur

SPECIAL STATUS CODE ABBREVIATIONS AND DEFINITIONS

FEDERAL

FE	Federally listed as Endangered
FT	Federally listed as Threatened
FPE	Federally proposed as Endangered
FPT	Federally proposed as Threatened
FC	Federal Candidate Species (former Category 1 candidates)
FD	Federally Delisted

STATE

SE	State listed as Endangered
ST	State listed as Threatened
SR	State listed as Rare
SD	State Delisted

Other

CFP	California Department of Fish and Wildlife designated “Fully Protected”
SSC	California Department of Fish and Wildlife designated “Species of Special Concern”
1A	California Rare Plant Rank - Presumed extinct
1B	California Rare Plant Rank - Rare or Endangered in California and elsewhere
2A	California Rare Plant Rank - Presumed extirpated in California, more common elsewhere
2B	California Rare Plant Rank - Rare or Endangered in California, more common elsewhere
3	California Rare Plant Rank - Plants About Which More Information is Needed, A Review List
4	California Rare Plant Rank - Plants of Limited Distribution, A Watch List
CNDDB	Species is tracked by the California Department of Fish and Wildlife’s “California Natural Diversity Database”

LIKELIHOOD OF OCCURRENCE DEFINITIONS

Known to Occur	Taxon was observed at the Project site during recent surveys.
Likely to Occur	Taxon previously reported within or immediately adjacent to the Project site or otherwise expected to occur due to neighboring occurrences and substantial habitat on the Project site.
Could Occur	Suitable habitat is available at the Project site; however, there is little to no other indicators that the taxon might be present.
Unlikely to Occur	Taxon is unlikely to be present due to poor habitat quality, lack of suitable habitat features, or known restricted current distribution that does not include the Project area.

ATTACHMENT B

Teichert's Aspen VIII & IX Biological Resources Assessment
Rare Plant Survey Report

SPECIAL-STATUS PLANT SPECIES SURVEY REPORT

Teichert – Aspen VIII & IX
Sacramento County, California



Prepared By:

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TEICHERT

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ASPEN VIII & IX PROPERTIES

TEICHERT AGGREGATES – SACRAMENTO COUNTY, CALIFORNIA

Special-Status Plant Species Survey Report

July 2015

1.0 INTRODUCTION

This report presents the methods and results of special-status plant surveys conducted on Teichert Aggregates' (Teichert's) Aspen VIII and Aspen IX properties (Property). The Property, comprised of approximately 682 acres, is located in the unincorporated portion of Sacramento County (Figure 1). Teichert is proposing to mine existing aggregate material (sand and gravel) on approximately 357 acres of the Property (Project). The proposed Project will consist of aggregate removal and conveyance, as well as reclamation for agricultural (grazing) purposes. The Project is an extension of mining on Teichert's 'Aspen' properties, which have continuously supplied aggregate resources to Teichert's materials processing operations since the 1950s.

1.1 PROPERTY SITE LOCATION AND DESCRIPTION

The Property is located approximately 2 miles south of Mather Field in Sacramento County and includes two separate properties owned by Teichert, known as Aspen VIII (APNs 063-01800-005, -006 and 063-01600-001) and Aspen IX (APNs 066-0020-006, 066-0030-001 and 066-0050-003) (Figure 2). Material mined from the site will be transported via conveyor belt to Teichert's Perkins processing plant, approximately 4 miles to the northwest (Figure 1). This conveyor will exit near the northwestern corner of Aspen VIII, where it will eventually tie in with an existing conveyor system on Aspen V-South. This portion of conveyor between Aspen VIII and Aspen V-South (APN 063-0190-027) has been included as part of the Project (collectively, Project Site) (Figure 2). The Project Site is located in Township 08N, Range 06E, Sections 27, 28, 33, and 34 with a portion of Aspen VIII falling in the Rio De Los Americanos Land Grant (MDBM) of the "Carmichael, California" 7.5-minute quadrangle (U.S. Department of the Interior, Geological Survey 1981). The approximate center of the site is located at 38° 30' 39" North and 121° 19' 03" West within the Elder Creek Watershed.

Elder Creek Road bisects the two properties, with Aspen VIII occurring to the north and Aspen IX to the south. Elder Creek enters the Project Site from the east on Aspen VIII, where it was historically channelized, and eventually enters Aspen IX on the north following its natural course before exiting on the west. The Project includes mining the majority of the Aspen VIII site, as well as the northwestern portion of Aspen IX, north of Elder Creek. The Project also includes the installation of a larger culvert under Elder Creek Road to increase the capacity of flows under the road and of a turn lane south of Aspen VIII to accommodate trucks.

2.0 ENVIRONMENTAL SETTING

The Project Site consists of approximately 682 acres of land, including Elder Creek which traverses through the site in an east to west direction. The majority of the site is utilized as rangeland for livestock and irrigated pasture for forage production. Some portions of the site have been dry farmed, primarily for wheat. Three separate rural residential houses and/or associated farm buildings also occur on the Project Site. Surrounding land uses include additional rangeland and rural residential homes, agricultural cropland, a nursery facility (Village Nurseries), two cemeteries (Arlington Memorial Cemetery and Bellevue Cemetery), and a wastewater treatment facility (Vineyard Surface Water Treatment Plant).

2.1 CLIMATE, TOPOGRAPHY, AND HYDROLOGY

Sacramento, as with the rest of California's Central Valley, is typical of a Mediterranean-type climate with hot, dry summers and cool, relatively wet winters. Average temperatures range from a low of 38°F in December to a high of 92°F in July (usclimatedata.com). Average annual precipitation is approximately 18.51 inches, with January usually the wettest month (usclimatedata.com).

The majority of the Project Site consists of historically leveled fields for both dryland grazing and irrigated pasture. Moderate rolling hills also characterize the topography of the site on other areas. The elevation of the site ranges from approximately 60 to 85 feet above mean sea level (MSL).

The Project Site is located within boundaries of the Morrison Creek and Elder Creek Watersheds (Figure 3). The Morrison Creek watershed encompasses approximately 200 acres in both Aspen VIII and IX, while the Elder Creek Watershed includes approximately 483 acres. Although Morrison Creek itself does not traverse the Project Site, its southern watershed boundary lies within the western portion of Aspen VIII and along the northwestern portion of Aspen IX before transitioning into the Elder Creek watershed to the south. Elder Creek occurs on both Aspen VIII and IX, whereby it enters Aspen VIII on the southeast and exits Aspen IX on the west (Figures 2 and 3). The creek is channelized throughout the Aspen VIII portion of the site, where it eventually enters an artificial expansion "pond" before flowing under Elder Creek Road and into Aspen IX. Once entering Aspen IX, the creek maintains its natural course before exiting the site on the west where it is once again channelized.

Elder Creek originates near the intersection of Kiefer Boulevard and Eagles Nest Road and eventually discharges into Morrison Creek near Brookfield Drive in the City of Sacramento, approximately 8 miles west of the Project Site. Historically, Elder Creek was probably an ephemeral to intermittent watercourse, seasonally supported by winter precipitation and runoff from the surrounding uplands. Today, however, the majority of Elder Creek can be characterized as a semi-perennial creek fed primarily by runoff from ranches, residential areas, and irrigated pasture lands. Within the Project Site, Elder Creek is bordered by irrigated pastures, which are supported by a groundwater release and recycling system that provides year-round irrigation to fields. In this system, groundwater is first supplied to pastures during the early summer months and allowed to sheet across fields. This water eventually

drains into a network of surrounding ditches and irrigation ponds for capture and reutilization, while excess irrigation runoff flows to Elder Creek.

2.2 SOILS

The Natural Resources Conservation Service (NRCS) soil surveys for Sacramento County identifies six soil types within in the Project Site (NRCS 1993). The most predominant soil component is Red Bluff-Xerarents complex, 0 to 2 percent slopes, which is distributed throughout much the proposed mining area (Figure 4). Red Bluff loam, 0 to 2 percent slopes is the second-most predominant soil type on the Project Site (Figure 4). Other soil types include San Joaquin silt loam, 0 to 3 percent slopes; Kimball silt loam, 0 to 2 percent slopes; San Joaquin silt loam, leveled; and Hedge loam, 0 to 2 percent slopes (Figure 4). Detailed summaries of these soil types have been described in the original wetland delineation report prepared by Foothill Associates (2006).

2.3 EXISTING HABITAT AND PLANT COMMUNITIES

Presently, both annual grasslands and irrigated pastures dominate the landscape on the Project Site (Figure 5). Elder Creek appears on the USGS 7.5-minute series Carmichael and Elk Grove, California quadrangles as a solid blue line feature (perennial drainage) and traverses the Project area in a northeast to southwest direction. Foothill Associates conducted a wetland delineation for the Aspen VIII and IX Property in 2006 (Foothill 2006). ECORP Consulting, Inc. revised the delineation in November 2009 and March 2009 and again in march 2014 as part of the development of the proposed Project (ECORP 2009; ECORP 2010; ECORP 2014). The U.S. Army Corps of Engineers issued a preliminary jurisdictional determination (PJD) on 03 June 2014. A total of 27.795 acres of wetland and waters of the U.S. have been identified on the Project Site (Figure 5). These include a perennial stream (Elder Creek), vernal pools, seasonal wetlands and swales, an ephemeral drainage, freshwater marshes, ditches, and ponds (Figure 5).

Other features on the Project Site include three rural residential homes and associated farm/equipment storage buildings. Dirt and graveled access roads to homes, farm buildings, and pastures are also present throughout the site.

3.0 SPECIAL-STATUS PLANT SPECIES

Special-status plants are those that are legally protected under state and federal Endangered Species Acts (ESAs) or other regulations, or species that are considered sufficiently rare by the scientific community to qualify for such listing. These include the following:

- Plants listed or proposed for listing as threatened or endangered under the federal ESA or candidates for possible listing as threatened or endangered under the ESA (50 Code of Federal Regulations (CFR] §17.12);

- Plants listed or candidates for listing by the state of California as threatened or endangered under the California ESA (Fish and Game Code of California §2050 et seq.);
- Plants listed as rare under the California Native Plant Protection Act (Fish and Game Code of California §1900 et. seq.);
- Plants listed that meet the definition of rare or endangered under the California Environmental Quality Act (CEQA) §15380;
- Plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR]1A, 2B, 2A and 2B); and
- Plants listed by CNPS as plants about which more information is needed to determine their status, and plants of limited distribution (CRPR 3 and 4). In general, these plants do not meet the definition of endangered, threatened, or rare pursuant to CEQA §15380; however, these species may be evaluated by the lead agency on a case by case basis to determine significance criteria under CEQA.

4.0 METHODS

This section describes the methods used to conduct special-status plant surveys on the Project Site. All research and surveys were conducted over a two-year period.

4.1 PRE-FIELD SURVEY INVESTIGATIONS

Prior to field surveys, a preliminary list of special-status plants that have the potential to occur on the Project Site and are documented in the regional area was generated by a query search of existing databases and agency information, including:

California Natural Diversity Database (Rarefind Version 5) – Database query of special-status plant species and sensitive natural communities reported in the study area; generated on 05 March 2013 and 14 August 2014 (CNDDB 2014) (Figure 6). Query included the "Carmichael, California" 7.5-minute quadrangle and eight surrounding quadrangles;

U.S. Fish and Wildlife Service, Sacramento Field Office website – Official list of federal candidate, proposed, threatened, and endangered plant species having the potential to occur in the study area; generated on 15 March 2013 (USFWS 2013) and 07 April 2014 (USFWS 2014); and

California Native Plant Society's Online Inventory of Rare and Endangered Plants of California – List of special-status plants that may occur in the study area; generated on various dates between March 2013 (CNPS 2013) and August 2014 (CNPS 2014).

A list of all special-status plant species known or potentially known to occur on the Project Site is shown in Table A-1 in Appendix A. For each species (CRPR 1A, 1B, 2A, and 2B) identified as having a moderate to high potential to occur on the Project Site, phenological data and photographs were compiled prior to

field surveys. Specific information gathered included distribution, life cycles, habitat requirements, regional occurrence(s), representative photographs, and species keys. This information was referenced from the CNDDB data, individual treatments from Jepson Manual: Vascular Plants of California, 2nd ed. (Baldwin et. al. 2012), and photographs from the CalPhoto website.

4.2 SPECIAL-STATUS PLANT SPECIES OCCURRENCE POTENTIAL

The potential for special-status plants depends largely on the presence of specific habitat types on the Project Site. Reconnaissance-level field surveys were conducted on 18 March 2013, and again on 09 April 2014, to review resources (i.e., wetlands) that warrant additional or more focused surveys. Habitat types identified during the reconnaissance-level field assessments were evaluated with known habitat requirements for each special-status plant species with potential to occur in the regional area. Each species' potential to occur on the Project Site was then assessed and ranked as either:

- No Potential – species reported to have a current or historic range in the regional area, but does not occur on the Project Site due to the lack of required habitat for the species;
- Unlikely/Low Potential – species reported to have a current or historic range in the regional area, but has only marginal quality habitat on the Project Site (i.e., disturbed, fragmented, or otherwise degraded) or its presence cannot be completely discounted due to incomplete information on the taxon's distribution or habitat requirements;
- Moderate Potential – species reported to have a current or historic range in the regional area and moderate quality habitat on the Project Site;
- Present/High Potential – species previously reported from the site or otherwise expected to occur due to substantial habitat on the Project Site.

Based on review of the CNDDB and CNPS database searches, previously prepared biological reports for the Project Site and surrounding areas, and reconnaissance-level field surveys, it was determined the Project Site supports potential suitable habitat (moderate to high) for eight special-status plant species. These include dwarf downingia (*Downingia pusilla*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*), Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii* subsp. *myersii*), slender Orcutt grass (*Orcuttia tenuis*), Sacramento Orcutt grass (*Orcuttia viscida*), and Sanford's arrowhead (*Sagittaria sanfordii*). Detailed descriptions of these species and their potential to occur on the Project Site are provided in Appendix B.

Several other special-status plant species were identified in the database searches for the selected quadrangles. These species include Brandegee's clarkia (*Clarkia biloba* subsp. *brandegeae*), stinkbells (*Fritillaria agrestis*), Heckard's dwarf peppergrass (*Lepidium latipes* var. *heckardii*), California rose mallow (*Hibiscus lasiocarpos* var. *occidentalis*), and saline clover (*Trifolium hydrophilum*). These species did not have moderate to high potential to occur at the site due to the lack of specific habitat requirements on the Project Site, such as foothill woodland/grassland, chaparral, tidal marsh, saltwater marsh, or alkaline vernal pools and flats. Although there is a CNDDB record of Peruvian dodder (*Cuscuta*

obtusiflora var. *glandulosa*) within the nine quadrangle search area, this species was last seen in 1948 in Merced County and is thought to be extirpated.

It should be noted that focused surveys for Sacramento Orcutt grass and slender Orcutt grass were previously conducted by Foothill Associates in May 2008 (Foothill 2008). In addition, follow-up surveys of special-status plant species were conducted between March and July of 2010 by Teichert's biologist B. Baba (Teichert 2010). No rare plants were found during those surveys; however, a few remnant populations of Sanford's arrowhead may have existed in an irrigation ditch (Baba pers. observ. 2010). This ditch had been previously cleaned out by the farmer and positive identification could not be confirmed at the time.

4.3 FIELD SURVEY METHODS

Field surveys for special-status plants were conducted over a two year period from March 2013 through August 2014 in accordance with the CNPS Botanical Survey Guidelines (CNPS 2001), the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 1996), and the Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2009).

4.4 REFERENCE POPULATIONS

Prior to and during the timeframe when surveys of the Project Site were conducted, various reference populations were visited. Reference populations were used to evaluate the condition of specific phenological traits needed to identify plants in the field, such as flowering and fruiting times. Teichert's biologist B. Baba visited various known populations of Legenere, dwarf downingia, bractless hedge-hyssop, Ahart's dwarf rush, Sacramento Orcutt grass, and Sanford's arrowhead within the regional area between April 2013 and July 2014. These sites included Teichert's Lincoln property in Placer County, Teichert's Aspen VI and Grantline properties in Sacramento County, Phoenix Field Vernal Pools in Sacramento County, Mather Field Vernal Pools in Sacramento County, and Jepson Prairie Preserve in Solano County.

Visiting additional species and reference sites was not feasible because of the uncertain status of many previously known locations, the lack of precise information on the location and ownership of local populations, and the lack of access to local populations on private and preserved lands.

4.5 ON-SITE FIELD SURVEYS

To determine if special-status plant species occur on the Project Site, surveys were conducted throughout the Project area for all potentially occurring species (as listed in Table A-1, Appendix A). In addition, the survey study area was extended outside the Project Site boundary to ensure all areas within 250-feet of the proposed mining footprint (i.e., proposed limits of disturbance) were covered (Figure 5). Specific survey dates were March 25th, April 22nd, May 6th and 22nd, and June 20th of 2013 and March 14th, April 14th, 23rd, 24th, May 1st and 23rd, June 19th, and July 14th of 2014. The survey

dates were established to encompass the range of flowering and identification periods for all species, with particular emphasis on the special-status plant species. Over the course of the 2-year survey period, Teichert's biologist B. Baba walked meandering transects across the entire Project Site. Teichert's biologist J. Greer also accompanied B. Baba on some of the 2014 surveys. Survey transects were spaced at 15- to 50-foot intervals, depending upon the existing terrain, habitat types, vegetation cover, and structural complexity. Special attention was given where the habitat type was determined to be suitable and most likely to support special-status plant species (i.e., wetlands). Many areas consisted of irrigated pastures dominated by various pasture species and thus provided limited or no suitable habitat for most special-status plants.

Owing to variance in the phenology and habitat preference of various species, surveys were conducted over a period of several months. Earlier surveys of vernal pools were also conducted to determine which wetlands to revisit later in the season that could most likely support Sacramento Orcutt grass or slender Orcutt grass. All habitats present on the Project Site were surveyed thoroughly in order to properly inventory and document any potential occurrences of special-status plant species. All plant species observed during the survey period were recorded in the field and presented in Appendix C. Nomenclature used follows the Jepson Manual: Vascular Plants of California, 2nd ed. (Baldwin et. al. 2012).

5.0 EXISTING HABITATS AND PLANT COMMUNITIES

The majority of the Project Site consists of irrigated pastures and annual grasslands (Figure 5). Other habitats at the site include perennial stream (Elder Creek), vernal pool, seasonal wetland, swale and ephemeral drainage, ditches, ponds, riparian woodland, and ruderal. A brief summary of these habitats and plant communities are described below and shown in Figure 5. Representative photos of habitat types are also included in Appendix D.

5.1 IRRIGATED PASTURE

Irrigated pastures, totaling 331 acres north of Elder Creek, are maintained by farming practices that supply irrigation to leveled areas via groundwater wells and recycled water from ponds and Elder Creek. These areas are both grazed by cattle and harvested for forage. A network of ditches and ponds are associated with the irrigated pastures (further discussed in Section 5.7 below). Common plant species occurring in irrigated pastures include tall fescue (*Festuca arundinacea*), Kentucky blue grass (*Poa pratensis* subsp. *pratensis*), ryegrass (*Festuca perennis*), dallis grass (*Paspalum dilatatum*), dense sedge (*Carex densa*), field sedge (*Carex praegracilis*), English plantain (*Plantago lanceolata*), white clover (*Trifolium repens*), shamrock (*Trifolium dubium*), cut-leaved geranium (*Geranium dissectum*), and yellow's owl's-clover (*Triphysaria versicolor* subsp. *faucibarbata*).

5.2 ANNUAL GRASSLAND

Annual grasslands on the Project Site are represented by both natural, undulating topography as well as historically leveled areas. This habitat community consists of 308 acres and includes grazing by cattle (Figure 5). Annual grasslands that have not been leveled are generally located south of Elder Creek, within the southern and eastern portions of Aspen IX. Similar landscapes are also present near the northwestern corner and south-central portion of Aspen VIII. These areas consist of relatively flat to moderately rolling hills dominated by soft chess brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum*), brome fescue (*Festuca bromioides*), longbeak filaree (*Erodium botrys*), perennial mustard (*Hirschfeldia incana*), winter vetch (*Vicia villosa* var. *varia*), common fiddleneck (*Amsinckia intermedia*), yellow star-thistle (*Centaurea solstitialis*), and bindweed (*Convolvulus arvensis*). Vernal pools and seasonal wetlands are common within these relatively undisturbed landscapes (further discussed in Sections 5.4 and 5.5 below).

Some grassland areas experience seepage from adjacent irrigated fields and ditches, contributing to semi-hydrophytic plants along these borders, including Mediterranean beard grass (*Polypogon maritimus*), toad rush (*Juncus bufonius*), Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum*), annual hairgrass (*Deschampsia danthonoides*), and pennyroyal (*Mentha pulegium*). Other areas that were historically leveled and farmed but that are no longer irrigated are present along the western portions of Aspen VIII and northwest corner of Aspen IX. These areas are generally dominated by Mediterranean barley, hare barley, and ryegrass.

Trees are largely absent in annual grassland communities except along borders where other features exist (i.e., roads, ditches, etc.). Most trees on site are the result of ornamental landscape plantings around roads and residential homes. In addition, a cluster of large red gum eucalyptus trees (*Eucalyptus camaldulensis*) occurs within the western section of Aspen VIII near an existing cemetery.

5.3 PERENNIAL STREAM (ELDER CREEK)

A total of 5.415 acres of perennial stream have been delineated on the Project Site (Figure 5). This includes approximately 8,470 lineal feet of Elder Creek. The creek is often bordered by wetland vegetation communities of various composition and cover depending on flow rates, duration of flow rates, and water depth. Common plants occurring along Elder Creek include knotgrass (Paspalum distichum), dallis grass, tall fescue, Kentucky blue grass, waxy mannagrass (*Glyceria declinata*), annual beardgrass (*Polypogon monspeliensis*), tall flatsedge (*Cyperus eragrostis*), Australian rush (*Juncus usitatus*), cattails (*Typha domingensis* and *T. latifolia*), common tule (*Schoenoplectus acutus* var. *occidentalis*), and creeping water primrose (*Ludwigia peploides* subsp. *peploides*). Riparian woody vegetation is rather limited throughout much of the creek, probably due to present and past grazing pressures. Trees consisting of Fremont cottonwood (*Populus fremontii* subsp. *fremontii*), black willow (*Salix gooddingii*), walnut (*Juglans hindsii*), and weeping willow (*Salix babylonica*) are scattered along portions of Elder Creek, particularly within the Aspen VIII site. This area of the creek also supports dense stands of Himalayan blackberry (*Rubus armeniacus*) and California wild rose (*Rosa californica*). While Elder Creek presently supports a biological system indicative of a perennial stream, it should be noted

that this creek is hydrologically sustained from late-spring through summer by irrigation runoff from adjacent pastures.

5.4 VERNAL POOLS

Numerous vernal pools, totaling 7.260 acres, occur throughout the undisturbed grassland areas of the Project Site (Figure 5). These vernal pools vary in maximum water depth between a few inches to 20 inches deep, and range in size from 0.001 to 1.075 acres. They are similar to other isolated, depressional seasonal wetland features at the site, but typically support a predominance of native vernal pool plants such as slender popcornflower (*Plagiobothrys stipitatus* var. *micranthus*), Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), Fremont's goldfields (*Lasthenia fremontii*), smooth goldfields (*Lasthenia glaberrima*), Great Valley coyote thistle (*Eryngium castrense*), creeping spikerush (*Eleocharis macrostachya*), annual hairgrass, Mediterranean barley, white navarretia (*Navarretia leucocephala*), double-horned downingia (*Downingia bicornuta* var. *picta*), dwarf woolly-marbles (*Psilocarphus brevissimus*), field owl's-clover (*Castilleja campestris*), and Rosy Douglas' meadowfoam (*Limnanthes douglasii* ssp. *rosea*).

Typical resident wildlife species associated with the vernal pools include various aquatic invertebrates and amphibians such as the Sierra chorus frog (Pseudacris sierra). The vernal pool fairy shrimp (Branchinecta lynchi) and vernal pool tadpole shrimp (Lepidurus packardi), listed as threatened and endangered, respectively, pursuant to the federal Endangered Species Act, are also known to occur within several vernal pools on the Project Site and adjacent areas (C. Rogers, pers. observ.).

5.5 SEASONAL WETLANDS, SWALES, AND EPHEMERAL DRAINAGE

The Project Site also supports numerous seasonal wetlands, swales, and an ephemeral drainage, totaling 7.005 acres (Figure 5). The majority of these seasonal wetlands follow a natural hydrologic pattern, whereby they are saturated (and partially inundated) in winter, but remain dry through summer. These wetlands occur in grasslands and are usually underlain by clay or a heavy clay loam and are very similar to vernal pools, but lack the species associated with vernal pools. Instead, these wetlands are frequently dominated by non-native wetland generalist plants, including ryegrass, Mediterranean barley, Mediterranean beardgrass, common hawkbit (*Leontodon saxatilis* subsp. *longirostris*), and hyssop loosestrife (*Lythrum hyssopifolia*). Some native plants include slender popcorn flower, annual hairgrass, toad rush, baltic rush (*Juncus balticus*), and iris-leaved rush (*Juncus xiphioides*). These wetlands, if inundated for sufficient periods, may also support the venal pool fairy shrimp.

In other instances, seasonal wetlands and swales are associated within irrigated pastures and affected by summer irrigation, remaining saturated or inundated for prolonged periods throughout the summer. These wetlands are saturated perennially and dominated by tall flatsedge, creeping spikerush, spatulaleaf loosestrife (*Lythrum portula*), creeping water primrose, willow weed (*Persicaria lapathifolia*), Mediterranean beardgrass, and waxy mannagrass.

5.6 FRESHWATER MARSH

Freshwater marshes, totaling 4.752 acres, are present at various locations throughout the Project Site (Figure 5). These wetland features are inundated or saturated for prolonged periods, and occur in conjunction with Elder Creek and other ditches receiving irrigation runoff during the summer months. Due to an extended saturation period, these areas are frequently occupied by perennial hydrophytes, including creeping spikerush, tall flatsedge, waxy mannagrass, willow weed, and creeping water primrose. Other common annuals include water pygmy-weed (*Crassula aquatica*), spatulaleaf loosestrife, and Mediterranean barley.

5.7 DITCHES AND PONDS

A network of ditches (2.444 acres) and ponds (0.920 acre) are scattered throughout irrigated pastures (Figure 5). The ditches collect irrigation runoff from pastures and eventually drain to ponds, from which irrigation water is redistributed back to the pastures. Ditches are frequently lined with various wetland plants including smartweed (*Persicaria lapathifolia*, *P. maculosa*, *P. hydropiper*, and *P. punctata*), creeping water primrose, slender centaury (*Centaurium tenuiflorum*), cattails, common tule, tall flatsedge, creeping spikerush, tapered rush (*Juncus acuminatus*), rice cutgrass (*Leersia oryzoides*), tall fescue, dallis grass, mannagrass, and annual beard grass. One ditch in Aspen VIII was dominated by Sanford's arrowhead.

Ponds on site are relatively deep, and thus pond centers tend to lack vegetation. Pond levels may also fluctuate considerably depending on irrigation schedules and patterns. The edges of ponds are frequently vegetated with tall flatsedge, dallis grass, annual beard grass and Australian rush. In addition, Himalayan blackberry, Fremont cottonwood, willows (*Salix gooddingii* and *S. babylonica*), and valley oak (*Quercus lobata*) are often associated with nearby upland areas.

5.8 RIPARIAN WOODLAND

Riparian woodland vegetation (approximately 1.091 acres) is limited to patches of narrow bands along Elder Creek and around the perimeter of existing ponds (Figure 5). Most of these species consists of Fremont cottonwood, willows, Himalayan blackberry, and California wild rose. Most of Elder Creek lacks riparian woodland vegetation, probably due to past and present grazing pressures. Existing ditches also lack riparian woodland species due to routine maintenance activities.

5.9 RUDERAL

Ruderal vegetation is frequently associated with various equipment storage areas and access roads. In addition, disposal areas along ditches are frequently lined with ruderal species. Common ruderal plants at the site include field mustard (*Brassica rapa*), perennial mustard, radish (*Raphanus sativus* and *R. raphanistrum*), yellow star-thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), pineapple weed (*Matricaria discoidea*), prickly lettuce (*Lactuca serriola*), English plantain, greenstem filaree (*Erodium moschatum*), redroot pigweed (*Amaranthus retroflexus*), and soft chess brome.

6.0 PLANT SURVEY RESULTS

A total of 261 taxa of vascular plants were identified on the Project Site (Appendix C). Of these taxa, 113 are native, 125 are naturalized, and 23 are ornamentals planted as landscape. A total of 26 species are considered noxious or invasive weeds in California (Cal-IPC 2014; CDFA 2014). No federal or state-listed plant taxa were observed. No elderberry (*Sambucus nigra* subsp. *caerulea*) shrubs, specific host plant for the federally-listed *Threatened* valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) were found. One rare plant species was documented within the survey area: Sanford's arrowhead (Figure 7; Appendix E).

Sanford's arrowhead is listed as a CRPR List 1B.2 plant. This species is an aquatic perennial member of the water-plantain family (Alismataceae). Sanford's arrowhead is associated with the shallow margins of small lakes and ponds and slow-moving sloughs, creeks, rivers, and canals. Numerous populations have also naturalized in ditches associated with irrigation and other drainage systems. Little is known regarding the biology or ecology of the species, although it appears to tolerate a wide range of freshwater marsh environments. Sanford's arrowhead is widely distributed throughout the Central Valley between 0 and 650 meters. This species is presently known from Shasta to Kern Counties, with the majority of records occurring in Sacramento County. At the Project Site, large populations of Sanford's arrowhead (2,000+ individuals) were observed growing within an irrigation ditch in Aspen VIII, near the western portion of the property (Figure 7; Appendix E). Two individual plants were also observed in a connected ditch running east to west along the northern border of the adjacent cemetery. These ditches are fed by irrigation runoff from irrigated pastures to the east, before eventually emptying into a large irrigation pond on the northern project boundary. Common plants growing in association with the ditch and Sanford's arrowhead include tall flatsedge, creeping spikerush, creeping water primrose, waxy mannagrass, and rice cutgrass.

Sanford's arrowhead is expected to be impacted by proposed mining activities. The proposed limits of disturbance (active mining) include the majority of the ditch containing Sanford's arrowhead and will directly impact the largest and most dense populations of the plant. The remaining populations of Sanford's arrowhead extend to the northern end of the ditch, where mining will not occur, but are expected to be indirectly affected once farming practices no longer utilize and support irrigated pastures. Interestingly, all other ditches or ponds within the study area were not observed to contain Sanford's arrowhead. It appears that the particular ditch supporting Sanford's arrowhead in Aspen VIII is the most maintained (routinely cleaned out), thereby suggesting that the species can be prolific with certain disturbance or management activities.

Because multiple surveys have been conducted during the appropriate blooming periods when target species would have been identifiable, all other special-status plant species are considered to be absent from or unlikely to occur at the Project Site at this time. The results of protocol-level special-status plant species surveys are typically considered to be valid by the resource agencies for a period of 5 years, given that circumstances on the Project Site can be assumed to remain largely unchanged during this time period.

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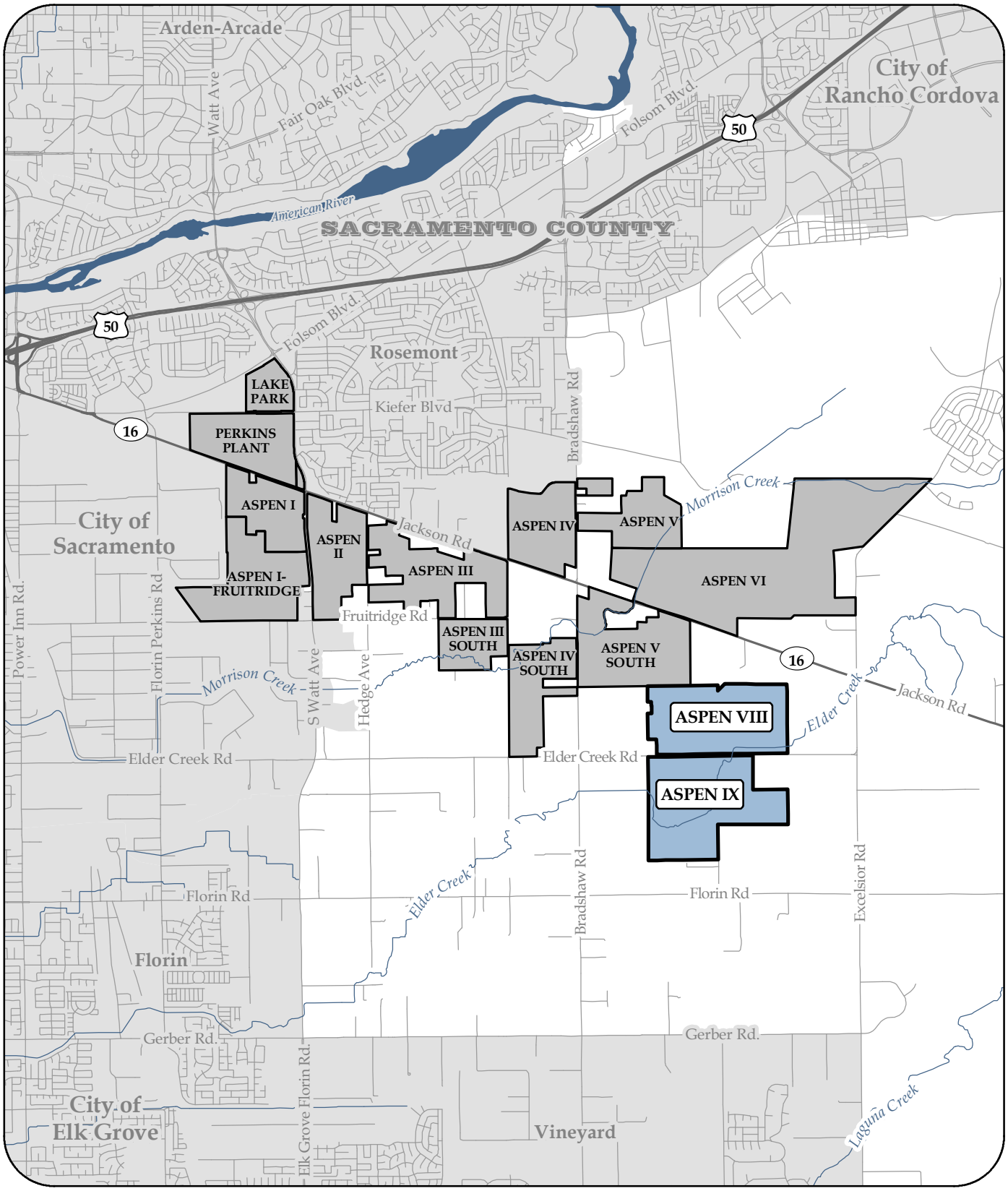


C. Cornejo 10/03/2014 AS8_AS9_RarePlant_Fig1_Vicinity_201410.mxd

TEICHERT MATERIALS

LEGEND:

- Teichert Aggregates Aspen VIII & IX Property Boundary
- Teichert Aggregates Aspen Property Boundaries

0 0.5 1 Miles

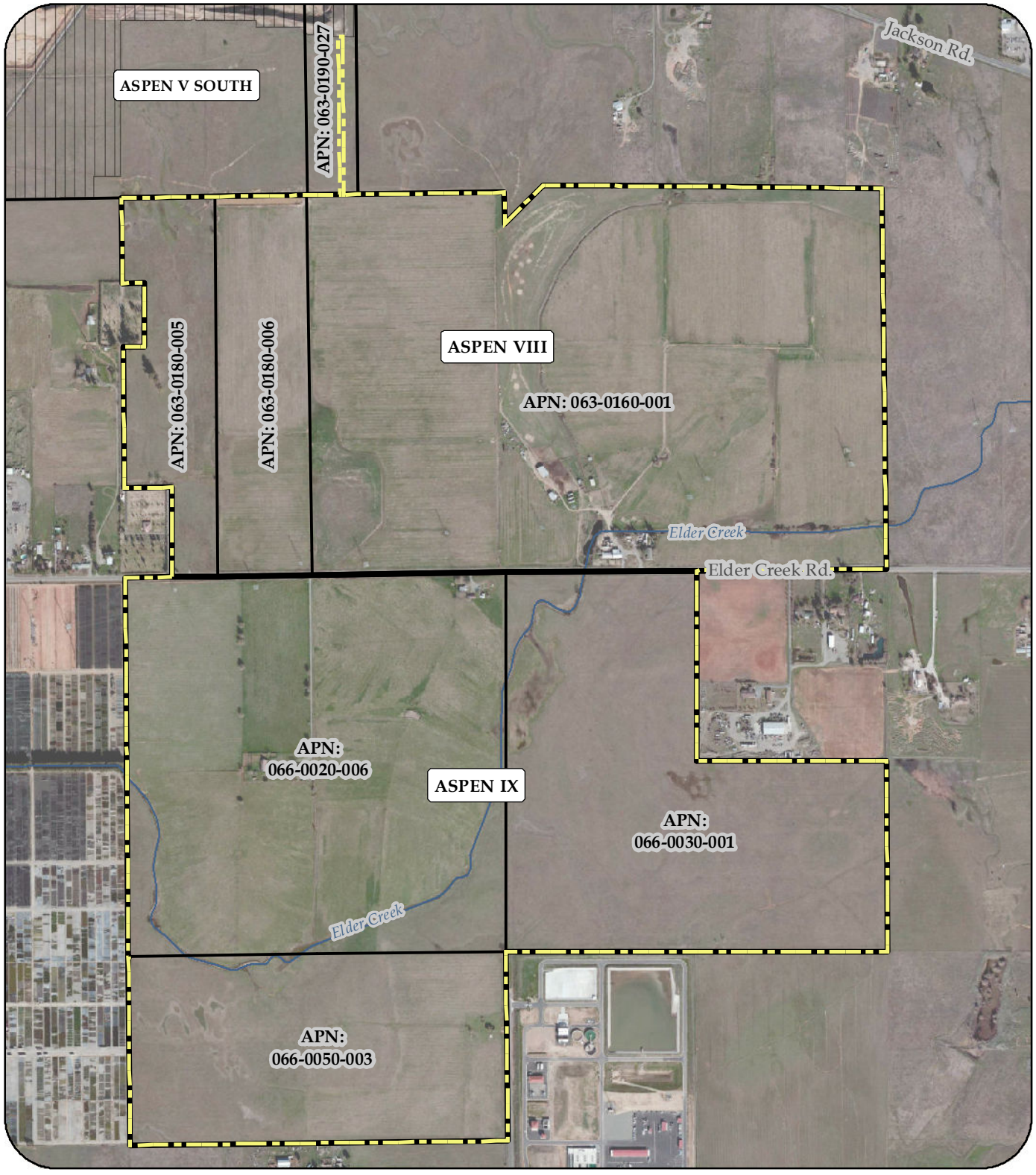
DISCLAIMER:

The data was mapped for assessment purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 1

SITE VICINITY

RARE PLANT REPORT
ASPEN VIII & IX
TEICHERT MATERIALS
SACRAMENTO COUNTY, CALIFORNIA



TEICHERT MATERIALS

LEGEND:

- Project Parcel Boundaries
- Project Boundary
- Aspen VIII & IX Property Boundary
- Aspen V South Approved Mining Boundary

0 500 1,000 Feet

SOURCE:

- Orthophoto Provided by Digital Globe (Feb. 2012)

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

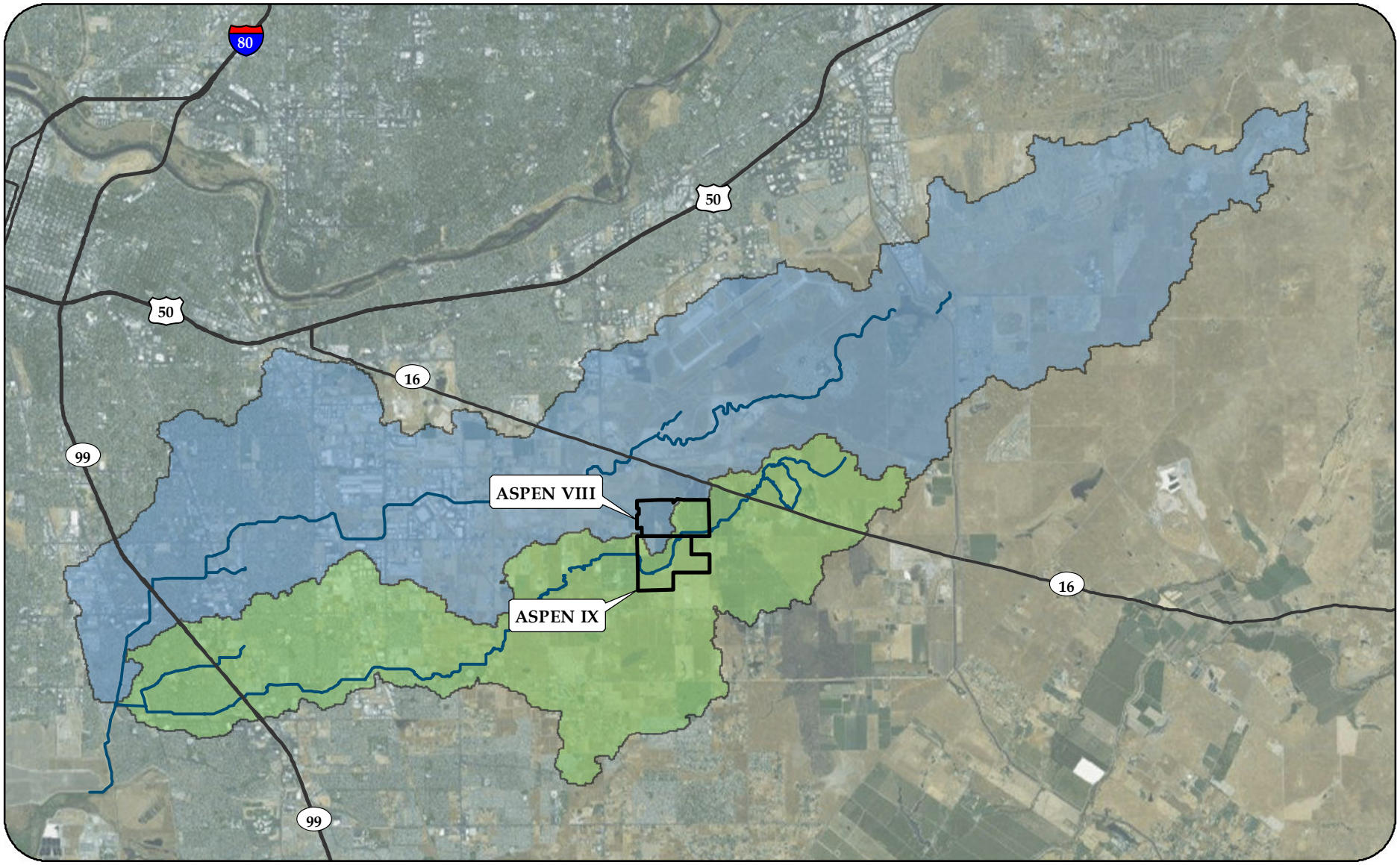
FIGURE 2

PROJECT SITE MAP

RARE PLANT REPORT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/13/2014 AS8_AS9_RarePlant_Fig2_Site_201410.mxd



TEICHERT MATERIALS

LEGEND:

- Morrison Creek & Elder Creek
- Morrison Creek Watershed
- Elder Creek Watershed
- Aspen VIII & IX Property Boundaries

SOURCE:

- Watersheds Provided by Foothill & Associates (2010)
- Aerial Photography Provided by ESRI Basemaps & Affliates (Feb. 2012)

0 1 2 Miles

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 3
MORRISON CREEK/ELDER CREEK WATERSHED MAP
RARE PLANT REPORT
ASPEN VIII & IX
TEICHERT MATERIALS
SACRAMENTO COUNTY, CALIFORNIA

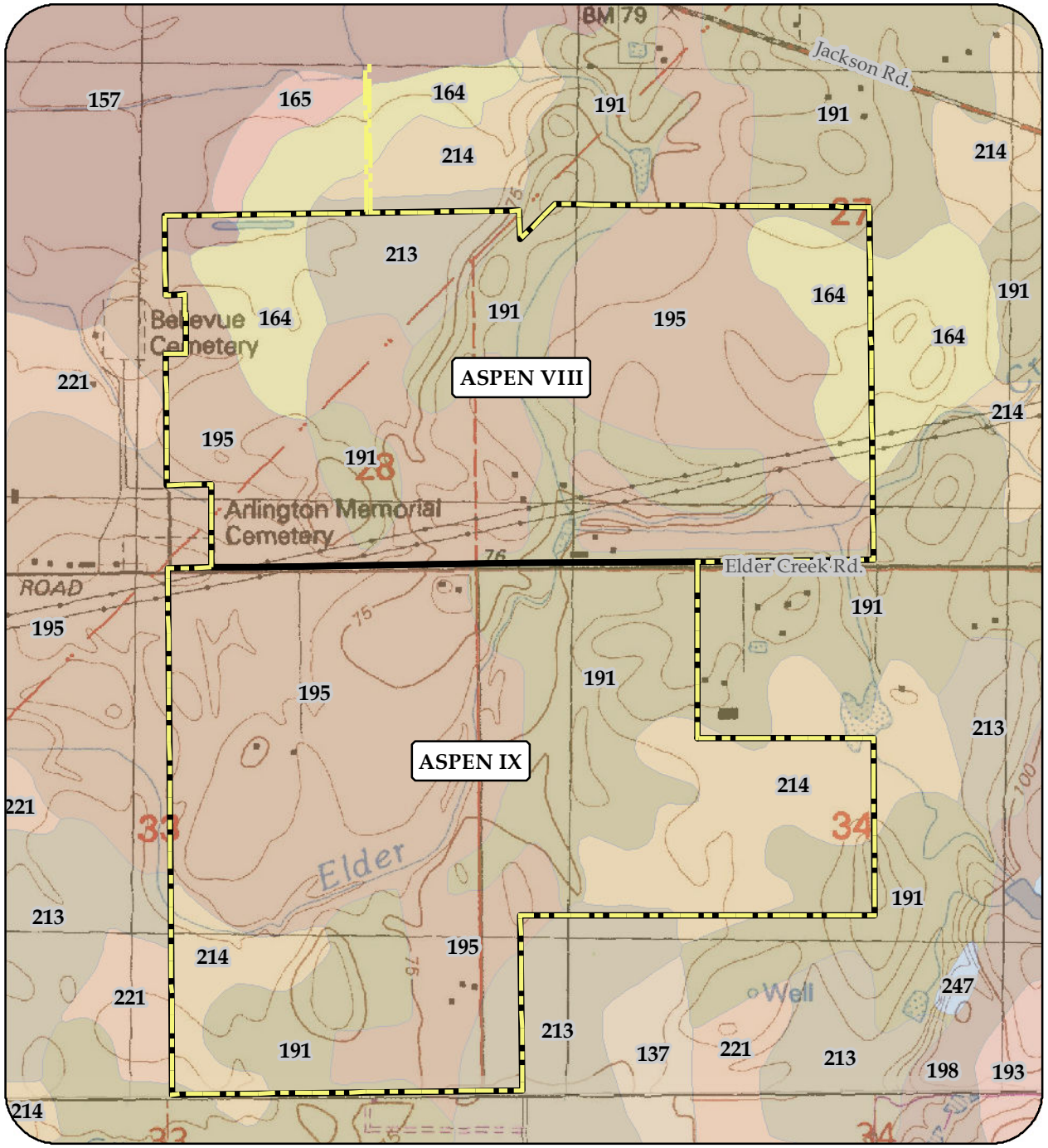
C. Cornejo 10/06/2014 AS8_AS9_RarePlant_Fig3_Watershed_201410.mxd

FIGURE 4

NATURAL RESOURCES CONSERVATION SERVICE SOIL TYPES

RARE PLANT REPORT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA



LEGEND:

NATURAL RESOURCES CONSERVATION SERVICE SOIL TYPES:

- 137- Durixeralfs, 0 to 1 percent slopes
- 157- Hedge loam, 0 to 2 percent slopes
- 164- Kimball silt loam, 0 to 2 percent slopes
- 165- Kimball silt loam, 2 to 8 percent slopes
- 191- Red Bluff loam, 0 to 2 percent slopes
- 193- Red Bluff-Redding complex, 0 to 5 percent slopes
- 195- Red Bluff-Xerarents complex, 0 to 2 percent slopes
- 198- Redding gravelly loam, 0 to 8 percent slopes
- 214- San Joaquin silt loam, 0 to 3 percent slopes
- 213- San Joaquin silt loam, leveled, 0 to 1 percent slopes
- 221- San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes
- 247- Water
- Project Boundary
- Aspen VIII & IX Property Boundaries

0 600 1,200 Feet

SOURCE:

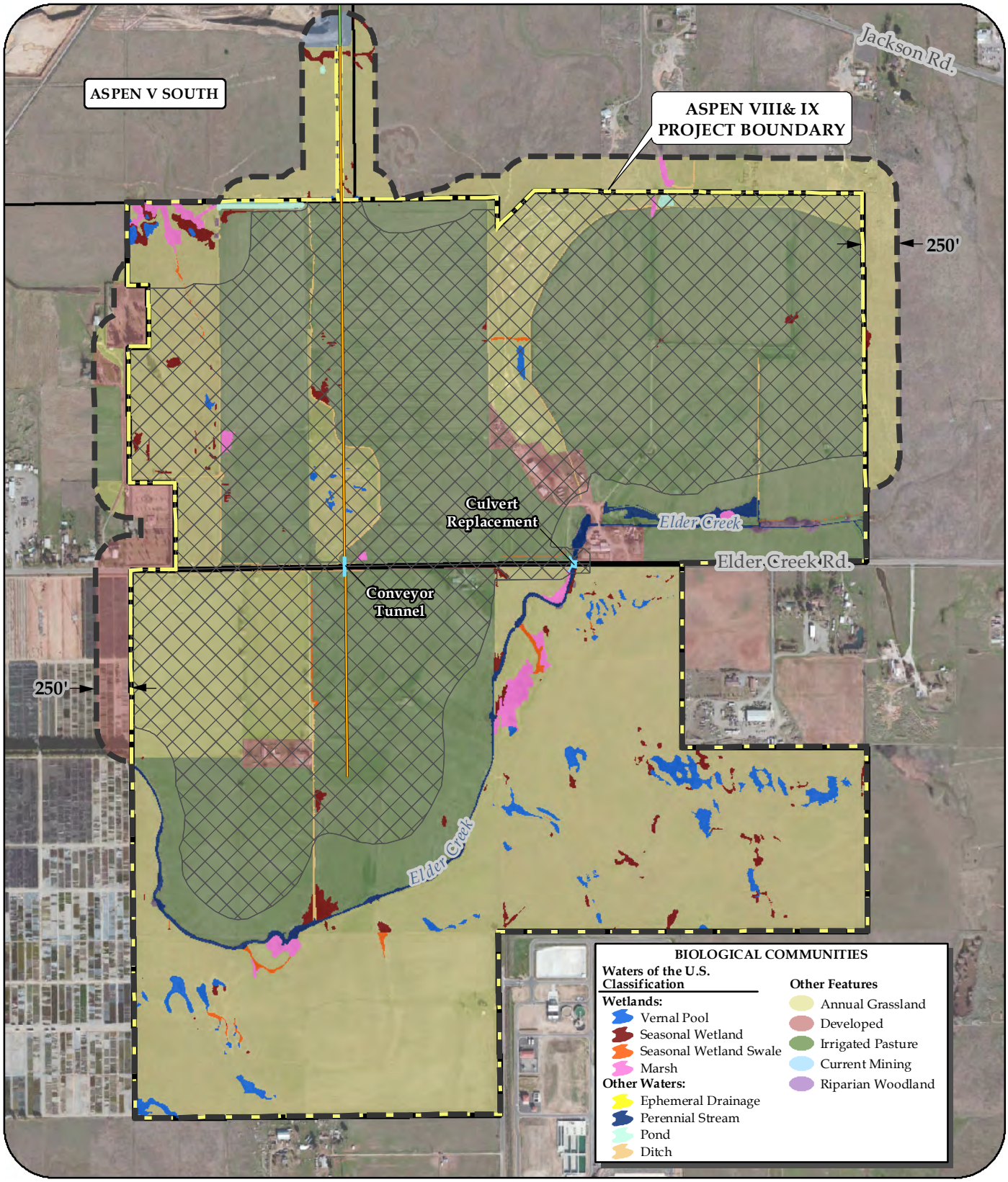
Soil Survey Provided by NRCS (Nov. 26, 2013)
USGS 7.5' Quads: Carmichael & Elk Grove
Property Boundary Provided by RFE Engineering (Mar. 2014)

DISCLAIMER:

The data was mapped for planning purposes only.
No liability is assumed for the accuracy of the data shown.

TEICHERT MATERIALS

C. Cornejo 10/06/2014 AS8_AS9_RarePlant_Fig4_Soils_201410.mxd



TEICHERT MATERIALS

LEGEND:

- Existing Conveyor Alignment
- Proposed Conveyor Alignment
- Proposed Conveyor Tunnel/ Culvert Replacement
- Rare Plant Study Survey Area
- Limits of Disturbance
- Project Boundary
- Aspen VIII & IX Property Boundary

SOURCE:

- Wetland Delineation Provided by ECORP (April 02, 2014)
- Orthophoto Provided by Digital Globe (Feb. 2012)

0 500 1,000 Feet

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

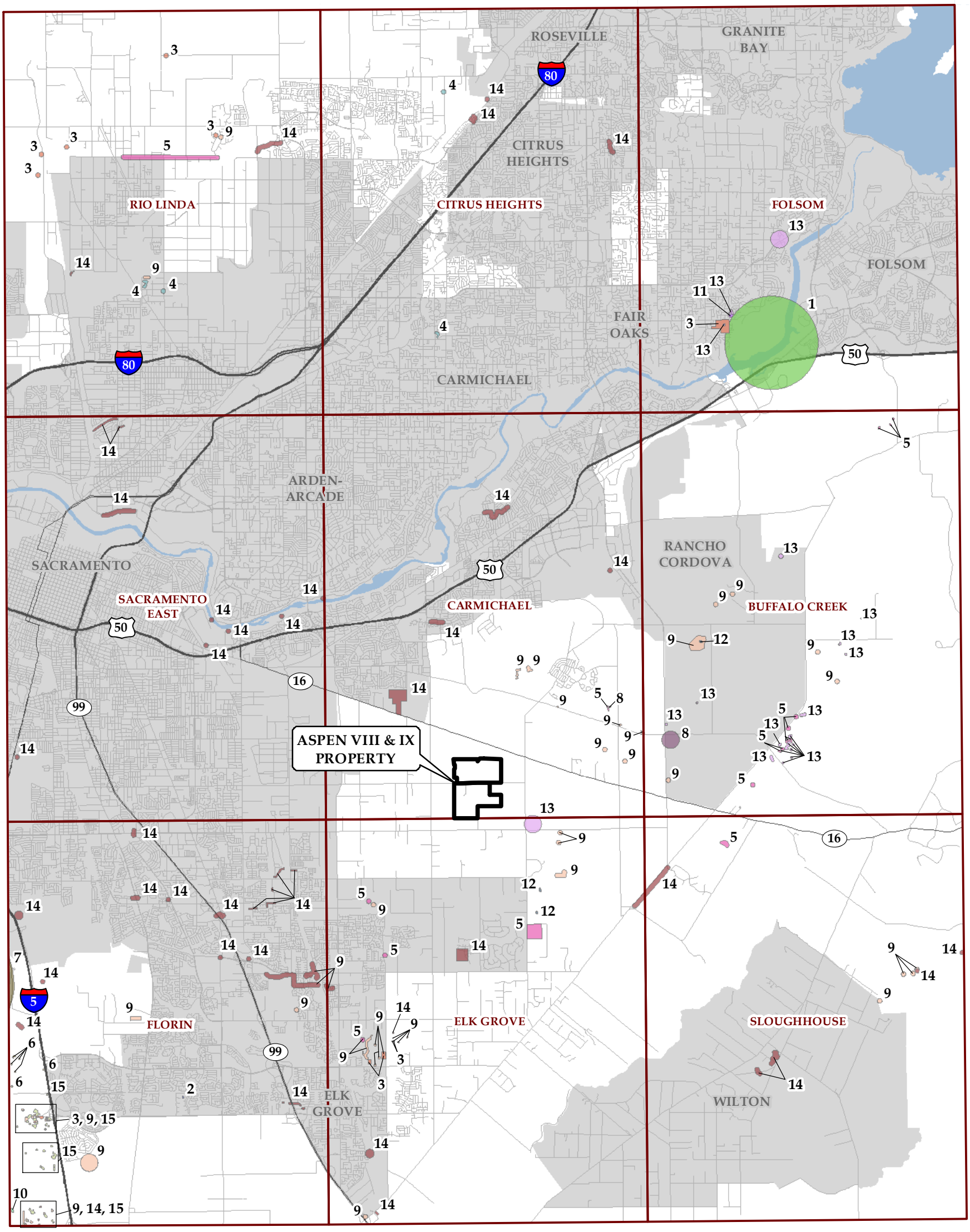
FIGURE 5

HABITATS AND WETLANDS

RARE PLANT REPORT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 6/16/2015 AS8_AS9_RarePlant_Fig5_Bio_201506.mxd



CNDDB RARE PLANT SPECIES:

1 - Clarkia biloba ssp. brandegeeae
2 - Cuscuta obtusiflora var. glandulosa
3 - Downingia pusilla
4 - Fritillaria agrestis
5 - Gratiola heterosepala
6 - Hibiscus lasiocarpos var. occidentalis
7 - Juglans hindsii
8 - Juncus leiospermus var. ahartii
9 - Legenere limosa
10 - Lepidium latipes var. heckardii
11 - Navarretia myersii ssp. myersii
12 - Orcuttia tenuis
13 - Orcuttia viscida
14 - Sagittaria sanfordii
15 - Trifolium hydrophilum

TEICHERT MATERIALS

LEGEND:

Aspen VIII & IX Property Boundary

7.5' USGS Quad Boundaries

0 6,000 12,000 Feet

SOURCE:
CNDDB Provided by CDFW (August 2014)

DISCLAIMER:
The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 6

CNDDB RARE PLANT LOCATIONS

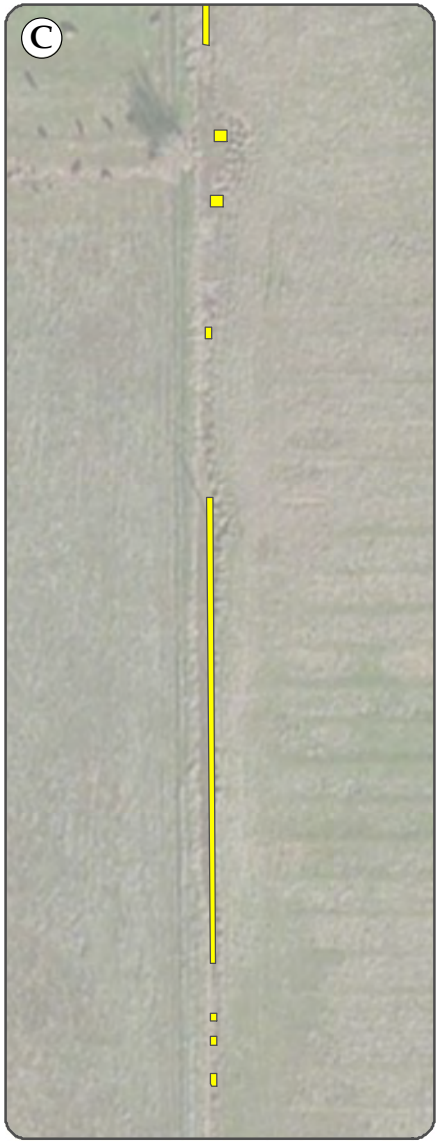
RARE PLANT REPORT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/06/2014 AS8_AS9_RarePlant_Fig6_CNDDB_201410.mxd







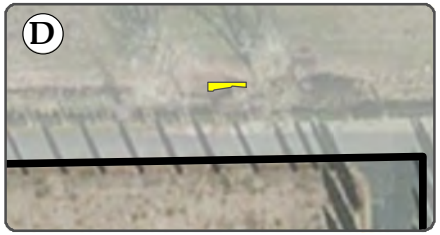


FIGURE 7

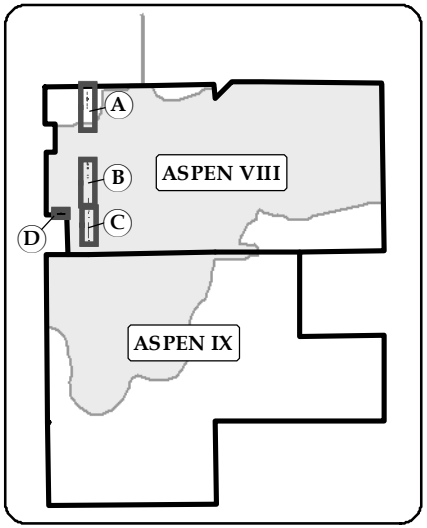
RARE PLANT LOCATIONS

RARE PLANT REPORT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

LEGEND:

- Sanford's Arrowhead Observed Locations
- Limits of Disturbance
- Aspen VIII & IX Property Boundaries



0 50 100 Feet

SOURCE:
Aerial Photography Provided by
ESRI Basemaps & Affliates (Feb. 2012)

DISCLAIMER:
The data was mapped for planning purposes only.
No liability is assumed for the accuracy of the data shown.

TEICHERT MATERIALS

C. Cornejo 6/16/2015 AS8_AS9_RarePlant_Fig7_RarePlantLocs_201506.mxd

APPENDIX A

Teichert – Aspen VIII & IX Rare Plant Survey
Special-Status Plant Species Known or Potentially Known to Occur within the Project Vicinity

Table A-1

Special-Status Plant Species Known or Potentially Known to Occur at Teichert's Aspen VIII/IX Property

Species	Fed / CA / CNPS Status	Distribution	Habitat	Flowering Period	Habitat Suitability at Site
California androsace *Androsace elongata* ssp. *acuta*	- / - / 4.2	Scattered locations throughout California Elev. 15-2000m.	Annual herb typically on dry grassy slopes in a variety of habitats, including foothill and valley grassland.	March – June	Unlikely/Low Potential
Depauperate milkvetch *Astragalus paupercaulus*	- / - / 4.3	Northeastern Sierra Nevada Foothill from Shasta Co. south to Placer Co. Elev. 150-1200 m.	Annual herb usually found on open, vernally-moist, volcanic clays & grassy flats.	March – June	Unlikely/Low Potential
Ferris' milkvetch *Astragalus tener* var. *ferrisiae*	- / - / 1B.1	Sacramento Valley region from Butte Co. south to Solano Co. Elev. <75 m.	Annual herb of alkaline flats, vernally moist meadows, & fallow rice fields.	April – May	Unlikely/Low Potential
Alkali milkvetch *Astragalus tener* var. *tener*	- / - / 1B.2	Central Valley & San Francisco Bay area from Yolo Co. south to Merced, San Benito & Monterey Cos. Elev. < 60 m.	Annual herb of alkali meadows, vernal pools & playas, edges of salt marshes, & moist grassy flats.	March – June	Unlikely/Low Potential
Heartscale *Atriplex cordulata* var. *cordulata*	- / - / 1B.2	Western Central Valley from Glenn Co. south to Tulare & San Luis Obispo Cos. Elev. < 200 m.	Annual herb of alkali grassland, alkali meadow & alkali scrub. Occasional on margins of alkali pools.	April – Oct.	No Habitat Present
Brittlescale *Atriplex depressa*	- / - / 1B.2	Western Central Valley from Glenn & Butte Cos. South to Kern Co. Elev. < 320 m.	Annual herb occurring on alkali flats, alkali scrub, alkali grassland & playas.	May – Oct.	No Habitat Present
San Joaquin saltbush *Atriplex joaquiniana*	- / - / 1B.2	Western Central Valley & Inner South Coast Range from Glenn Co. south to San Luis Obispo Co. Elev. < 835 m.	Annual herb occurring on alkali flats, alkali scrub, alkali grassland, & playas.	April – Oct.	No Habitat Present
Vernal pool smallscale *Atriplex persistens*	- / - / 1B.2	Central Valley from Glenn Co. south to Tulare Co. Elev. < 115 m.	Annual herb found in the deeper portions of large, alkaline vernal pools.	June – Oct.	No Habitat Present
Hispid bird's-beak *Cordylanthus mollis* ssp. *hispidus*	- / - / 1B.1	Scattered locations throughout San Joaquin Valley. Also Solano & Alameda Cos. & near Rocklin in Placer Co. Elev. < 150m.	Annual herb inhabiting saline marshes, alkali flats, & alkali vernal pools.	June – Sept.	No Habitat Present
Palmate bird's-beak *Cordylanthus palmatus*	E / E / 1B.1	Central Valley from Glenn Co. south to Fresno Co. Also Livermore Valley in Alameda Co. Elev. < 150 m.	Annual herb of saline alkali flats, alkali scrub, & alkali grassland.	May – Oct.	No Habitat Present

Table A-1

Special-Status Plant Species Known or Potentially Known to Occur at Teichert's Aspen VIII/IX Property

Species	Fed / CA / CNPS Status	Distribution	Habitat	Flowering Period	Habitat Suitability at Site
Dwarf downingia *Downingia pusilla*	- / - / 2B.2	Central Valley from Tehama Co. south to Fresno Co. Also in valleys north of S.F. in Napa & Sonoma Cos. Elev. < 450 m.	Annual herb of vernal pools & swales, ephemeral drainages, & margins of other seasonal wetlands.	March – May	Moderate Potential
Tuolumne button-celery *Eryngium pinnatisectum*	- / - / 1B.2	North-central Sierra Nevada Foothill & adjacent valley from Sacramento Co. south to Tuolumne Co. Elev. 70-900 m.	Annual to perennial herb occurring in swales, vernal pools, moist flats, & ephemeral drainages.	May – August	Unlikely/Low Potential
Boggs Lake hedge-hyssop *Gratiola heterosepala*	- / E / 1B.2	Central Valley & foothills from Shasta to Tulare Co. Also occurs in Lake Co., Modoc Plateau, & Oregon. Elev. < 1200 m.	Annual herb found along marshy lake margins, cattle ponds, & in vernal pools.	April – Aug.	Moderate Potential
Hogwallow starfish *Hesperevax caulescens*	- / - / 4.2	Central Valley & adjacent foothills from Tehama Co. south to Kern Co. Also reported in San Diego Co. Elev. < 500 m.	Annual herb occupying vernal pools, vernal swales, & heavy clay soils.	March – June	Moderate Potential
Rose mallow *Hibiscus lasiocarpos* var. *occidentalis*	- / - / 1B.2	Sacramento Valley and the northern part of San Joaquin Valley. Most records are from the Sacramento River/Delta waterways. Elev. < 120m.	Perennial herb growing on the margins of freshwater marshes, wet riverbanks, and peat islands in sloughs.	June – Sept	Unlikely/Low Potential
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	- / - / 1B.2	Eastern Sacramento Valley from Tehama Co. south to Sacramento Co. Also found in Calaveras Co. Elev. 30-100 m.	Annual herb found in vernal pool, swales & ephemeral drainages.	March – May	Moderate Potential
Legenere *Legenere limosa*	- / - / 1B.1	Northern Central Valley (Shasta to San Joaquin Co.) & Inland Coast Range (Sonoma to Santa Clara Co.). Elev. < 880 m.	Annual herb of vernal pools, seasonal wetlands, drainages, & along margins of cattle ponds.	April – June	Moderate Potential
Heckard's peppergrass *Lepidium latipes* var. *heckardii*	- / - / 1B.2	Western Sacramento Valley from Glenn Co. south to Solano Co. Elev. < 200 m.	Annual herb occurring on alkali flats and alkali grassland near the margins of vernal pools.	March – May	No Habitat Present
Hoary navarretia *Navarretia eriocephala*	- / - / 4.3	Southeastern Sacramento Valley & northern & central Sierra Nevada Foothill from Yuba to Tuolumne Co. Elev. 100-400 m.	Annual herb of seasonally wet flats, usually in heavy soil.	May – June	Unlikely/Low Potential

Table A-1

Special-Status Plant Species Known or Potentially Known to Occur at Teichert's Aspen VIII/IX Property

Species	Fed / CA / CNPS Status	Distribution	Habitat	Flowering Period	Habitat Suitability at Site
Tehama navarretia *Navarretia heterandra*	- / - / 4.3	Scattered throughout northern California & southern Oregon. Elev. 30-1000 m.	Annual herb typically growing heavy soils, vernal pools, & drying flats.	April – June	Unlikely/Low Potential
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	- / - / 1B.1	Western Sacramento Valley & northern Inland Coast Range from Glenn & Mendocino Cos. to Solano Co. Elev. < 1700 m.	Annual herb growing in vernal pools and ephemeral drainages.	April – July	Unlikely/Low Potential
Myer's pincushion navarretia *Navarretia myersii* ssp. *myersii*	- / - / 1B.1	Eastern Central Valley & adjacent Sierra Nevada Foothill from Placer Co. south to Merced Co. Elev. 20-330 m.	Annual herb found in vernal pools, usually with acidic soils.	April – May	Moderate Potential
Adobe navarretia *Navarretia nigelliformis* ssp. *nigelliformis*	- / - / 4.2	Scattered locations from the Sierra Nevada Foothills, Central Valley & Inner South Coast Ranges. Elev. 100-1000 m.	Annual herb occurring in vernal pools & vernally moist swales.	April – June	Unlikely/Low Potential
Slender orcutt grass *Orcuttia tenuis*	T / E / 1B.1	Scattered from the Sacramento Valley north to the Modoc Plateau area. Also occurs in Lake Co. Elev. 30-1700 m.	Annual grass generally restricted to deeper vernal pools & other ephemeral wetlands with clay soils.	May – Oct	Moderate Potential
Sacramento orcutt grass *Orcuttia viscida*	E / E / 1B.1	Known only in Sacramento County (from about Phoenix Field to approximately Rancho Seco). Elev. 30-100 m.	Annual grass generally found in larger, deeper vernal pools.	April – Sept	Moderate Potential
Sanford's arrowhead *Sagittaria sanfordii*	- / - / 1B.2	Widely distributed throughout the Central Valley from Shasta Co. to Kern Co. Elev. < 650m.	Perennial herb occurring along the margins of small lakes and ponds and slow-moving sloughs, creeks, rivers, ditches, and canals.	May - Aug	Present/High Potential
Saline clover *Trifolium depauperatum* var. *hydrophilum*	- / - / 1B.2	Central Western California (Sonoma Co. to San Luis Obispo Co.) & southwestern Sacramento Valley. Elev. < 300 m.	Annual herb of salt marshes, alkali meadows, & vernal pools.	April – June	Unlikely/Low Potential

APPENDIX B

Teichert – Aspen VIII & IX Rare Plant Survey
Species Accounts

Dwarf Downingia

Downingia pusilla

Federal Listing Status: None
State Listing Status: None
CNPS Rare Plant Rank: 2B.2



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Dwarf downingia is an inconspicuous, annual member of the Bellflower family (Campanulaceae). Depending on location, plants are quite variable, with some growing as small-stature plants less than 3 centimeters tall and others producing sprawling stems up to 15 centimeters long. Floral characteristics are the most distinguishing features separating this rare species from other, more common downingia species. Unlike other species in the genus, dwarf downingia flowers are tiny (2.5 to 4 millimeters) and lack the strong bilateral symmetry characteristic of other *Downingia* flowers. Dwarf downingia flowers are creamy white to occasionally pale blue, with two small yellow spots near the throat. Flowering typically occurs from March through May. Like most *Downingia* species, it is almost impossible to identify to species without flowers.

This species is largely restricted to wetlands with a strict endemic of the vernal pool hydrologic cycle. The species appears to occupy a range of pool sizes and depths, with most records indicating that the species prefers smaller and/or shallower vernal pools with comparatively 'flashy' hydrology (CNDDB 2014). The species will also frequently occupy ephemeral drainages and swales and the seasonally fluctuating vernal pool-like edges of stock ponds and seasonal marshes (Baba pers. obs.). Dwarf downingia does not appear to be associated with any specific landforms or soil associations.

Dwarf downingia is documented from 127 occurrences in California's vernal wetlands, generally below 150 meters elevation (CNDDB 2014). In California, the species' range extends from the northern San Joaquin Valley (Merced and Fresno counties) in the south through the Sacramento Valley to Tehama County in the north. It is also known from the Interior valleys on the Coast Range north of San Francisco (Napa and Sonoma counties). Most occurrences occupy a belt from Sonoma County to the southern Sacramento Valley. Dwarf downingia, like some other members of the annual vernal pool flora, is also known from disjunct localities in Chile.

The nearest known occurrence of dwarf downingia is approximately 4.9 miles south-southwest from the site (CNDDB Occurrence No. 54) (CNDDB 2014). This population is located in vernal pools east of Waterman Road, between Sheldon Road and Bond Road in Elk Grove. The population is till presumed extant. Vernal pools, swales and hydrologically similar margins of seasonal marshes and ponds at the site are considered potential habitat for the species. Considering the relatively close proximity of nearby populations and wide geographical range, Dwarf downingia could be expected to occur at the site.

Boggs Lake Hedge-Hyssop

Gratiola heterosepala



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Federal Listing Status: None
State Listing Status: Endangered
CNPS Rare Plant Rank: 1B.2

Boggs Lake hedge-hyssop is diminutive annual of the Plantain family (Plantaginaceae). This species grows erect with stems reaching 2 to 10 centimeters in height. The stems produce small, opposite leaves about 1 to 2 centimeters long, with the lower ones tending to be longer and leaner than the shorter and wider ones above. The upper leaves are also notably blunt at their tips. One to several tubular flowers are produced at the tips of stem, which are glandular puberulent. The flowers are pale yellow to white and only about 6 to 8 millimeters long. Blooming usually occurs in spring between April and June, depending on the specific location. This species is distinguished from the relatively common bractless hedge-hyssop (*Gratiola ebracteata*) by its more truncate leaves and yellow flowers. Boggs Lake hedge-hyssop also has shorter, unequal sepals that are fused at the base (Baldwin et. al. 2012).

Boggs Lake hedge hyssop is found in a wide geographic area but is strictly associated with the vernal pool-type hydrologic cycle. This species has been reported to grown in vernal pools and playa lakes, as well as seasonal stock ponds and fluctuating lake margins. Most occurrences are from well-developed large or deep vernal pools that exhibit more extreme, longer inundation periods, often where interspecies completion is lower. Associated species indicative of these longer inundated pools include hairy pepperwort (*Marsilia vestita*), quillwort (I*soetes* spp.), downingia (*Downingia* spp.), smooth goldfields (*Lasthenia glaberrima*), elatine (*Elatine* spp.), coyote thistle (*Eryngium castrense* and E. *vaseyi*), and bractless hedge-hyssop.

Boggs Lake hedge hyssop was first collected in 1954 from Bogg's Lake in Lake County, California. Since that time, numerous additional occurrences have been recorded, ranging from the Modoc Plateau, through the Sacramento Valley, Inner North Coast Range, and central Sierra Nevada Foothills, south to Merced and Fresno Counties in the San Joaquin Valley Region. Most records are from Tehama and Modoc Counties and are associated with northern volcanic mudflow vernal pools of the northern Sacramento Valley and Modoc Plateau.

The nearest known location of Boggs Lake hedge hyssop is approximately 2.5 miles of northwest of the site, at Mather Field (CNDDB Occurrence No. 84) (CNDDB 2014). These plants were recorded growing in deeper vernal pools and still presumed extant. Vernal pools inundated for longer periods and the margins of seasonal marshes ponds at the site are considered potential habitat for the species. Considering its wide distribution and relatively close proximity of nearby populations, Boggs Lake hedge hyssop could be expected to occur within the Project site.

Ahart's Dwarf Rush

Juncus leiospermus var*. ahartii*

Federal Listing Status: None
State Listing Status: None
CNPS Rare Plant Rank: 1B.2



© 2012 Barry Baba

Ahart's dwarf rush is an inconspicuous annual member of the Rush family (Juncaceae). Ahart's dwarf rush is a green to reddish grass-like plant reaching 2 to 10 centimeters tall. Each plant may produces one to several, erect, thread-like stems from a basal cluster of grass-like leaves. Each stem produces a single, tiny flower at the tip. The flowers are small (less than 0.5 centimeters) and consist of 6 to 10 dark brown, pointed scales, three stamens, and an ovary with a long three-branched style. Flowering generally occurs from late-March through May. Other small, common annual rushes that may co-exist with Ahart's dwarf rush include toad rush (*Juncus bufonius*), leafy-bracted rush (*Juncus capitatus*), and inch-high rush (*Juncus uncialis*). Ahart's dwarf rush is most easily distinguished from the others by its comparatively long style (very short in inch-high rush), simple stem (branched in toad rush), single terminal flower (axillary in toad rush and clustered at tip in leafy-bracted rush) and relatively short inflorescence bract (much longer in leafy-bracted rush).

Ahart's dwarf rush grows in a variety of seasonal wetland type habitats, but appears to by restricted to acidic soils in vernal pool complexes. Although Ahart's dwarf rush has been recorded growing with more "deeply-adapted" vernal pool associates, most records indicate that the species prefers the margins of vernal pools or in swales and seasonal wetlands where hydrologic conditions are more "flashy." In addition, this species is also known to occur on gopher mounds along the margins of these wetlands (CDFG 2014).

Presently, Ahart's dwarf rush is known from only 13 occurrences throughout the Great Central Valley. Populations are recorded from Tehama County in the north to Calaveras County in the south, with elevations ranging from 30 to 90 meters (CDFG 2014). Most occurrences are from Butte and Sacramento County.

The nearest known occurrence of Ahart's dwarf rush is approximately 1.8 miles northeast of the site, at Mather Field just west of Eagles Nest Road (CNDDB Occurrence No. 8). These plants are located in in shallow vernal pools and along vernal swales and still presumed extant. Vernal pools inundated for longer periods and the margins of seasonal marshes at the site are considered potential habitat for the species. Considering the relatively close proximity of nearby populations and wide geographical range, Ahart's dwarf rush could be expected to occur at the site.

Legenere

Legenere limosa

Federal Listing Status: None
State Listing Status: None
CNPS Rare Plant Rank: 1B.1



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Legenere is an inconspicuous, annual member of the Bellflower family (Campanulaceae). This plant grows with sprawling stems that reach 10 to 30 centimeters in length. Its slender stems, which are produced underwater, often form roots along the lower nodes and eventually rise out of water or are left growing entangled within a mass of other vegetation. Due to its cryptic, delicate stature, the plant is notoriously overlooked and difficult to detect. Probably the most distinguishing feature of this plant is its cylindrical fruit capsule (about ½ to 1 centimeter long) that is present at the end of each elongated flower stalk, which may be as long as 3 centimeters. Most plants do not have any petals and are generally observed with just their narrowly, triangular-shaped sepals at the tip of each fruit capsule. Sometimes, however, tiny flowers are present and resemble other flowers in its family. If present, the flowers are white with a greenish-yellow center and are fused into a bilaterally symmetrical lobed corolla about 3 to 4 millimeters long. Flowering typically occurs from April to June.

Legenere grows in a variety of wetland habitats including vernal pools, seasonal marshes, floodplains of intermittent streams, and along the margins of cattle stock ponds. Legenere is associated with a wide range of physiographic/edaphic landscapes. Most records indicate that the species prefers the shallower areas of seasonal pools that are inundated for longer periods than average and typically support at least some perennial species such as spikerush (*Eleocharis macrostachya*).

This species' range includes the northern Central Valley from Shasta to San Joaquin Counties and the Inland Coast Range from Lake to Santa Clara County. Populations are reported 78 occurrences, ranging in elevation from less than 950 meters. (CNDDB 2014) The majority of known extant records are concentrated in Solano and Sacramento counties, with other scattered occurrences in Alameda, Lake, Napa, Sonoma, San Mateo, Santa Clara, Placer, Yuba, and Shasta counties (Holland 1983; Platenkamp 1998; CNDDB 2014).

The nearest known occurrence of Legenere is approximately 1.4 miles south of the site (CNDDB Occurrence No. 29) (CNDDB 2014). Two colonies were identified growing in vernal pools just south of Florin Road and 0.7 miles east of Excelsior Road. Vernal pools inundated for longer periods and the margins of seasonal marshes at the site are considered potential habitat for the species. Considering the relatively close proximity of nearby populations and wide geographical range, Legenere could be expected to occur within the Project site.

Pincushion Navarretia

Navarretia myersii subsp. *myersii*

Federal Listing Status: None
State Listing Status: None
CNPS Rare Plant Rank: 1B.1

Pincushion navarretia is an annual member of the Phlox family (Polemoniaceae). This plant has a distinctive characteristic in that it grows very prostrate, often appearing almost mat-like without stems. Although present, stems are typically less than 2 centimeters long. It produces long, thread-like leaves (4 to 8 centimeters) that radiate from the base of the inflorescence. The inflorescence is a cluster of numerous white, sessile, tubular flowers, each about 1 to 2 centimeters long. The species is may be seen flowering from mid-April through May (Dittes and Guardino 2001, CNPS 2014). Pincushion navarretia is most readily distinguished from the more common white-headed navarretia (*Navarretia leucocephala* subsp. *leucocephala*) by its low-growing stems and longer, tubular flowers.

Pincusion navarretia is a strict vernal pool endemic, often occurring in pools with moderate to highly acidic soils (CNPS 2014). Based on known populations and those observed in eastern Merced County, the species was associated with the ancient, weathered alluvial terraces comprising the Valley Springs and Ione Geologic Formations (Dittes and Guardino 2001). Generally, pincushion navarretia is presumed to occupy smaller and/or shallower pools where hydrologic conditions may be more 'flashy.' Associated species in these shallower pools or margins include annual hairgrass (*Deschampsia danthonioides*), Fremont's goldfields (*Lasthenia fremontii*), vernal pool popcornflower (*Plagiobothrys stipitatus*), coyote thistle (*Eryngium* spp.), wooly marbles (*Psilocarphus* spp.), and Sacramento Valley pogogyne (*Pogogyne zizyphoroides*).

Presently, pincushion navarretia is known from 14 occurrences along the eastern portion of the Central Valley and adjacent Sierra Nevada Foothill from Placer County south to Merced County, between 20 and 330 meters elevation (CNPS 2014). A more rare subspecies, small pincushion navarretia (*Navarretia myersii* supbsp. *deminuta*), is also known from the Coast Range in Lake County.

The nearest known location of this species is approximately 10.6 miles northeast of the site, in the Department of Fish and Wildlife Phoenix Field Ecological Reserve (CNDDB Occurrence No. 3) (CNDDB 2014). The species occurs in two pools within the south half of the Preserve and are still presumed extant. The smaller, shallow pools at Aspen VIII & IX are considered potential habitat for pincushion navarretia. Considering the relatively close proximity of nearby populations, this species could be expected to occur within the Project site.

Slender Orcutt Grass

Orcuttia tenuis

Federal Listing Status: Threatened
State Listing Status: Endangered
CNPS Rare Plant Rank: 1B.1

Slender Orcutt grass is an annual member of the distincitive Orcuttieae Tribe in the grass family (Poaceae). This plant grows loosely tufted with slender, erect stems reaching approximately 5 to 15 centimeters. The leaves grow to be about 1.5 to 2 millimeters wide and may appear bluish-green in color. The stems are sparsely hairy and covered with droplets of a sticky, highly aromatic exudate. This feature is common in other members of the Orcutt grasses. Individual spikelets of slender Orcutt grass are evenly spaced along the inflorescence axis, which comprises more than half the plant's height. Flowering may occur between May and September (usually May or June in the Central Valley), and sometimes October, making it one of the latest blooming members of the Orcutt grasses. Other distinguishing characteristics are its equally five-toothed lemmas and stems that are frequently branching from its upper nodes. This species is also less hairy than most other Orcutt grasses.

Slender Orcutt grass is found primarily in vernal pools on substrates of volcanic orgin, but have also been found in places such as stock ponds and borrow pits. Orcutt grasses are strongly adapted to deeper vernal pools with more extreme hydrologic regimes. Interestingly, this species appears to be the least specific of Orcutt grasses with regard to specific habitats niches. This is confirmed by its occupation of a wider range of vernal pool sizes and vernal wetland types, as well as occurrences over a wider geographical range and landform types.

Slender Orcutt grass has been documented from 96 occurrences, which includes a wide range of elevations corresponding to its broad geographical range (CNDDB 2014). The lowest reported elevation is 27 meters in Sacramento County and the highest is 1,756 meters in Plumas County. The species is found from Modoc County south to Sacramento County, with large concentrations occurring in Tehama County and the Modoc Plateau Vernal Pool Region.

The nearest documented occurrence of Slender Orcutt grass is approximately 2 south of the site (CNDDB Occurrence No. 16), in a narrow vernal pool west of Laguna Creek (CNDDB 2014). The population is till presumed extant. The larger, deeper pools that remain inundated for extended periods at the site are considered potential habitat for Sacramento Orcutt grass. Considering the relatively close proximity of nearby populations, this species could be expected to occur at Aspen VIII & IX.

Sacramento Orcutt Grass

Orcuttia viscida



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Federal Listing Status: Endangered
State Listing Status: Endangered
CNPS Rare Plant Rank: 1B.1

Sacramento Orcutt grass is an annual member of the unique Orcuttieae Tribe in the grass family (Poaceae). As with other members of the tribe, Sacramento Orcutt grass is a relatively small-stature, densely tufted plant that grows 3 to 10 centimeters tall. This species appears almost bluish-green and is covered in dense, sticky hairs. As with the majority of the Orcuttieae grasses, this species produces aromatic resinous exudates at majority. Flowering typically occurs in May and June. Although the plant resembles other members of its tribe, Sacramento Orcutt grass is distinguished from the other species by its relatively long and unequal lemma teeth.

Sacramento Orcutt grass occurs primarily in large vernal pools that remain inundated for prolonged periods. Soils associated with this species tend to be strongly acidic and support a well-developed silica-iron hardpan layer approximately 2 to 10 feet below the surface. Many plants may only grown in years when seasonal rainfall is sufficient, particularly when rains begin in November and continue through the end of April. This plant is less likely to germinate in years of below-normal precipitation than other members of the Orcuttieae grasses.

Sacramento Orcutt grass is endemic to the southeastern Sacramento Valley, and has always been restricted to Sacramento County. It is known from only 12 occurrences, most of which are still presumed extant (CNDDB 2014). The recorded range of the species extends in a narrow band from just north of the American River near Orangevale to the vicinity of Rancho Seco Lake on Arroyo Seco Mesa, approximately 26 miles to the south.

The nearest documented occurrence of Sacramento Orcutt grass is approximately 0.8 mile southeast of the site (CNDDB Occurrence No. 20); however, this population is presumed extirpated (CNDDB 2014). This occurrence was last observed in 1998 in a pool that is now a permanent marsh due to runoff from an adjacent nursery (CNDDB 2014). The nearest possible extant location is approximately 3.6 miles northeast of the site (CNDDB Occurrence No. 17), in vernal pools on the Anatolia Preserve east of Sunrise Boulevard and north of Kiefer Boulevard (CNDDB 2014). The larger, deeper pools that remain inundated for extended periods at the site are considered potential habitat for Sacramento Orcutt grass. Considering the relatively close proximity of nearby populations, this species could be expected to occur at Aspen VIII & IX.

Sanford's Arrowhead

Sagittaria sandfordii



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Federal Listing Status: None
State Listing Status: None
CNPS Rare Plant Rank: 1B.2

Sanford's arrowhead is an aquatic perennial member in the water-plantain family (Alismataceae). This emergent plant possesses linear to narrowly ovate leaves and typically grows 15 to 30 centimeters tall. Plants often grow densely and spread by underground rhizomes, which produce small spherical tubers at their tips. Separate male and female flowers are produced in three-whorled clusters, with the female clusters located basally. Relatively conspicuous, white petals (0.5 to 1 centimeter) are produced from May through August. The pedicels are also recurved rather than straight when in fruit (Baldwin et. al. 2012). Sanford's arrowhead is distinguished from its close relatives in that it does not possess sagittate (arrowhead-shaped) leaves.

Sanford's arrowhead is associated with the shallow margins of small lakes and ponds and slow-moving sloughs, creeks, rivers, and canals. Numerous populations have also naturalized in ditches associated with irrigation and other drainage systems. Little is known regarding the biology or ecology of the species, although it appears to tolerate a wide range of freshwater marsh environments. Most populations appear to have established by seeds, with existing colonies spreading mainly from rhizomes and tubers.

This species occupies a variety of freshwater marsh habitats and is widely distributed throughout the Central Valley between 0 and 650 meters. Sanford's arrowhead documented from 93 occurrences and is presently known from Shasta to Kern Counties, with the majority of records occurring in Sacramento County (CNDDB 2014). A disjunct population also occurs near Crescent City in Del Norte County. The species is presumed to have been extirpated from much of its historic range in southern California (Orange and Ventura Counties).

The nearest known occurrence of Sanford's arrowhead is approximately 1.8 miles northwest of the site (CNDDB Occurrence No. 25) (CNDDB 2014). These populations occur in two ponds at the Cordova Golf Course, just north of Jackson Road (Highway 16), and are still presumed extant. Existing ponds, irrigations ditches, marshes, and portions of Elder Creek are considered potential habitats for the species. Considering the close proximity of nearby populations and wide geographical range, Sanford's arrowhead could be expected to occur at the site.

APPENDIX C

Teichert – Aspen VIII & IX Rare Plant Survey
Flora Inventory

TEICHERT AGGREGATES

PERKINS – ASPEN VIII & IX
SACRAMENTO COUNTY

Flora Inventory
Spring/Summer 2013-14

LYCOPHYTES

ISOETACEAE (QUILLWORT FAMILY)

Isoetes orcuttii	Orcutt's quillwort

FERNS

AZOLLACEAE (MOSQUITO FERN FAMILY)

Azolla filiculoides	Water fern, Mosquito fern

MARSILEACEAE (MARSILEA FAMILY)

Marsilea vestita subsp. *vestita*	Hairy water-clover, Hairy pepperwort
Pilularia americana	American pillwort

GYMNOSPERMS

CUPRESSACEAE (CYPRESS)

*Calocedrus decurrens***	Incense cedar
*Sequoia semperivirens***	Redwood

PINACEAE (PINE FAMILY)

Pinus sp.**	Pine

MAGNOLIDS

LAURACEAE (LAUREL FAMILY)

*Cinnamomum camphora***	Camphor tree

ANGIOSPERMS, EUDICOTS

AMARANTHACEAE (AMARANTH FAMILY)

*Amaranthus albus**	Tumbleweed
*Amaranthus blitoides**	Procumbent pigweed
*Amaranthus retroflexus**	Redroot pigweed

ANACARDIACEAE (SUMAC OR CASHEW FAMILY)

*Pistacia atlantica**	Mt. Atlas mastic tree
Toxicodendron diversilobum	Western poison oak

APIACEAE (CARROT FAMILY)

*Conium maculatum**	Poison hemlock-thistle

* Non-native plants of California (Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepsom manual: vascular plants of California, second edition. University of California Press, Berkeley.)

** Ornamental, planted as landscape tree/shrub

Eryngium castrense	Great Valley coyote thistle

APOCYNACEAE (DOGBANE FAMILY)

Asclepias eriocarpa	Kotolo
Asclepias fascicularis	Narrow-leaf milkweed

ASTERACEAE (SUNFLOWER FAMILY)

*Anthemis cotula**	Dog-fennel
Carduus pycnocephalus subsp. *pycnocephalus**	Italian thistle
*Centaurea calcitrapa**	Purple star-thistle
*Centaurea solstitialis**	Yellow star-thistle
Centromadia fitchii	Fitch's spikeweed
*Cichorium intybus**	Chicory
*Cirsium vulgare**	Bull thistle
*Cotula coronopifolia**	Brass-buttons
*Dittrichia graveolens**	Stinkwort
Erigeron sp.	Horseweed
Gnaphalium palustre	Western marsh cudweed
*Helminthotheca echioides**	Bristly ox-tongue
Heterotheca grandiflora	Telegraph weed
Holocarpha virgata subsp. *virgata*	Sticky tarweed
*Hypochaeris glabra**	Smooth cat's-ear
*Lactuca serriola**	Prickly lettuce
Lasthenia glaberrima	Smooth goldfields
Lasthenia fremontii	Fremont's goldfields
Leontodon saxatilis subsp. *longirostris**	Common hawkbit
*Logfia gallica**	Daggerleaf cottonweed
Micropus californicus var. *californicus*	Cottontop
*Matricaria discoidea**	Pineapple weed
*Pseudognaphalium luteoalbum**	Common cudweed
Psilocarphus brevissimus var. *brevissimus*	Dwarf woolly-marbles
Psilocarphus tenellus	Slender woolly-marbles
*Senecio vulgaris**	Common groundsel
*Silybum marianum**	Milk thistle
*Soliva sessilis**	Common soliva, Field burrweed
Sonchus asper subsp. *asper**	Prickly sow thistle
*Sonchus oleraceus**	Common sow thistle
Wyethia angustifolia	Narrow-leaved mule's ear
*Xanthium spinosum**	Spiny cocklebur
Xanthium strumarium	Cocklebur

BETULACEAE (BIRCH FAMILY)

*Betula pendula***	European white birch

BIGNONIACEAE (TRUMPET-CREEPER FAMILY)

*Catalpa bignonioides***	Catalpa

BORAGINACEAE (BORAGE FAMILY)

Amsinckia intermedia	Common fiddleneck
Amsinckia menziesii	Small-flowered fiddleneck
Plagiobothrys greenei	Greene's popcornflower
Plagiobothrys stipitatus var. *micranthus*	Common vernal pool popcornflower

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** Ornamental, planted as landscape tree/shrub

BRASSICACEAE (MUSTARD FAMILY)	
*Brassica rapa**	Field mustard, Turnip
*Capsella bursa-pastoris**	Shepherd's purse
Cardamine oligosperma	Western bittercress
*Hirschfeldia incana**	Perennial mustard
Lepidium nitidum	Shining peppergrass
Lepidium strictum	Prostrate peppergrass
*Raphanus raphanistrum**	Jointed charlock
*Raphanus sativus**	Radish
Rorippa curvisiliqua	Western yellow cress, Curvepod yellow cress
Rorippa palustris	Bog yellow cress
*Sisymbrium officinale**	Hedge mustard
CAMPANULACEAE (BELLFLOWER FAMILY)	
Downingia bicornuta var. *picta*	Doublehorn downingia
Downingia ornatissima var. *ornatissima*	Folded downingia
CANNABACEAE (HEMP FAMILY)	
*Celtis sinensis***	Chinese hackberry
CARYOPHYLLACEAE (PINK FAMILY)	
*Cerastium glomeratum**	Sticky mouse-ear chickweed
*Petrorhagia dubia**	Hairy pink
*Silene gallica**	Small-flower catchfly, Windmill pink
*Spergula arvensis**	Stickwort, Starwort
*Spergularia bocconi**	Boccone's sand-spurrey
*Spergularia rubra**	Red sand-spurrey
*Stellaria media**	Common chickweed
CHENOPODIACEAE (GOOSEFOOT FAMILY)	
*Chenopodium album**	Lamb's quarters
*Chenopodium murale**	Nettleleaf goosefoot
*Salsola tragus**	Russian thistle, Tumbleweed
CONVOLVULACEAE (MORNING-GLORY FAMILY)	
*Convolvulus arvensis**	Bindweed
Cuscuta howelliana	Vernal pool dodder
CRASSULACEAE (STONECROP FAMILY)	
Crassula aquatica	Water pygmy-weed
*Crassula tillaea**	Moss pygmy-weed, Mediterranean pygmy-weed
ELATINACEAE (WATERWORT FAMILY)	
Elatine brachysperma	Shortseed waterwort
EUPHORBIACEAE (SPURGE FAMILY)	
Croton setigerus	Turkey-mullein, Doveweed
FABACEAE (LEGUME FAMILY)	
Acacia sp.**	*Acacia*
Acmispon americanus var. *americanus*	Spanish clover
*Lotus corniculatus**	Bird's-foot trefoil

* Non-native plants of California (Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepsom manual: vascular plants of California, second edition. University of California Press, Berkeley.)

** Ornamental, planted as landscape tree/shrub

Lupinus bicolor	Miniature lupine
*Medicago polymorpha**	Common burclover
*Melilotus indicus**	Sourclover
Trifolium depauperatum var. *depauperatum*	Dwarf sack clover
*Trifolium dubium**	Shamrock
*Trifolium glomeratum**	Clustered clover
Trifolium gracilentum	Pinpoint clover
*Trifolium campestre**	Hop clover
*Trifolium hirtum**	Rose clover
Trifolium microcephalum	Small-head clover
*Trifolium repens**	White clover
Trifolium variegatum var. *variegatum*	Variegated clover, White-tipped clover
Vicia sativa subsp. *nigra**	Smaller spring vetch
Vicia sativa subsp. *sativa**	Spring vetch
Vicia villosa var. *varia**	Winter vetch

FAGACEAE (OAK FAMILY)

Quercus lobata	Valley oak
Quercus wislizenii var. *wislizenii*	Interior live oak

GENTIANACEAE (GENTIAN FAMILY)

*Centaurium tenuiflorum**	Slender centaury
Cicendia quadrangularis	Timwort

GERANIACEAE (GERANIUM FAMILY)

*Erodium botrys**	Longbeak filaree, Broadleaf filaree
*Erodium brachycarpum**	Short-fruit filaree, Whitestem filaree
*Erodium cicutarium**	Redstem filaree
*Erodium moschatum**	Greenstem filaree
*Geranium dissectum**	Cut-leaved geranium
*Geranium molle**	Dove's-foot geranium

HYPERICACEAE (ST. JOHN'S WORT FAMILY)

Hypericum perforatum subsp. *perforatum**	Klamathweed

JUGLANDACEAE (WALNUT FAMILY)

Juglans hindsii	Northern California black walnut

LAMIACEAE (MINT FAMILY)

Lycopus americanus	American bugleweed
*Marrubium vulgare**	Horehound
*Mentha pulegium**	Pennyroyal
Pogogyne zizyphoroides	Sacramento mesa mint
Trichostema lanceolatum	Vinegar weed

LIMNANTHACEAE (MEADOWFOAM FAMILY)

Limnanthes douglasii ssp. *rosea*	Rosy Douglas' meadowfoam

LINACEAE (FLAX FAMILY)

*Linum bienne**	Pale flax

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** Ornamental, planted as landscape tree/shrub

LYTHRACEAE (LOOSESTRIFE FAMILY)

*Lagerstroemia indica***	Crape myrtle
*Lythrum hyssopifolia**	Hyssop loosestrife
*Lythrum portula**	Spatulaleaf loosestrife

MAGNOLIACEAE (MAGNOLIA FAMILY)

Magnolia sp.**	

MALVACEAE (MALLOW FAMILY)

*Malva nicaeensis**	Bull mallow
*Malva parviflora**	Cheeseweed

MONTIACEAE (MINER'S LETTUCE FAMILY)

Calandrinia ciliata	Red maids
Claytonia perfoliata subsp. *perfoliata*	Miner's lettuce
Montia fontana	Water chickweed, Blinks

MORACEAE (MULBERRY FAMILY)

*Ficus carica**	Edible fig
*Morus alba***	White mulberry

MYRSINACEAE (MYRSINE FAMILY)

*Anagallis arvensis**	Scarlet pimpernel

MYRTACEAE (MYRTLE FAMILY)

*Eucalyptus camaldulensis***	Red gum

OLEACEAE (OLIVE FAMILY)

Fraxinus 'Modesto'**	Modesto ash
Ligustrum sp.**	Privet
*Olea europaea***	Olive

ONAGRACEAE (EVENING PRIMROSE FAMILY)

Epilobium brachycarpum	Annual willowherb
Epilobium campestre	Smooth willowherb
Epilobium ciliatum ssp. *ciliatum*	Fringed willowherb, Northern willowherb
Epilobium torreyi	Torrey's willowherb
Ludwigia peploides subsp. *peploides**	Creeping water primrose

OROBANCHACEAE (BROOMRAPE FAMILY)

Castilleja attenuata	Valley tassels
Castilleja exserta subsp. *exserta*	Purple owl's-clover
*Parentucellia viscosa**	Yellow glandweed
Triphysaria eriantha subsp. *eriantha*	Butter-and-eggs, Johnny-tuck
Triphysaria pusilla	Dwarf owl's-clover
Triphysaria versicolor subsp. *faucibarbata*	Yellow owl's-clover

OXALIDACEAE (OXALIS FAMILY)

Oxalis pes-caprae	Bermuda buttercup

PAPAVERACEAE (POPPY FAMILY)

Eschscholzia californica	California poppy

* Non-native plants of California (Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepsom manual: vascular plants of California, second edition. University of California Press, Berkeley.)

** Ornamental, planted as landscape tree/shrub

PHRYMACEAE (LOPSEED FAMILY)

Mimulus guttatus	Common yellow monkeyflower
Mimulus tricolor	Tricolor monkeyflower

PLANTAGINACEAE (PLANTAIN FAMILY)

Callitriche heterophylla var. *heterophylla*	Varied leaved water starwort
Callitriche marginata	Winged water starwort
*Plantago lanceolata**	English plantain
*Veronica anagallis-aquatica**	Water speedwell
*Veronica persica**	Persian speedwell
Veronica peregrina subsp. *xalapensis*	Purslane speedwell

PLATANACEAE (PLANE-TREE FAMILY)

Platanus x. *acerifolia***	London plane-tree

POLEMONIACEAE (PHLOX FAMILY)

Navarretia leucocephala ssp. *leucocephala*	White-flowered navarretia

POLYGONACEAE (BUCKWHEAT FAMILY)

Polygonum aviculare subsp. *depressum**	Common knotweed
*Persicaria hydropiper**	Waterpepper
Persicaria lapathifolia	Willow weed
*Persicaria maculosa**	Lady's thumb
Persicaria punctata	Dotted smartweed
*Rumex acetosella**	Sheep sorrel
*Rumex conglomeratus**	Clustered dock
*Rumex crispus**	Curly dock
*Rumex pulcher**	Fiddle dock

RANUNCULACEAE (BUTTERCUP FAMILY)

Ranunculus aquatilus var. *hispidulus*	Fern-leaf water buttercup
Ranunculus bonariensis var. *trisepalus*	Vernal pool buttercup
*Ranunculus muricatus**	Spiny-fruit buttercup
Ranunculus sceleratus var. *sceleratus**	Cursed buttercup

ROSACEAE (ROSE FAMILY)

Malus sp.**	Apple
Prunus sp.**	Fruit tree
Pyrus sp.**	Pear
Rosa californica	California wild rose
*Rosa eglanteria**	Sweet-brier
*Rubus armeniacus**	Himalayan blackberry

RUBIACEAE (MADDER FAMILY)

Galium aparine	Goose grass
*Galium parisiense**	Wall bedstraw

RUTACEAE (CITRUS FAMILY)

Citrus sp.**	Citrus

SALICACEAE (WILLOW FAMILY)

Populus fremontii subsp. *fremontii*	Fremont cottonwood

* Non-native plants of California (Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepsom manual: vascular plants of California, second edition. University of California Press, Berkeley.)

** Ornamental, planted as landscape tree/shrub

*Salix babylonica***	Weeping willow
Salix gooddingii	Goodding's black willow
SAPINDACEAE (SOAPBERRY FAMILY)	
*Acer saccharinum***	Silver maple
SCROPHULARIACEAE (FIGWORT FAMILY)	
Limosella acaulis	Owyhee mudwort
SOLANACEAE (NIGHTSHADE FAMILY)	
Solanum americanum	White nightshade
ULMACEAE (ELM FAMILY)	
*Ulmus americana***	American elm
VERBENACEAE (VERVAIN FAMILY)	
Phyla nodiflora	Common lippia
VITACEAE (GRAPE FAMILY)	
Vitis sp.	Grape
ZYGOPHYLLACEAE (CALTROP FAMILY)	
*Tribulus terrestris**	Puncture vine

ANGIOSPERMS, MONOCOTS

AGAVACEAE (CENTURY PLANT FAMILY)	
Chlorogalum sp.	Soap plant
ALISMATACEAE (WATER-PLANTAIN FAMILY)	
*Alisma lanceolatum**	Lance-leaved water plantain
Alisma triviale	Northern water plantain
Damasonium californicum	Fringed water-plantain
Sagittaria sanfordii [1]	Sanford's arrowhead
ARACEAE (ARUM FAMILY)	
Lemna minor	Common duckweed
Wolffia brasiliensis	Brazilian watermeal
CYPERACEAE (SEDGE FAMILY)	
Carex densa	Dense sedge
Carex praegracilis	Field sedge
Cyperus eragrostis	Tall nutsedge
Eleocharis acicularis	Least spikerush
Eleocharis macrostachya	Creeping spikerush
Schoenoplectus acutus var. *occidentalis*	Common tule
JUNCACEAE (RUSH FAMILY)	
Juncus acuminatus	Tapered rush

[1] California Native Plant Society CRPR List 1B.2

* Non-native plants of California (Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepsom manual: vascular plants of California, second edition. University of California Press, Berkeley.)

** Ornamental, planted as landscape tree/shrub

Juncus balticus	Baltic rush
Juncus bufonius var. *bufonius*	Common toad rush
*Juncus capitatus**	Leafybract dwarf rush
Juncus uncialis	Inch-high rush
*Juncus usitatus**	Australian rush
Juncus xiphioides	Iris-leaved rush

JUNCAGINACEAE (ARROW-GRASS FAMILY)

Triglochin scilloides	Flowering-quillwort

LILIACEAE (LILY FAMILY)

Chlorogalum sp.	Soap plant

POACEAE (GRASS FAMILY)

*Agrostis avenacea**	Pacific bentgrass
*Aira caryophyllea**	Silver European hairgrass
Alopecurus saccatus	Vernal pool foxtail
*Anthoxanthum odoratum**	Sweet vernal grass
*Avena barbata**	Slender wild oat
*Avena fatua**	Wild oat
*Briza minor**	Little quaking grass
*Bromus diandrus**	Ripgut grass
*Bromus hordeaceus**	Soft-chess brome
*Crypsis schoenoides**	Swamp grass
*Cynodon dactylon**	Bermuda grass
*Dactylis glomerata**	Orchard grass
Deschampsia danthonioides	Annual hairgrass
*Echinochloa crus-galli**	Barnyard grass
*Elymus caput-medusae**	Medusa head
*Festuca arundinacea**	Tall fescue
*Festuca bromoides**	Brome fescue
*Festuca myuros**	Six-weeks fescue, Rattail fescue
*Festuca perennis**	Ryegrass
*Festuca pratensis**	Meadow fescue
*Glyceria declinata**	Waxy mannagrass
*Holcus lanatus**	Common velvet grass
Hordeum marinum ssp. *gussoneanum**	Mediterranean barley
Hordeum murinum ssp. *leporinum**	Hare barley
Hordeum murinum subsp. *murinum**	Wall barley
Leersia oryzoides	Rice cutgrass
*Paspalum dilatatum**	Dallis grass
Paspalum distichum	Knotgrass
*Phalaris aquatica**	Harding grass
*Poa annua**	Annual blue grass
*Poa bulbosa**	Bulbous blue grass
Poa pratensis subsp. *pratensis**	Kentucky blue grass
*Poa trivialis**	Rough blue grass
*Polypogon maritimus**	Mediterranean beard grass
*Polypogon monspeliensis**	Annual beard grass
*Sporobolus indicus**	Smut grass

* Non-native plants of California (Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepsom manual: vascular plants of California, second edition. University of California Press, Berkeley.)

** Ornamental, planted as landscape tree/shrub

POTAMOGETONACEAE (PONDWEED FAMILY)

Potamogeton sp.	Pondweed

THEMIDACEAE (BRODIAEA FAMILY)

Brodiaea coronaria subsp. *coronaria*	Harvest brodiaea
Brodiaea elegans subsp. *elegans*	Elegant brodiaea
Dichelostemma capitatum ssp. *capitatum*	Blue dicks
Dichelostemma multiflorum	Wild hyacinth
Triteleia laxa	Ithuriel's spear
Triteleia hyacinthina	White brodiaea

TYPHACEAE (CATTAIL FAMILY)

Typha domingensis	Southern cattail
Typha latifolia	Broad-leaved cattail

* Non-native plants of California (Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepsom manual: vascular plants of California, second edition. University of California Press, Berkeley.)

** Ornamental, planted as landscape tree/shrub

APPENDIX D

Teichert – Aspen VIII & IX Rare Plant Survey
Representative Photos



Photo 1

15 August 2014

Aspen VIII & IX
Irrigated Pasture in Summer
after Harvesting



Photo 2

28 March 2014

Aspen VIII & IX
Annual Grassland



Photo 3

06 June 2014

Aspen VIII & IX
Elder Creek



Photo 4

14 April 2014

Aspen VIII & IX
Vernal Pools



Photo 5

28 March 2014

Aspen VIII & IX
Seasonal Wetlands and Swales



Photo 6

19 June 2014

Aspen VIII & IX
Irrigated Seasonal Wetland



Photo 7

15 August 2014

Aspen VIII & IX
Irrigated Season Swale



Photo 8

15 August 2014

Aspen VIII & IX
Freshwater Marsh along Ditch



Photo 9

15 August 2014

Aspen VIII & IX
Irrigation Pond



Photo 10

15 August 2014

Aspen VIII & IX
Irrigation Ditch



Photo 11

06 June 2014

Aspen VIII & IX
Riparian Woodland Bordering Expansion Pond along Elder Creek



Photo 12

28 March 2014

Aspen VIII & IX
Residential Home Surrounded by Ornamental Trees and Ruderal Vegetation



Photo 13

30 June 2014

Aspen VIII & IX
Sanford's Arrowhead
Growing in Ditch



Photo 14

30 June 2014

Aspen VIII & IX
Sanford's Arrowhead

APPENDIX E

Teichert – Aspen VIII & IX Rare Plant Survey
CNDDB California Native Species Field Survey Form

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 07/14/2014

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Sagittaria sanfordii*

Common Name: Sanford's Arrowhead

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 2,000+ Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Barry Baba
Address: PO Box 15002
Sacramento, CA 95851
E-mail Address: bbaba@teichert.com
Phone: (916) 480-5505

Plant Information

Phenology: 90 % vegetative 50 % flowering 50 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Sacramento Landowner / Mgr.: Teichert - Triangle Properties

Quad Name: Carmichael Elevation: 20 meters

T 8N R 6E Sec 28, SW ¼ of SE ¼, Meridian: H☐ M☑ S☐ Source of Coordinates (GPS, topo. map & type): GPS

T 8N R 6E Sec 28, NW ¼ of SE ¼, Meridian: H☐ M☑ S☐ GPS Make & Model Trimble ProXRT

DATUM: **NAD27** ☐ **NAD83** ☑ **WGS84** ☐ Horizontal Accuracy 0.2 feet meters/feet

Coordinate System: UTM Zone 10 ☑ UTM Zone 11 ☐ ***OR*** Geographic (Latitude & Longitude) ☐

Coordinates: 646172.118, 4264282.443 (meters)

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Population occurring in a routinely maintained irrigation ditch. Growing in association with Ludwigia peploides, Leersia oryzioides, Cyperus eragrostis, Eleocharis macrostachya, and Glyceria declinata.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Irrigated pasture, grazing

Visible disturbances: Ditch maintenance, but appears to prefer regular maintenance of ditch

Threats: Proposed mine site

Comments:

Determination: *(check one or more, and fill in blanks)*

☑ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☑

May we obtain duplicates at our expense? yes ☑ no ☐

ATTACHMENT C

Teichert's Aspen VIII & IX Biological Resources Assessment
Arborist Survey Report

ASPEN VIII & IX

ARBORIST REPORT

Teichert Aggregates – Sacramento County





Prepared For:

Sacramento County
Planning and Environmental Review Division
827 7th Street, Room 230
Sacramento, CA 95814

Prepared By:

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Date:

~~December 2014~~
Revised: July 2015

TEICHERT

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ASPEN VIII & IX

TEICHERT – SACRAMENTO COUNTY

Arborist Report

July 2015

1.0 INTRODUCTION

This Arborist Report has been prepared for Teichert Aggregates, Inc.'s (Teichert's) Aspen VIII and IX site (Property) in Sacramento County, California. The Property is located approximately 0.5 mile south of Jackson Road (Highway 16) and 0.5 mile east of Bradshaw Road, and is bisected by Elder Creek Road (Figure 1). The purpose of this report is to present the results of a tree survey conducted for the Property, including information about the species, size, condition, and location of the trees on the property. This information will be used to evaluate project impacts and create appropriate mitigation pursuant to Sacramento County Code (Chapter 19.12 *Tree Preservation and Protection*) and policies of the Sacramento General Plan Conservation Element.

1.1 Project Overview

The Property is an approximately 682-acre site within unincorporated Sacramento County, of which Teichert proposes to mine approximately 357.3 acres for aggregate resources (Project) (Figure 2). Material mined from the site will be transported via conveyor belt to Teichert's Perkins processing plant, approximately 4 miles to the northwest (Figure 1). This conveyor will exit near the northwestern corner of Aspen VIII, where it will extend into the neighboring Aspen V-South Property to the north, before eventually connecting to an existing conveyor system on a permitted mining area on Aspen V-South. This portion of conveyor between Aspen VIII and Aspen V-South has been included as part of the Project (Figure 2). The Project also includes a conveyor tunnel that will be constructed underneath Elder Creek Road (Figure 2). In addition to mining activities, Teichert proposes to improve an existing culvert that connects Elder Creek between Aspen VIII and IX from underneath Elder Creek Road (Figure 2). All ancillary elements and construction activities, including conveyor between Aspen VIII and Aspen V-South, tunnel under Elder Creek Road, and culvert replacement in Elder Creek, have been included as part of the Project and, together with mining, amount to a total disturbance area of approximately 384.44 acres (Figure 2).

1.2 Regulatory Context

The Sacramento County Tree Preservation Ordinance and policies within the General Plan Conservation Element afford various protections to native vegetation and the urban forest. Requirements for the protection of native oak trees are found in Sacramento County Code 19.12. This policy and ordinance requires a project applicant to obtain authorization from the County for any project impacts which would encroach within the dripline of or destroy, kill or remove any "tree," as defined, with the urban

area of the unincorporated area of Sacramento County, or any property, public or private. The ordinance defines "trees" as follows:

> "Any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half feet above the ground (dbh)."

In addition to protection of oak trees, the Conservation Element of the Sacramento County General Plan includes policies that build on Sacramento County's Tree Preservation and Protection Ordinance. Specifically, CO-138 and CO-139 require that other native trees (California sycamore and California black walnut) also be protected or otherwise mitigated for in accordance with existing tree replacement policies and standards for native oaks (i.e., on an inch-by-inch basis). Sacramento General Plan Policy CO-140 further expands on native tree protections by addressing tree canopy and other mitigation requirements for native oak woodlands, oak savannah and mixed riparian areas. Impacts to non-native tree canopy are addressed in the Urban Forest Management section of the General Plan under policies CO-145 and CO-146, which require mitigation for loss of non-native tree canopy as a result of development.

For projects that will substantially impact or remove on-site or off-site trees, an arborist report is typically required as part of the Planning Application. Impacted trees are defined as all on-site and off-site trees meeting the County's criteria of a 'protected' tree that have canopies overhanging the site or that may be impacted by off-site project-related construction.

1.3 Existing Conditions

The Aspen VIII property (Sacramento Co. Assessor's Parcel Numbers [APNs] 063-0180-005,-006 and 063-0160-001) is an approximately 319-acre site bounded by Elder Creek Road to the south, Bellevue and Arlington Cemeteries to the west, and agricultural land (grazing) to the north and east (Figure 2). The Aspen IX property (APNs 066-0020-006, 066-0030-001 and 066-0050-003) is an approximately 363-acre site located immediately south of Elder Creek Road, 0.5 mile east of Bradshaw Road, 0.25 mile north of Florin Road and 0.5 west of Excelsior Road (Figure 2). Current land uses surrounding the site include rural residential, agricultural cropland, and rangeland. The topography of the site is generally flat with a few moderate rolling hills.

Several different biological communities occur on the Property, including irrigated pasture, annual grassland and wetland communities (Figure 3). Irrigated pasture habitat occurs over the majority of the site, totaling approximately 331.1 acres. A network of ditches and ponds are associated with the irrigated pastures. Common plant species include tall fescue (*Festuca arundinacea*), Kentucky blue grass (*Poa pratensis* subsp. *pratensis*), ryegrass (*Festuca perennis*), dallis grass (*Paspalum dilatatum*), dense sedge (*Carex densa*), field sedge (*Carex praegracilis*), English plantain (*Plantago lanceolata*), white clover (*Trifolium repens*), shamrock (*Trifolium dubium*), cut-leaved geranium (*Geranium dissectum*), and yellow's owl's-clover (*Triphysaria versicolor* subsp. *faucibarbata*).

Much of the remaining Property consists of annual grasslands, totaling approximately 308.5 acres. These areas consist of relatively flat to moderately rolling hills dominated by soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), wall barley (*Hordeum murinum*), Mediterranean barley (*Hordeum marinum* subsp. *gussoneanum*), brome fescue (*Festuca bromioides*), ryegrass, longbeak filaree (*Erodium botrys*), perennial mustard (*Hirschfeldia incana*), winter vetch (*Vicia villosa* var. *varia*), common fiddleneck (*Amsinckia intermedia*), yellow star-thistle (*Centaurea solstitialis*), and bindweed (*Convolvulus arvensis*). Vernal pools and seasonal wetlands are common within these relatively undisturbed landscapes.

Trees are largely absent on the Property except along borders where other features exist (i.e., homes, roads, ditches, ponds, etc.). Most trees on site are the result of ornamental landscape plantings around roads and residential homes. Himalayan blackberry (*Rubus armeniacus*) and sweet briar (*Rosa rubiginosa*) brambles are also interspersed with trees throughout the site along fencelines, irrigation ditches/ponds, and portions of Elder Creek.

Wetlands identified and mapped on the Property include vernal pool, seasonal wetland, seasonal swale, freshwater marsh, perennial stream, ephemeral stream, stock pond and ditch (Figure 3). In addition, Elder Creek occurs on both Aspen VIII and IX, whereby it enters at the southeast corner of Aspen VIII and exits at the western boundary of Aspen IX (Figure 3). The creek is channelized throughout the Aspen VIII portion of the site, where it eventually enters an artificial expansion "pond" before flowing under Elder Creek Road and into Aspen IX. Once entering Aspen IX, the creek maintains its natural course before exiting the site on the west where it is once again channelized. The creek is essentially a perennial drainage that is hydrologically supported by irrigation runoff during the dry (summer) season.

Other features on the Property include three rural residential homes and associated farm/equipment storage buildings. Dirt and graveled access roads to homes, farm buildings, and pastures are also present throughout the Property.

2.0 TREE SURVEY REPORT- IDENTIFICATION, INVENTORY AND ASSESSMENT

2.1 Survey Methods

An aerial photo of the site was used to determine potential tree locations and to develop field survey maps. Trees were then surveyed on foot by Teichert biologists B. Baba and J. Greer (ISA Certified Arborist, Cert. #WE-10104A) on 23 April, 01 May, and 07 October 2014 to verify and map all trees located within and immediately adjacent to the proposed limits of disturbance. In general, surveys were focused to areas within the project boundary and roughly 150 feet of the proposed limits of disturbance. Adjacent private properties were not inventoried if their trees were determined to be well outside of potential impacts.

All trees with trunks equal to or greater than four inches in diameter were inventoried and mapped using a Trimble Juno global positioning system (GPS) unit with sub-meter accuracy. All recorded trees were closely examined to determine species type and their diameter at breast height (DBH). To determine DBH, a diameter tape was used to verify each trunk diameter at the industry standard of 54 inches above grade. In addition, dripline radius was assessed based upon the measurement from the trunk to the end of the longest lateral limb, which defines the protection zone of the tree.

The overall vigor of each tree was rated according to Table 1 (below). Vigor consists of a combined assessment of the health and structure of a tree. The health rating component considers factors such as the size, color, and density of the foliage; the amount of deadwood within the canopy; bud viability; evidence of wound closure; and the presence or evidence of stress, disease, nutrient deficiency, and insect infestation. The structural rating component reflects the trunk and branch configuration; canopy balance; the presence of included bark and other structural defects such as decay; and the potential for structural failure.

TABLE 1. ASPEN VIII & IX ARBORIST REPORT (2014) - TREE VIGOR RATING SYSTEM

Vigor Rating	Tree Health	Tree Structure
4	Healthy tree or shrub, free of signs and symptoms of disease. Leaf size, color, and density are typical for the species; buds are normal size, viable and abundant; current and past growth increments are better than average.	No wounds, cavities, decay, or indication of hollowness evident in the root crown, trunk, or primary and secondary limbs; no anchor roots exposed; no dead primary or secondary limbs present; there have been no major limb failures; limbs are not overburdened; branching structure appropriate for species.
3	Tree with moderate vigor, with very little evidence of stress or disease. Some thinning of crown and somewhat poor leaf color; buds are normal size and viable; current and past growth increments are generally average.	Average amount of deadwood/dieback with respect to the tree's size and growing environment; there have been no major limb failures; limbs are not overburdened; branching structure is appropriate for species; any callusing is vigorous; any decay is limited to small dead branches/stubs.
2	Tree in decline, with moderate evidence of stress, disease, nutrient deficiency, and/or insect infestation; epicormic growth evident; current and past growth increments below average; buds small and few; tree may be slow to callus around old wounds.	Dieback of medium to large branches; limbs slightly overburdened; branching structure and/or canopy balance moderately altered by the tree's growing environment; small to moderate wounds, cavities, decay, and indication of hollowness evident in the root crown, trunk, and/or primary and secondary limbs; some anchor roots may be exposed.
1	Tree in severe decline; most of the foliage is from epicormic growth; major evidence of stress, disease, nutrient deficiency and/or insect infestation; poor leaf color; buds unviable.	Dieback of scaffold branches and/or trunk; significant wounds, cavities, decay, and/or indication of hollowness evident in the root crown, trunk, and/or primary and secondary limbs; anchor roots exposed; limbs may be severely overburdened.
0	Tree is dead; no living tissue evident.	Extensive dieback evident, with branches completely dry and breaking easily; trunk and major limbs hollow; tree has lost all anchorage.

Data Collected

1. Tree tag number;
2. Species identification;
3. Location;
4. Trunk diameter at breast height (DBH);
5. Visual estimate of dripline radius ; and
6. Visual assessment for health and structural condition using a 0-4 scale, defined in Table 1.

2.2 Survey Results

A total of 102 trees, representing 17 species, were surveyed. The numbers and types of trees surveyed are shown in Table 2. Demographic data for each tree can be found in Appendix A, and the number and locations of each tree can be found in Figure 4.

TABLE 2. ASPEN VIII & IX ARBORIST REPORT (2014) TREE SPECIES SURVEYED

Common Name	Scientific Name	No. of Trees Surveyed
Goodding's black willow	*Salix gooddingii*	21
California black walnut	*Juglans hindsii*	9
Valley oak	*Quercus lobata*	5
Modesto ash	*Fraxinus velutina*	21
Fremont cottonwood	*Populus fremontii*	9
Red gum	*Eucalyptus camaldulensis*	10
Fruitless mulberry	*Morus alba*	13
Weeping willow	*Salix babylonica*	1
Chinese tallowtree*	*Triadica sebifera*	1
London plane tree	*Plantanus x hispanica*	1
Edible fig*	*Ficus carica*	2
Mount Atlas Mastic Tree	*Pistacia atlantica*	1
Camphortree	*Cinnamomum camphora*	1
Chinese pistache	*Pistacia chinensis*	3
Lemon	*Citrus x limon*	1
Prunus tree	*Prunus spp.*	2
Silver Maple	*Acer saccharinum*	1

*The California Invasive Plant Council classifies this tree as a "Not-Native Invasive" species with moderate status regarding potential impact to local native ecosystems.

Trees were scattered throughout the survey area, commonly along fencelines, roads, irrigation ditches, ponds and residential landscapes (Figure 4). The most frequently occurring species were Goodding's black willow and Modesto ash. Goodding's black willow trees are common California native trees that are usual colonizers of disturbed sites with a continuous water supply. All surveyed black willows exist adjacent to irrigation water sources, with the majority concentrated along an irrigation pond and connected ditches in the northwestern portion of Aspen VIII. Modesto ash trees, regularly planted as ornamental landscape/shade trees, are common along driveways/fencelines and around residential homes.

Other commonly occurring trees were red gum eucalyptus, fruitless mulberry, and Fremont cottonwood. Both the red gum and mulberry trees are not native and were most likely planted as landscape trees. The red gum trees form two large clumps in the northwest corner of the study area, near the Bellvue Cemetery. Mulberry trees were found scattered throughout the site along fencelines and around homes. Fremont cottonwood trees were also distributed throughout the site, usually in association with water sources. Similar to the black willow, Fremont cottonwood trees are native to the area and tend to behave as fast-growing, primary colonizers in areas with a constant water supply.

Both cottonwood and black willow trees will often form riparian scrub or forest habitat along the perimeters of riparian areas, usually in association with other species (such as black walnut and valley oak). Within the Aspen VIII and IX survey area, riparian forest tree canopy is generally lacking, represented only by small patches along an irrigation pond in the northwest corner of the study area and along various ditches and Elder Creek (totaling approximately 0.469 acre) (Figure 5). Additional riparian forest scrub was observed within the Elder Creek channel in the southeast portion of Aspen VIII. This was probably the largest riparian stand on the Property, but was not mapped due to its location well outside of the survey area. The riparian habitat in this area is generally dominated by Himalayan blackberry/sweet briar brambles interspersed with willow and cottonwood trees.

Outside of landscape and riparian areas, other frequently-encountered tree species were Northern California black walnut and valley oak. Black walnut trees were generally found to be growing as individuals along various fencelines, with the exception of one small stand mapped as part of riparian habitat just north of the intersection of Elder Creek and Elder Creek Road in Aspen VIII. Several valley oak trees were also found scattered within the survey area but did not form oak woodland canopy, existing instead either as isolated individuals or as understory saplings within riparian scrub habitat.

In general, trees surveyed within the Aspen VIII and IX property represent a random collection of species, the majority of which are considered ornamental landscape trees. The highest concentrations of trees were found in association with residential landscapes and generally constitute planted assemblages of ornamental species. Most surveyed trees were large, mature individuals of overall decent health but with poor structure, as is typical of older trees. In addition to age, a combination of neglect, ground disturbance and heavy browsing by livestock has likely contributed to poor structure. Notably, two caged trees (#42 and #76) were severely stressed and altered by browsing activity. Overall, the majority of large trees exhibited overburdened limbs, limb dieback and various forms of decay. Additionally, more than half (62) of the surveyed trees were multi-stemmed, with many trees showing evidence of included bark. One tree (#43) was found to be dead and was recorded as a standing dead snag.

Additional ornamental and landscape trees were observed within adjacent private properties to the west, south and east of the Project boundary, but were not accessible and thus not mapped. These trees are well outside of potential impacts and are protected by required setbacks.

2.3 General Recommendations

The proposed mining boundary and limits of disturbance include a total of approximately 383.68 acres. Of the 102 trees surveyed on the Property, 74 were found to be within or immediately adjacent to (i.e., with overhanging canopies) the proposed limits of disturbance and may be removed or otherwise disrupted as a result of Project activities (Figure 4).

A total of 14 protected trees (5 valley oak and 9 California black walnut) were found onsite to be of a sufficient size to be protected and regulated by the Sacramento County Tree Preservation Ordinance, 12 of which exist within the proposed limits of disturbance and may be impacted as a result of the project. For valley oak and black walnut trees that would be removed or indirectly impacted (i.e., ground disturbance within existing driplines), Teichert will comply with the Sacramento Tree Preservation Ordinance and Sacramento General Plan Policy CO-139 by replacing these trees on an inch-by-inch basis. Table 3 summarizes the total potential impacts to native protected trees by the proposed Project.

TABLE 3. POTENTIAL IMPACTS TO NATIVE PROTECTED TREES – ASPEN VIII AND IX (2014)

Common Name	Scientific Name	No. Trees	Total Inches DBH
California Black Walnut	*Juglans hindsii*	9	156.3
Valley Oak	*Quercus lobata*	3	22.3
		TOTAL:	**178.6**

Several patches of riparian forest scrub habitat were found sporadically distributed near water sources within the survey area, totaling approximately 0.469 acre (Figure 5). The total remaining native and non-native tree canopy—excluding invasive species—potentially impacted by the proposed project is approximately 1.345 acres (Figure 5). The removal of non-native invasive trees (i.e., Chinese tallow and edible fig) (Cal-IPC 2006) could be considered a benefit to future reclamation goals and the surrounding ecosystem. Sacramento General Plan Policies address losses to mixed riparian forest canopy (Policy CO-140) and other tree canopy (Policies CO-145 and CO-146) by requiring the creation of an on-site mitigation area equal in size to the acreage of canopy lost. Mitigation planting will be carried out on-site within preserved portions of Elder Creek. Table 4 summarizes the total potential impacts to tree canopy by the proposed project.

TABLE 4. POTENTIAL IMPACTS TO TREE CANOPY – ASPEN VIII AND IX (2014)

Canopy	Total Canopy of Surveyed Trees (Acres)	Total Canopy Potentially Impacted (Acres)
Riparian Forest/ Scrub Canopy	0.469	0.229
Other Canopy	1.345	1.345
GRAND TOTAL:	**1.814**	**1.574**

3.0 SUMMARY

A total of 74 trees, representing 1.574 acres of tree canopy, will be potentially impacted by the Project. Of these impacts, 12 are native trees (valley oak and Northern California black walnut), totaling 178.6 inches DBH, that are protected by the Sacramento County Tree Preservation Ordnance. Prior to Project impacts, Teichert will prepare a detailed mitigation plan addressing impacts to native protected trees (i.e., valley oak and black walnut) and other tree canopy loss (excluding invasive species), developed in accordance with County Ordinance, General Plan policies and final mitigation measures for the Project. The Mitigation Plan will include species to be planted, planting locations and densities, planting methods, a maintenance plan (e.g., for irrigation, weeds, and herbivory), and monitoring and performance requirements.

4.0 REFERENCES

California Invasive Plant Council (Cal-IPC). 2006. California Invasive Plant Inventory. Published by the California Invasive Plant Council, February 2006.

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Figure 1 – Site Vicinity Map

Figure 2 – Property and Project Site Map

Figure 3 – Existing habitat Communities

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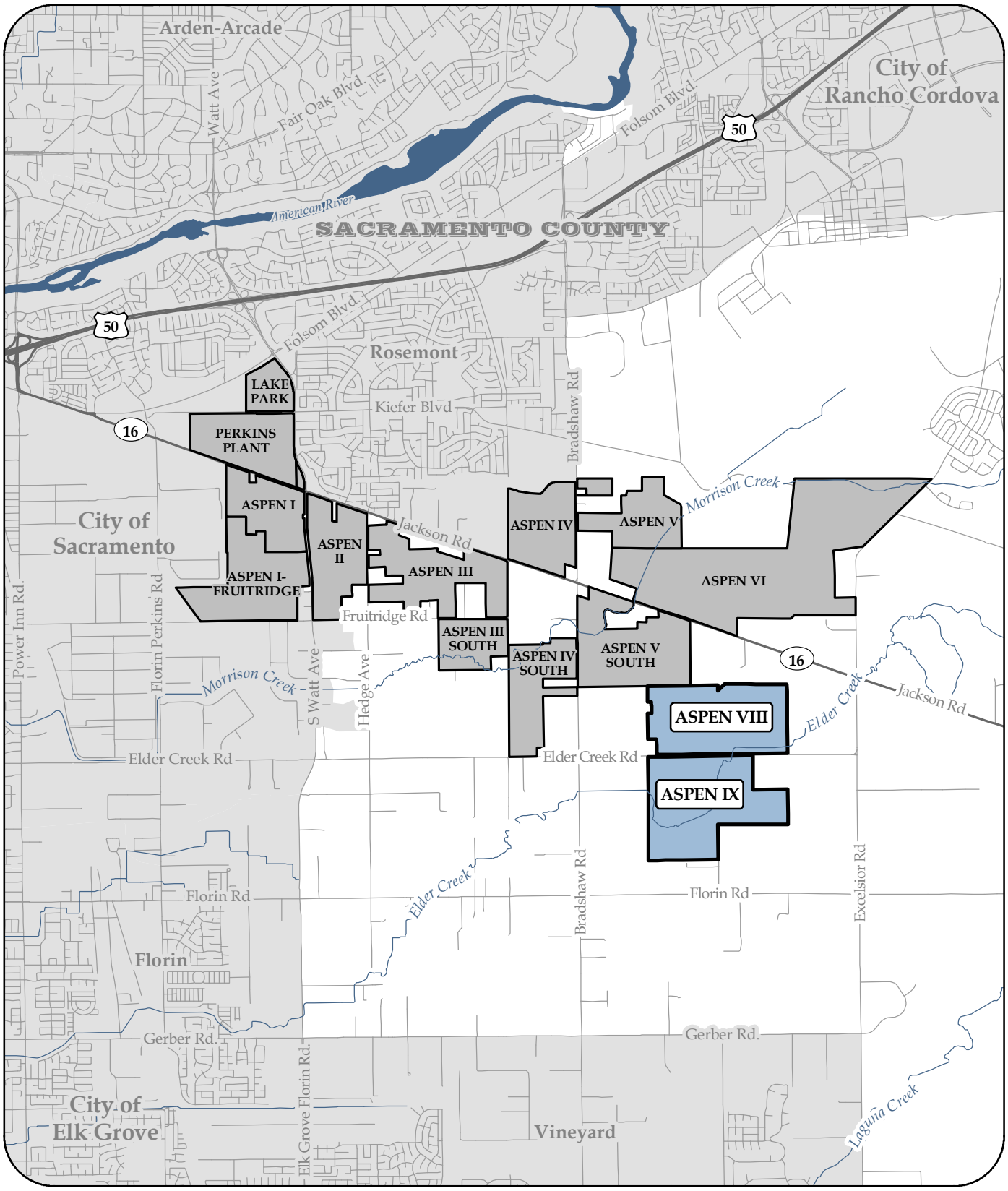
Figure 5 – Tree Canopy



TEICHERT MATERIALS

LEGEND:

- Teichert Aggregates Aspen VIII & IX Property Boundary
- Teichert Aggregates Aspen Property Boundaries

0 0.5 1 Miles

DISCLAIMER:

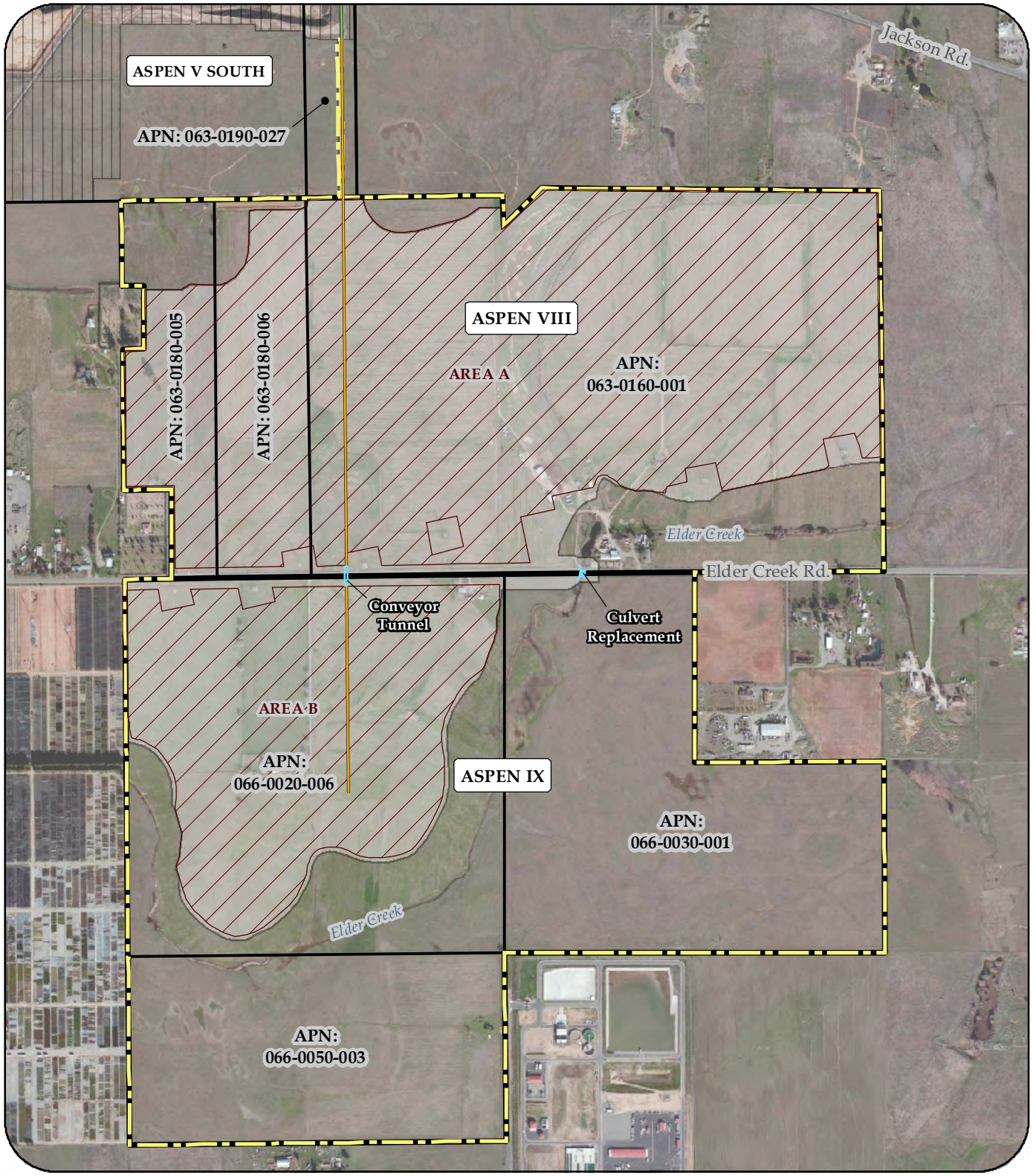
The data was mapped for assessment purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 1

SITE VICINITY MAP

ARBORIST REPORT
ASPEN VIII & IX
TEICHERT MATERIALS
SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 10/23/2014 AS8_AS9_Arborist_Fig1_Vicinity_201410.mxd



LEGEND:

- Existing Conveyor Alignment
- Proposed Conveyor Alignment
- Proposed Conveyor Tunnel & Culvert Replacement
- Proposed Mining Boundary
- Limits of Disturbance
- Project Boundary
- Aspen VIII & IX Property Boundary
- Aspen V South Approved Mining Boundary

0 500 1,000 Feet

SOURCE:

Orthophoto Provided by Digital Globe (Feb. 2012)

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

TEICHERT MATERIALS

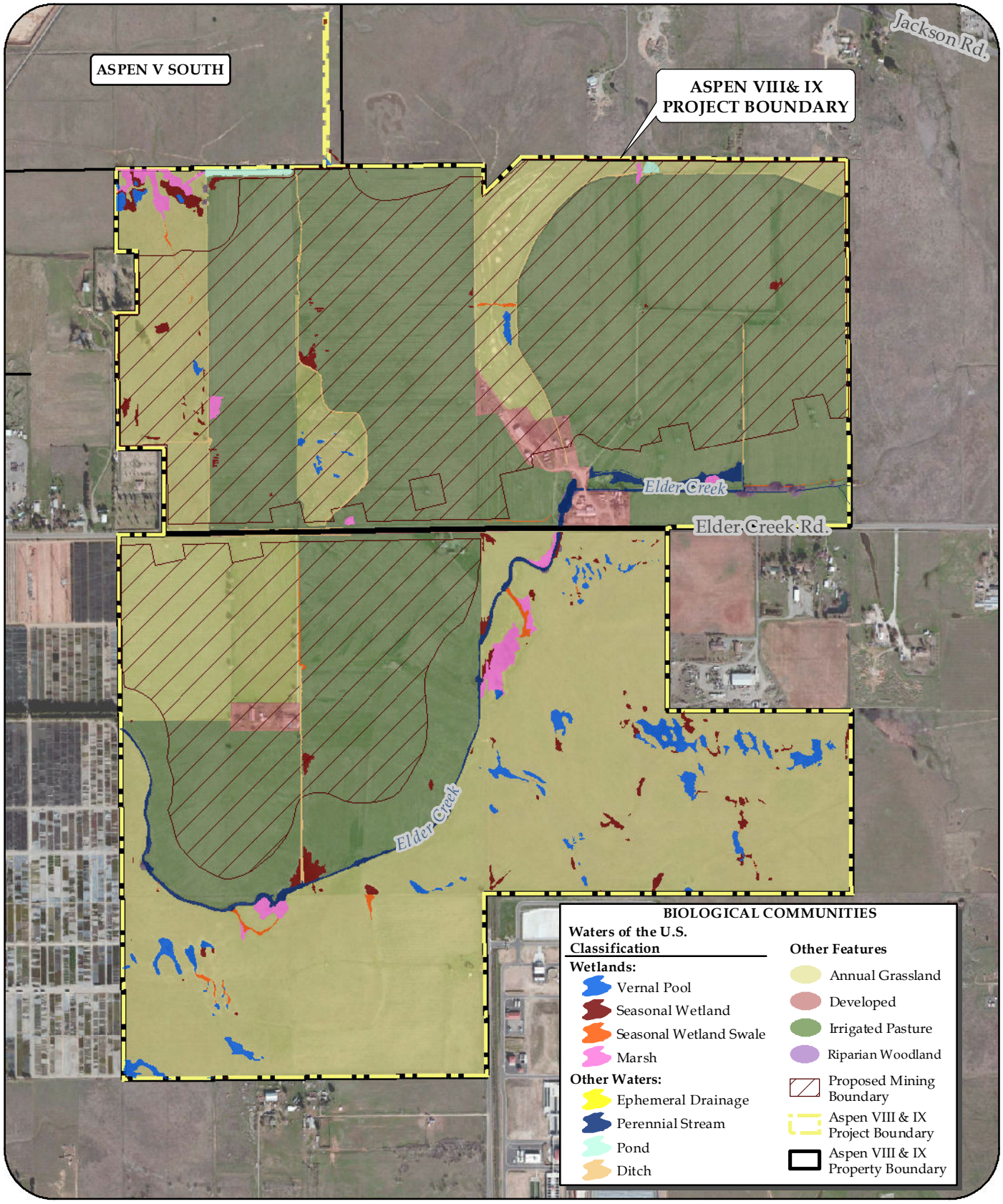
FIGURE 2

PROPERTY & PROJECT SITE MAP

ARBORIST REPORT
ASPEN VIII & IX
TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 6/10/2015 AS8_AS9_Arborist_Fig2_Site_201506.mxd



TEICHERT MATERIALS

SOURCE:

- Wetland Delineation Provided by ECORP (April 02, 2014)
- Orthophoto Provided by Digital Globe (Feb. 2012)

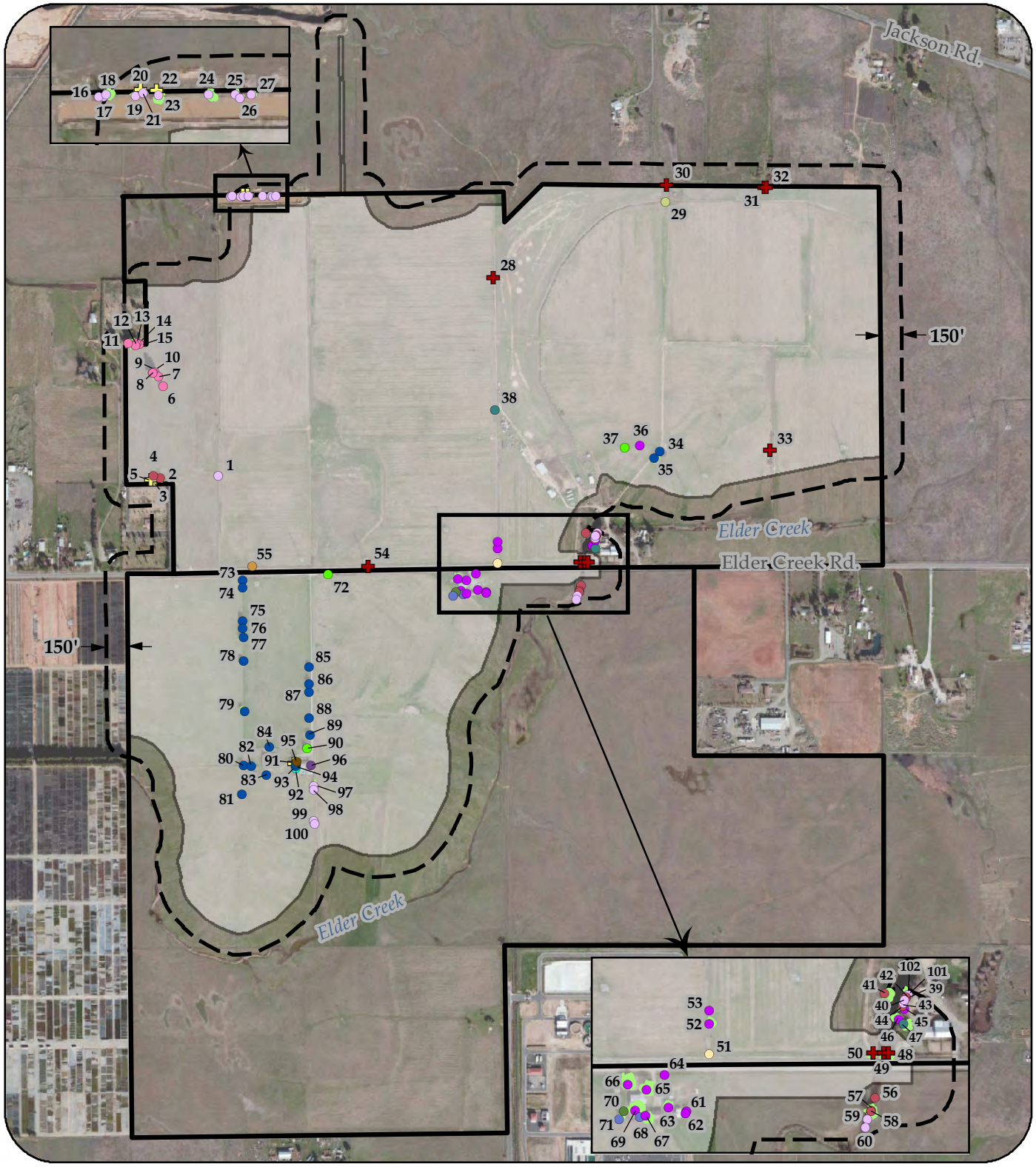
0 500 1,000 Feet

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 3
HABITATS AND WETLANDS
ARBORIST REPORT
ASPEN VIII & IX
TEICHERT MATERIALS
SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 12/5/2014 AS8_AS9_Arborist_Fig3_Bio_201412.mxd



LEGEND:

Native Protected Species:
- Northern CA Black Walnut
- Valley Oak

Other Species:
- Acacia
- Camphortree
- Chinese Pistache
- Chinese Tallowtree
- Citrus
- Edible Fig
- Fremont Cottonwood
- Goodding's Black Willow
- Lemon
- London Plane
- Modesto Ash
- Mt Atlas Mastic Tree
- Mulberry
- Prunus
- Red Gum
- Silver Maple
- Weeping Willow
- Tree Canopy
- Arborist Survey Area
- Limits of Disturbance
- Aspen VIII & IX Property Boundary

0 500 1,000 Feet

SOURCE:
- Arborist Survey GPS (April-Oct. 2014)
- Orthophoto Provided by Digital Globe (February 2012)

DISCLAIMER:
The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

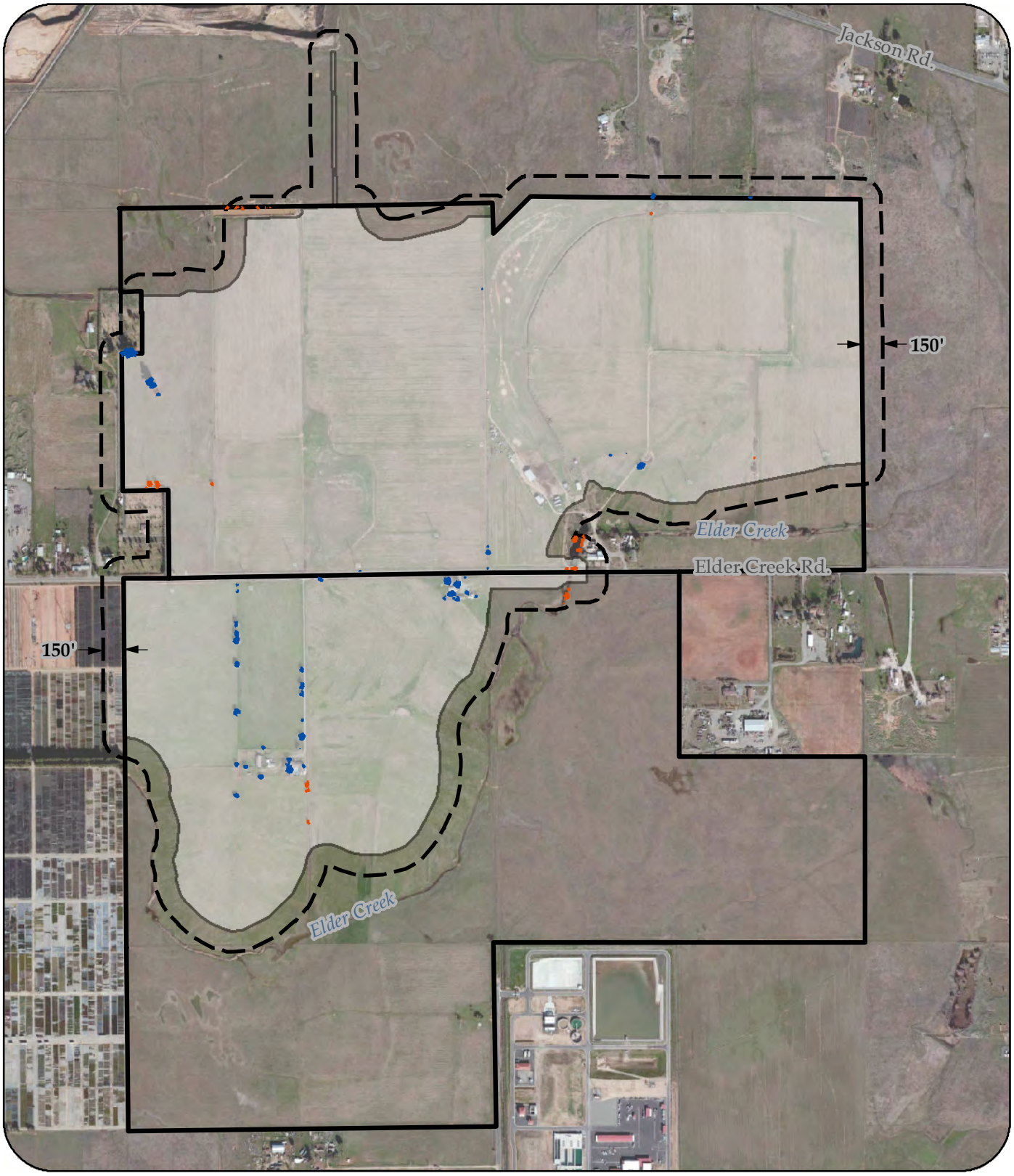
FIGURE 4

TREE SURVEY

ARBORIST REPORT ASPEN VIII & IX TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo Rev. by R. Enes 6/11/2015 AS8_AS9_Arborist_Fig4_TreeSurveyArea_201506.mxd



TEICHERT MATERIALS

LEGEND:

- Riparian Forest/Scrub Canopy: ± 0.469 Acres
- Other Canopy: ± 1.345 Acres
- Arborist Survey Area
- Limits of Disturbance
- Aspen VIII & IX Property Boundary

0 500 1,000 Feet

SOURCE:

- Orthophoto Provided by Digital Globe (February 2012)

DISCLAIMER:

The data was mapped for planning purposes only. No liability is assumed for the accuracy of the data shown.

FIGURE 5

TREE CANOPY

ARBORIST REPORT ASPEN VIII & IX TEICHERT MATERIALS

SACRAMENTO COUNTY, CALIFORNIA

C. Cornejo 6/11/2015 AS8_AS9_Arborist_Fig5_TreeCanopy_201506.mxd

Teichert Aggregates – Aspen VIII and IX
Tree Survey Data

TABLE A-1. ASPEN VIII & IX ARBORIST REPORT - TREE SURVEY DATA							
Tree ID#	**Common Name**	**Scientific Name**	**Health**	**DBH**	**No. Stems**	**Dripline Radius**	**Impact (Yes/No)**
1	Goodding's Black Willow	*Salix gooddingii*	3.0	20.2	1	20.0	Yes
2	Fremont Cottonwood	*Populus fremontii*	2.0	32.9	1	25.0	Yes
3	Valley Oak	*Quercus lobata*	4.0	5.2	1	4.0	Yes
4	Fremont Cottonwood	*Populus fremontii*	2.0	28.2	1	20.0	Yes
5	Valley Oak	*Quercus lobata*	3.0	13.0	3	4.0	Yes
6	Red Gum	*Eucalyptus camaldulensis*	2.0	34.5	1	20.0	Yes
7	Red Gum	*Eucalyptus camaldulensis*	3.0	46.7	2	30.0	Yes
8	Red Gum	*Eucalyptus camaldulensis*	3.0	31.1	1	30.0	Yes
9	Red Gum	*Eucalyptus camaldulensis*	4.0	34.8	2	30.0	Yes
10	Red Gum	*Eucalyptus camaldulensis*	4.0	48.5	2	20.0	Yes
11	Red Gum	*Eucalyptus camaldulensis*	3.0	24.5	1	30.0	Yes
12	Red Gum	*Eucalyptus camaldulensis*	3.0	14.2	1	20.0	Yes
13	Red Gum	*Eucalyptus camaldulensis*	4.0	21.6	2	10.0	Yes
14	Red Gum	*Eucalyptus camaldulensis*	3.0	10.1	1	6.0	Yes
15	Red Gum	*Eucalyptus camaldulensis*	3.0	20.5	1	12.0	Yes
16	Goodding's Black Willow	*Salix gooddingii*	1.0	8.0	1	6.0	No
17	Goodding's Black Willow	*Salix gooddingii*	3.0	30.0	4	10.0	No
18	Goodding's Black Willow	*Salix gooddingii*	2.0	13.0	2	5.0	No
19	Goodding’s Black Willow	*Salix gooddingii*	2.0	13.0	2	5.0	No
20	Valley Oak	*Quercus lobata*	4.0	9.1	1	8.0	No
21	Goodding's Black Willow	*Salix gooddingii*	3.0	11.0	2	6.0	No
22	Valley Oak	*Quercus lobata*	4.0	4.0	1	5.0	No
23	Goodding's Black Willow	*Salix gooddingii*	4.0	40.0	5	15.0	No
24	Goodding's Black Willow	*Salix gooddingii*	2.0	25.0	3	10.0	No
25	Goodding's Black Willow	*Salix gooddingii*	3.0	8.0	1	5.0	No
26	Goodding's Black Willow	*Salix gooddingii*	4.0	10.0	1	6.0	No
27	Goodding's Black Willow	*Salix gooddingii*	4.0	10.0	1	6.0	No
28	Northern CA Black Walnut	*Juglans hindsii*	3.0	7.1	1	7.0	Yes
29	Weeping Willow	*Salix babylonica*	3.0	16.6	1	10.0	Yes
30	Northern CA Black Walnut	*Juglans hindsii*	4.0	34.8	2	25.0	Yes
31	Northern CA Black Walnut	*Juglans hindsii*	3.0	8.0	1	6.0	Yes
32	Northern CA Black Walnut	*Juglans hindsii*	3.0	12.0	1	10.0	Yes
33	Northern CA Black Walnut	*Juglans hindsii*	4.0	11.7	2	10.0	Yes
34	Modesto Ash	*Fraxinus velutina*	0.0	0.0	1	0.0	Yes
35	Modesto Ash	*Fraxinus velutina*	1.0	59.5	2	30.0	Yes
36	Mulberry	*Morus alba*	1.0	12.5	4	5.0	Yes
37	Chinese Pistache	*Pistacia chinensis*	4.0	14.0	2	10.0	Yes
38	Edible Fig*	*Ficus carica*	4.0	13.0	3	8.0	Yes

*The California Invasive Plant Council classifies this tree as a “Not-Native Invasive” species with moderate status regarding potential impact to local native ecosystems.

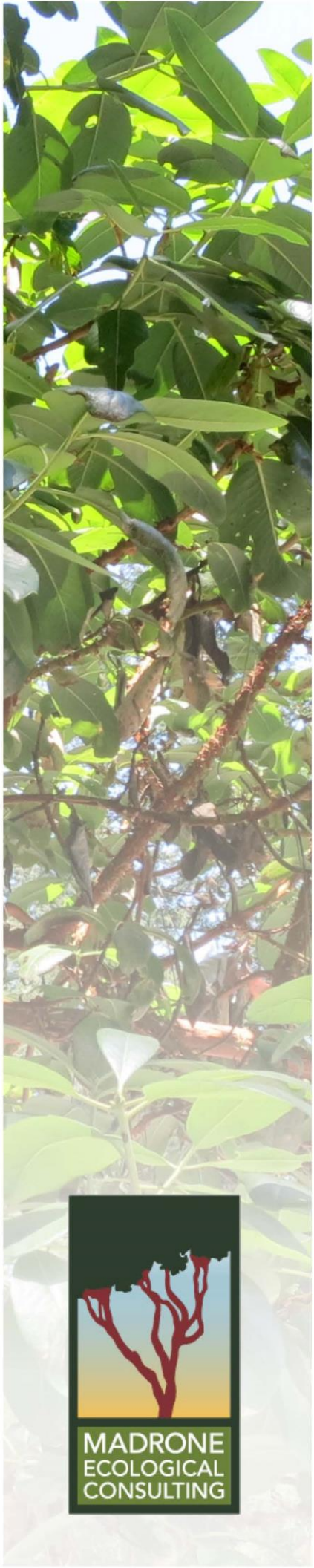
TABLE A-1. ASPEN VIII & IX ARBORIST REPORT - TREE SURVEY DATA (CONTINUED)							
Tree ID#	**Common Name**	**Scientific Name**	**Health**	**DBH**	**No. Stems**	**Dripline Radius**	**Impact (Yes/No)**
39	Fremont Cottonowood	*Populus fremontii*	2.0	60.0	3	15.0	No
40	Goodding's Black Willow	*Salix gooddingii*	2.0	14.7	5	8.0	No
41	Fremont Cottonwood	*Populus fremontii*	3.0	46.0	3	35.0	No
42	Fremont Cottonwood	*Populus fremontii*	2.0	64.0	3	30.0	No
43	Goodding's Black Willow	*Salix gooddingii*	3.0	13.0	5	8.0	No
44	Fremont Cottonwood	*Populus fremontii*	2.0	16.0	3	12.0	No
45	Mulberry	*Morus alba*	3.0	15.0	2	15.0	No
46	Mulberry	*Morus alba*	3.0	32.0	4	15.0	No
47	Edible Fig*	*Ficus carica*	3.0	46.0	4	25.0	No
48	Northern CA Black Walnut	*Juglans hindsii*	2.0	34.0	2	20.0	Yes
49	Northern CA Black Walnut	*Juglans hindsii*	2.0	23.5	3	18.0	Yes
50	Northern CA Black Walnut	*Juglans hindsii*	3.0	19.0	3	18.0	Yes
51	Mt Atlas Mastic Tree	*Pistacia atlantica*	3.0	26.0	4	10.0	Yes
52	Mulberry	*Morus alba*	4.0	45.0	9	15.0	Yes
53	Mulberry	*Morus alba*	4.0	17.0	5	10.0	Yes
54	Northern CA Black Walnut	*Juglans hindsii*	3.0	6.2	1	5.0	Yes
55	Chinese Tallowtree*	*Triadica sebifera*	2.0	9.2	2	4.0	Yes
56	Fremont Cottonwood	*Populus fremontii*	2.0	31.0	4	22.0	No
57	Fremont Cottonwood	*Populus fremontii*	2.0	24.0	1	20.0	No
58	Fremont Cottonwood	*Populus fremontii*	2.0	52.0	2	35.0	No
59	Goodding's Black Willow	*Salix gooddingii*	2.0	7.0	1	6.0	No
60	Goodding's Black Willow	*Salix gooddingii*	2.0	14.0	1	8.0	No
61	Mulberry	*Morus alba*	2.0	17.0	6	10.0	Yes
62	Mulberry	*Morus alba*	2.0	11.7	4	12.0	Yes
63	Mulberry	*Morus alba*	3.0	16.2	1	20.0	Yes
64	Mulberry	*Morus alba*	2.0	7.5	3	10.0	Yes
65	Mulberry	*Morus alba*	4.0	33.0	1	25.0	Yes
66	Mulberry	*Morus alba*	4.0	62.0	3	30.0	Yes
67	Mulberry	*Morus alba*	2.0	23.5	1	25.0	Yes
68	Prunus	*Prunus spp.*	2.0	15.4	2	15.0	Yes
69	Mulberry	*Morus alba*	4.0	21.7	1	30.0	Yes
70	Lemon	*Citrus x limon*	2.0	8.0	2	5.0	Yes
71	Prunus	*Prunus spp.*	3.0	20.0	2	15.0	Yes
72	Chinese Pistache	*Pistacia chinensis*	3.0	38.0	1	20.0	Yes
73	Modesto Ash	*Fraxinus velutina*	2.0	30.5	2	10.0	Yes
74	Modesto Ash	*Fraxinus velutina*	2.0	33.0	2	10.0	Yes
75	Modesto Ash	*Fraxinus velutina*	2.0	28.3	1	30.0	Yes
76	Modesto Ash	*Fraxinus velutina*	3.0	29.7	1	35.0	Yes

*The California Invasive Plant Council classifies this tree as a "Not-Native Invasive" species with moderate status regarding potential impact to local native ecosystems.

TABLE A-1. ASPEN VIII & IX ARBORIST REPORT - TREE SURVEY DATA (CONTINUED)							
Tree ID#	**Common Name**	**Scientific Name**	**Health**	**DBH**	**No. Stems**	**Dripline Radius**	**Impact (Yes/No)**
77	Modesto Ash	*Fraxinus velutina*	2.0	40.7	2	35.0	Yes
78	Modesto Ash	*Fraxinus velutina*	3.0	25.2	1	25.0	Yes
79	Modesto Ash	*Fraxinus velutina*	2.0	26.4	1	35.0	Yes
80	Modesto Ash	*Fraxinus velutina*	1.0	21.6	1	20.0	Yes
81	Modesto Ash	*Fraxinus velutina*	2.0	18.0	1	15.0	Yes
82	Modesto Ash	*Fraxinus velutina*	1.0	34.9	2	15.0	Yes
83	Modesto Ash	*Fraxinus velutina*	2.0	23.0	1	25.0	Yes
84	Modesto Ash	*Fraxinus velutina*	1.0	18.4	1	15.0	Yes
85	Modesto Ash	*Fraxinus velutina*	3.0	26.3	1	30.0	Yes
86	Modesto Ash	*Fraxinus velutina*	3.0	28.3	1	20.0	Yes
87	Modesto Ash	*Fraxinus velutina*	3.0	37.6	2	25.0	Yes
88	Modesto Ash	*Fraxinus velutina*	1.0	25.0	1	15.0	Yes
89	Modesto Ash	*Fraxinus velutina*	2.0	28.9	1	35.0	Yes
90	Chinese Pistache	*Pistacia chinensis*	3.0	4.4	1	10.0	Yes
91	Valley Oak	*Quercus lobata*	3.0	4.1	1	4.0	Yes
92	London Plane	*Platanus x hispanica*	4.0	45.0	1	40.0	Yes
93	Modesto Ash	*Fraxinus velutina*	2.0	47.0	3	30.0	Yes
94	Modesto Ash	*Fraxinus velutina*	1.0	59.2	4	30.0	Yes
95	Silver Maple	*Acer saccarinum*	1.0	52.3	2	35.0	Yes
96	Camphortree	*Cinnamomum camphora*	1.0	34.9	2	25.0	Yes
97	Goodding's Black Willow	*Salix gooddingii*	2.0	89.0	5	25.0	Yes
98	Goodding's Black Willow	*Salix gooddingii*	2.0	27.9	3	30.0	Yes
99	Goodding's Black Willow	*Salix gooddingii*	1.0	21.0	4	20.0	Yes
100	Goodding's Black Willow	*Salix gooddingii*	1.0	28.7	3	15.0	Yes
101	Goodding’s Black Willow	*Salix gooddingii*	2.0	8.0	1	15.0	No
102	Goodding’s Black Willow	*Salix gooddingii*	2.0	22.0	2	20.0	No

APPENDIX E

WEST JACKSON HIGHWAY MASTER PLAN
BIOLOGICAL RESOURCES ASSESSMENT



BIOLOGICAL RESOURCES ASSESSMENT

WEST JACKSON HIGHWAY MASTER PLAN

Sacramento County, California
December 2018

MADRONE ECOLOGICAL CONSULTING

Prepared for:
Teichert Land Co./Stonebridge Properties
3500 American River Drive
Sacramento, CA 95864

Granite Construction, Inc.
585 West Beach Street
Watsonville, CA 95076

Recommended Citation:
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Appendix

Appendix A. Revised Project Land Use Plan - West Jackson Highway Master Plan

1.0 INTRODUCTION

The West Jackson Highway Master Plan was initiated by the Sacramento County Board of Supervisors on 17 April 2012. In accordance with the requirements of General Plan Land Use Element Policy LU-119, StoneBridge Properties, LLC, a subsidiary of Teichert Land Company (Teichert), and Granite Construction Company (Granite), a California corporation, (jointly referred to as the "Participating Properties") have initiated the Master Plan process for all land encompassed within the proposed Master Plan Area (Plan Area). Of the entire approximately **5,913 acres** of the Plan Area, the Participating Properties collectively own approximately **4,079 acres**: Teichert owns approximately **3,016 acres** and Granite owns approximately **1,063 acres.** Thus, Participating Properties represent 69% of the total Plan Area acreage. These Participating Properties include aggregate mining sites used for sand and gravel extraction, many of which have already been reclaimed. Some of the Participating Properties continue to support various mining related activities. In addition to mining areas, the Plan Area is comprised of a mixture of rural, residential, institutional, agricultural, commercial, industrial, and other properties located along State Route 16 (Jackson Highway) in the geographic center of Sacramento County (**Figures 1** and **2**).

The purpose of this document is to catalog biological resources, including wetlands and waters, special-status species, sensitive species, nesting raptors, landmark and native trees within the Plan Area. The level of detail in this document varies based on land ownership and participation in the Master Plan process, both of which affect the accessibility of individual properties. All properties within the Plan Area are evaluated at a level sufficient for Master Plan analysis, and Participating Properties are evaluated with greater detail sufficient for a District Area Plan/Specific Plan analysis.

2.0 PROJECT LOCATION AND DESCRIPTION

The Plan Area boundaries are generally Jackson Highway, Kiefer Boulevard, and Mather Airport to the north; portions of Elder Creek Road and Florin Road to the south; South Watt Avenue and the City of Sacramento to the west; and Excelsior Road to the east (**Figures 1** and **2**). Approximately 80% of the Plan Area boundary abuts the existing Sacramento County Urban Policy Area and the Sacramento City Limits. As a result of the mining activities, which have encompassed the landscape since the 1930's, the Plan Area has largely been bypassed for development.

The Master Plan has been designed to provide a mixture of residential, commercial, recreational, farming, and employment nodes intended to reduce vehicle miles traveled (VMT) within the Plan Area and support the provision and use of alternative transportation options. The Master Plan establishes a framework and strategy for all future land use within the Plan Area, including general land use and development standards, policies, land use allocations, infrastructure, and public service planning. Within the Master Plan, two District Area Plans (District 1 and District 2) are established, in addition to three Future Planning Areas (FPAs) (FPA-A, B and C). District Area Plans primarily consist of Participating Properties, while Future Planning Areas are comprised of Non-Participating Property owners (**Figure 3**).

The District Area Plans establish specific land uses, policies and development standards for the properties within Districts 1 and 2. Although future land uses for the FPAs will be established in gross by the Master Plan, specific land uses, policies, and development standards for each of these areas is not provided by the Master Plan. It is anticipated that the landowners within the FPAs will initiate District Area Plans or Specific Plans in the future. Should the landowners in those areas contemplate changing existing land uses within the FPAs, such future use must be consistent with the provisions of the Master Plan. Land uses envisioned within District 1 and District 2 are shown on **Figure 4**.

The total acreage of the Plan Area in this biological resources assessment approximately matches that depicted in the Land Use Summary on the Revised Project Land Use Plan - West Jackson Highway Master Plan (Land Use Plan) dated April 5, 2017 (**Appendix A**), which was submitted to Sacramento County for review in 2017. However, the acreage break-downs by District 1, District 2, and the FPAs vary slightly between the Plan Area and the Land Use Plan due to differing methodologies. Unlike the Land Use Plan, this biological resources assessment relies heavily upon interpretation of aerial photography to categorize landcover types as described below in Section 3.2 (Existing Conditions, Methods and Sources of Information), thereby resulting in minor acreage discrepancies.

2.1 District 1 Area Plan

The District 1 Area Plan (District 1) is approximately **3,651 acres** comprised of approximately **3,016 acres** owned by Teichert, and approximately **635 acres** of Non-Participating Property owners and roads as shown on **Figure 5**.

2.2 District 2 Area Plan

The District 2 Area Plan (District 2) is approximately **1,245 acres** comprised of approximately **1,063 acres** owned by Granite and **182 acres** of Non-Participating Property owners and roads as shown on **Figure 6**.

2.3 Future Planning Areas

The three FPAs as shown on **Figure 3** are comprised of approximately **1,018 acres**, all of which are controlled by a number of smaller parcels owned by numerous Non-Participating Property owners. FPA-A is approximately **189 acres**, FPA-B is approximately **232 acres**, and FPA-C is approximately **597 acres**. While it is anticipated that the landowners within the FPAs will initiate District Area Plans or Specific Plans in the future, the timing on such planning efforts is unknown at this time.

3.0 BIOLOGICAL AND WETLAND SETTING

This section is comprised of four main sub-sections: regulatory policies and law that may apply to development within the Plan Area; methods utilized to assess the biological resources within the Plan Area; existing site conditions within the Plan Area; and the baseline site conditions within the Plan Area. Existing conditions are defined as those conditions as they occur within the Plan Area at the time of publication.

Baseline conditions are defined as those conditions which will exist after full reclamation on all lands permitted for aggregate extraction.

3.1 Regulatory Setting

This section describes federal, state, and local laws and policies that are relevant to this assessment of biological resources within the Plan Area.

3.1.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires evaluations of project effects on biological resources. Determining the significance of those effects is guided by Appendix G of the CEQA guidelines. These evaluations must consider direct effects on a biological resource within the project site itself, indirect effects on adjacent resources, and cumulative effects within a larger area or region. Effects can be locally important but not significant according to CEQA if they would not substantially affect the regional population of the biological resource. Significant adverse impacts on biological resources would include the following:

- Substantial adverse effects on any species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife (CDFW) or the U.S. Fish and Wildlife Service (USFWS) (these effects could be either direct or via habitat modification);
- Substantial adverse impacts to species designated by the CDFW (2018) as Species of Special Concern;
- Substantial adverse effects on riparian habitat or other sensitive habitat identified in local or regional plans, policies, or regulations or by CDFW and USFWS;
- Substantial adverse effects on federally protected wetlands defined under Section 404 of the Clean Water Act (these effects include direct removal, filling, or hydrologic interruption of marshes, vernal pools, coastal wetlands, or other wetland types);
- Substantial interference with movements of native resident or migratory fish or wildlife species population, or with use of native wildlife nursery sites;
- Conflicts with local policies or ordinances protecting biological resources (e.g. tree preservation policies); and
- Conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

3.1.2 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 protects species that are federally listed as endangered or threatened with extinction. FESA prohibits the unauthorized "take" of listed wildlife species. Take includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such activities. Harm includes significant

modifications or degradations of habitats that may cause death or injury to protected species by impairing their behavioral patterns. Harassment includes disruption of normal behavior patterns that may result in injury to or mortality of protected species. Civil or criminal penalties can be levied against persons convicted of unauthorized "take." FESA enables the USFWS to authorize take of a listed species that is incidental to carrying out an otherwise lawful project when the impacts of the authorized take will be minimized and fully mitigated. In addition, FESA prohibits malicious damage or destruction of listed plant species on federal lands or in association with federal actions, and the removal, cutting, digging up, damage, or destruction of listed plant species in violation of state law. FESA does not afford any protections to federally listed plant species located on private lands with no associated federal action when those plant species are not also included on a state endangered species list.

3.1.3 State Endangered Species Act

With limited exceptions, the California Endangered Species Act (CESA) of 1984 protects state-designated endangered and threatened species in a way similar to FESA. For projects on private property (i.e. that for which a state agency is not a lead agency), CESA enables CDFW to authorize take of a listed species that is incidental to carrying out an otherwise lawful project where the impacts of the authorized take will be minimized and fully mitigated (Fish & Game Code Section 2081).

3.1.4 Clean Water Act, Section 404

Section 404 of the Federal Clean Water Act requires that a Department of the Army permit be issued prior to the discharge of any dredged or fill material into waters of the United States, including wetlands (waters). The U. S. Army Corps of Engineers (USACE) implements this program, with oversight from the U. S. Environmental Protection Agency. Waters of the United States include all navigable waters; interstate waters and wetlands; all intrastate waters and wetlands that could affect interstate or foreign commerce; impoundments of the above; tributaries of the above; territorial seas; and wetlands adjacent to the above. Typically, the USACE does not recognize as jurisdictional waters of the U.S. areas that are "*water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water…*" [33 CFR 328.3(b)(4)(v)].

3.1.5 Clean Water Act, Section 401

Section 401 of the Clean Water Act requires any applicant for a 404 permit in support of activities that may result in any discharge into waters of the United States to obtain a water quality certification with the Regional Water Quality Control Board (RWQCB). This program is meant to protect these waters and wetlands by ensuring that waste discharged into them meets state water quality standards. Because the water quality certification program is triggered by the need for a Section 404 permit (and both programs are a part of the Clean Water Act), the definition of waters of the United States under Section 401 is the same as that used by the USACE under Section 404.

3.1.6 California Water Code, Porter-Cologne Act

The Porter Cologne Act, from Division 7 of the California Water Code, requires any person discharging waste or proposing to discharge waste that could affect the quality of waters of the state to file a report of waste discharge (RWD) with the RWQCB. The RWQCB can waive the filing of a report, but once a report is filed, the RWQCB must either waive or adopt water discharge requirements (WDRs). "Waters of the state" are defined as any surface water or groundwater, including saline waters, within the boundaries of the state.

3.1.7 California Fish and Game Code Section 1600 – Streambed and Lake Alteration

The Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code, Section 1602, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel in order to be considered subject to CDFW jurisdiction. If notification is required and CDFW believes the proposed activity is likely to result in adverse harm to the natural environment, it will require that the parties enter into a Lake or Streambed Alteration Agreement (LSAA).

3.1.8 California Fish and Game Code Section 3503.5 - Raptor Nests

Section 3503.5 of the Fish and Game Code makes it unlawful to take, possess, or destroy hawks or owls, unless permitted to do so, or to destroy the nest or eggs of any hawk or owl.

3.1.9 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any native migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11.). Likewise, Section 3513 of the California Fish & Game Code prohibits the "take or possession" of any migratory non-game bird identified under the MBTA. Therefore, activities that may result in the injury or mortality of native migratory birds, including eggs and nestlings, would be prohibited under the MBTA.

3.1.10 County of Sacramento General Plan

The Conservation Element of the Sacramento County General Plan (under Policy CO-58) currently provides protection to various ecosystems. Specifically, it "ensures no net loss of wetlands, riparian woodlands, and oak woodlands." The General Plan also seeks to protect landmark and heritage trees (collectively referred to as "protected trees"). "Landmark trees" are defined as ones that are "especially prominent and stately." "Heritage trees" are defined as native oaks that exceed 60 inches in circumference. Policies CO-137, CO-138, CO-139, CO-140, and CO-141 encourage protection and preservation of landmark and heritage trees, and Policy CO-145 requires mitigation by creation of new tree canopy equivalent to the acreage of non-native tree canopy removed (County of Sacramento 2017).

3.1.11 South Sacramento Habitat Conservation Plan

The Final South Sacramento Habitat Conservation Plan (SSHCP) is a regional approach to addressing issues related to urban development, habitat conservation, and agricultural protection. The SSHCP consolidates environmental efforts to protect and enhance wetlands (primarily vernal pools) and upland habitats to provide ecologically viable conservation areas. The SSHCP covers 28 different species of plants and wildlife including 11 that are state or federally listed as threatened or endangered. The SSHCP is an agreement between state/federal wildlife and wetland regulators and local jurisdictions, which will allow land owners to engage in the "incidental take" of listed species under the FESA and CESA (i.e., to destroy or degrade habitat) in return for conservation commitments from local jurisdictions. The SSHCP and a related Aquatic Resources Program (ARP) will also set up an abbreviated process for U.S. Army Corps of Engineers permitting under Section 404 of the federal Clean Water Act. The geographic scope of the SSHCP includes U.S. Highway 50 to the north, Interstate 5 to the west, the Sacramento County line with El Dorado and Amador Counties to the east, and San Joaquin County to the south.

The SSHCP Study Area (SSHCP Study Area) excludes the City of Sacramento, the City of Folsom and Folsom's Sphere of Influence, the City of Elk Grove and Elk Grove's Sphere of Influence, the Sacramento-San Joaquin Delta, and the Sacramento County community of Rancho Murieta. Sacramento County is partnering with the incorporated cities of Rancho Cordova and Galt, as well as the Sacramento Regional County Sanitation District and Sacramento County Water Agency to further advance the regional planning goals of the SSHCP. The stated goals and objectives of the SSHCP are to create a Habitat Conservation Plan that:

- Ensures long-term viability to aid and enhance recovery of sensitive species in the SSHCP Study Area by protecting an adequate quality and quantity of habitat in an integrated manner.
- Accommodates development in appropriate sites with fair and reasonable mitigation cost structure.
- Protects agricultural lands and operations from constraints associated with the plan's implementation.
- Gains the trust of all stakeholders in the permitting process by providing certainty that their interests will be considered in a fair and predictable process.
- Relies on voluntary participation through incentives that make the HCP process preferable to the existing process.

- Provides a streamlined permitting process that reduces permitting cost to developers and taxpayers.
- Provides a comprehensive framework for use in linking plant and animal conservation with local land use programs, consistent with Sacramento County General Plan goals and policies.

3.1.12 Sacramento County Tree Preservation Ordinance (Sacramento County Code Chapter 19.12)

Sacramento County outlines their requirements regarding the protection of trees in County Code 19.12.060. The county code includes the following statement:

> "*No person shall trench, grade or fill within the dripline of any tree or destroy, kill or remove any tree as defined, in the designated urban area of the unincorporated area of Sacramento County, on any property, public or private, without a tree permit, or unless authorized as a condition of a discretionary project approval by the Board of Supervisors, County Planning Commission, Zoning Board of Appeals, the Zoning Administrator or the Subdivision Review Committee. (SCC 1400 § 23, 2008: SCC 480 § 1, 1981.)*."

Sacramento County Code (Section 19.12.040) defines trees as follows:

> *"Tree: As used in this chapter, a 'tree' shall mean any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half feet above the ground (dbh)."*

3.1.13 Sacramento County Swainson's Hawk Ordinance (Sacramento County Code Chapter 16.130)

Sacramento County has developed a Swainson's Hawk Mitigation Program, codified in Chapter 16.130 of the County Code, which provides an option for mitigating a project's impacts to Swainson's hawk foraging habitat. Under this program, mitigation can be satisfied by: (1) providing replacement foraging habitat or paying a fee if the impact is less than 40 acres; or (2) by providing replacement land if the impact is 40 acres or more. Other options for mitigating a project's impacts to foraging habitat generally involve working on an individual basis with CDFW.

3.2 Existing Conditions, Methods and Sources of Information

As discussed in the Project Description above, the Plan Area is comprised of District 1, District 2, and three FPAs. Assessment methodologies for existing conditions were driven by site accessibility, which in turn was driven by participation in the Master Plan process. All Non-Participant Properties within the Plan Area were evaluated remotely, based on the best available information, as described below.

Existing conditions biological resources assessments for District 1 and District 2 Participant Properties drew information from site visits, survey data, and/or previously prepared assessment reports involving site visits.

Rare plant surveys, detailed wetland delineations, biological assessments, and arborist reports are examples of sources of information for Districts 1 and 2. The majority of the landcover type acreage totals, excluding delineated wetlands and other waters of the U.S. (Waters), were primarily derived from the interpretation of aerial photography flown for the National Agriculture Imagery Program (NAIP) in 2016 and 2018 aerials provided by Google Earth Pro. The acreage totals for permitted mining areas, such as Vineyard, Aspen IV South, Aspen V South, Aspen VIII, Aspen IX, and Machida[1], were updated to reflect the latest conditions within these actively worked areas.

Existing conditions biological resources assessments for land controlled by Non-Participating Property owners within Districts 1 and 2 and for all three FPAs utilized biological baseline information derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerials and from observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

3.2.1 California Natural Diversity Database (CNDDB) Query

A record query of the California Natural Diversity Database (CNDDB) was conducted to identify all historic and extant occurrences of special-status species within a 10-mile radius of the Plan Area regardless of ownership. The resulting assessment considered species formally listed as threatened or endangered by USFWS or CDFW as well as those proposed for formal listing, candidates for federal listing, those classified as species of special concern by CDFW and "special animals." "Special animals" is a broad term used by CDFW and refers to all animal taxa tracked by the CNDDB. Also included were species considered to be or "fully protected" by the CDFW and plant species considered to be rare, threatened, or endangered in California by the California Native Plant Society (CNPS). These include species listed in California Rare Plant Ranks 1, 2, 3, and 4 of the CNPS Ranking System:

- California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- California Rare Plant Rank 2A: Plants presumed extirpated in California, but common elsewhere.
- California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
- California Rare Plant Rank 3: Plants about which more information is needed – a review list.
- California Rare Plant Rank 4: Plants of limited distribution – a watch list.

[1] Machida was technically exempt from the Surface and Mining Reclamation Act and therefore approved under a Sacramento County Grading Permit.

The CNPS Threat Rank is an extension that is added onto the California Rare Plant Rank (CRPR). It ranges from 0.1 to 0.3 and indicates the level of endangerment to the species with 0.1 representing the most endangered and 0.3 being the least endangered.

The following is an overview of the species that were listed in the CNDDB query as occurring within ten miles of the Plan Area, or were identified during surveys or ground-level observations. Brief descriptions of habitat requirements are also included. **Figure 7** is an exhibit displaying CNDDB occurrences within ten miles of the Plan Area, and **Figure 8** presents Critical Habitats and Vernal Pool Core Recovery Areas in relation to the Plan Area. Detailed species information is discussed within the Existing Site Conditions sections below.

3.2.1.1 Special-Status Plants

3.2.1.1.1 Brandegee's Clarkia

Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*) is a CRPR 4.2 plant. The species favors chaparral and cismontane woodland at elevations ranging from about 240 to 3,000 feet, but it is also often associated with roadcuts and switchbacks. Brandegee's clarkia is an annual herbaceous species, and it typically blooms from May to July.

There are no known CNDDB occurrences of this species within the Plan Area, and only one presumed extant occurrence within ten miles of the Plan Area, which is located approximately 8 miles to the northeast in the Folsom Lake State Recreation Area (CNDDB occurrence #79) (CNDDB 2018).

3.2.1.1.2 Peruvian Dodder

Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*) is a CRPR 2B.2 plant. The CNDDB lists only six occurrences of Peruvian dodder within California with the most recent recorded in 1995. Peruvian dodder is a holoparasite meaning that it lacks chlorophyll and is entirely dependent upon its host species to provide nutrients. Peruvian dodder, which is strongly associated with freshwater marshes and swamps, is believed to parasitize members of several genera including *Alternanthera*, *Dalea*, *Lythrum*, *Polygonum*, and *Xanthium*. This annual vine blooms from June to October and is found between approximately 50 and 900 feet.

There are no known CNDDB occurrences of this species within the Plan Area and only one presumed extant occurrence within ten miles of the Plan Area, which is located approximately 7.5 miles to the southwest in Laguna Lake in Elk Grove. The CNDDB considers the identification of this specimen as questionable and recommends additional field work to confirm the presence of Peruvian dodder at this location (CNDDB occurrence #6) (CNDDB 2018).

3.2.1.1.3 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is a CRPR 2B.2 plant that is strongly associated with vernal pools and other seasonally inundated features. Dwarf downingia is a diminutive herb currently threatened by urbanization, agriculture, grazing, vehicles, and industrial forestry. It prefers elevations ranging between 1 and 1,500 feet, and it blooms from March to May.

There are no known CNDDB occurrences of this species within the Plan Area; however, four presumed extant occurrences are located within ten miles of the Plan Area. The nearest is located approximately 5 miles to the southwest on the east side of Waterman Road between Sheldon and Bond Roads in Elk Grove (CNDDB occurrence #54) (CNDDB 2018). A non-CNDDB occurrence of this species was observed during 2016 rare plant surveys in the Vineyard South Mine Project site, which is located south of Vineyard I on the south side of Elder Creek Road (APN 066-0010-001) (WRA 2016). This occurrence has yet to be published by the CNDDB.

3.2.1.1.4 Stinkbells

Stinkbells (*Fritillaria agrestis*) is a CRPR 4.2 plant. Stinkbells, so named because of its strong odor, are a species of lily commonly associated with annual grasslands with heavy clay soils at elevations ranging from 30 to 5,100 feet. This species blooms from March to June and also favors other habitat types such as chaparral, cismontane woodland, and pinyon and juniper woodland. Stinkbells have also been documented on serpentine soils.

There are no known CNDDB occurrences of this species within the Plan Area; however, two presumed extant occurrences are located within ten miles of the Plan Area. The nearest is located approximately 6 miles to the north in Carmichael at the northeast corner of Winding Way and Hackberry Lane (CNDDB occurrence #11) (CNDDB 2018).

3.2.1.1.5 Bogg's Lake Hedge-Hyssop

Bogg's Lake hedge-hyssop (*Gratiola heterosepala*) is listed as endangered under CESA and is a CRPR 1B.2 plant. Though Bogg's Lake hedge-hyssop grows in vernal pools, it can also occur around the perimeter of lakes and ponds. This small annual herb is found between 30 and 7,800 feet, favors clay soils, and blooms from April to August.

There are no known CNDDB occurrences of this species within the Plan Area; however, nine presumed extant occurrences are located within ten miles of the Plan Area. The nearest is located approximately 1.25 miles to the east at Mather Field west of Eagles Nest Road (CNDDB occurrence #84) (CNDDB 2018).

3.2.1.1.6 Woolly Rose-Mallow

Woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*) is a CRPR 1B.2 plant. It typically occurs on freshwater-saturated riverbanks and low peat islands located within sloughs, though woolly rose-mallow has also been observed growing in riprap on the sides of levees. Woolly rose-mallow is found at elevations below 395 feet, and it is strongly associated with the Delta watershed.

There are no known CNDDB occurrences of this species within the Plan Area; however, three presumed extant occurrences are located within ten miles of the Plan Area. All are located on the Stone Lakes National Wildlife Refuge approximately 9 miles to the southwest (CNDDB occurrence #189 through #191) (CNDDB 2018).

3.2.1.1.7 Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is a CRPR 1B.2 plant. It is an annual herb found between elevations of approximately 100 feet and 750 feet. Ahart's dwarf rush blooms from March to May and grows along the edges of seasonal wet habitats such as vernal pools and swales within Valley and foothill grasslands.

There are no known CNDDB occurrences of this species within the Plan Area; however, one presumed extant occurrence is located within ten miles of the Plan Area approximately 1.25 miles to the east at Mather Field west of Eagles Nest Road (CNDDB occurrence #8) (CNDDB 2018).

3.2.1.1.8 Legenere

Legenere (*Legenere limosa*) is a CRPR 1B.1 plant that is primarily associated with the bottoms of vernal pools. Legenere, which grows between 0 to 2,630 feet, is an annual herb. It blooms from April to June and is currently threatened by grazing and developments. Many historic populations of legenere are believed to have been extirpated.

There are no known CNDDB occurrences of this species within the Plan Area; however, twenty-six presumed extant occurrences are located within ten miles of the Plan Area. The closest is approximately 0.2 mile to the east at Mather Field (CNDDB occurrence #44) (CNDDB 2018).

3.2.1.1.9 Pin Cushion Navarretia

Pin cushion navarretia (*Navarretia myersii* ssp. *myersii*) is a CRPR 1B.1 plant that is associated with vernal pools and other seasonal wetlands associated with annual grasslands with clay soils. Pin cushion navarretia, which is an annual herbaceous species that is found between approximately 65 and 1,100 feet, typically blooms in April and May. It is currently threatened by development.

There are no known CNDDB occurrences of this species within the Plan Area and only one presumed extant occurrence within ten miles of the Plan Area. This is located approximately 9 miles to the northeast at the Phoenix Field Ecological Reserve (CNDDB occurrence #3) (CNDDB 2018).

3.2.1.1.10 Slender Orcutt Grass

Slender Orcutt grass (*Orcuttia tenuis*) is listed as threatened under CESA and endangered under FESA. It is found in vernal pools often with gravelly substrates at elevations generally ranging between 100 and 5,800 feet. Categorized as a CRPR 1B.1 plant, slender Orcutt grass is an annual herb, and its bloom period usually extends from May to October.

There are no known CNDDB occurrences of this species within the Plan Area; however, three presumed extant occurrences are located within ten miles of the Plan Area. The closest is approximately 1.3 miles to the south on the west side of Laguna Creek 0.2 mile east of Excelsior Road and 0.7 mile north of Dierks Road (CNDDB occurrence #16) (CNDDB 2018).

3.2.1.1.11 Sacramento Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is a CRPR 1B.1 plant that is listed as endangered under FESA and CESA. Like slender Orcutt grass, this herbaceous annual also favors vernal pool habitats, and it is found between elevations of 100 and 330 feet. Sacramento Orcutt grass typically blooms from April to July, though it has been occasionally known to bloom as late as September. It currently faces serious threats from agriculture, urbanization, and competition from exotic species.

There are no known CNDDB presumed extant occurrences of this species in the Plan Area; however, nine presumed extant occurrences are located within ten miles of the Plan Area. The closest is approximately 3 miles to the east on the Anatolia Preserve on the east side of Sunrise Boulevard (CNDDB occurrence #17) (CNDDB 2018).

3.2.1.1.12 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is listed as a CRPR 1B.2 plant by the CNPS. It generally occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow moving water into early summer. Sanford's arrowhead is a perennial rhizomatous emergent species, and it blooms from May to October.

Colonies of Sanford's arrowhead were observed in two ditches in the western portion of Aspen VIII within the Plan Area (Teichert 2015). The majority of these colonies have been extirpated by permitted mining activities on Aspen VIII. This impact was mitigated pursuant to the Final EIR for the Aspen VII and Aspen IX Mining Use Permit.

3.2.1.1.13 Saline Clover

Saline clover (*Trifolium hydrophilum*) is listed as a CRPR 1B.2 plant by the CNPS. Saline clover is associated with saline marshes or vernal pools with alkaline soils in valley grasslands, though it has been documented as occurring near springs or seeps. Saline clover is an annual fleshy species typically found below 1,000 feet, and it blooms from April to June.

There are no known CNDDB occurrences of this species within the Plan Area; however, two presumed extant occurrences are located approximately 9.5 miles to the southwest near Stone Lakes (CNDDB occurrence #37 and #38) (CNDDB 2018).

3.2.1.2 Special-Status Invertebrates

3.2.1.2.1 Special-Status Vernal Pool Branchiopod Species

These species are strongly associated with vernal pools or other seasonally ponded fish-free aquatic features that sustain inundation during the winter before drying in the late spring. According to the CNDDB, fifteen occurrences of these species are located within the Plan Area (CNDDB 2018). These include five occurrences of vernal pool fairy shrimp *(Branchinecta lynchi*) and six occurrences of vernal pool tadpole shrimp (*Lepidurus packardi*), which are listed as threatened and endangered, respectively, under FESA. Also recorded are eight occurrences of California linderiella (*Linderiella occidentalis*) and two occurrences of midvalley fairy shrimp (*Branchinecta mesovallensis*), both of which are non-listed.

3.2.1.2.2 Andrenid Bees

The blennosperma andrenid bee (*Andrena blennospermatis*) is not a state or federal listed species; however, it has been assigned a State Ranking code of S2 by CDFW meaning that the species is imperiled because of extreme rarity due to very restricted range, very few populations, often 20 or fewer, steep declines, or other factors making it very vulnerable to extirpation from the state This ground nesting species collects pollen from the vernal pool flower, blennosperma (*Blennosperma nanum*), which it caches in several individual underground brood chambers. In each chamber the female deposits a solitary egg that will hatch and feed on the specially treated pollen ball. These bees forage in vernal pool habitat supporting blennosperma and burrow and nest in adjacent uplands.

There are no known CNDDB occurrences of this species within the Plan Area and only one presumed extant occurrence within ten miles of the Plan Area. This is located approximately 9 miles to the east near Sloughhouse (CNDDB occurrence #8) (CNDDB 2018).

Also listed as occurring within ten miles is the vernal pool andrenid bee (*Andrena subapasta*). It is not a state or federal listed species; however, it has been assigned a State Ranking code of S1S2 by CDFW. This means the State Ranking falls in between S1 - critically imperiled in the state because of extreme rarity (often 5 or fewer populations), or because of factor(s) such as very steep declines making it especially

vulnerable to extirpation from the state - and S2 - imperiled because of rarity due to very restricted range, very few populations, often 20 or fewer, steep declines, or other factors making it very vulnerable to extirpation from the state. This species is known to collect pollen from sandwort (*Arenaria* sp.), butter and eggs (*Triphysaria erianthus*), and goldfields (*Lasthenia* sp.) which grow in vernal pools or adjacent grasslands. Though its life cycle is poorly understood, other bees of this genus are solitary and burrow into the ground to cache collected pollen and lay eggs.

There are no known CNDDB occurrences of this species within the Plan Area and only one presumed extant 1954 occurrence within ten miles of the Plan Area. This is located approximately 6.5 miles to the northeast in what is now a developed area of Fair Oaks (CNDDB occurrence #4) (CNDDB 2018).

3.2.1.2.3 Sacramento Valley Tiger Beetle

The Sacramento Valley tiger beetle (*Cicindela hirticollis abrupta*) is not a state or federal listed species; however, it has been assigned a State Ranking code of SH by CDFW meaning that all California elemental occurrences are historical. The USFWS considers the species extinct. Its habitat consisted of fine to medium sand located on terraced flood plains.

There are no known CNDDB historic occurrences of this species within the Plan Area; and only one presumed extirpated occurrence within ten miles of the Plan Area. This is located approximately 8 miles to the northwest along the Sacramento River between Sacramento and West Sacramento (CNDDB occurrence #10) (CNDDB 2018).

3.2.1.2.4 Hairy Water Flea

Hairy water flea (*Dumontia oregonensis*) is not a state or federal listed species; however, it has been assigned a State Ranking code of S1 by CDFW meaning that the species is critically imperiled because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state. The habits of this poorly understood species have not been thoroughly documented, though they are associated with vernal pools. In California, specimens have only been observed at Mather Airport, a small portion of which overlaps the Plan Area, and Travis Air Force Base (CNDDB occurrence #1) (CDFW 2018).

3.2.1.2.5 Valley Elderberry Longhorn Beetle (VELB)

The Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is listed as threatened under FESA. It is associated exclusively with elderberry shrubs (*Sambucus* spp.) in the Central Valley and adjacent foothills. The beetle's life cycle consists of four stages: egg, larva, pupa and adult. Females deposit eggs on the bark. Upon hatching, the larvae burrow into the stems where they remain for as long as 2 years, after which they enter the pupae stage and transform into adults. This species most commonly occurs within or near riparian corridors comprised of willow (*Salix* spp.), cottonwood (*Populus fremontii* ssp. *fremontii*), wild grape (*Vitis californica*), and box elder (*Acer negundo*). Population densities are probably

naturally low (USFWS 1984), and it has been suggested based on the spatial distribution of occupied shrubs, that it has limited dispersal capabilities. Low densities and limited dispersal capabilities may result in vulnerability to the adverse effects of habitat fragmentation.

There are no known CNDDB occurrences of this species in the Plan Area; however, thirty presumed extant occurrences are located within ten miles of the Plan Area. The closest is approximately 2 miles to the north along the American River (CNDDB occurrence #282) (CNDDB 2018).

3.2.1.2.6 Ricksecker's Water Scavenger Beetle

The Ricksecker's water scavenger beetle (*Hydrochara ricksecker*i) is not a state or federal listed species; however, it has been assigned a State Ranking code of "S2?" by CDFW meaning that the species is imperiled because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state. The "?" denotes that the level of imperilment is less than "S2." The behaviors of this poorly understood species have not been thoroughly documented. They are believed to be scavengers and metamorphose from a predacious larval stage. This species favors shallow, weedy, freshwater habitats such as vernal pools, lakes, ponds, and slow moving streams. It is capable of flight, but its dispersal tendencies are not well documented.

Though no known CNDDB occurrences are documented directly within the Plan Area, the species has been observed at Mather Airport (CNDDB occurrence #5) (CDFW 2018).

3.2.1.3 Special-Status Fish

3.2.1.3.1 Sacramento Perch

Sacramento perch (*Archoplites interruptus*), which is a CDFW species of special concern, is the only native centrarchid (or sunfish) west of the Rocky Mountains. The species was once very abundant in lakes, sloughs, rivers, ponds, and drainages throughout the Central Valley, but has been adversely affected by habitat destruction and the introduction of non-native fishes. Exotic sunfish typically spawn in nests that the male builds and protects until the off-spring are free swimming. Conversely, the Sacramento perch usually spawns on unprepared substrate and provides no further parental care. This may result in a higher rate of predation of eggs.

There are no known CNDDB occurrences of this species in the Plan Area, and only one presumed extant occurrence within ten miles, which is situated approximately 9 miles to the west in Lake Greenhaven (CNDDB occurrence #4) (CNDDB 2018). The Plan Area potentially supports low quality habitat for this species.

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3.2.1.3.2 Central Valley Steelhead - Distinct Population Segment (DPS)

The Central Valley steelhead DPS (*Oncorhynchus mykiss irideus*) is listed as threatened under FESA. It requires cold freshwater water courses with gravelly substrates for breeding. The young remain in freshwater

habitats foraging for a variety of terrestrial and aquatic invertebrates before migrating to estuarine and marine environments.

There are no known CNDDB occurrences of this species in the Plan Area; however, six presumed extant occurrences are located within ten miles of the Plan Area. The closest is approximately 2 miles to the north in the American River (CNDDB occurrence #5) (CNDDB 2018). The Plan Area does not support suitable habitat for this species.

3.2.1.3.3 Central Valley Winter-Run and Spring-Run Chinook Salmon

Two runs of Central Valley Chinook salmon (*Oncorhynchus tshawytscha*) are recorded as occurring within ten miles of the Plan Area. The first is the Central Valley spring-run, which is listed as threatened under FESA and CESA, and the second is the Sacramento River winter-run, which is listed as endangered under FESA and CESA. Both require cold freshwater water courses with gravelly substrates for breeding. The life cycle and habitat requirements of the Chinook salmon are roughly similar to those of the Central Valley steelhead with the young remain in freshwater drainages before moving to estuarine and marine habitats. Chinook salmon are the largest salmonids with individuals reaching 120 pounds.

There are no known CNDDB occurrences of this species in the Plan Area. The only presumed extant occurrence is approximately 8 miles to the west in the Sacramento Deep Water Ship Channel (CNDDB occurrence #7) (CNDDB 2018). The Plan Area does not support suitable habitat for this species.

3.2.1.3.4 Longfin Smelt

Longfin smelt (*Spirinchus thaleichthys*) is listed as threatened under CESA and is a candidate species under FESA. The Bay-Delta populations of longfin smelt are anadromous, though other populations are known to spend their entire life cycles in freshwater. The Bay-Delta population migrates upstream from brackish or marine waters to spawn in freshwater drainages, possibly during the night. Longfin smelt, which have a life cycle of approximately two years, die shortly after spawning. The majority of the young spend their first three months in fresh water before migrating to brackish or marine habitats.

There are no known CNDDB occurrences of this species in the Plan Area. The only presumed extant occurrence is approximately 8 miles to the west in the Sacramento River (CNDDB occurrence #14) (CNDDB 2018). The Plan Area does not support suitable habitat for this species.

3.2.1.4 Special-Status Amphibians & Reptiles

3.2.1.4.1 Western Pond Turtle

The western pond turtle (*Emys marmorata*) is a California species of special concern. Favored habitats include streams, large rivers and canals with slow-moving water, aquatic vegetation, and open basking sites. Although the turtles must live near water, they can tolerate drought by burrowing into the muddy beds of

dried drainages. This species feeds mainly on invertebrates such as insects and worms, but will also consume small fish, frogs, mammals and some plants. Western pond turtle predators include raccoons, coyotes, raptors, weasels, large fish, and bullfrogs. This species breeds from mid to late spring in adjacent open grasslands or sandy banks.

There is one known occurrence of this species within the Plan Area within Morrison Creek (CNDDB occurrence #433) (CDFW 2018). The ponds, channels, industrial ponds, as well as some of the ditches within the Plan Area may provide suitable habitats for this species.

3.2.1.4.2 Western Spadefoot Toad

The western spadefoot toad (*Spea hammondii)* is a California species of special concern. This amphibian is a nocturnally active animal and prefers to forage in grassland, scrub, and chaparral habitats for a variety of invertebrates such as insects and worms. This species breeds from January to May in vernal pools, pools in ephemeral stream courses, and other fish-free water features. Females commonly lay more than 500 eggs in one season. The tadpoles develop in 3 to 11 weeks, and must complete their metamorphosis before the temporary pools dry.

There are no known CNDDB occurrences of this species in the Plan Area; however, five presumed extant occurrences are located within ten miles. The closest is approximately 1 mile to the west near the junction of Kiefer Boulevard and Eagles Nest Road (CNDDB occurrence #167) (CNDDB 2018). The seasonal wetlands, vernal pools, and seasonal wetland swales, as well as other natural and constructed seasonal water features within the Plan Area may provide suitable breeding habitats for this species.

3.2.1.4.3 Giant Garter Snake

Giant garter snake (*Thamnophis gigas*) is listed as threatened under FESA and CESA. Giant garter snakes are generally associated with larger canals, irrigation ditches, and other semi-permanent to permanent aquatic sites with slow moving water and an abundance of emergent vegetation and basking sites

There are no known CNDDB occurrences of this species in the Plan Area; however, five presumed extant occurrences are located within ten miles, all of which are located west of State Route 99. The closest is approximately 8.5 miles to the southwest near South Beach Lake in the vicinity of Morrison Creek (CNDDB occurrence #147) (CNDDB 2018). Morrison Creek as well as some of the ditches and natural and constructed ponds may provide suitable habitat within the Plan Area for this species.

3.2.1.5 Special-Status Birds

3.2.1.5.1 Cooper's Hawk

Cooper's hawk (*Accipiter cooperii*), which is also known as the blue darter or chicken hawk, is a CDFW special animal. This raptor is an ambush predator that prefers to forage in or near wooded locations for birds,

domestic poultry, and small mammals. Cooper's hawks subdue prey by continuously squeezing with talon-equipped feet, and it has been observed on occasion drowning captured prey in water. This species nests in trees located in wooded areas typically 10 to 60 feet above ground level.

The CNDDB records no occurrences of Cooper's hawks within the Plan Area; however, this species was observed in the vicinity of the constructed emergent marsh on Granite I and Aspen VI, though it is unclear whether a nesting site was observed (Teichert 2013). Some of the riparian woodlands and adjacent annual grasslands within the Plan Area provide suitable nesting and foraging habitats, respectively.

3.2.1.5.2 Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) populations, which are currently in decline throughout the state, was listed as threatened under the California Endangered Species Act by the California Fish and Game Commission on 19 April 2018. Historically, colonies were established in freshwater marshes dominated by cattails (*Typha* spp.) and bulrushes (*Scirpus* or *Schoenoplectus* spp.). More recently, they have utilized non-native mustards (*Brassica* spp.), blackberries (*Rubus* spp.), thistles (*Circium* spp.), and mallows (*Malva* spp.) as nesting substrate. Since the 1980's, the largest colonies have been observed in the San Joaquin Valley in cultivated fields of triticale, which is a hybrid of wheat and rye often grown as livestock fodder. This current trend of nesting in active agricultural fields has further imperiled the species as nestlings typically have not fledged by the time the triticale is harvested.

The CNDDB records at least ten presumed extant occurrences of nesting colonies scattered throughout the Plan Area in Granite I, Aspen IV, Aspen V South, Aspens VI through IX, and FPA-C (CNDDB occurrence #177, #305-6, #349, #390, #483, #485, #499, #500, and #743) (CNDDB 2018). Four nesting colonies were also observed in the eastern portion of Aspen VIII in 2013-14 (Teichert 2015).

3.2.1.5.3 Golden Eagle

The golden eagle (*Aquila chrysaetos*) is afforded protection by CDFW as a species of special concern and a fully protected species. It is a very large solitary tree nesting raptor which feeds on mammals, carrion, and reptiles. Though its natural densities are generally believed to be low, it once was relatively common to the open areas of California. Today, the golden eagle is rarely observed in the Central Valley.

There is one known occurrence of this species within the Plan Area located southwest of Mather Field in Granite I, Aspen V, and Aspen VI between Kiefer Boulevard, Bradshaw Road, Jackson Highway, and Excelsior Road (CNDDB occurrence #135) (CDFW 2018). The open areas including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands provide suitable foraging habitats. The Plan Area is generally considered to be out of the breeding range of this species.

3.2.1.5.4 Great Egret

The great egret (*Ardea alba*) is considered a special animal by CDFW. This wading bird usually forages alone in shallow open water and wetlands for fish, amphibians, and aquatic invertebrates. The species has recovered from historic persecution by plume hunters, but destruction of wetlands, especially in the West where colonies are few and widely scattered, poses a current threat. Great egrets prefer breeding sites in or near open waters and wetlands.

There are no known CNDDB occurrences of rookeries for this species in the Plan Area; however, five presumed extant occurrences are located within ten miles. The closest is approximately 2 miles to the north along the south bank of the American River (CNDDB occurrence #2) (CNDDB 2018). The thicker riparian woodlands within the Plan Area may provide suitable breeding habitat for this species; the restored and undeveloped annual grasslands, croplands, restored agricultural lands, and numerous water features provide suitable foraging habitats.

3.2.1.5.5 Great Blue Heron

The great blue heron (*Ardea herodias*) is considered a special animal by CDFW. This wading bird forages in wetlands and shallow open waters for fish, aquatic invertebrates, small mammals, and amphibians. It usually nests in rookeries that are situated in wetlands or near open waters.

There are no known CNDDB occurrences of rookeries for this species in the Plan Area; however, five presumed extant occurrences are located within ten miles. The closest, which is at the same location as the great egret rookery described above, is approximately 2 miles to the north along the south bank of the American River (CNDDB occurrence #2) (CNDDB 2018). The thicker riparian woodlands within the Plan Area may provide suitable breeding habitat for this species; the restored and undeveloped annual grasslands, croplands, restored agricultural lands, and numerous water features provide suitable foraging habitats.

3.2.1.5.6 Burrowing Owl

Burrowing owl (*Athene cunicularia*) is a ground nesting raptor that is considered a species of special concern by CDFW due to declining populations in the Great Central Valley of California. They typically inhabit open grasslands and nest in abandoned ground squirrel burrows, cavities associated with raised mounds, levees, debris piles, or soft berm features.

There is one presumed extant CNDDB occurrence of this species within the Plan Area located southwest of Mather Field in Granite I, Aspen V, and Aspen VI between Kiefer Boulevard, Bradshaw Road, Jackson Highway, and Excelsior Road (CNDDB occurrence #487) (CDFW 2018). Some of the open areas, including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands may provide suitable foraging and nesting habitats.

3.2.1.5.7 Ferruginous Hawk

The ferruginous hawk (*Buteo regalis*) is considered a special animal by CDFW. This species winters in California from August or September to February or early March where it forages in grasslands, farmlands or other open areas. Favored prey primarily includes rabbits, ground squirrels or other small mammals, though they have been known to feed on birds, reptiles, and large insects. During the winter this large powerful buteo is relatively common throughout most of the state with the exception of the northwestern and northeastern corners of California. The breeding range in the U.S. extends from east of the Rocky Mountains to the Great Plains.

There is one presumed extant CNDDB occurrence of wintering/foraging ferruginous hawks within the Plan Area located southwest of Mather Field in Granite I, Aspen V, and Aspen VI between Kiefer Boulevard, Bradshaw Road, Jackson Highway, and Excelsior Road (CNDDB occurrence #31) (CDFW 2018). Though this species does not nest in the Central Valley, the open areas, including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands may provide suitable foraging and wintering habitats.

3.2.1.5.8 Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a raptor species currently listed as threatened under CESA. Breeding pairs typically nest in tall cottonwoods, Valley oaks, or willows associated with riparian corridors, grasslands, irrigated pastures, and croplands with a high density of rodents. The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter. This species has been observed within the Plan Area (Teichert 2015).

There are no known CNDDB occurrences of this species in the Plan Area; however, 128 presumed extant occurrences are located within ten miles. The closest is approximately 0.2 mile to the north in Rosemont on the east side of Bradshaw Road and is surrounded by development (CNDDB occurrence #2205) (CNDDB 2018). The larger trees within the Plan Area may provide suitable nesting habitat while the open areas, including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands may provide suitable foraging habitats. This species has also been observed foraging in Aspen IX and Aspen IX (Teichert 2015).

3.2.1.5.9 White-Tailed Kite

White-tailed kite (*Elanus leucurus*), also known as black-shouldered kite, is a CDFW fully protected species. This non-migrating bird typically attains a wingspan of approximately 40 inches and feeds primarily on insects, small mammals, reptiles, and amphibians, which it forages from open grasslands. It builds a platform-like nest of sticks in trees or shrubs and lays 3 to 5 eggs, but may brood a second clutch if prey is abundant. The kite's distinct style of hunting includes hovering before diving onto its target.

This species has been observed within Aspen VIII and Aspen IX (Teichert 2015), and the CNDDB records one presumed extant occurrence of nesting within the Plan Area near the west side of Aspen VIX (CNDDB

occurrence #27) (CNDDB 2018). The larger trees within the Plan Area provide suitable nesting habitat while the open areas, including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands provide suitable foraging habitats.

3.2.1.5.10 Merlin

The merlin (*Falco columbarius*) is considered a special animal by CDFW. It has never been observed nesting in California, though it is a transient throughout most of the state, and wintering populations are known to occur in the Central Valley and along the coast. Merlins prefer to forage open areas with small clumps or groves of trees for roosting.

There are no known CNDDB occurrences of this species in the Plan Area; however, six presumed extant occurrences are located within ten miles. The closest is approximately 6.5 miles to the southwest in the Sacramento Regional County Sanitation District's Bufferlands (CNDDB occurrence #20) (CNDDB 2018). The restored and undeveloped annual grasslands, croplands, and restored agricultural lands provide suitable wintering and foraging habitats.

3.2.1.5.11 Song Sparrow – Modesto Population

The song sparrow – Modesto population (*Melospiza melodia*) is considered by CDFW as a species of special concern and is endemic to the north-central portion of the Central Valley. The Modesto population is generally associated with freshwater emergent marshes dominated by cattails (*Typha* spp.), riparian willows (*Salix* spp.) or tules (*Schoenoplectus* spp.). Nesting has also been observed within riparian forests of Valley oak (*Quercus lobata*) with dense understories of Himalayan blackberries (*Rubus armeniacus*). This species usually forages on the ground or in the leaf litter for seeds and small invertebrates.

There are no known CNDDB occurrences of this species in the Plan Area; however, four presumed extant occurrences are located within ten miles. The closest is approximately 8.5 miles to the southwest on the Stone Lakes National Wildlife Refuge (CNDDB occurrence #78) (CNDDB 2018). Though the Plan Area is outside of the known range of this species, which is strongly associated with the Sacramento River and the Sacramento-San Joaquin Delta, the riparian woodlands and constructed emergent marsh represent marginally suitable habitat for this species.

3.2.1.5.12 Black-Crowned Night Heron

Black-crowned night heron (*Nycticorax nycticorax*) is considered a special animal by CDFW. Most breeding colonies are associated with large wetlands, streams, rivers, marshes, mud flats, and the edges of lakes. Its diet consists mainly of fish, though earthworms, insects, crayfish, mussels, squid, amphibians, lizards, snakes, rodents, birds, eggs, trash, carrion, and plant materials are also commonly consumed. Black-crowned night herons defend their foraging territory and hunt usually alone at night. This species, like many heron species, is also a colonial tree nester.

There are no known CNDDB occurrences of rookeries of this species in the Plan Area; however, three presumed extant occurrences are located within ten miles. The closest is approximately 6.5 miles to the southwest at Fishhead Lake in the Sacramento Regional County Sanitation District's Bufferlands (CNDDB occurrence #16) (CNDDB 2018). Black-crowned night heron was observed in the vicinity of the constructed emergent marsh in Aspen VI and Granite I, though it is not known if this species was foraging or nesting (Teichert 2013). The thicker riparian woodlands within the Plan Area provide suitable breeding habitat for this species; the constructed emergent marsh, natural marshes, ponds and industrial ponds present suitable foraging habitats.

3.2.1.5.13 Double-Crested Cormorant

The double-crested cormorant (*Phalacrocorax auritus*) is considered a special animal by CDFW. This diving aquatic bird is the most widespread cormorant in North America. It prefers open water habitats such as ponds, lakes, rivers, estuaries, lagoons, and open coastlines where it forages for fish, amphibians, and crustaceans. It constructs nests near water in colonies on cliffs, rocks, or in trees.

There are no known CNDDB occurrences of nesting colonies of this species in the Plan Area; however, three presumed extant occurrences are located within ten miles. The closest is approximately 8 miles to the southwest in the Sacramento Regional County Sanitation District's Bufferlands along Morrison Creek (CNDDB occurrence #39) (CNDDB 2018). The thicker riparian woodlands within the Plan Area provide suitable breeding habitat for this species; the constructed emergent marsh, natural marshes, and ponds and industrial ponds present suitable foraging habitats.

3.2.1.5.14 Purple Martin

The purple martin (*Progne subis*) is considered a species of special concern by CDFW. This bird winters in South American and migrates to Mexico, the United States, and southern Canada to breed. It is a colonial nester and utilizes natural cavities such as hollow trees, cliffs, and abandoned woodpecker dens as well as created nesting sites such as bird houses or gourds. It feeds on winged insects which it catches on the fly, and it prefers open areas near lakes, ponds, marshes or other water features.

There are no known CNDDB occurrences of nesting colonies of this species in the Plan Area; however, ten presumed extant occurrences are located within ten miles. The closest is approximately 3 miles to the northwest where purple martins were observed nesting in the weep holes of the Highway 50 overpass at Redding Road between 65th Street and Howe Avenue (CNDDB occurrence #19) (CNDDB 2018). The thicker riparian woodlands within the Plan Area provide suitable breeding habitat for this species; the constructed emergent marsh and ponds and industrial ponds present suitable foraging habitats.

3.2.1.5.15 Bank Swallow

The bank swallow (*Riparia riparia*) is listed as threatened under CESA. This bird nests in colonies of two or three pairs to a few thousand in vertical cliffs and banks associated with riparian zones, lakes, and streams. The species is known to colonize human-made vertical banks or building structures.

There are no known CNDDB occurrences of nesting colonies of this species in the Plan Area; however, five presumed extant occurrences are located within ten miles. The closest is approximately 4.5 miles to the northwest along the south side of the American River upstream from Cal Expo near the Capital City Freeway bridge (CNDDB occurrence #94) (CNDDB 2018). The vertical banks in the mined areas of the Plan Area provide suitable breeding habitat for this species; the constructed emergent marsh, natural marshes and ponds and industrial ponds present suitable foraging habitats.

3.2.1.5.16 Least Bell's Vireo

Least Bell's vireo (*Vireo bellii pusillus*) is listed as endangered under CESA and FESA. This small bird is strongly associated with riparian corridors. Historically abundant in riparian woodlands throughout the Central Valley and low level riparian areas of southern California and northern Mexico, today it is generally restricted to southern California along lowland willow-dominated riparian areas. This insectivore, which gleans its prey from bark or leaves, winters in southern Baja California, Mexico in a variety of non-riparian habitats including palm groves, mesquite scrub, and hedgerows bordering agricultural fields and residential developments. In the Sacramento Valley, the species occurs as a vagrant during the breeding season.

There are no known CNDDB occurrences of this species in the Plan Area; however, one presumed extant occurrence is located within ten miles. The exact location of this 1877 occurrence is unknown, but it was probably collected in riparian vegetation along the Sacramento River in a currently developed area of the Sacramento region approximately 2 to 10 miles to the northwest (CNDDB occurrence #515) (CNDDB 2018). Though generally believed to be extirpated from the area, the riparian woodlands within the Plan Area provide suitable habitat.

3.2.1.5.17 Yellow-Headed Blackbird

The yellow-headed blackbird (*Xanthocephalus xanthocephalus*) is considered a species of special concern by CDFW. It nests in deeper portions of tule, bulrush, or cattail marshes than other blackbirds and typically breeds in California from April to June. Though some populations are known to over-winter in California, many migrate to Mexico and Costa Rica. Yellow-headed blackbirds feed on seeds and insects, and flocks are often observed in open areas such as grasslands and agricultural fields during migration.

There are no known CNDDB occurrences of this species in the Plan Area; however, one presumed extant occurrence is located within ten miles. Situated approximately 8.5 miles to the southwest probably along the Sacramento River, this poorly documented occurrence is based on eggs collected in 1899 (CNDDB occurrence #9) (CNDDB 2018). The constructed emergent marsh and natural marshes present suitable

nesting habitats while the open areas, including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands provide suitable foraging habitats.

3.2.1.6 Special-Status Mammals

3.2.1.6.1 Hoary Bat

The hoary bat (*Lasiurus cinereus*) is a considered a special animal by CDFW. It is believed to be one of the most widespread of all American bats with a range extending from Canada to central Chile and Argentina as well as Hawaii. Hoary bats prefer older large leaf species such as cottonwoods, willows, and fruit or nut trees for daytime roosts. This species is primarily crepuscular or nocturnal and requires open areas to hunt its main prey item, moths. The hoary bat is considered a forest/woodland species, and in California they are often associated with undisturbed riparian or stream corridors.

There are no known CNDDB occurrences of this species in the Plan Area; however, one presumed extant occurrence is located within ten miles. Situated approximately 9 miles to the northwest, this sparsely documented 1991 occurrence is based on written location data (CNDDB occurrence #137) (CNDDB 2018). The riparian woodlands provide suitable roosting habitat while the open areas, including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands provide suitable foraging habitats.

3.2.1.6.2 American Badger

American badger (*Taxidea taxus*) is considered a species of special concern by CDFW. This burrowing carnivorous mammal, which is solitary and very territorial, prefers to feed on small mammals, lizards, snakes, insects, and carrion. It has no known natural enemies and inhabits dry, open fields, grasslands, and pastures.

There is one known occurrence of this species within the Plan Area located southwest of Mather Field in Granite I, Aspen V, and Aspen VI between Kiefer Boulevard, Bradshaw Road, Jackson Highway, and Excelsior Road (CNDDB occurrence #73) (CDFW 2018). The open areas including the restored and undeveloped annual grasslands, croplands, and restored agricultural lands provide suitable habitats for this species.

3.3 Existing Site Conditions

3.3.1 Existing Site Conditions - District 1 Area Plan

District 1 is approximately **3,651 acres** comprised of approximately **3,016 acres** owned by Teichert, and approximately **635 acres** of Non-Participating Property owners and roads as shown on **Figures 3** and **5**.

3.3.1.1 Site History – District 1 Participant Properties

Most of the District 1 Participant parcels have been mined for aggregate and are situated as much as 15 to 40 feet below the topography of the surrounding un-mined lands. The majority of these parcels are

currently utilized in the continued processing of mined aggregate. One parcel directly south of Jackson Highway and east of Mayhew Road was mined then subsequently utilized as a commercial green waste composting facility, but has since been fallow. The perimeter of most mining areas has been planted with ornamental species such as oleander (*Nerium oleander*) and privot (*Ligustrum* sp.) though several native trees such as Valley oak (*Quercus lobata*) and walnut (*Juglans* sp.) are also present. Disturbed mining areas and ruderal habitats comprise most of District 1 and support filaree (*Erodium botrys*), soft chess (*Bromus hordeaceus*), rip-gut brome (*Bromus diandrus*), medusa head *(Elymus caput-medusae*), wild oats (*Avena fatua*), yellow star-thistle (*Centaurea solstitialis*), and common tarweed (*Holocarpha virgata*).

To offset the loss of vernal pools during aggregate mining in two of its properties, Aspen V and VI, Teichert implemented a compensatory mitigation project in October of 1996. As a result, numerous vernal pools were constructed within the Aspen V Participant Properties.

3.3.1.2 Site History – District 1 Non-Participant Properties

The majority of the District 1 Non-Participants are located along Jackson Highway or on the periphery of the West Jackson Highway Master Plan Boundary. Most of the District 1 Non-Participants have not been mined and are relatively close to their natural grades with the exception of several parcels near the Jackson Highway-Bradshaw Road intersection and small areas directly south of Aspen III. These lands predominantly represent undeveloped, developed, and agricultural lands.

3.3.1.3 Soils and Geology – District 1 Area Plan

According to the "Soil Survey of Sacramento County, California," nineteen soil map units occur within Participant Properties of District 1 (USDA 1993):

1. Columbia sandy loam, drained, 0-2% slopes, occasionally flooded (118);
2. Creviscreek sandy loam, 0-3% slopes (132);
3. Dierssen clay loam, deep, drained, 0-2% slopes (135);
4. Durixeralfs, 0-1% slopes (137);
5. Hedge loam, 0-2% slopes (157);
6. Hicksville loam, 0-2%, occasionally flooded (158);
7. Kimball silt loam, 0-2% slopes (164),
8. Kimball silt loam, 2-8% slopes (165);
9. Natomas loam, 0-2% slopes (181);
10. Pits (190);
11. Red Bluff loam, 0-2% slopes (191);
12. Red Bluff-Redding complex, 0-5% slopes (193);
13. Red Bluff-Xerarents complex, 0-2% slopes (195);
14. Redding gravelly loam, 0-8% slopes (198);
15. San Joaquin silt loam, leveled, 0-1% slopes (213);
16. San Joaquin silt loam, 0-3% slopes (214);

17. San Joaquin silt loam, 3-8 % slopes (215);
18. San Joaquin-Xerarents complex, leveled, 0-1% slopes (221); and
19. Xerarents-San Joaquin complex, 0-1% slopes (238).

Figure 9 is an exhibit displaying the soil map units within District 1.

3.3.1.4 Existing Landcovers – District 1 Participant Properties

District 1 Participant Properties presently encompass Mining Areas and Constructed/Restored Lands, as well as Developed and Undeveloped Lands. **Figure 10** (NAIP 2016) is a map displaying the existing landcover conditions within District 1 Participant Properties.

3.3.1.4.1 Mining Areas

Mining Areas consist of disturbed mining areas, drying beds, an abandoned parking lot, industrial yards, and industrial ponds. Disturbed mining areas have been and continue to be utilized for the extraction of aggregate. These areas typically exist as pits with sloped walls, access roads, conveyor belt pathways, and the areas along the pit rims where screen trees have been planted to mitigate impacts to the viewshed. The vegetation in areas subjected to mining activities is relatively sparse and can be best described as dominated by weedy annual grassland species. Vegetative screening located on the pit rims supports a narrow band approximately 10 to 20 feet wide of ornamental shrubs and trees. This habitat supports generalist species tolerant of non-native vegetated habitats such as mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), California quail (*Callipepla californica*), Anna's hummingbirds (*Calypte anna*), and house finches (*Haemorhous mexicanus*). Because these areas continue to be used as part of the on-going aggregate extraction process, the landscape is constantly in flux and routine maintenance of mining areas is an ongoing activity.

Drying beds are shallow basins that are used to dispose of sediment washed from aggregate delivered to the Perkins Plant site. The purpose of these beds is to fill the depressions created by previous mining activities and eventually bring these areas up closer to adjacent grade. The sediment is delivered to the basins in slurry form and spread over the previously mined "pit" areas in interval layers of approximately 12 inches. The basins are filled in a rotational sequence resulting in differing states of wetness, ranging from shallow turbid ponds to mudflats or dry beds. The slurry is allowed to dry until surface cracks appear. A farm tractor then turns the material over to facilitate continued evaporation. Once the material has dried, it is compacted to create engineered fill. Following compaction, the process is repeated with another layer of material. The drying beds are maintained at 90 percent compaction or greater.

An abandoned concrete parking lot is located on the parcel directly east of Mayhew Road. The site historically contained an aggregate mine and green waste composting facility, but neither operation is currently active. Earthmoving associated with mining activities created a large pit with an average elevation of roughly 30 feet, which is approximately 30 to 40 feet lower than the immediately surrounding areas.

Three industrial yards were constructed within the Participant Properties with two situated along Jackson Highway and a third located off of Hedge Avenue. All appear to be composed of compacted earth or gravel and are used as vehicle and equipment storage areas.
Twenty-one industrial ponds have been constructed within the previously mined areas of the District 1 Participant Properties. Industrial wash-water is either pumped directly into the industrial ponds, or it flows into the ponds by way of the excavated drainage ditches described below. The ditches not only convey wash-water, but in some cases also convey run-off from precipitation from the surrounding areas. Teichert Aggregates conducts continual maintenance of the ponds and ditches, including the removal of vegetation to maintain the integrity of the ponds.

In general, vegetation within the industrial ponds is limited to the banks and shallow vegetated margins. Woody riparian species such as Valley oak (*Quercus lobata*), cottonwood (*Populus fremontii*), black willow (*Salix nigra*), arroyo willow *(S. lasiolepus*), sandbar willow (*S. exigua*), and coyote brush (*Baccharis pilularis*) dominate the tree and shrub layer. The understory is typically dominated by such common species as Himalayan blackberry (*Rubus armeniacus*), hairy vetch (*Vicia villosa*), white sweetclover (*Melilotus alba*), sour sweetclover (*M. indica*), ripgut brome grass (*Bromus diandrus*), soft chess brome grass (*B. hordeaceus*), field mustard (*Brassica rapa*), and black mustard (*B. nigra*). In the shallower portions, emergent wetland vegetation occurs along the margins and is typically dominated by spike rush (*Eleocharis macrostachya*) and sandbar willow (*Salix exigua*).

3.3.1.4.2 Constructed/Restored Lands

Constructed/Restored Lands are previously mined areas that have been actively reclaimed or have remained idle long enough to allow the re-establishment of vegetation. These include restored riparian woodlands, agricultural lands, and annual grasslands containing constructed vernal pools, marshes, depressional seasonal wetlands, seasonal wetland swales, a low flow corridor, and channels with adjacent wetlands. The characteristics of these are similar to their corresponding natural habitat types, with the exception of the some of the constructed channels and surrounding restored riparian woodlands, which are still becoming established. Currently, existing restored agricultural lands are leased for hay production and have been farmed for several years in alfalfa.

3.3.1.4.3 Developed Lands

Developed Lands refer to manipulated or developed areas and include institutional parcels such as schools as well as commercial, residential, and industrial sites. These areas are collectively referred to as Commercial/Residential/Industrial/Institutional lands on **Figure 10** (NAIP 2016). These represent built-up areas occupied by buildings and associated structures such as driveways, sidewalks, parking lots, playgrounds, and landscaped areas. Paved roads and ditches are also included in this category.

Twenty-three ditches are located within District 1 Participant Properties. Several run parallel to roads and were designed to capture and convey road run-off. The rest, which are located within the disturbed mining areas, are regularly maintained to ensure that proper drainage occurs throughout these sites.

3.3.1.4.4 Undeveloped Lands

Undeveloped Lands refer to natural (at-grade) irrigated pastures and cropland as well as annual grasslands that contain channels, depressional seasonal wetlands, marshes, seasonal wetlands, riparian woodlands, seasonal riparian wetlands, seasonal wetlands swales, and vernal pools.

The majority of undeveloped lands are situated south of Jackson Highway, east of Mayhew Road, west of Excelsior Road, and north of Florin Road, though several smaller such parcels are scattered throughout the District 1 Participant Properties. The majority of these areas consist of annual grasslands composed of soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), rip-gut brome (*Bromus diandrus*), medusa head *(Elymus caput-medusae*), filaree (*Erodium botrys*), and perennial rye grass (*Festuca perennis*). Interspersed within the annual grasslands are numerous water features including vernal pools, depressional seasonal wetlands, seasonal wetlands, seasonal wetland swales, channels, marshes, seasonal riparian wetlands, and ponds.

Vernal pools, depressional seasonal wetlands, seasonal wetlands, seasonal riparian wetlands, and seasonal wetland swales are ephemeral water features that sustain long-term ponding and/or saturated soil conditions during and following periods of heavy precipitation in the wet-season. Additional water may be provided by surface sheet flow and subsurface discharge onto the perched water-tables or impermeable surfaces when present. Depressional seasonal wetlands and vernal pools represent small enclosed basins in the microrelief that allow for seasonal ponding, unlike seasonal wetland swales, which are linear sloping vegetated drainages that lack a defined bed and bank. Vernal pools support a higher level of plant diversity, particularly of native plants, than depressional seasonal wetlands, seasonal wetlands, or seasonal wetland swales. Hydrophytes, or water-loving plants, observed by Gibson & Skordal, LLC. (Gibson & Skordal) in 2010 within the vernal pools included coyote thistle (*Eryngium castrense*), slender popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), creeping spike rush (*Eleocharis macrostachya*), Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), rush (*Juncus* sp.), rabbit's-foot grass (*Polypogon monspeliensis*), dove weed (*Croton setigerus*), Fremont's goldfields (*Lasthenia fremontii*), white-headed navarretia (*Navarretia leucocephala*), and smooth goldfields (*Lasthenia glaberrima*). Plants noted in the depressional seasonal wetlands, seasonal wetlands, and seasonal wetland swales included coyote thistle (*Eryngium castrense*), iris-leaf rush (*Juncus xiphioides*), Mediterranean barley (*Hordeum marinum*), and loosestrife (*Lythrum hyssopifolia*). Seasonal riparian wetlands are situated adjacent to Elder Creek, but lack the shrub and tree species typically associated with riparian corridors. These depressional features are likely flooded by near-by Elder Creek during times of high flows. The noted plants, which are dominated by herbaceous species, included perennial rye (*Festuca perennis*), coyote thistle (*Eryngium castrense*), Mediterranean barley (*Hordeum marinum*), prickly lettuce (*Lactuca serriola*), clustered dock (*Rumex conglomerates*), and hairy hawkbit (*Leontodon saxatilis*). Five ponds are located within the District 1 Participant Properties south of Jackson Highway, and all are constructed to facilitate the watering of several irrigated pastures. Freshwater marshes of broadleaf cattails (*Typha angustifolia*), and bulrush (*Schoenoplectus acutus*) occupy the shallower edges of the ponds and irrigation ditches (Gibson & Skordal 2010a, 2010c).

Several channels, most of which are ephemeral or intermittent, traverse this portion of the District 1 Participant Properties. All display a bed and bank with ordinary high water mark and the absence of terrestrial vegetation. The exceptions are Morrison Creek and Elder Creek, which are perennial and flow into the Sacramento River. Morrison Creek, portions of which are channelized, supports small corridors of riparian woodlands composed of Valley oak (*Quercus lobata*), walnut (*Juglans* sp.), willows (*Salix* spp.), blue oak (*Quercus douglasii*), poison oak (*Toxicodendron diversilobum*), and Himalayan blackberry (*Rubus armeniacus*). The herbaceous understory includes creeping wild rye (*Elymus triticoides*), fiddle dock (*Rumex pulcher*), wild oats (*Avena fatua*), winter vetch (*Vicia villosa*), Italian thistle (*Carduus pycnocephalus*), chickweed (*Stellaria media*), and rose clover (*Trifolium hirtum*). Several reaches of Elder Creek, near Elder Creek Road, appear to have been straightened. Some reaches of Elder Creek resemble seasonal wetland swales due to heavy growths of vegetation obscuring the ordinary high water mark. Perennial rye grass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum*), clustered dock (*Rumex conglomeratus*), and curly dock (*Rumex crispus*) represent the majority of wetland species within these channels.

Croplands, which are situated in unmined areas, are typically utilized yearly and planted in dry crops such as wheat (*Triticum* sp.) and hay. The irrigated pastures, which are also located in unmined areas, provide forage for cattle and consist of wetter species such as perennial rye grass (*Festuca perennis*), tall flat-sedge (*Cyperus eragrostis*), bird's foot-trefoil (*Lotus corniculatus*), knotweed (*Polygonum aviculare*) loosestrife (*Lythrum hyssopifolia*), white clover (*Trifolium repens*), English plantain (*Plantago lanceolata*), and dallis grass (*Paspalum dilatatum*).

Table 1 summarizes existing conditions within the Participant Properties for District 1.

Table 1. Landcover Types - Existing Conditions within District 1, Participant Properties

Landcover Type	Acreage
Constructed/Restored Lands	
Restored Agricultural Lands	102
Restored Annual Grasslands	89
Constructed Channel and Adjacent Wetlands	7.6
Constructed Depressional Seasonal Wetland	0.2
Constructed Low Flow Corridor	91.1
Restored Riparian Woodland	9.9
Constructed Seasonal Wetland Swale	0.3
Constructed Vernal Pool	19.9
Undeveloped Lands	
Annual Grasslands	614
Channel	9.4
Cropland	15
Depressional Seasonal Wetland	3.0

Table 1. Landcover Types - Existing Conditions within District 1, Participant Properties, Cont'd

Landcover Type	Acreage
Undeveloped Lands	
Marsh	4.1
Pond	0.8
Riparian Woodland	17.5
Seasonal Riparian Wetland	1.0
Seasonal Wetland	6.5
Seasonal Wetland Swale	4.7
Vernal Pool	15.1
Developed Lands	
Commercial/Residential/Industrial/Institutional	13
Ditch	3.1
Road	4.8
Mining Areas	
Abandoned Parking Lot	5.0
Disturbed Mining Area	1,648
Drying Bed	152
Industrial Pond	166
Industrial Yard	13
Total	**3,016**

3.3.1.5 Existing Landcovers – District 1 Non-Participant Properties

The existing landcovers for lands controlled by Non-Participant Property owners within District 1 utilized information derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photos and observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

The District 1 Non-Participants currently encompass **Mining Areas** as well as **Developed** and **Undeveloped Lands**. **Figure 11** (NAIP 2016) is a map displaying the existing landcover conditions within District 1 Non-Participant Properties.

3.3.1.5.1 Mining Areas

Mining Areas consist of disturbed mining areas, industrial yards, and industrial ponds. Disturbed mining areas have been and continue to be utilized for the extraction of aggregate. These areas typically exist as

pits with sloped walls, access roads, conveyor belt pathways, and the areas along the pit rim where screen trees have been planted to mitigate impacts to the viewshed. The vegetation in areas subjected to mining activities is relatively sparse and can be best described as dominated by weedy annual grassland species. Vegetative screening located on the pit rims supports a narrow band approximately 10 to 20 feet wide of ornamental shrubs and trees. This habitat supports generalist species tolerant of non-native vegetated habitats such mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), California quail (*Callipepla californica*), Anna's hummingbirds (*Calypte anna*), and house finches (*Haemorhous mexicanus*).

Two industrial yards are within the Non-Participant Properties with one situated along Jackson Highway and a second located off of Hedge Avenue. Both appear to be constructed of compacted earth or gravel and are used as vehicle and equipment storage areas.

One industrial pond has been constructed within the previously mined areas of the District 1 Non-Participant Properties. It appears to be a relict of excavation activities associated with the mining operations.

3.3.1.5.2 Developed Lands

Developed Lands refer to heavily manipulated or built-up areas and include institutional parcels such as schools as well as commercial, residential, and industrial sites. These areas are collectively referred to as Commercial/Residential/Industrial/Institutional lands on **Figure 11** (NAIP 2016). Developed Lands also include associated structures such as driveways, sidewalks, paved roads, parking lots, playgrounds, landscaped areas, and ditches. Several ditches are located within the District 1 Non-Participant Properties and were designed to capture and convey road run-off.

3.3.1.5.3 Undeveloped Lands

Undeveloped Lands refer to naturally occurring (at-grade) annual grasslands that contain channels, depressional seasonal wetlands, marshes, ponds, riparian woodlands, seasonal wetlands swales, seasonal riparian wetlands, vernal pools, cropland, and irrigated pasture.

The majority of Undeveloped Lands are clustered in the eastern portion of the Plan Area near Excelsior Road. Most of these areas typically consist of annual grasslands likely composed of soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), rip-gut brome (*Bromus diandrus*), medusa head *(Elymus caput-medusae*), filaree (*Erodium botrys*), and perennial rye grass (*Festuca perennis*). Within the annual grasslands are numerous water features including vernal pools, depressional seasonal wetlands, seasonal riparian wetlands, seasonal wetland swales**,** channels, marshes, and ponds.

Vernal pools commonly support coyote thistle (*Eryngium castrense*), slender popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), creeping spike rush (*Eleocharis macrostachya*), Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), rush (*Juncus* sp.), rabbit's-foot grass (*Polypogon monspeliensis*), dove weed (*Croton setigerus*), Fremont's goldfields (*Lasthenia fremontii*), white-headed

navarretia (*Navarretia leucocephala*), and smooth goldfields (*Lasthenia glaberrima*). Plants expected in the depressional seasonal wetlands, seasonal wetlands, and seasonal wetland swales include coyote thistle (*Eryngium castrense*), iris-leaf rush (*Juncus xiphioides*), Mediterranean barley (*Hordeum marinum*), and loosestrife (*Lythrum hyssopifolia*).

Located within the Non-Participant Properties are several ponds. All appear to have been created by excavation or the placement of earthen levees across natural drainages. Vegetative communities dominated by broadleaf cattails (*Typha angustifolia*), and/or bulrush (*Schoenoplectus acutus*) likely occupy the shallower edges of the ponds.

Numerous channels, most of which are ephemeral or intermittent, traverse the District 1 Non-Participant Properties. Channels typically display a bed and bank with ordinary high water mark and the absence of terrestrial vegetation. The exceptions are Morrison Creek and Elder Creek which are perennial. Morrison Creek flows to the west through Non-Participants off of Jackson Highway and Bradshaw Road before emptying into the Sacramento River while Elder Creek crosses Jackson Highway from north to south and merges with Morrison Creek southwest of the Plan Area. Morrison Creek supports small corridors of riparian woodlands. Riparian woodlands in Sacramento County are commonly composed of Valley oak (*Quercus lobata*), walnut (*Juglans* sp.), willows (*Salix* sp.), blue oak (*Quercus douglasii*), poison oak (*Toxicodendron diversilobum*), and Himalayan blackberry (*Rubus armeniacus*). The herbaceous understory may typically include creeping wild rye (*Elymus triticoides*), fiddle dock (*Rumex pulcher*), wild oats (*Avena fatua*), winter vetch (*Vicia villosa*), Italian thistle (*Carduus pycnocephalus*), chickweed (*Stellaria media*), and/or rose clover (*Trifolium hirtum*).

The croplands are typically utilized yearly and planted in dry crops such as wheat (*Triticum* sp.) and hay. The irrigated pastures provide forage for cattle and probably consist of wetter species such as perennial rye grass (*Festuca perennis*), tall flat-sedge (*Cyperus eragrostis*), bird's foot-trefoil (*Lotus corniculatus*), knotweed (*Polygonum aviculare*) loosestrife (*Lythrum hyssopifolia*), white clover (*Trifolium repens*), English plantain (*Plantago lanceolata*), and dallis grass (*Paspalum dilatatum*).

Table 2 summarizes existing conditions within the Non-Participant Properties for District 1.

Table 2. Landcover Types - Existing Conditions within District 1, Non-Participants

Landcover Type	Acreage
Undeveloped Lands	
Annual Grasslands	210
Channel	2.4
Cropland	12.0
Depressional Seasonal Wetland	1.4
Irrigated Pasture	7.0

Table 2. Landcover Types - Existing Conditions within District 1, Non-Participants, Cont'd

Landcover Type	Acreage
Undeveloped Lands	
Marsh	0.9
Pond	1.8
Riparian Woodland	7.3
Seasonal Riparian Wetland	0.1
Seasonal Wetland Swale	1.7
Vernal Pool	4.8
Developed Lands	
Commercial/Residential/Industrial/Institutional	257
Ditch	0.1
Road	78.8
Mining Areas	
Disturbed Mining Areas	47
Industrial Pond	2.0
Industrial Yard	0.7
Total	**635**

3.3.1.6 Summary of Existing Landcovers – District 1 Area Plan

Table 3 summarizes existing conditions within both the Participant and the Non-Participant Properties for District 1.

Table 3. Landcover Types - Existing Conditions within District 1 Area Plan

Landcover Type	Acreage
Constructed/Restored Lands	
Restored Agricultural Lands	102
Restored Annual Grasslands	89
Constructed Channel and Adjacent Wetlands	7.6
Constructed Depressional Seasonal Wetland	0.2
Constructed Low Flow Corridor	91.1
Restored Riparian Woodland	9.9
Constructed Seasonal Wetland Swale	0.3
Constructed Vernal Pool	19.9

Table 3. Landcover Types - Existing Conditions within District 1 Area Plan, Cont'd

Landcover Type	Acreage
Undeveloped Lands	
Annual Grasslands	824
Channel	11.8
Cropland	27
Depressional Seasonal Wetland	4.4
Irrigated Pasture	7.0
Marsh	5.0
Pond	2.6
Riparian Woodland	24.8
Seasonal Riparian Wetland	1.1
Seasonal Wetland	6.5
Seasonal Wetland Swale	6.4
Vernal Pool	19.9
Developed Lands	
Commercial/Residential/Industrial/Institutional	270
Ditch	3.2
Road	83.6
Mining Areas	
Abandoned Parking Lot	5.0
Disturbed Mining Areas	1,695
Drying Bed	152
Industrial Pond	168
Industrial Yard	13.7
Total	**3,651**

3.3.1.7 Special-Status Species – District 1 Area Plan

The special-status species assessment drew information from site visits, survey data and/or previously prepared assessment reports involving site visits. Rare plant surveys, detailed wetland delineations, biological assessments, and arborist reports are examples of sources of information utilized, but not all Participant Properties were surveyed. For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

If reports or survey data were unavailable, assessments regarding presence of potential habitat were derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from

accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerials and observations of features from public areas.

3.3.1.7.1 Rare Plant and VELB Surveys – District 1 Area Plan

In 2006, ECORP Consulting, Inc. (ECORP) conducted rare plant surveys within the Aspen IV South parcel for the following species: dwarf downingia (*Downingia pusilla*), Bogg's Lake hedge-hyssop (*Gratiola heterosepala*), woolly rose-mallow (*Hibiscus lasiocarpus*), Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), legenere (*Legenere limosa*), pin cushion navarretia (*Navarretia myersii* ssp. *myersii*), slender Orcutt grass (*Orcuttia tenuis*), Sacramento Orcutt grass (*Orcuttia viscida*), Sanford's arrowhead (*Sagittaria sanfordii*). ECORP concurrently conducted an elderberry (*Sambucus* sp.). Both surveys yielded negative results (ECORP 2008).

In 2010 Gibson & Skordal performed rare plant surveys in the following sections of the District 1 Participant Properties: Aspen II, Aspen III, Aspen III South, the northern Aspen V parcel, portions of Aspen V South, Aspen VII, Aspen VII South, and Mayhew. Target species included twelve special-status plants recorded by the CNDDB as occurring within the vicinity of these parcels. These included: Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*), dwarf downingia (*Downingia pusilla*), stinkbells (*Fritillaria agrestis*), Bogg's Lake hedge-hyssop (*Gratiola heterosepala*), woolly rose-mallow (*Hibiscus lasiocarpus*), Northern California black walnut (*Juglans hindsii*), Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), legenere (*Legenere limosa*), pin cushion navarretia (*Navarretia myersii* ssp. *myersii*), slender Orcutt grass (*Orcuttia tenuis*), Sacramento Orcutt grass (*Orcuttia viscida*), and Sanford's arrowhead (*Sagittaria sanfordii*). No listed plants or elderberry shrubs were observed (Gibson & Skordal 2010a, 2010b).

Field surveys involving numerous field visits for special-status plant species were performed within the Aspen VIII and Aspen IX sites from March 2013 through August 2014 by Teichert Materials. Sanford's arrowhead (*Sagittaria sanfordii*) was observed within several ditches on the Aspen VIII site (Teichert Materials 2015). The majority of these colonies have been extirpated by permitted mining activities.

Figure 12 displays the areas where special-status plant and elderberry surveys were performed. For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.1.7.2 CNDDB Occurrences - Rare Plants and VELB – District 1 Area Plan

The CNDDB records one occurrence of special-status plants species within District 1 as well as three located within close proximity (CDFW 2018). No occurrences of VELB are listed by the CNDDB within District 1. The special-status plant occurrences include the following:

- In 2014 over 2,000 Sanford's arrowhead (*Sagittaria sanfordii*) plants were observed within an irrigation ditch in the Aspen VIII parcel (CNDDB occurrence #109).

- In 2013 Sanford's arrowhead (*Sagittaria sanfordii*) were observed less than a mile west within a drainage ditch paralleling a railroad track (CNDDB occurrence #110).
- The CNDDB records a 1989 occurrence of Sanford's arrowhead (*Sagittaria sanfordii*) directly north of Aspen III across Jackson Highway in man-made ponds within the Cordova Golf Course (CNDDB occurrence #25).
- Sacramento Orcutt grass (*Orcuttia viscida*) was observed less than one mile southeast of the Aspen VII parcel in 1998, but this occurrence is believed to be extirpated. The vernal pool identified as supporting this record has evolved into a marsh due to run-off from a nearby plant nursery (CNDDB occurrence #20).

Figure 13 is an exhibit displaying existing occurrences of special-status species plants in relation to District 1. A non-CNDDB occurrence of dwarf downingia was observed during 2016 rare plant surveys in the Vineyard South Mine Project site, which is located south of Vineyard I on the south side of Elder Creek Road (APN 066-0010-001) (WRA 2016). This occurrence has yet to be published by the CNDDB.

In summary, the appropriate habitat is potentially present within unsurveyed areas of District 1 to support the following species:

- Dwarf downingia (*Downingia pusilla*);
- Stinkbells (*Fritillaria agrestis*);
- Bogg's Lake hedge-hyssop (*Gratiola heterosepala*);
- Woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*);
- Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*);
- Legenere (*Legenere limosa*);
- Pin cushion navarretia (*Navarretia myersii* ssp. *myersii*);
- Slender Orcutt grass(*Orcuttia tenuis*);
- Sacramento Orcutt grass (*Orcuttia viscida*);
- Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*); and
- Sanford's arrowhead (*Sagittaria sanfordii*).

For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.1.7.3 Vernal Pool Branchiopod Surveys – District 1 Area Plan

Gibson & Skordal conducted protocol vernal pool branchiopod surveys during the 2009-10 and 2010-11 wet-seasons in the following areas: the eastern part of Aspen III (Gibson & Skordal 2010c, 2011), Aspen V South (North Parcel) (Gibson & Skordal (2010d, 2011a), Aspen VII South (Gibson & Skordal 2010e, 2011b), and Mayhew (Gibson & Skordal 2010f, 2011c). These areas were evaluated due to the fact that they had either been undisturbed by past mining activities, or in the case of the Mayhew property, there had been a lack of long-term maintenance. California linderiella (*Linderiella occidentalis*), vernal pool tadpole shrimp (*Lepidurus packardi*), and vernal pool fairy shrimp (*Branchinecta lynchi*) were observed within the Aspen VII South Study Area during both sampling seasons. California linderiella (*Linderiella occidentalis*) was observed

within the Aspen III Study Area during both sampling seasons. No target vernal pool branchiopods were observed within the Mayhew Study Area.

Additionally, vernal pool tadpole shrimp (*Lepidurus packardi*) were observed in a vernal pool near Jackson Highway within the Aspen VII Study Area during plant surveys in 2008 conducted by Gibson & Skordal. EcoAnalysts, Inc. also performed surveys on Aspen IX in 2006 and Aspen V, Aspen V South, and Aspen IV South in 2008; California linderiella (*Linderiella occidentalis*), vernal pool tadpole shrimp (*Lepidurus packardi*), and vernal pool fairy shrimp (*Branchinecta lynchi*) were present within the Aspen IX survey area; vernal pool tadpole shrimp (*Lepidurus packardi*) and vernal pool fairy shrimp (*Branchinecta lynchi*) were observed within the Aspen V and Aspen V South Study Areas (EcoAnalyst, Inc. 2006, 2008, 2008a, 2008b).

Aspen II, Aspen III, Aspen III South, Aspen IV South, Aspen V South, Aspen VI, Aspen VIII and portions of Aspen IX are continuously subjected to permitted earth-moving activities associated with ongoing aggregate mining operations. As such, most of these areas currently lack suitable vernal pool branchiopod habitat. **Figure 14** displays the areas where vernal pool branchiopod surveys were performed and where habitat is not present, and **Table 4** summarizes survey results and current site conditions. For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

Table 4. Branchiopod Survey Results and Current Site Conditions within District 1 Area Plan

Parcel	Results
Aspen II	No branchiopod habitat present due to on-going permitted mining operations
Aspen III (Surveyed Area)	California linderiella present
Aspen III (Unsurveyed Area)	No branchiopod habitat present due to on-going permitted mining operations
Aspen III South	No branchiopod habitat present due to on-going permitted mining operations
Mayhew	No branchiopods present
Aspen IV	No branchiopod habitat present due to on-going permitted mining operations
Aspen IV South	Surveyed, but currently no branchiopod habitat present due to permitted mining operations
Aspen V (North Parcel)	No branchiopods present
Aspen V (South Parcel)	Vernal pool tadpole shrimp and vernal pool fairy shrimp present
Aspen V South (North Parcel)	No branchiopods present

Table 4. Branchiopod Survey Results and Current Site Conditions - District 1 Area Plan, Cont'd

Parcel	Results
Aspen V South (Mined Area)	Surveyed, but currently no branchiopod habitat present due to permitted mining operations
Aspen VI	No branchiopod habitat present due to on-going permitted mining operations
Aspen VII	Vernal pool tadpole shrimp observed during plant surveys
Aspen VII South	Vernal pool tadpole shrimp, vernal pool fairy shrimp, and California linderiella present
Aspen VIII	No branchiopod habitat present due to on-going permitted mining operations
Aspen IX	Vernal pool tadpole shrimp, vernal pool fairy shrimp, and California linderiella present

Appropriate habitat is present within unsurveyed areas of District 1 for the following species: vernal pool fairy shrimp *(Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), California linderiella (*Linderiella occidentalis*), and midvalley fairy shrimp (*Branchinecta mesovallensis*). For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.1.7.4 Native and Non-Native Trees – District 1 Area Plan

In 2005, ECORP performed surveys to identify all native oak trees, non-native oak trees, and non-oak native trees (excluding cottonwoods and willows) within Aspen IV South with a DBH of 6 inches or greater. ECORP surveyed a total of 50 Valley oaks (*Quercus lobata*). The report acknowledges the presence of willows and cottonwoods as well as ornamentals, but does not quantify numbers of non-oaks (ECORP 2005).

Teichert Aggregates performed a preliminary oak tree survey on portions of Aspen V South in August of 2005. All native oaks with a single trunk DBH of 6 inches or multi-trunk trees with a combined DBH of 10 inches were included. A total of 47 Valley oaks (*Quercus lobata*) were recorded (Teichert 2005).

Since 2005, a total of 61 Valley oak (*Quercus lobata*) on Aspen IV South and Aspen V South were removed as part of permitted mining activities. As mitigation, Teichert Aggregates has successfully planted 351 Valley oak (*Quercus lobata*), 139 interior live oak (*Quercus wislizeni*), 19 California box elder (*Acer negundo*), and 30 Oregon ash (*Fraxinus latifolia*) on Aspen V South. An additional 13 Valley oaks (*Quercus lobata*), 6 interior live oaks (*Quercus wislizeni*), and 4 Oregon ash (*Fraxinus latifolia*) were also successfully planted on Aspen V (Teichert 2014a).

In 2010, Gibson & Skordal performed surveys within Aspen II, Aspen III, Aspen III South, Aspen IV, and Mayhew to identify all trees native to Sacramento County with a cumulative trunk diameter at breast height (DBH) of 6 inches or greater. (DBH is the trunk diameter approximately 4.5 feet above the ground while standing on the high side of the tree.) The results are listed below (Gibson & Skordal 2010g):

- Aspen II: 49 trees including one interior live oak (*Quercus wislizeni*), 2 Valley oaks (*Quercus lobata*), 10 Goodding's black willows (*Salix gooddingii*), one walnut (*Juglans* sp.), and 31 cottonwoods (*Populus fremontii*).
- Aspen III: 36 trees including one interior live oak (*Quercus wislizeni*), 11 Valley oaks (*Quercus lobata*), 5 Goodding's black willows (*Salix gooddingii*), 4 walnut (*Juglans* sp.), and 15 cottonwoods (*Populus fremontii*). Aspen III South: 12 trees including 2 interior live oaks (*Quercus wislizeni*), 5 Valley oaks (*Quercus lobata*), and 5 walnut (*Juglans* sp.).
- Aspen IV: 3 trees including one interior live oak (*Quercus wislizeni*) and 2 Valley oaks (*Quercus lobata*).
- Mayhew: 26 Valley oaks (*Quercus lobata*).

In 2014, Teichert Aggregates surveyed all trees with a trunk diameter greater than or equal to four inches at DBH on select portions of the Aspen V South, Aspen VIII and Aspen IX parcels. Teichert Aggregates surveyed a total of 102 trees including 21 Goodding's black willows (*Salix gooddingii*), 9 California black walnut (*Juglans hindsii*), 5 Valley oaks (*Quercus lobata*), and 9 Fremont cottonwood (*Populus fremontii*) as well as an additional 13 species of non-native landscape trees. **Figure 15** displays the areas where tree surveys were performed within the District 1 Participant Properties (Teichert 2014a). Of these, the following native protected trees have been removed as part of permitted mining activities within Aspen VIII and Aspen IX (Teichert 2015):

- 9 California black walnut (*Juglans hindsii*) – with a total DBH of 156.2 inches;
- 3 Valley oaks (*Quercus lobata*) – with a total DBH of 22.3 inches.

Impacts to tree canopies for Aspen VII and Aspen IX are as follows:

- 0.229 acre of Riparian Forest/Scrub Canopy;
- 1.345 acres of Other Canopy.

Based on interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography, the likelihood of occurrences of regulated trees within the unsurveyed areas of District 1 is high. For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.1.7.5 CNDDB Occurrences - Nesting/Foraging Raptors & Other Birds – District 1 Area Plan

According to the CNDDB, several occurrences of nesting birds are located within or in very close proximity to District 1 properties (CDFW 2018). These include the following:

- A pair of white-tailed kites (*Elanus leucurus*) was observed nesting in a tree within Aspen IX in 1990 (CNDDB occurrence #27).

- The Elder Creek colony of tricolored blackbirds (*Agelaius tricolor*), which was located within Aspen VII South and Aspen VIII, had been observed sporadically supporting nesting colonies from 1992 and to 2014 (CNDDB occurrence #306).
- A second Elder Creek nesting colony of tricolored blackbirds (*Agelaius tricolor*), which was located west of Aspen IX, had been first observed in 1993. The last active nesting colony was observed in 2015, though it may have failed (CNDDB occurrence #307).
- In 2015 three new tricolored blackbirds (*Agelaius tricolor*) nesting colonies were observed: one was located in Aspen V South (CNDDB occurrence #743). The other two were located south and east of Aspen VII South (CNDDB occurrence #499, #741).
- In 2014 several hundred tricolored blackbirds (*Agelaius tricolor*) were observed nesting in cattails growing in an industrial pond in the Aspen IV parcel (CNDDB occurrence #500).
- Tricolored blackbirds (*Agelaius tricolor*) were observed nesting in blackberry thickets on the south side of Morrison Creek within Aspen V South in 1994 and 2000 (CNDDB occurrence #305).
- Between 1990 and 2000 breeding colonies of tricolored blackbirds (*Agelaius tricolor*) occupied blackberry thickets on either side of Knox Road near the southeast corner of Aspen IX (CNDDB occurrence #177).
- In 1994 a small breeding colony of 15 adult tricolored blackbirds (*Agelaius tricolor*) was observed nesting in blackberry thickets north of Jackson Highway just southeast of Aspen VII; 500 were observed nesting at this location in 2012 (CNDDB occurrence #349).

The following CNDDB records are located within lands enclosed by Kiefer Boulevard on the north, Excelsior Road on the east, Jackson Highway on the south, and Bradshaw Road on the west (CDFW 2018):

- Sixteen active burrowing owl (*Athene cunicularia*) burrows were observed in 1991 (CNDDB occurrence #487).
- Several ferruginous hawks (*Buteo regalis*) and golden eagles (*Aquila chrysaetos*) were observed foraging annual grasslands in 1990-91 (CNDDB occurrence #31 and #135, respectively).
- About 300 adult tricolored blackbirds (*Agelaius tricolor*) were observed nesting in a cattail marsh in 1991. This occurrence was updated after 500-2,000 birds were observed foraging and possibly nesting in and around the constructed emergent marsh in Granite I directly north of the Aspen VI parcel in 2014-15 (CNDDB occurrence #390).

Many of these areas have since been highly altered and currently support disturbed mining areas and industrial ponds. **Figure 16** displays the above nesting/foraging bird occurrences in relation to the District 1 Participant Properties.

According to the document titled "Biological Resources Assessment – Aspen VIII & IX Project, Sacramento County, California" prepared by Teichert Materials in December 2014 and revised June 2015, several special-status bird species were observed within District 1 during associated field surveys performed in 2013 and 2014 (Teichert Materials 2015). These include the following:

- Four separate nesting colonies of tricolored blackbirds (*Agelaius tricolor*) were observed in blackberry thickets in Aspen VIII.
- Swainson's hawk (*Buteo swainsoni*) was observed foraging in Aspen VIII and Aspen IX.
- White-tailed kite (*Elanus leucurus*) was observed foraging in Aspen VIII and Aspen IX.

In addition to the above observed species, appropriate habitat is present within District 1 for the following birds:

- Cooper's hawk (*Accipiter cooperii*);
- Golden eagle (*Aquila chrysaetos*);
- Great egret (*Ardea alba*);
- Blue heron (*Ardea herodias*);
- Ferruginous hawk (*Buteo regalis*);
- Merlin (*Falco columbarius*);
- Song sparrow – Modesto population (*Melospiza melodia*);
- Black-crowned night heron (*Nycticorax nycticorax*);
- Double-crested cormorant (*Phalacrocorax auritus*);
- Purple martin (*Progne subis*);
- Bank swallow (*Riparia riparia*);
- Least Bell's vireo (*Vireo bellii pusillus*); and
- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.1.7.6 Other CNDDB Occurrences – District 1 Area Plan

The CNDDB records four occurrences of additional special-status species within or within close proximity to District 1. These include the following (CDFW 2018):

- Hairy water flea (*Dumontia oregonensis*) was collected in 2004 at Mather Field; very little information is available concerning this occurrence (CNDDB occurrence #1).
- A carcass of a juvenile American badger (*Taxidea taxus*) was discovered in 1991 within an area formerly controlled by Mather Airfield between Kiefer Boulevard, Bradshaw Road, Jackson Highway, and Excelsior Road (CNDDB occurrence #73).
- Western pond turtle (*Emys marmorata*) was observed in 1991 within a reach of Morrison Creek currently located in Aspen VI; this portion of Morrison Creek has been relocated to the west (CNDDB occurrence #433).
- Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*) was collected in 1997 at Mather Field east of Aspen VI; very little information is available concerning this occurrence (CNDDB occurrence #5).

Appropriate habitat for all of the above species is present within District 1. Surveys would be necessary prior to construction to ascertain the absence or presence of these species. **Figure 17** displays existing other CNDDB occurrences that do not fit into the groupings addressed above.

3.3.2 Existing Site Conditions - District 2 Area Plan

District 2 is approximately **1,245 acres** comprised of approximately **1,063 acres** owned by Granite and approximately **182 acres** of Non-Participating Property owners and roads as shown on **Figures 3** and **6**.

3.3.2.1 Site History – District 2 Participant Properties

Most of District 2 Participant Properties have been mined for aggregate and as a result are situated as low as approximately 30 to 40 feet below the topography of the surrounding un-mined lands. Most of these parcels primarily consist of disturbed mining areas and industrial ponds. Ruderal habitats such as disturbed mining areas and industrial ponds support filaree (*Erodium botrys*), soft chess (*Bromus hordeaceus*), rip-gut brome (*Bromus diandrus*), medusa head *(Elymus caput-medusae*), wild oats (*Avena fatua*), yellow star-thistle (*Centaurea solstitialis*), and common tarweed (*Holocarpha virgata*). The perimeter of the mining areas has been planted with ornamental species such as oleander (*Nerium oleander*) and privot (*Ligustrum* sp.) though several native trees such as Valley oak (*Quercus lobata*) and walnut (*Juglans* sp.) are also present.

3.3.2.2 Site History – District 2 Non-Participant Properties

Most of the District 2 Non-Participants are scattered on the periphery of the West Jackson Highway Master Plan Boundary near the west end of Mather Airport. A second small cluster is situated off of Elder Creek Road. Most of the District 2 Non-Participants have not been mined and are relatively close to their natural grades with the exception of several parcels near the southwest end of the Mather Airport runways.

3.3.2.3 Soils and Geology – District 2 Area Plan

According to the "Soil Survey of Sacramento County, California," eleven soil map units occur within Participant Properties of District 2 (USDA 1993):

1. Columbia sandy loam, drained, 0-2% slopes, occasionally flooded (118);
2. Hedge loam, 0-2% slopes (157);
3. Kimball silt loam, 0-2% slopes (164);
4. Natomas loam, 0-2% slopes (181);
5. Pits (190);
6. San Joaquin silt loam, leveled, 0-1% slopes (213);
7. San Joaquin silt loam, 0-3% slopes (214);
8. San Joaquin silt loam, 3-8 % slopes (215);
9. San Joaquin-Xerarents complex, leveled, 0-1% slopes (221);
10. Urban Land (227); and

11. Xerarents-Urban land-San Joaquin Complex, 0-5% slopes (240).

Figure 18 is an exhibit displaying the soil map units within District 2.

3.3.2.4 Existing Landcovers – District 2 Participant Properties

District 2 Participant Properties presently encompasses Mining Areas and Constructed/Restored Lands as well as Developed and Undeveloped Lands. **Figure 19** (NAIP 2016) is a map displaying existing landcovers within District 2 Participant Properties.

3.3.2.4.1 Mining Areas

Mining Areas in the District 2 Participant Properties consist of disturbed mining areas, processing facilities, an industrial yard, and industrial ponds. Disturbed mining areas have been utilized for the extraction of aggregate. These areas typically exist as pits with sloped walls, access roads, conveyor belt pathways, fences, and the areas along the pit rim where screen trees have been planted. The vegetation in areas subjected to mining activities is relatively sparse and can be best described as dominated by ruderal annual grassland species. Vegetative screening located on the pit rims supports a narrow band approximately 10 to 20 feet wide of ornamental shrubs and trees. This habitat supports generalist species tolerant of non-native vegetated habitats such as mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), California quail (*Callipepla californica*), Anna's hummingbirds (*Calypte anna*), and house finches (*Haemorhous mexicanus*). Because these areas continue to be used as part of the on-going aggregate extraction process, the landscape is constantly in flux and routine maintenance of mining areas is an ongoing activity.

An industrial yard is located along Happy Lane to the west of Mather Field. It is constructed of compacted earth or gravel and is used as a vehicle and equipment storage area.

Six industrial ponds are located within the mined areas of the District 2 Participant Properties. Woody species on the banks include Valley oak (*Quercus lobata*), cottonwood (*Populus fremontii*), black willow (*Salix nigra*), arroyo willow *(S. lasiolepus*), sandbar willow (*S. exigua*), Himalayan blackberry (*Rubus armeniacus*), and coyote brush (*Baccharis pilularis*). The herbaceous layer is typically dominated by common species such as hairy vetch (*Vicia villosa*), white sweetclover (*Melilotus alba*), sour sweetclover (*M. indica*), ripgut brome grass (*Bromus diandrus*), soft chess brome grass (*B. hordeaceus*), field mustard (*Brassica rapa*), and black mustard (*B. nigra*). Emergent vegetation occurs in the shallower portions, particularly along the margins, and is typically dominated by spike rush (*Eleocharis macrostachya*) and sandbar willow (*S. exigua*).

3.3.2.4.2 Constructed/Restored Lands

Constructed/Restored Lands are previously mined areas that have been actively reclaimed or have remained idle long enough to allow the re-establishment of vegetation. Within District 2 Participant Properties, these include restored riparian woodlands and constructed vernal pools, emergent marshes, and channels with

adjacent wetlands. Based on a review of aerial photography, the characteristics of these features are similar to their corresponding natural habitat types, with the exception of the constructed channels and surrounding restored riparian woodlands, which are still becoming established.

3.3.2.4.3 Developed Lands

Developed Lands refer to manipulated or developed areas and include institutional parcels such as schools as well as commercial, residential, and industrial sites. These areas, collectively referred to as Commercial/Residential/Industrial/Institutional lands on **Figure 19** (NAIP 2016), include buildings and accompanying features such as driveways, sidewalks, parking lots, and landscaped areas.

3.3.2.4.4 Undeveloped Lands

Due to the highly disturbed nature of District 2 Participant Properties, **Undeveloped Lands** refer to small areas of naturally occurring (at-grade) annual grasslands, riparian woodlands, and channels. Narrow tracts of annual grasslands are located along the east side of Hedge Avenue. These areas are unmined and are composed of soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), rip-gut brome (*Bromus diandrus*), medusa head *(Elymus caput-medusae*), filaree (*Erodium botrys*), and perennial rye grass (*Festuca perennis*).

Several channels, many of which have adjacent riparian woodlands, traverse District 2 Participant Properties. Most are ephemeral or intermittent, and all display a distinct bed and bank with ordinary high water mark and the absence of terrestrial vegetation. The exception is Morrison Creek, which is perennial and empties into the Sacramento River. The riparian woodlands are commonly composed of Valley oak (*Quercus lobata*), walnut (*Juglans* sp.), willows (*Salix* sp.), blue oak (*Quercus douglasii*), poison oak (*Toxicodendron diversilobum*), and Himalayan blackberry (*Rubus armeniacus*). The herbaceous understory typically includes creeping wild rye (*Elymus triticoides*), fiddle dock (*Rumex pulcher*), wild oats (*Avena fatua*), winter vetch (*Vicia villosa*), Italian thistle (*Carduus pycnocephalus*), chickweed (*Stellaria media*), and/or rose clover (*Trifolium hirtum*). **Table 5** summarizes the existing conditions within the District 2 Participant Properties.

Table 5. Landcover Types - Existing Conditions within District 2, Participants

Landcover Type	Acreage
Constructed/Restored Lands	
Constructed Channel and Adjacent Wetlands	11.9
Constructed Emergent Marsh	46.3
Restored Riparian Woodland	18.6
Constructed Vernal Pool	8.1
Undeveloped Lands	
Annual Grasslands	34
Channel	0.1

Table 5. Landcover Types - Existing Conditions within District 2, Participants, Cont'd

Landcover Type	Acreage
Undeveloped Lands	
Riparian Woodland	0.1
Developed Lands	
Commercial/Residential/Industrial/Institutional	139
Mining Areas	
Disturbed Mining Areas	675
Industrial Pond	122.7
Industrial Yard	7.2
Total	**1,063**

3.3.2.5 Existing Landcovers – District 2 Non-Participant Properties

The existing conditions for lands controlled by Non-Participant Property owners within District 2 were derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

The District 2 Non-Participants currently encompass Constructed/Restored Lands, Developed and Undeveloped Lands. **Figure 20** (NAIP 2016) is a map displaying existing landcovers within District 2 Non-Participant Properties.

3.3.2.5.1 Developed Lands

Developed Lands refer to heavily manipulated or built-up areas and include institutional parcels such as schools as well as commercial, residential, and industrial sites. These areas, collectively referred to as Commercial/Residential/Industrial/Institutional lands on **Figure 20** (NAIP 2016), include buildings and accompanying features such as driveways, sidewalks, parking lots, and landscaped areas.

3.3.2.5.2 Undeveloped Lands

Undeveloped Lands within the District 2 Non-Participant Properties refer to natural (at-grade) seasonal wetland swales, annual grasslands, and vernal pools. Interspersed within the areas of annual grasslands are vernal pools and seasonal wetland swales.

Vernal pools commonly support coyote thistle (*Eryngium castrense*), slender popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), creeping spike rush (*Eleocharis macrostachya*), Carter's

buttercup (*Ranunculus bonariensis* var. *trisepalus*), rush (*Juncus* sp.), rabbit's-foot grass (*Polypogon monspeliensis*), dove weed (*Croton setigerus*), Fremont's goldfields (*Lasthenia fremontii*), white-headed navarretia (*Navarretia leucocephala*), and smooth goldfields (*Lasthenia glaberrima*). Plants expected in the depressional seasonal wetlands, seasonal wetlands, and seasonal wetland swales include coyote thistle (*Eryngium castrense*), iris-leaf rush (*Juncus xiphioides*), Mediterranean barley (*Hordeum marinum*), and loosestrife (*Lythrum hyssopifolia*).

3.3.2.5.3 Constructed/Restored Lands

One feature within the Non-Participant Properties, a constructed channel and adjacent wetlands, has been classified under the category of Constructed/Restored Lands. It is situated within the annual grasslands just south of the Mather Airport runways and appears to have been straightened.

Table 6 summarizes the existing conditions within the District 2 Non-Participant Properties.

Table 6. Landcover Types - Existing Conditions within District 2, Non-Participants

Landcover Type	Acreage
Constructed/Restored Lands	
Constructed Channel and Adjacent Wetlands	0.2
Undeveloped Lands	
Annual Grasslands	17
Seasonal Wetland Swale	0.2
Vernal Pool	0.6
Developed Lands	
Commercial/Residential/Industrial/Institutional	130
Road	34
Total	**182**

3.3.2.6 Summary of Existing Landcovers – District 2 Area Plan

Table 7 summarizes existing conditions within both the Participant and the Non-Participant Properties within District 2.

Table 7. Landcover Types - Existing Conditions within District 2 Area Plan

Landcover Type	Acreage
Constructed/Restored Lands	
Constructed Channel and Adjacent Wetlands	12.1

Table 7. Landcover Types - Existing Conditions within District 2 Area Plan, Cont'd

Landcover Type	Acreage
Constructed/Restored Lands	
Constructed Emergent Marsh	46.3
Restored Riparian Woodland	18.6
Constructed Vernal Pool	8.1
Undeveloped Lands	
Annual Grasslands	51
Channel	0.1
Riparian Woodland	0.1
Seasonal Wetland Swale	0.2
Vernal Pool	0.6
Developed Lands	
Commercial/Residential/Industrial/Institutional	269
Road	34
Mining Areas	
Disturbed Mining Areas	675
Industrial Pond	122.7
Industrial Yard	7.2
Total	**1,245**

3.3.2.7 Special-Status Species – District 2 Area Plan

The special-status species assessment drew information from site visits, survey data and/or previously prepared assessment reports involving site visits. Rare plant surveys, detailed wetland delineations, biological assessments, and arborist reports are examples of sources of information utilized; however, large portions of the District 2 properties were not surveyed.

If reports or survey data were unavailable, assessments were derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and Google Earth Pro 2018 aerial photography and observations of features from public areas.

3.3.2.7.1 Rare Plant and VELB Surveys – District 2 Area Plan

No rare plant or elderberry surveys were performed throughout the majority of District 2 since the implementation of permitted aggregate mining activities, which occurred after 1998. The subsequent ground-moving activities associated with mining initially resulted in the loss of habitat for most special-status species plants known to occur in the general area; however, several constructed vernal pools are currently located within the Fairbairn South II and Granite I parcels, and potentially provide habitat for special-status species plants associated with seasonal wetlands (**Figure 19**) (NAIP 2016). Granite I also encompasses a large constructed emergent marsh and constructed channels and adjacent wetlands that provide potential habitat for listed hydrophytes.

The appropriate habitat is potentially present within unsurveyed areas of District 2 to support the following species:

- Dwarf downingia (*Downingia pusilla*);
- Bogg's Lake hedge-hyssop (*Gratiola heterosepala*);
- Woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*);
- Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*);
- Legenere (*Legenere limosa*);
- Pin cushion navarretia (*Navarretia myersii* ssp. *myersii*);
- Slender Orcutt grass (*Orcuttia tenuis*);
- Sacramento Orcutt grass (*Orcuttia viscida*);
- Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*); and
- Sanford's arrowhead (*Sagittaria sanfordii*).

For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.2.7.2 CNDDB Occurrences – Rare Plants and VELB – District 2 Area Plan

The CNDDB records no occurrences of special-status plants species within District 2; however, four are located within close proximity. These include the following (CDFW 2018):

- The CNDDB records an occurrence of Sanford's arrowhead (*Sagittaria sanfordii*) directly north of Jackson Highway in man-made ponds within the Cordova Golf Course (CNDDB occurrence #25).
- An occurrence of legenere (*Legenere limosa*) was recorded in 1999 to the east within lands south of the Mather Airport runways (CNDDB occurrence #44).
- In 2014 over 2,000 Sanford's arrowhead (*Sagittaria sanfordii*) plants were observed within an irrigation ditch in the Aspen VIII parcel(CNDDB occurrence #109).
- In 2013 Sanford's arrowhead (*Sagittaria sanfordii*) were observed less than a mile west within a drainage ditch paralleling a railroad track (CNDDB occurrence #110).

Figure 21 is an exhibit displaying existing occurrences of special-status plants in relation to District 2. A non-CNDDB occurrence of dwarf downingia was observed during 2016 rare plant surveys in the Vineyard

South Mine Project site, which is located south of Vineyard I on the south side of Elder Creek Road (APN 066-0010-001) (WRA 2016). This occurrence has yet to be published by the CNDDB.

3.3.2.7.3 CNDDB Occurrences - Vernal Pool Branchiopods – District 2 Area Plan

Appropriate habitat is present within District 2 for the following species: vernal pool fairy shrimp *(Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), California linderiella (*Linderiella occidentalis*), and midvalley fairy shrimp (*Branchinecta mesovallensis*). The CNDDB contains numerous records of vernal pool branchiopods in and around District 2 (CDFW 2018):

- Several occurrences of vernal pool fairy shrimp *(Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), California linderiella (*Linderiella occidentalis*), and midvalley fairy shrimp (*Branchinecta mesovallensis*) were documented between 1993 and 2002 within lands enclosed by Kiefer Boulevard on the north, Excelsior Road on the east, Jackson Highway on the south, and Bradshaw Road on the west. Subsequent to these records, portions of this area were heavily impacted by mining activities (CNDDB occurrence #21, #22, #39, #47, #50, #56, #57, #144, #175, #220, and #886).
- California linderiella (*Linderiella occidentalis*) and vernal pool tadpole shrimp (*Lepidurus packardi*) were also observed in 1993 and 1997 in a Non-Participant Property on the east side of Happy Lane (CNDDB occurrence #160 and #132, respectively).
- Between 1993 and 2010 numerous occurrences of vernal pool fairy shrimp (Branchinecta lynchi), vernal pool tadpole shrimp (*Lepidurus packardi*), and California linderiella (*Linderiella occidentalis*) have been reported on lands surrounding the Mather Airport runways (CNDDB occurrence #131, #160, #162, #282, #391, and #750).
- Vernal pool tadpole shrimp (*Lepidurus packardi*) were observed within constructed vernal pools within Granite I in 2010(CNDDB occurrence #21 and #50).
- Cysts for a *Branchinecta* species and California linderiella (*Linderiella occidentalis*) and were identified in 2000 during dry-season surveys within Vineyard (CNDDB occurrence #197).

For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance. **Figure 22** displays existing CNDDB vernal pool branchiopod occurrences in relation to District 2.

3.3.2.7.4 Native and Non-Native Trees

No tree surveys have been performed within District 2. Based on interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography, the likelihood of regulated trees within District 2 is high. For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.2.7.5 CNDDB Occurrences - Nesting/Foraging Raptors & Other Birds – District 2 Area Plan

According to the CNDDB several occurrences of nesting birds are located within or in very close proximity to District 2 (CDFW 2018). These include the following:

- Tricolored blackbirds (*Agelaius tricolor*) were observed nesting in blackberry thickets on the south side of Morrison Creek within Non-Participant Properties off of Bradshaw Road in 1994 and 2000 (CNDDB occurrence #305).
- In 1994 a small breeding colony of 15 adult tricolored blackbirds (*Agelaius tricolor*) was observed nesting in blackberry thickets north of Jackson Highway just southeast of Aspen VII; 500 were observed nesting at this location in 2012 (CNDDB occurrence #349).
- In 2010 a nesting pair of Swainson's hawks (*Buteo swainsoni*) was observed in a large eucalyptus tree on the intersection of Kiefer Boulevard and Bradshaw Road in very close proximity to one of the Bradshaw Road Non-Participants. The eucalyptus tree has since been removed (CNDDB occurrence #504).
- The Elder Creek colony of tricolored blackbirds (*Agelaius tricolor*), which was located within Aspen VII South and Aspen VIII, has been observed sporadically supporting nesting colonies from 1992 and to 2014 (CNDDB occurrence #306).
- A second Elder Creek nesting colony of tricolored blackbirds (*Agelaius tricolor*), which was located west of Aspen IX, had been first observed in 1993. The last active nesting colony was observed in 2015, though it may have failed (CNDDB occurrence #307).
- In 2015 three tricolored blackbirds (*Agelaius tricolor*) nesting colonies were observed: one was located in Aspen V South (CNDDB occurrence #743). The other two were located south and east of Aspen VII South (CNDDB occurrence #499, #741).
- In 2014 several hundred tricolored blackbirds (*Agelaius tricolor*) were observed nesting in cattails growing in an industrial pond in Aspen IV (CNDDB occurrence #500).

The following CNDDB records, which appear to have occurred in or in very close proximity to District 2 are located an area enclosed by Kiefer Boulevard on the north, Excelsior Road on the east, Jackson Highway on the south, and Bradshaw Road on the west:

- Sixteen active burrowing owl (*Athene cunicularia*) burrows were observed in 1991 (CNDDB occurrence #487).
- Several ferruginous hawks (*Buteo regalis*) and golden eagles (*Aquila chrysaetos*) were observed foraging annual grasslands in 1990-91 (CNDDB occurrence #31 and #135, respectively).
- About 300 adult tricolored blackbirds (*Agelaius tricolor*) were observed nesting in a cattail marsh in 1991. This occurrence was updated after 500-2,000 birds were observed foraging and possibly nesting in and around the constructed emergent marsh in Granite I directly north of the Aspen VI parcel in 2014-15 (CNDDB occurrence #390).

Figure 23 displays the above existing CNDDB nesting/foraging bird occurrences in relation to District 2.

In summary, appropriate habitat is currently present within District 2 for the following bird species:

- Cooper's hawk (*Accipiter cooperii*);
- Tricolored blackbirds (*Agelaius tricolor*);
- Golden eagle (*Aquila chrysaetos*);

- Great egret (*Ardea alba*);
- Blue heron (*Ardea herodias*);
- Burrowing owl (*Athene cunicularia*);
- Ferruginous hawk (*Buteo regalis*);
- Swainson's hawk (*Buteo swainsoni*);
- White-tailed kite (*Elanus leucurus*);
- Merlin (*Falco columbarius*);
- Song sparrow – Modesto population (*Melospiza melodia*);
- Black-crowned night heron (*Nycticorax nycticorax*);
- Double-crested cormorant (*Phalacrocorax auritus*);
- Purple martin (*Progne subis*);
- Bank swallow (*Riparia riparia*);
- Least Bell's vireo (*Vireo bellii pusillus*); and
- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.2.7.6 Other CNDDB Occurrences

The CNDDB records four additional occurrences of special-status species within or within close proximity to District 2 (CDFW 2018). These include the following:

- Hairy water flea (*Dumontia oregonensis*) was collected in 2004 at Mather Field; very little information is available concerning this occurrence (CNDDB occurrence #1).
- A carcass of a juvenile American (*Taxidea taxus*) badger was discovered in 1991 within an area formerly controlled by Mather Airfield between Kiefer Boulevard, Bradshaw Road, Jackson Highway, and Excelsior Road (CNDDB occurrence #73). A second occurrence based on a National Museum of Natural History specimen collected at an unknown date is located over 1 mile to the west (CNDDB occurrence #304).
- Western pond turtle (*Emys marmorata*) was observed in 1991 within a reach of Morrison Creek currently located in Aspen VI; this portion of Morrison Creek has been relocated to the west (CNDDB occurrence #433).
- Ricksecker's water scavenger beetle (*Hydrochara ricksecker*i) was collected in 1997 at Mather Field east of Aspen VI; very little information is available concerning this occurrence (CNDDB occurrence #5).

Appropriate habitat for all of the above species is present within District 2. Surveys would be necessary prior to construction to ascertain the absence or presence of these species. **Figure 24** displays other CNDDB occurrences that do not fit into the groupings addressed above.

3.3.3 Existing Conditions for Future Planning Areas (FPAs)

Three Future Planning Areas (FPAs) as shown on **Figure 3** are comprised of approximately **1,018 acres**, all of which are controlled by Non-Participating Property owners. FPA-A is approximately **189 acres**, FPA-B is approximately **232 acres**, and FPA-C is approximately **597 acres**. While the landowners within the FPAs may initiate District Area Plans or Specific Plans in the future, the timing on such planning efforts is unknown at this time.

The existing landcovers for lands within the FPAs utilized information derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

3.3.3.1 Site History - FPAs

The three FPAs are located on the periphery of the West Jackson Highway Master Plan Boundary. FPA-A, which is composed of 62 parcels, is located east of the Fruitridge Road-South Watt Avenue intersection; the twenty-seven parcels making up FPA-B are situated north of the Elder Creek Road-Bradshaw Road intersection; and FPA-C is comprised of 25 parcels and can be found northwest of the Excelsior Road-Florin Road intersection. Unlike the District Area Plans, the FPAs have not been mined and are relatively close to their natural grades. These areas represent mostly undeveloped lands interspersed with developed and agricultural lands.

3.3.3.2 Soils and Geology - FPAs

According to the "Soil Survey of Sacramento County, California," twelve soil map units occur within Participant Properties of the FPAs (USDA 1993):

1. Durixeralfs, 0-1% slopes (137);
2. Hedge loam, 0-2% slopes (157);
3. Kimball silt loam, 0-2% slopes (164);
4. Red Bluff loam, 0-2% slopes (191);
5. Red Bluff-Redding complex, 0-5% slopes (193);
6. Red Bluff-Xerarents complex, 0-2% slopes (195);
7. Redding gravelly loam, 0-8% slopes (198);
8. San Joaquin silt loam, leveled, 0-1% slopes (213);
9. San Joaquin silt loam, 0-3% slopes (214);
10. San Joaquin silt loam, 3-8 % slopes (215);
11. San Joaquin-Durixeralfs complex, 0-1% slopes (216);
12. and San Joaquin-Xerarents complex, leveled, 0-1% slopes (221).

Figure 25 is an exhibit displaying the soil map units within the three FPAs.

3.3.3.3 Existing Landcovers – FPAs

The FPAs currently encompass Developed and Undeveloped Lands. **Figure 26** (NAIP 2016) is a map displaying existing landcover conditions within the three FPAs.

3.3.3.3.1 Developed Lands

Developed Lands refer to heavily manipulated or built-up areas and include institutional parcels such as schools as well as commercial, residential, and industrial sites. These areas are collectively referred to as Commercial/Residential/Industrial/Institutional lands on **Figure 26** (NAIP 2016). Developed Lands also include associated structures such as driveways, sidewalks, paved roads, parking lots, playgrounds, landscaped areas, and ditches. Three ditches are located within the FPAs. Two act as irrigation features and are associated with irrigated pastures south of FPA-B, while the third is a roadside drainage ditch on the north side of Florin Road in FPA-C.

3.3.3.3.2 Undeveloped Lands

Undeveloped Lands refer to natural (at-grade) annual grasslands that contain channels, depressional seasonal wetlands, marshes, seasonal wetlands, ponds, riparian woodlands, seasonal wetlands swales, and vernal pools. The majority of Undeveloped Lands are situated within FPA-C, although such lands also make up approximately half of FPA-A and FPA-B. These areas typically consist of annual grasslands likely composed of soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), rip-gut brome (*Bromus diandrus*), medusa head *(Elymus caput-medusae*), filaree (*Erodium botrys*), and perennial rye grass (*Festuca perennis*). Interspersed within the annual grasslands are numerous water features including vernal pools, depressional seasonal wetlands, seasonal wetlands, seasonal wetland swales, channels, marshes, and ponds.

Common plants within vernal pools include coyote thistle (*Eryngium castrense*), slender popcorn flower (*Plagiobothrys stipitatus*), woolly marbles (*Psilocarphus brevissimus*), creeping spike rush (*Eleocharis macrostachya*), Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), rush (*Juncus* sp.), rabbit's-foot grass (*Polypogon monspeliensis*), dove weed (*Croton setigerus*), Fremont's goldfields (*Lasthenia fremontii*), white-headed navarretia (*Navarretia leucocephala*), and smooth goldfields (*Lasthenia glaberrima*). Plants expected in the depressional seasonal wetlands, seasonal wetlands, and seasonal wetland swales include coyote thistle (*Eryngium castrense*), iris-leaf rush (*Juncus xiphioides*), Mediterranean barley (*Hordeum marinum*), and loosestrife (*Lythrum hyssopifolia*).

Twenty ponds are located within the FPAs, four of which were constructed to facilitate the watering of the irrigated pastures within FPA-B. The rest appear to have been created by excavation or the placement of earthen levees across natural drainages. Freshwater marshes consisting of broadleaf cattails (*Typha angustifolia*), and/or bulrush (*Schoenoplectus acutus*) may occupy the shallower edges of the ponds and ditches.

Several channels, most of which are ephemeral or intermittent, traverse the FPAs. All display a bed and bank with ordinary high water mark and the absence of terrestrial vegetation. The exception is Morrison Creek which is perennial and flows to the west through FPA-A before draining into the Sacramento River. Morrison Creek and small unnamed drainages in FPA-A support small corridors of riparian woodlands. These are likely composed of Valley oak (*Quercus lobata*), walnut (*Juglans* sp.), willows (*Salix* sp.), blue oak (*Quercus douglasii*), poison oak (*Toxicodendron diversilobum*), and Himalayan blackberry (*Rubus armeniacus*). The herbaceous understory may typically include creeping wild rye (*Elymus triticoides*), fiddle dock (*Rumex pulcher*), wild oats (*Avena fatua*), winter vetch (*Vicia villosa*), Italian thistle (*Carduus pycnocephalus*), chickweed (*Stellaria media*), and/or rose clover (*Trifolium hirtum*).

Croplands within the FPAs are usually utilized yearly and planted in dry crops such as wheat (*Triticum* sp.) and hay. The irrigated pastures provide forage for cattle and probably consist of wetter species such as perennial rye grass (*Festuca perennis*), tall flat-sedge (*Cyperus eragrostis*), bird's foot-trefoil (*Lotus corniculatus*), knotweed (*Polygonum aviculare*) loosestrife (*Lythrum hyssopifolia*), white clover (*Trifolium repens*), English plantain (*Plantago lanceolata*), and dallis grass (*Paspalum dilatatum*).

Table 8 summarizes landcover types present for the existing conditions within the FPAs.

Table 8. Landcover Types - Existing Conditions within Future Planning Areas

Landcover Type	Acreage
Undeveloped Lands	
Annual Grasslands	578
Channel	2.6
Cropland	27
Depressional Seasonal Wetland	0.3
Irrigated Pasture	27
Marsh	0.8
Pond	23.4
Riparian Woodland	4.6
Seasonal Wetland	0.6
Seasonal Wetland Swale	6.4
Vernal Pool	3.0
Developed Lands	
Commercial/Residential/Industrial/Institutional	321
Ditch	1.3
Road	22
Total	**1,018**

3.3.3.4 Special-Status Species - FPAs

Since no reports or survey data were available for the FPAs, all information was derived from the CNDDB and from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

3.3.3.4.1 CNDDB Occurrences - Rare Plants and VELB - FPAs

The CNDDB records two occurrences of special-status plant species as occurring near the FPAs (CDFW 2018):

- In 1998 Sacramento Orcutt grass (*Orcuttia viscida*) was observed approximately 0.25 mile east of FPA-C, but this occurrence is believed to be extirpated. The vernal pool identified as supporting this record has evolved into a marsh due to run-off from a nearby plant nursery (CNDDB occurrence #20).
- In 2014 over 2,000 Sanford's arrowhead (*Sagittaria sanfordii*) plants were observed within an irrigation ditch in the Aspen VIII parcel east of FPA-B (CNDDB occurrence #109).

Figure 27 is an exhibit displaying existing occurrences of special-status plants in relation to the FPAs. A non-CNDDB occurrence of dwarf downingia was observed during 2016 rare plant surveys in the Vineyard South Mine Project site, which is located south of Vineyard I on the south side of Elder Creek Road (APN 066-0010-001) (WRA 2016). This occurrence has yet to be published by the CNDDB.

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Based on aerial photo interpretation, the appropriate habitat is potentially present within the FPAs to support the following species:

- Dwarf downingia (*Downingia pusilla*);
- Stinkbells (*Fritillaria agrestis*);
- Bogg's Lake hedge-hyssop (*Gratiola heterosepala*);
- Woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*);
- Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*);
- Legenere (*Legenere limosa*);
- Pin cushion navarretia (*Navarretia myersii* ssp. *myersii*);
- Slender Orcutt grass(*Orcuttia tenuis*);
- Sacramento Orcutt grass (*Orcuttia viscida*);
- Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*); and
- Sanford's arrowhead (*Sagittaria sanfordii*).

For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.3.4.2 CNDDB Occurrences - Vernal Pool Branchiopods - FPAs

According to the CNDDB, five occurrences of special-status vernal pool branchiopods were located within or in very close proximity to the FPAs (CDFW 2018):

- In 1992 California linderiella (*Linderiella occidentalis*) were observed in a roadside ditch near Elder Creek and Excelsior Road near FPA-C.
- In 1992 California linderiella (*Linderiella occidentalis*) were observed at two locations in roadside ditches along Florin Road in the vicinity of Bradshaw Road near FPA-C.
- In 1992 vernal pool tadpole shrimp (*Lepidurus packardi*) were observed in a vernal pool east of Excelsior Road east of FPA-C.
- In 1993 and 2006, vernal pool fairy shrimp *(Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*), respectively, were observed in seasonal water features south of Florin Road.
- California linderiella (*Linderiella occidentalis*) were also observed just southeast of FPA-A in 2001.

Figure 28 displays existing CNDDB vernal pool branchiopod occurrences in relation to the FPAs. Based on aerial photo interpretation, appropriate habitat is present within the FPAs for the following species: vernal pool fairy shrimp *(Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), California linderiella (*Linderiella occidentalis*), and midvalley fairy shrimp (*Branchinecta mesovallensis*). For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.3.4.3 Native and Non-Native Trees

No tree survey data was available for the FPAs; however, based on interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography, the likelihood of regulated trees within FPA's is high. For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.3.4.4 CNDDB Occurrences - Nesting/Foraging Raptors & Other Birds - FPAs

According to the CNDDB, numerous occurrences of special-status bird species including raptors were located within or in very close proximity to the FPAs (CDFW 2018):

- In 1990, a pair of white-tailed kites (*Elanus leucurus*) was observed nesting in a tree located between FPA-B and FPA-C (CNDDB occurrence #27).
- Tricolored blackbirds (*Agelaius tricolor*) were observed nesting in blackberry thickets on the south side of Morrison Creek within Aspen V South in 1994 and 2000 (CNDDB occurrence #305).
- The Elder Creek colony of tricolored blackbirds (*Agelaius tricolor*), which was located within Aspen VII South and Aspen VIII, had been observed sporadically supporting nesting colonies from 1992 and to 2014 (CNDDB occurrence #306).
- A second Elder Creek nesting colony of tricolored blackbirds (*Agelaius tricolor*) was located west of Aspen IX and south of FPA-B and had been first observed in 1993. The last active nesting colony was recorded in 2015, though it may have failed (CNDDB occurrence #307).

- In 1994 a small breeding colony of 15 adult tricolored blackbirds (*Agelaius tricolor*) was observed nesting in blackberry thickets north of Jackson Highway southeast of Aspen VII and north of FPA-C; 500 were observed nesting at this location in 2012 (CNDDB occurrence #349).
- In 2000, a colony of nesting tricolored blackbirds (*Agelaius tricolor*) was recorded along Elder Creek along the north edge of FPA-C (CNDDB occurrence #306).
- From 1990 to 2000, a colony of nesting tricolored blackbirds (*Agelaius tricolor*) was observed along Knox Road within FPA-C and south of Aspen IX (CNDDB occurrence #177).
- In 2015 two tricolored blackbirds (*Agelaius tricolor*) nesting colonies were observed: one was located in Aspen V South(CNDDB occurrence #743), and the other was located in FPA-C near Aspen VII South (CNDDB occurrence #499).

Figure 29 displays the above existing CNDDB nesting/foraging bird occurrences in relation to the FPAs.

In summary, appropriate habitat is present within the FPAs for the following bird species:

- Cooper's hawk (*Accipiter cooperii*);
- Tricolored blackbirds (*Agelaius tricolor*);
- Golden eagle (*Aquila chrysaetos*);
- Great egret (*Ardea alba*);
- Blue heron (*Ardea herodias*);
- Burrowing owl (*Athene cunicularia*);
- Ferruginous hawk (*Buteo regalis*);
- Swainson's hawk (*Buteo swainsoni*);
- White-tailed kite (*Elanus leucurus*);
- Merlin (*Falco columbarius*);
- Song sparrow – Modesto population (*Melospiza melodia*);
- Black-crowned night heron (*Nycticorax nycticorax*);
- Double-crested cormorant (*Phalacrocorax auritus*);
- Purple martin (*Progne subis*);
- Bank swallow (*Riparia riparia*);
- Least Bell's vireo (*Vireo bellii pusillus*); and
- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

For areas not surveyed, surveys may be deemed appropriate prior to initial site disturbance.

3.3.3.4.5 Other CNDDB Occurrences - FPAs

The CNDDB records two additional occurrences of special-status species within or within close proximity to the FPAs (CDFW 2018). These include the following:

- A carcass of a juvenile American badger (*Taxidea taxus*) was discovered in 1991, within an area formerly controlled by Mather Airfield between Kiefer Boulevard, Bradshaw Road, Jackson Highway, and Excelsior Road (CNDDB occurrence #73).

- A western pond turtle (*Emys marmorata*) was observed in 1991, within a reach of Morrison Creek currently located in Aspen VI; this portion of Morrison Creek has since been relocated to the west (CNDDB occurrence #433).

Appropriate habitat for all of the above species is present within the FPAs. Surveys would be necessary to ascertain the absence or presence of these species prior to the start of construction. **Figure 30** displays existing other CNDDB occurrences that do not fit into the groupings addressed above.

3.4 Baseline Site Conditions

CEQA requires that environmental impact reports (EIRs) identify the "baseline" conditions against which the significance of a project's impacts will be measured. In most cases, lead agencies analyze the impacts of the project based on conditions that exist at the time of publication of the Notice of Preparation for an environmental impact report. (See Existing Conditions discussion, above.) However, case law has clarified that in proper cases, use of projected or future conditions as an environmental baseline is appropriate where the lead agency determines, based on substantial evidence, that inclusion of an "existing conditions" analysis would be "misleading or without informational value." *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, Cal. Supreme Court Case No. S202828 (2013).

Several of the properties within Districts 1 and 2 are in the process of being mined and/or reclaimed pursuant to County-approved use permits and reclamation plans. Reclamation of mined properties is required to occur pursuant to the California Surface Mining and Reclamation Act (SMARA) and Teichert and Granite's obligation to reclaim these mined sites is secured by financial assurance mechanisms (sometimes taking the form of surety bonds).

Since all of the approved mining sites in Districts 1 and 2 will ultimately be reclaimed as described in the approved reclamation plans, measuring the impacts of the proposed Plan Area against existing conditions is not likely to yield information that will help Sacramento County or the public to fully understand the environmental impacts of the Plan Area. Accordingly, and as discussed in more detail below, for mining properties with approved reclamation plans, this report utilizes the land uses described in those plans as the appropriate baseline condition for analysis.

In addition, Teichert and Granite have obtained permits from federal and state agencies authorizing impacts to waters and habitat within several of their respective active mining/reclamation properties. Teichert and Granite have commenced constructing wetlands and other water features, and planting associated vegetation, on several of their properties within Districts 1 and 2 as mitigation for impacts to Waters. These mitigation projects are required pursuant to permits issued by the USACE. Moreover, like the reclamation plans, performance of these mitigation obligations is secured by either bonds, letters of credits, or endowments, and, as such, the work is guaranteed to occur. Therefore, this analysis assumes that these currently approved but not-yet-completed mitigation projects are in place and therefore comprise the baseline for analysis instead of the existing conditions on those sites.

Lastly, Teichert and Granite have also obtained authorizations from Sacramento County for the removal of native oaks within several of their respective active mining/reclamation properties. Subsequently, Teichert and Granite have commenced with the planting of native acorns, saplings and oak trees, as well as other native vegetation as mitigation for impacts to county-regulated trees and to enhance overall habitat quality.

3.4.1 Baseline Site Conditions - District 1 Area Plan

District 1 is comprised of approximately **3,651 acres**, consisting of approximately **3,016 acres** of land controlled by Teichert and approximately **635 acres** of Non-Participating Property owners and roads as shown on **Figures 3** and **5**. **Figure 3** identifies the areas where mining has occurred or is occurring as the "Aspen" projects.

3.4.1.1 Baseline Landcovers - District 1 Area Plan Participant Properties

The establishment of baseline conditions will result from the projected implementation of mining reclamation plans and mitigation plans for impacts to Waters. Upon the completion of the reclamation and mitigation plans for each of the mine sites, the District 1 Participant Properties will encompass Constructed/Restored Lands and Mining Areas as well as Developed and Undeveloped Lands. **Figure 31** (NAIP 2016) is a map displaying the baseline landcovers within District 1 Participant Properties.

3.4.1.1.1 Constructed/Restored Lands

Constructed/Restored Lands**,** both existing and future, are previously mined areas that have been reclaimed or have remained idle long enough to allow the re-establishment of vegetation. Within District 1 Participant Properties, reclaimed conditions include restored riparian woodlands, restored agricultural lands, restored annual grasslands, a constructed low flow corridor, portions of the Morrison Creek bypass channel, and tree/shrub mitigation. Additional constructed/restored features will include constructed ponds, vernal pools, depressional seasonal wetlands, channels, and seasonal wetland swales.

3.4.1.1.2 Developed Lands

Developed Lands refer to manipulated or built-up areas and include ditches and institutional parcels such as schools as well as commercial and residential parcels, industrial yards, and an abandoned parking lot.

3.4.1.1.3 Undeveloped Lands

Undeveloped Lands refer to annual grasslands that contain channels, depressional seasonal wetlands, marshes, seasonal wetlands, ponds, riparian woodlands, seasonal riparian wetlands, seasonal wetlands swales, vernal pools, and croplands in previously unmined areas.

Table 9 summarizes landcover types present for the baseline conditions within the District 1 Participant Properties.

Table 9. Landcover Types - Baseline Landcover Conditions within District 1, Participants

Landcover Type	Acreage
Constructed/Restored Lands	
Morrison Creek Bypass Channel	23.9
Restored Agricultural Lands	102
Restored Annual Grasslands	1,893
Constructed Channel and Adjacent Wetlands	6.7
Constructed Depressional Seasonal Wetland	0.2
Constructed Low Flow Corridor	91.8
Constructed Pond	109.3
Restored Riparian Woodland	45.8
Constructed Seasonal Wetland Swale	0.4
Constructed Vernal Pool	20.0
Tree/Shrub Mitigation	4.0
Undeveloped Lands	
Annual Grasslands	596
Channel	11.1
Cropland	15
Depressional Seasonal Wetland	3.0
Marsh	4.1
Pond	0.8
Riparian Woodland	35.7
Seasonal Riparian Wetland	1.0
Seasonal Wetland	6.6
Seasonal Wetland Swale	4.6
Vernal Pool	15.1
Developed Lands	
Commercial/Residential/Industrial/Institutional	14
Ditch	0.5
Road	4.0
Mining Areas	
Abandoned Parking Lot	5.3
Industrial Yard	2.1
Total	**3,016**

3.4.1.2 Baseline Landcovers - District 1 Non-Participant Properties

The baseline landcovers for District 1 Non-Participant Properties are the same as the existing landcovers. Baseline landcovers for lands controlled by Non-Participant Property owners within District 1 were derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

Table 10 summarizes landcover types present for the baseline (existing) conditions within the District 1 Non-Participant Properties.

Table 10. Landcover Types - Baseline Conditions within District 1, Non-Participants

Landcover Type	Acreage
Undeveloped Lands	
Annual Grasslands	210
Channel	2.4
Cropland	12
Depressional Seasonal Wetland	1.4
Irrigated Pasture	7.0
Marsh	0.9
Pond	1.8
Riparian Woodland	7.3
Seasonal Riparian Wetland	0.1
Seasonal Wetland Swale	1.7
Vernal Pool	4.8
Developed Lands	
Commercial/Residential/Industrial/Institutional	257
Ditch	0.1
Road	78.8
Mining Areas	
Disturbed Mining Areas	47
Industrial Pond	2.0
Industrial Yard	0.7
Total	**635**

3.4.1.3 Summary of Baseline Landcovers – District 1 Area Plan

Table 11 summarizes the landcover types present under baseline conditions within District 1 for Participating and Non-Participating Properties.

Table 11. Landcover Types - Baseline Conditions within District 1 Plan Area

Landcover Type	Acreage
Constructed/Restored Lands	
Morrison Creek Bypass Channel	23.9
Restored Agricultural Lands	102
Restored Annual Grasslands	1,893
Constructed Channel and Adjacent Wetlands	6.7
Constructed Depressional Seasonal Wetland	0.2
Constructed Low Flow Corridor	91.8
Constructed Pond	109.3
Restored Riparian Woodland	45.8
Constructed Seasonal Wetland Swale	0.4
Constructed Vernal Pool	20.0
Tree/Shrub Mitigation	4.0
Undeveloped Lands	
Annual Grasslands	806
Channel	13.5
Cropland	27
Depressional Seasonal Wetland	4.4
Irrigated Pasture	7.0
Marsh	5.0
Pond	2.6
Riparian Woodland	43.0
Seasonal Riparian Wetland	1.1
Seasonal Wetland	6.6
Seasonal Wetland Swale	6.3
Vernal Pool	19.9

Table 11. Landcover Types - Baseline Conditions within District 1 Plan Area, Cont'd

Landcover Type	Acreage
Developed Lands	
Commercial/Residential/Industrial/Institutional	271
Ditch	0.6
Road	82.8
Mining Areas	
Abandoned Parking Lot	5.3
Disturbed Mining Areas	47
Industrial Pond	2.0
Industrial Yard	2.8
Total	**3,651**

3.4.2 Baseline Site Conditions - District 2 Area Plan

District 2 is approximately **1,245 acres** comprised of **1,063 acres** owned by Granite, and approximately **182 acres** of Non-Participating Property owners and roads as shown on **Figure 3**.

Existing conditions within the District 2 Participant Properties utilized information derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

3.4.2.1 Baseline Landcovers - District 2 Participant Properties

The establishment of baseline conditions will result from the projected implementation of mining reclamation plans and mitigation plans for impacts to Waters. Upon the completion of the reclamation and mitigation plans for each of the mine sites, the District 2 Participant Properties will encompass Constructed/Restored Lands, Undeveloped Lands, and Developed Lands. **Figure 32** is a map displaying the baseline landcover conditions within District 2 Participant Properties.

3.4.2.1.1 Constructed/Restored Lands

Constructed/Restored Lands are previously mined areas that have been reclaimed or have remained idle long enough to allow the re-establishment of vegetation. Within District 2 Participant Properties, restored conditions include annual grasslands, riparian woodlands, annual grasslands, and several constructed water features including portions of the Morrison Creek Bypass channel, Morrison Creek Realigned Channel (on Vineyard), a low flow corridor, ponds, emergent marsh, vernal pools, and channels.

3.4.2.1.2 Developed Lands

Developed Lands refer to manipulated or built-up areas and include institutional parcels such as schools as well as commercial, residential, and industrial sites.

3.4.2.1.3 Undeveloped Lands

Undeveloped Lands refer to a small undisturbed portion of riparian woodlands.

Table 12 summarizes landcover types present for the baseline landcover conditions within the District 2 Participant Properties.

Table 12. Landcover Types - Baseline Landcover Conditions within District 2, Participants

Landcover Type	Acreage
Constructed/Restored Lands	
Morrison Creek Bypass Channel	15.9
Restored Annual Grasslands	667
Constructed Channel and Adjacent Wetlands	13.1
Constructed Emergent Marsh	46.3
Constructed Low Flow Corridor	3.9
Constructed Pond	26
Restored Riparian Woodland	56.7
Constructed Vernal Pool	9.0
Undeveloped Lands	
Riparian Woodland	0.1
Developed Lands	
Commercial/Residential/Industrial/Institutional	225
Total	**1,063**

3.4.2.2 Baseline Landcovers - District 2 Non-Participant Properties

The baseline landcovers for District 2 Non-Participant Properties will be the same as the existing landcovers. **Table 13** summarizes landcover types present for the baseline (existing) conditions within the District 2 Non-Participant Properties.

Table 13. Landcover Types - Baseline Conditions within District 2, Non-Participants

Landcover Type	Acreage
Constructed/Restored Lands	
Constructed Channel and Adjacent Wetlands	0.2
Undeveloped Lands	
Annual Grasslands	17
Seasonal Wetland Swale	0.2
Vernal Pool	0.6
Developed Lands	
Commercial/Residential/Industrial/Institutional	130
Road	34
Total	**182**

3.4.2.3 Summary of Baseline Landcovers - District 2 Area Plan

Table 14 summarizes baseline landcovers within both the Participant and the Non-Participant Properties for District 2.

Table 14. Landcover Types - Baseline Conditions within District 2 Area Plan

Landcover Type	Acreage
Constructed/Restored Lands	
Morrison Creek Bypass Channel	15.9
Restored Annual Grasslands	667
Constructed Channel and Adjacent Wetlands	13.3
Constructed Emergent Marsh	46.3
Constructed Low Flow Corridor	3.9
Constructed Pond	26
Restored Riparian Woodland	56.7
Constructed Vernal Pool	9.0
Undeveloped Lands	
Annual Grasslands	17.0
Riparian Woodland	0.1
Seasonal Wetland Swale	0.2
Vernal Pool	0.6

Table 14. Landcover Types - Baseline Conditions within District 2 Area Plan, Cont'd

Landcover Type	Acreage
Developed Lands	
Commercial/Residential/Industrial/Institutional	355
Road	34
Total	**1,245**

3.4.3 Baseline Site Conditions - FPAs

The baseline landcovers for the FPAs will be the same as the existing landcovers. **Table 15** summarizes the landcover types for the baseline (existing) conditions within the FPAs. The baseline landcovers for lands within the FPAs utilized information derived from the interpretation of 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from accessible properties and public roads. Aerial photo interpretation developed by Sacramento County for the SSHCP was used to identify initial potential wetland resources and was adjusted based on 2016 NAIP and 2018 Google Earth Pro aerial photography and observations from public areas.

Table 15. Landcover Types - Baseline Conditions within Future Planning Areas

Landcover Type	Acreage
Undeveloped Lands	
Annual Grasslands	578
Channel	2.6
Cropland	27
Depressional Seasonal Wetland	0.3
Irrigated Pasture	27
Marsh	0.8
Pond	23.4
Riparian Woodland	4.6
Seasonal Wetland	0.6
Seasonal Wetland Swale	6.4
Vernal Pool	3.0
Developed Lands	
Commercial/Residential/Industrial/Institutional	321
Ditch	1.3
Road	22
Total	**1,018**

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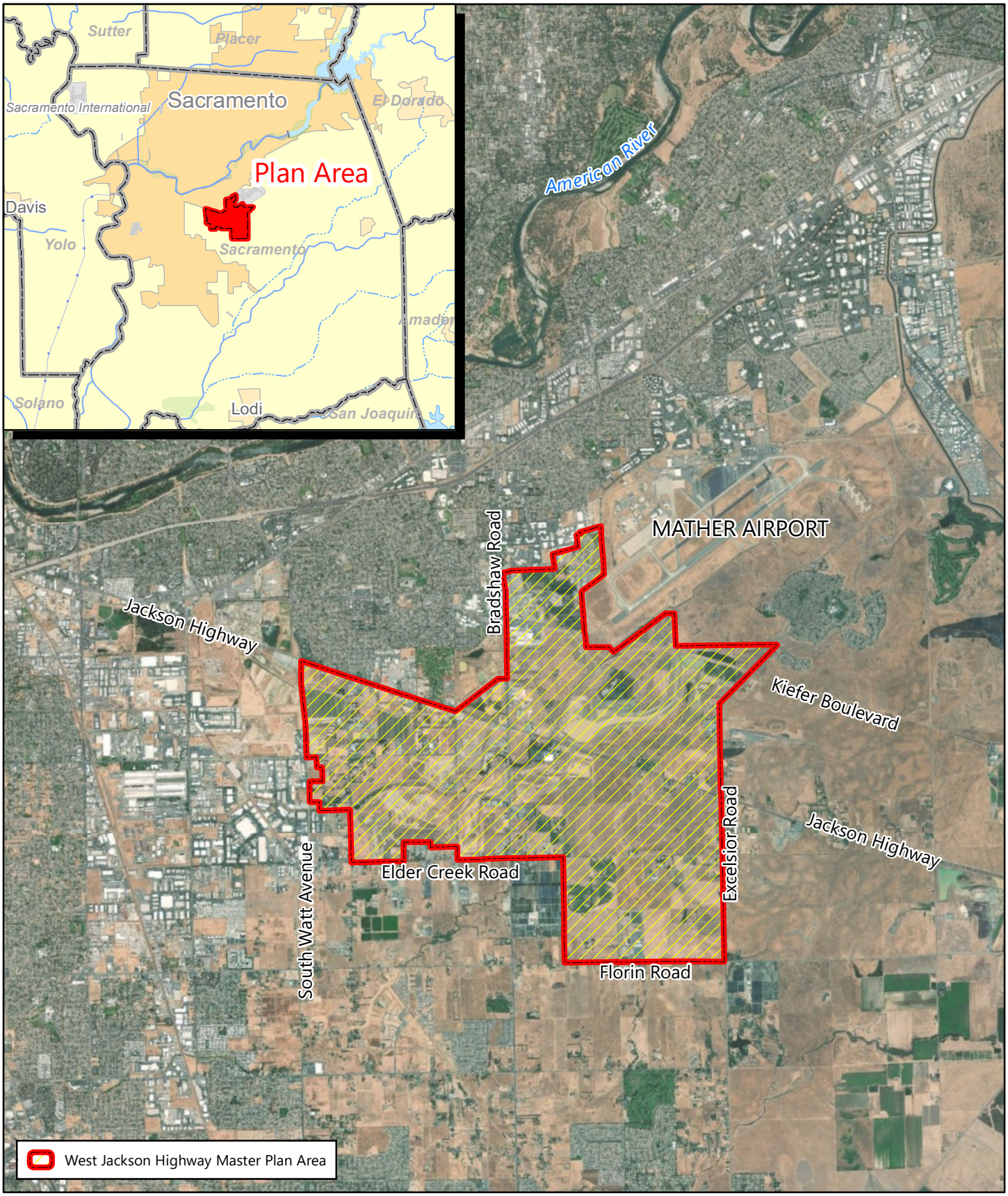

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Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Inset Source: *ESRI Maps*, 2014

Figure 1
Vicinity Map

West Jackson Highway Master Plan
Biological Resources Assessment

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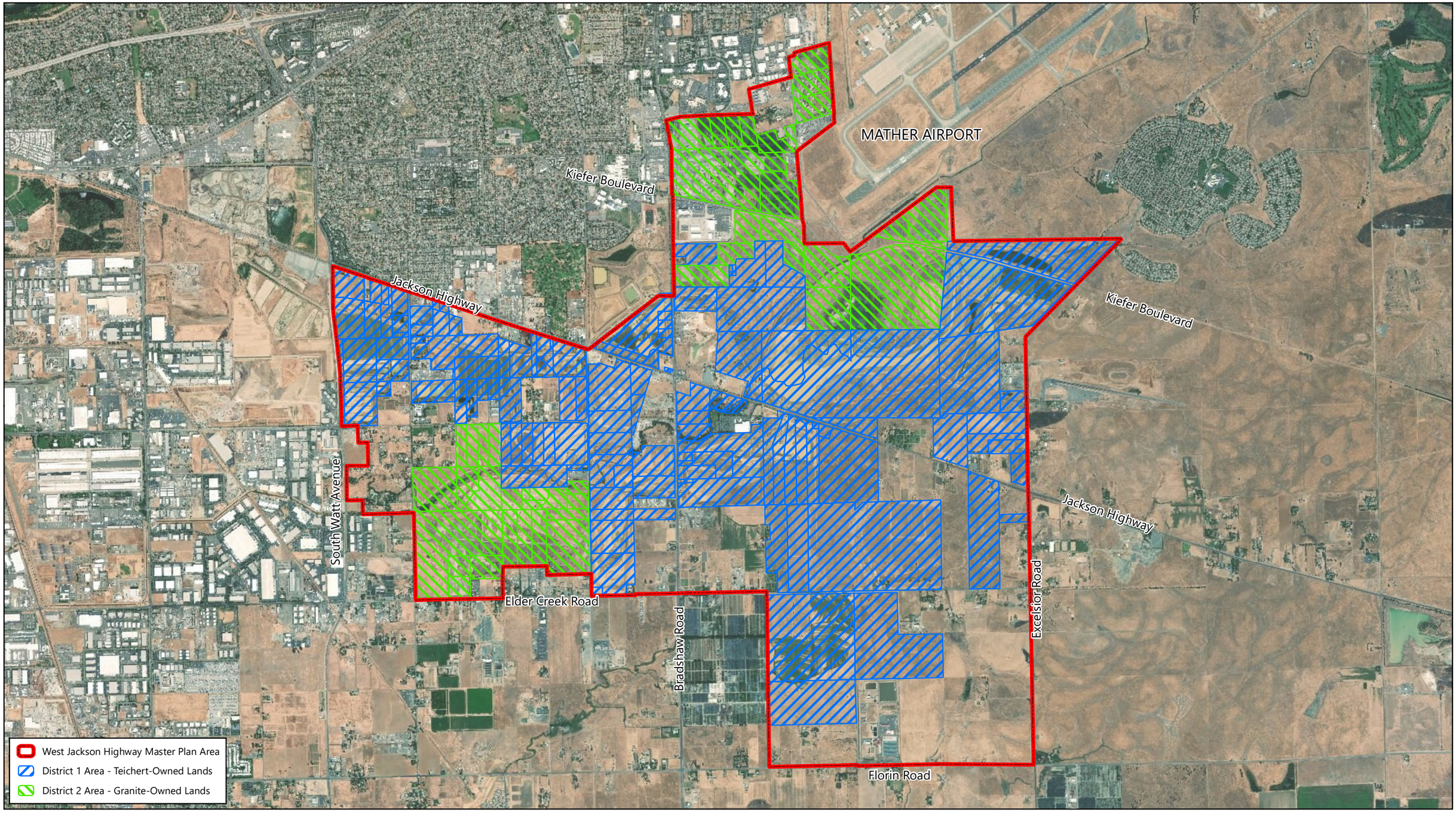

Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 2
Ownership Map

West Jackson Highway Master Plan
Biological Resources Assessment

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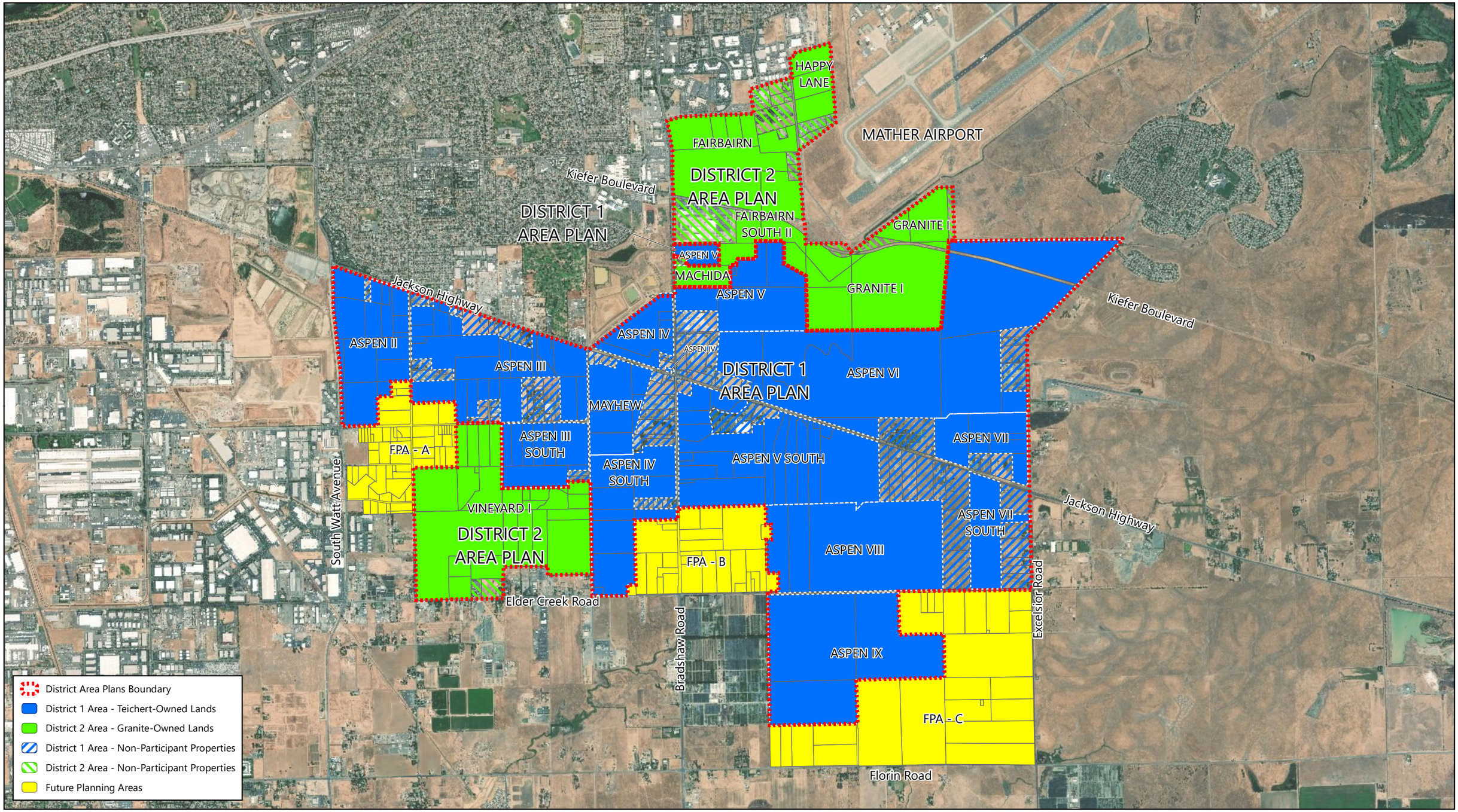

Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 3
District Area Plans and Mining Areas

West Jackson Highway Master Plan
Biological Resources Assessment

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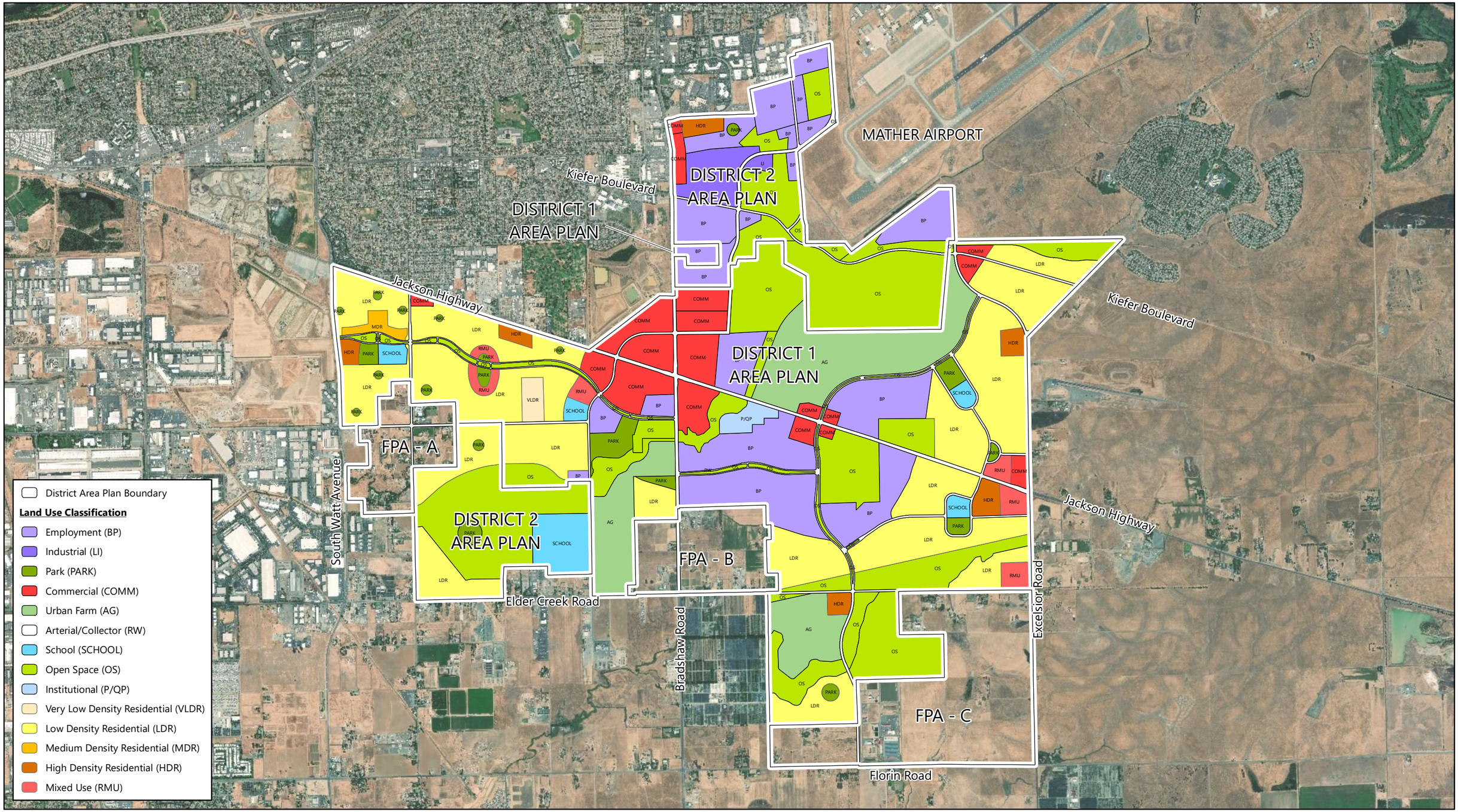
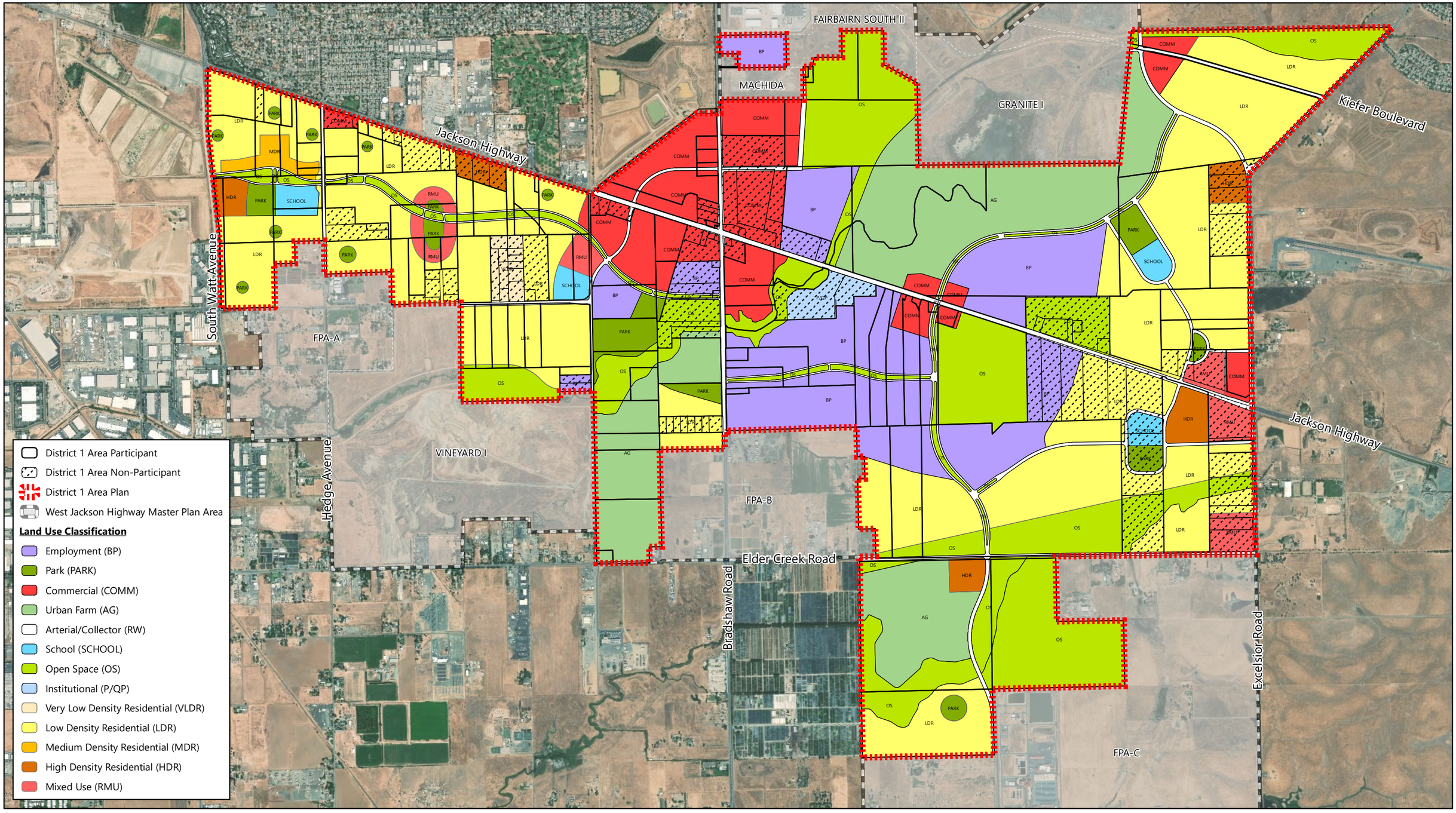


Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Land Use Source: *Wood Rodgers,* 2017

Figure 4
District Area Plans - Land Uses



Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Land Use Source: *Wood Rodgers,* 2017
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 5
District 1 Land Uses

West Jackson Highway Master Plan
Biological Resources Assessment

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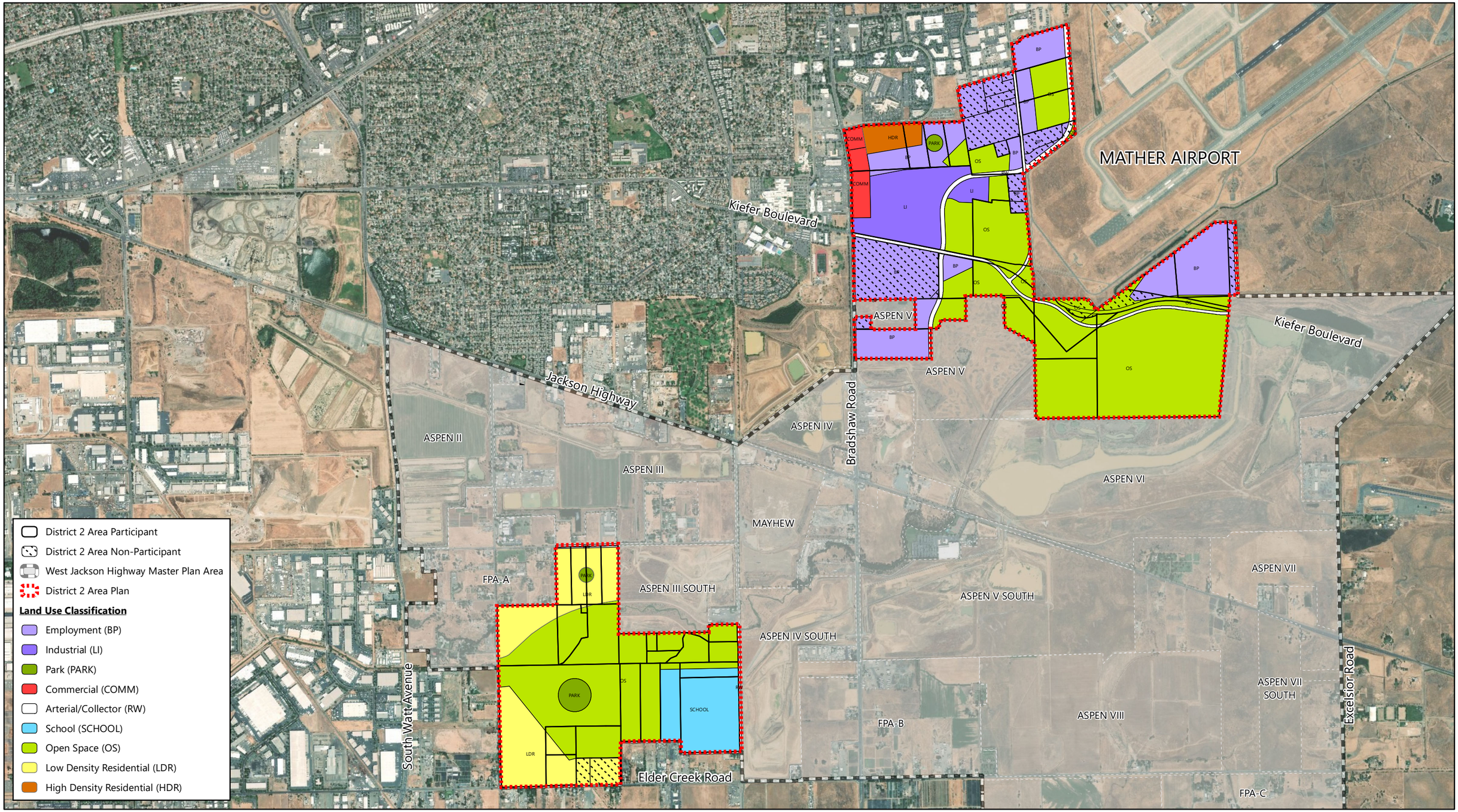

Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Land Use Source: *Wood Rodgers,* 2017
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 6
District 2 Land Uses

West Jackson Highway Master Plan
Biological Resources Assessment

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West Jackson Master Plan Area

Special-Status Birds

- Bank Swallow
- Black-Crowned Night Heron
- Burrowing Owl
- Cooper's Hawk
- Double-Crested Cormorant
- Ferruginous Hawk
- Golden Eagle
- Great Blue Heron
- Great Egret
- Least Bell's Vireo
- Merlin
- Purple Martin
- Song Sparrow ("Modesto" population)
- Swainson's Hawk
- Tricolored Blackbird
- White-Tailed Kite
- Yellow-Headed Blackbird

Special-Status Amphibians & Reptiles

- Giant Garter Snake
- Western Pond Turtle
- Western Spadefoot

Special-Status Fish

- Chinook Salmon - Central Valley Spring-Run
- Chinook Salmon - Sacramento River Winter-Run
- Longfin Smelt
- Sacramento Perch
- Steelhead

Special-Status Plants

- Ahart's Dwarf Rush
- Boggs Lake Hedge-Hyssop
- Brandegee's Clarkia
- Dwarf Downingia
- Legenere
- Peruvian Dodder
- Pincushion Navarretia
- Sacramento Orcutt Grass
- Saline Clover
- Sanford's Arrowhead
- Slender Orcutt Grass
- Stinkbells
- Woolly Rose-Mallow

Special-Status Mammals

- American Badger
- Hoary Bat

Special-Status Invertebrates

- Blennosperma Andrenid Bee
- California Linderiella
- Hairy Water Flea
- Midvalley Fairy Shrimp
- Ricksecker's Water Scavenger Beetle
- Sacramento Valley Tiger Beetle
- Valley Elderberry Longhorn Beetle
- Vernal Pool Andrenid Bee
- Vernal Pool Fairy Shrimp
- Vernal Pool Tadpole Shrimp

10-Mile Radius of WJHMP Boundary

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Source: *California Department of Fish and Wildlife*, March 2018
Basemap Source: *National Geographic* and *ESRI*, 2018

Figure 7
CNDDB Occurrences

West Jackson Highway Master Plan
Biological Resources Assessment

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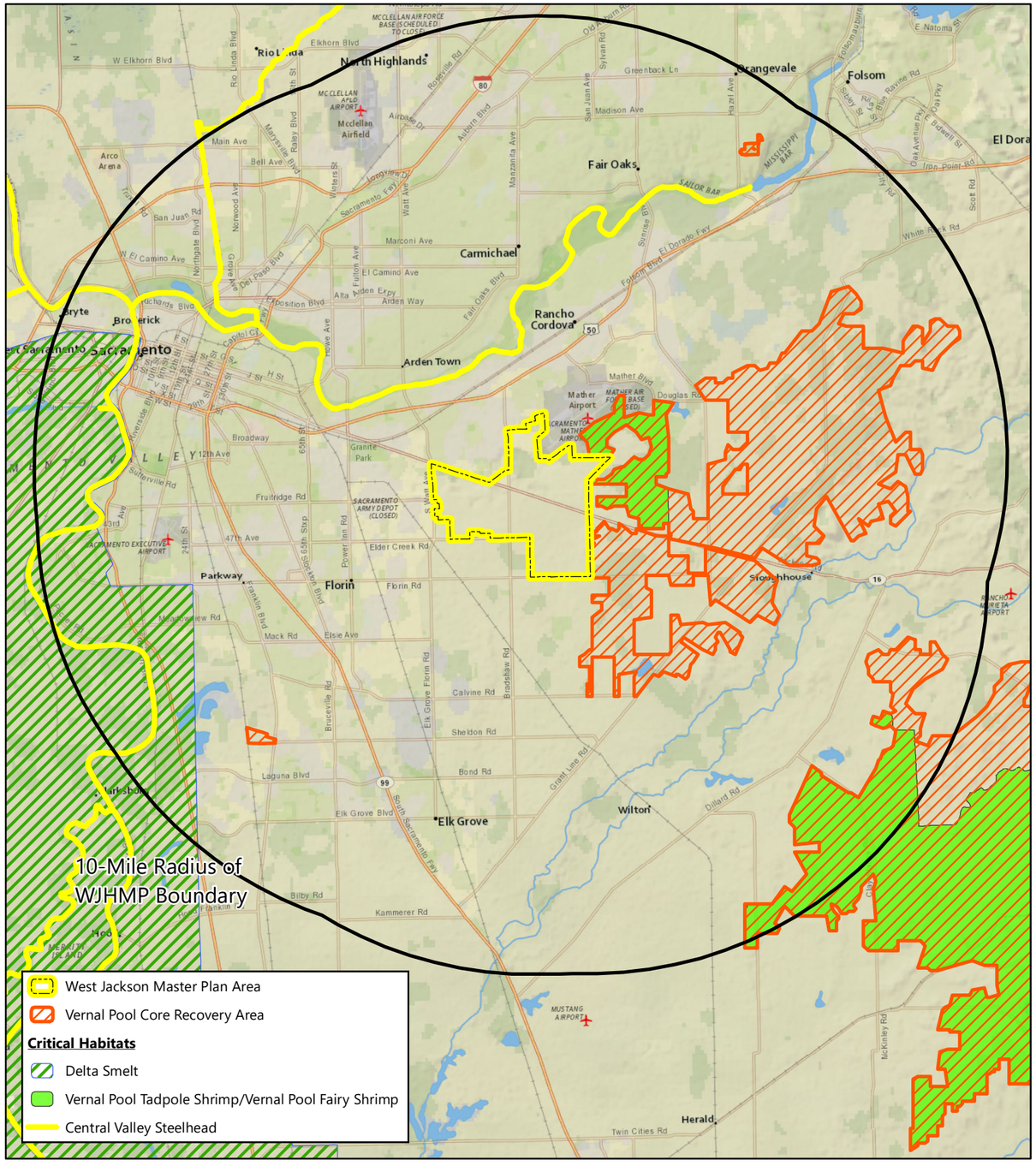
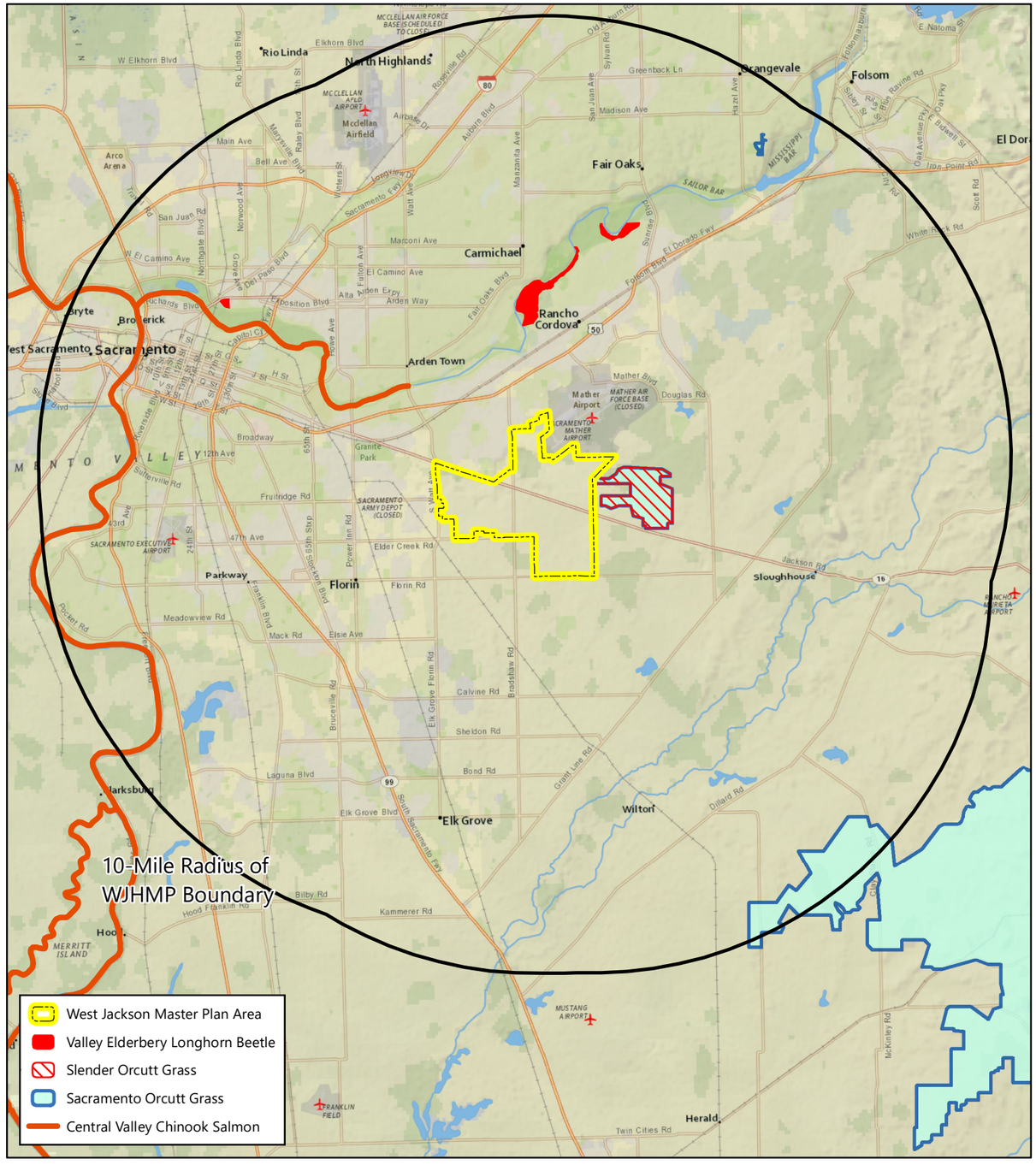
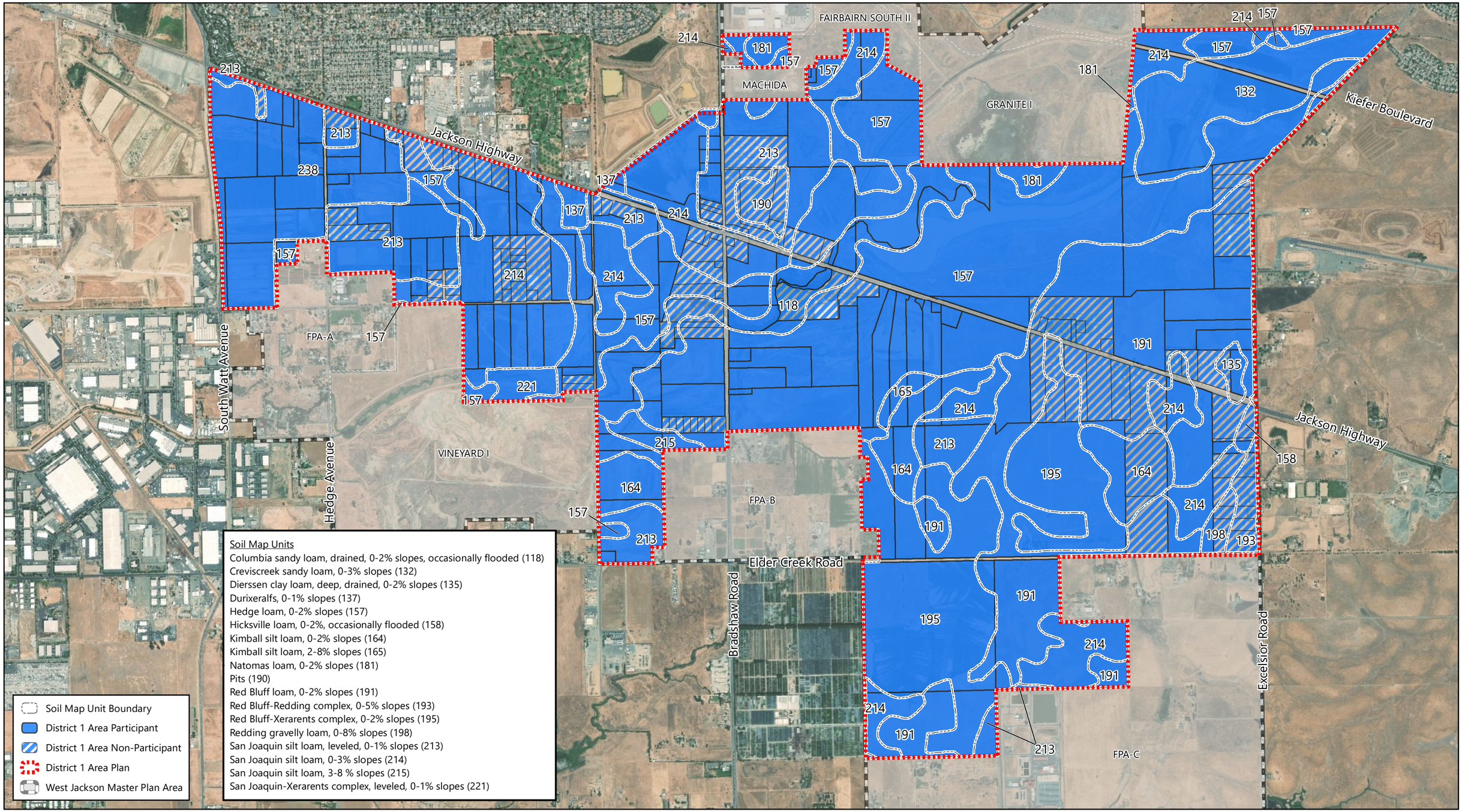




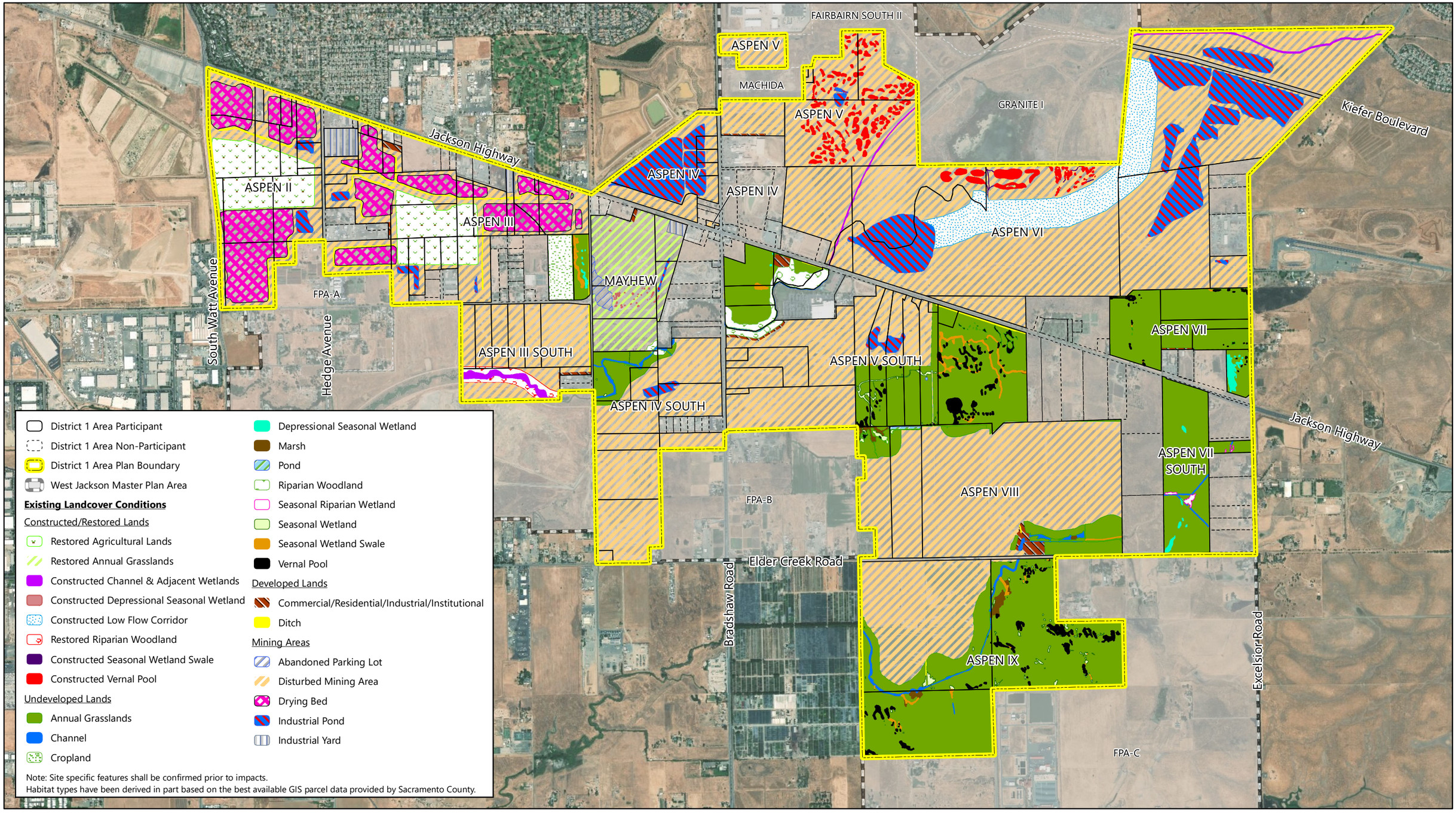
Basemap Source: *National Geographic* and *ESRI*, 2018
Critical Habitat Source: *U.S. Fish and Wildlife Service*, 2017
VP Core Recovery Area Source: *U.S. Fish and Wildlife Service*, 2005

Figure 8
Critical Habitats and Vernal Pool Core Recovery Areas



Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Soil Survey Source: *USDA, Soil Conservation Service. Soil Survey Geographic (SSURGO) Database for Sacramento County, California,* 2007
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 9
District 1 Area Plan Soils



Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 10
District 1 Area Plan Participant Properties
Existing Landcover Conditions

West Jackson Highway Master Plan
Biological Resources Assessment

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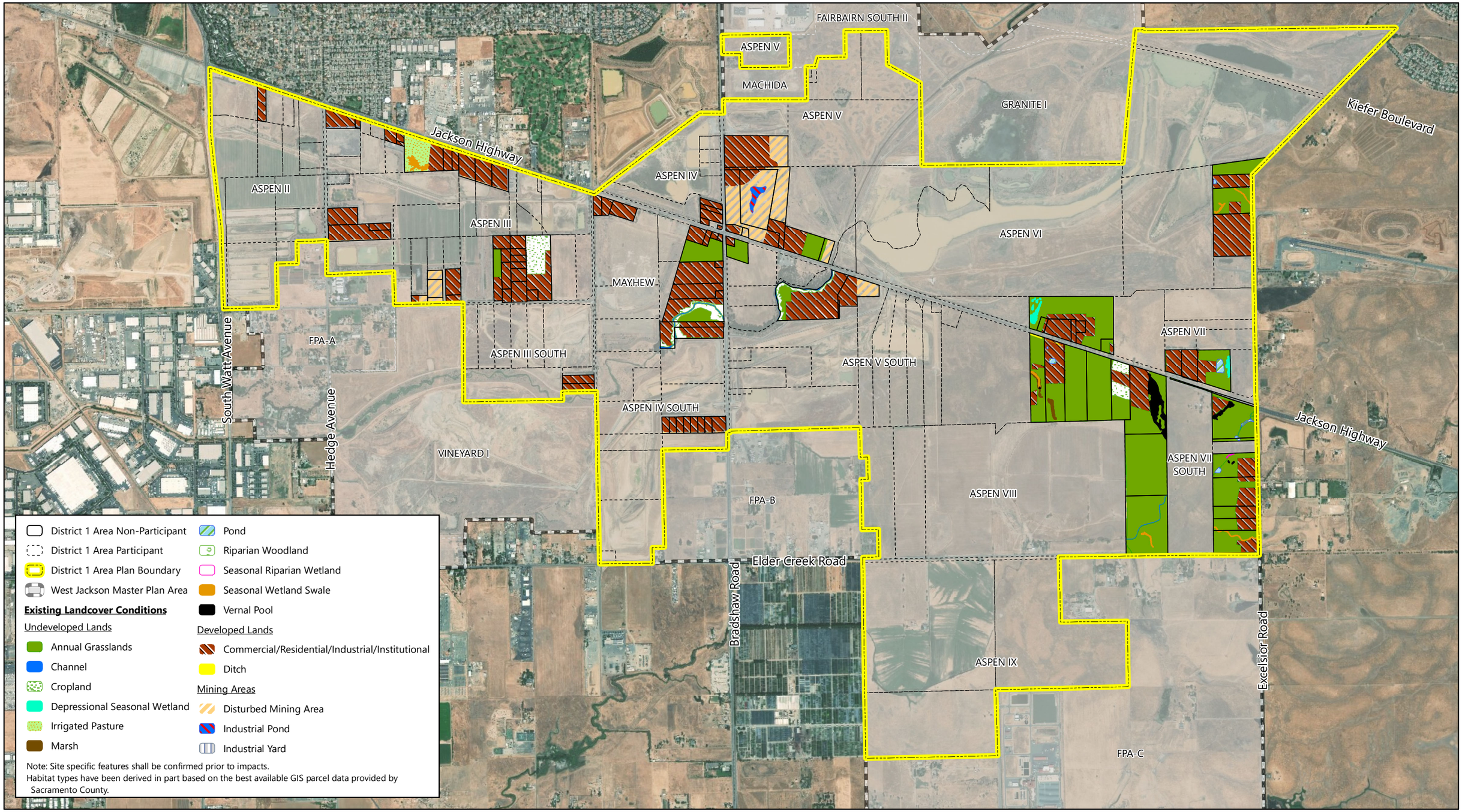
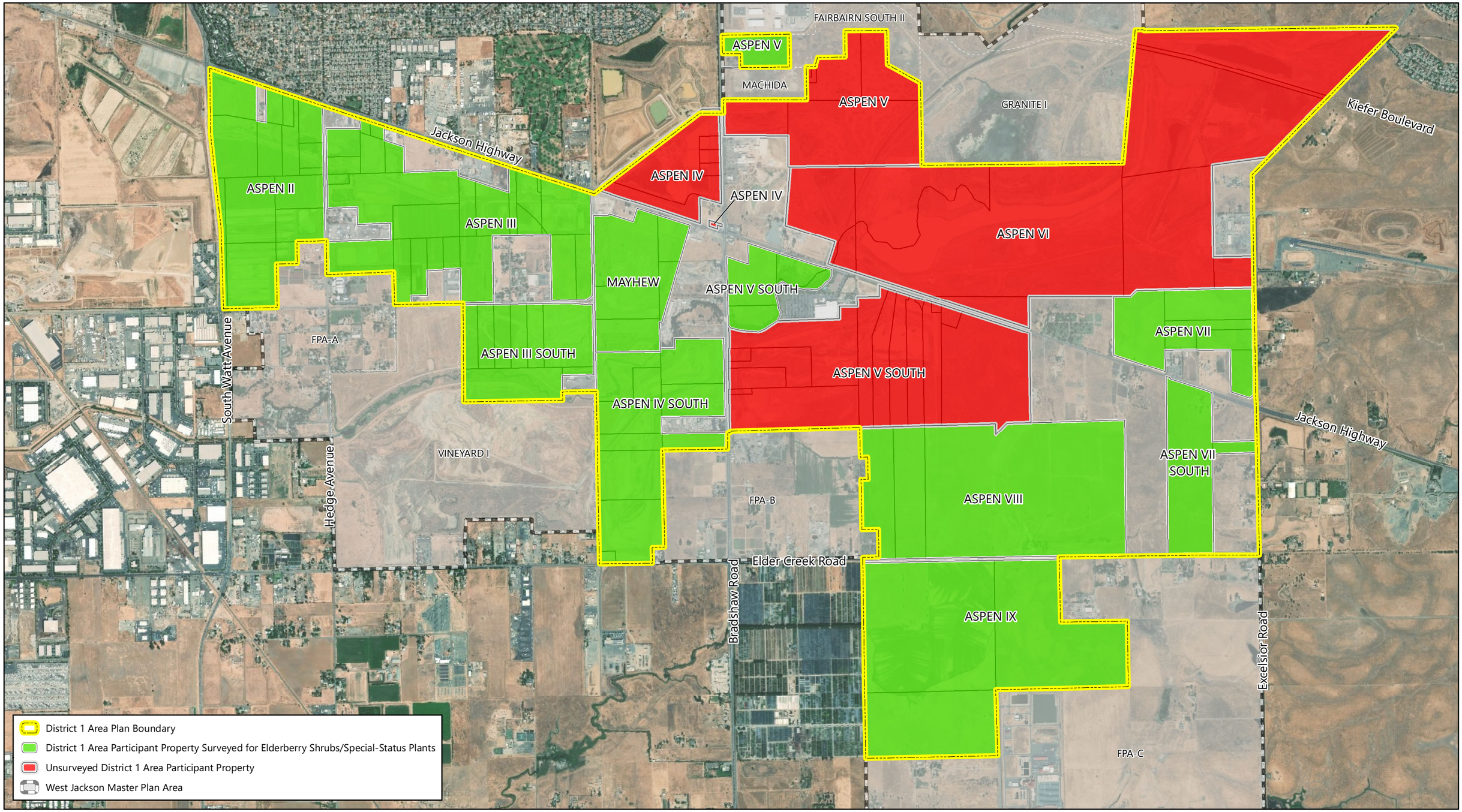


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 11
District 1 Area Plan Non-Participant Properties
Existing Landcover Conditions

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING



Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 12
District 1 Area Plan Participant Properties
Existing Elderberry/Special-Status Plant Surveys

West Jackson Highway Master Plan
Biological Resources Assessment

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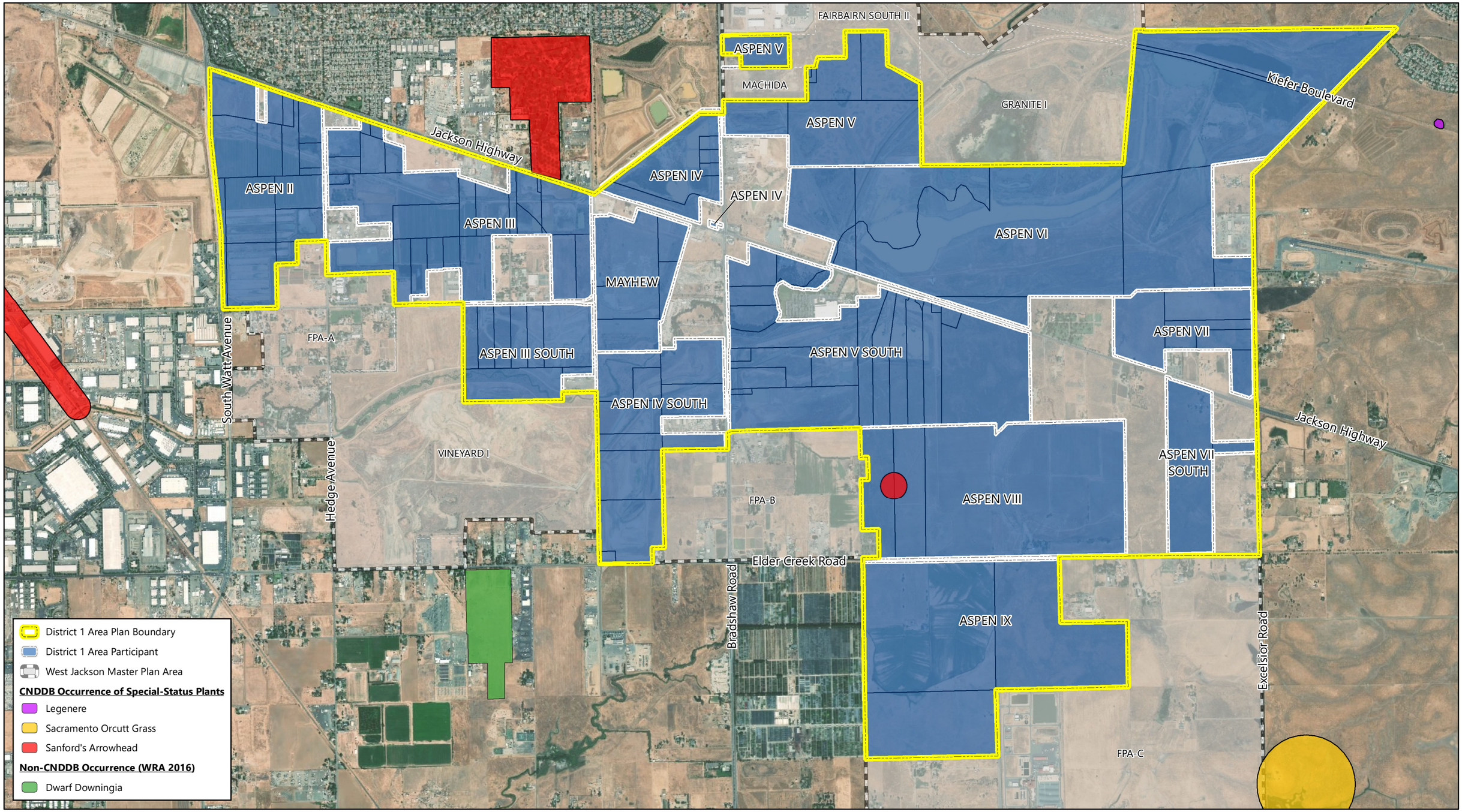

Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 13
District 1 Area Plan
Existing Occurrences of Special-Status Plants

West Jackson Highway Master Plan
Biological Resources Assessment

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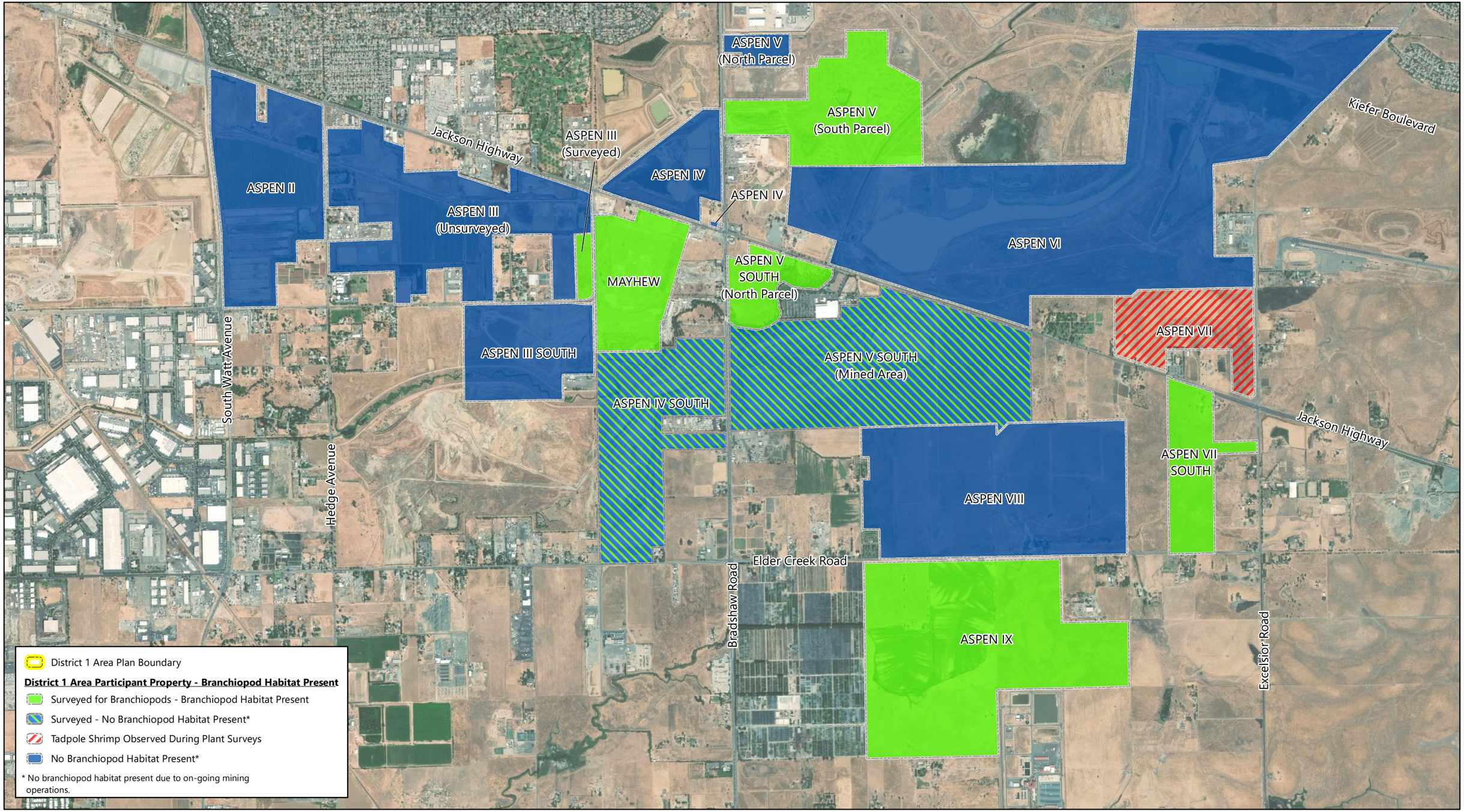

Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 14
District 1 Area Plan Participant Properties
Existing Vernal Pool Branchiopod Surveys

West Jackson Highway Master Plan
Biological Resources Assessment

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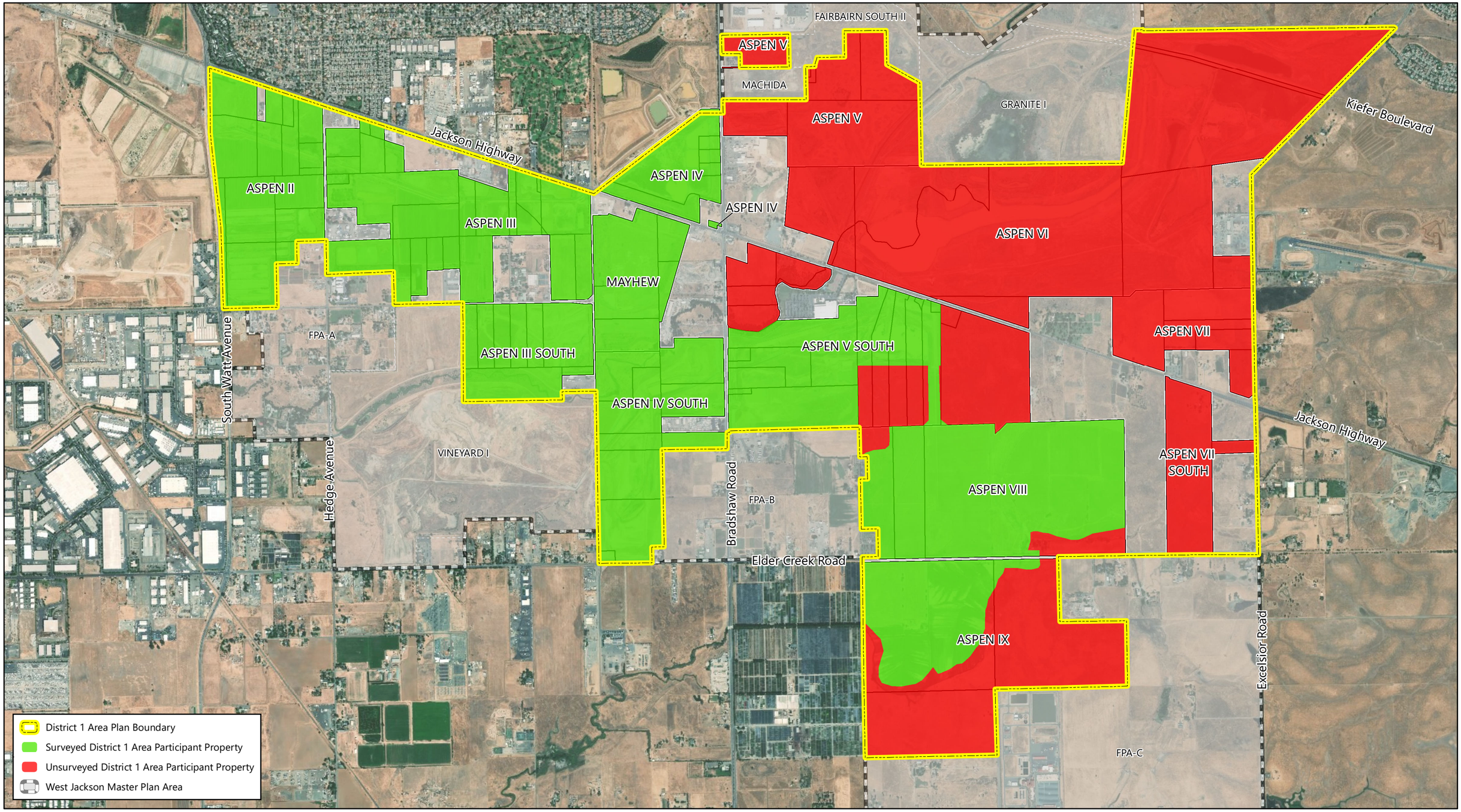

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Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 15
District 1 Area Plan Participant Properties
Existing Tree Surveys

West Jackson Highway Master Plan
Biological Resources Assessment

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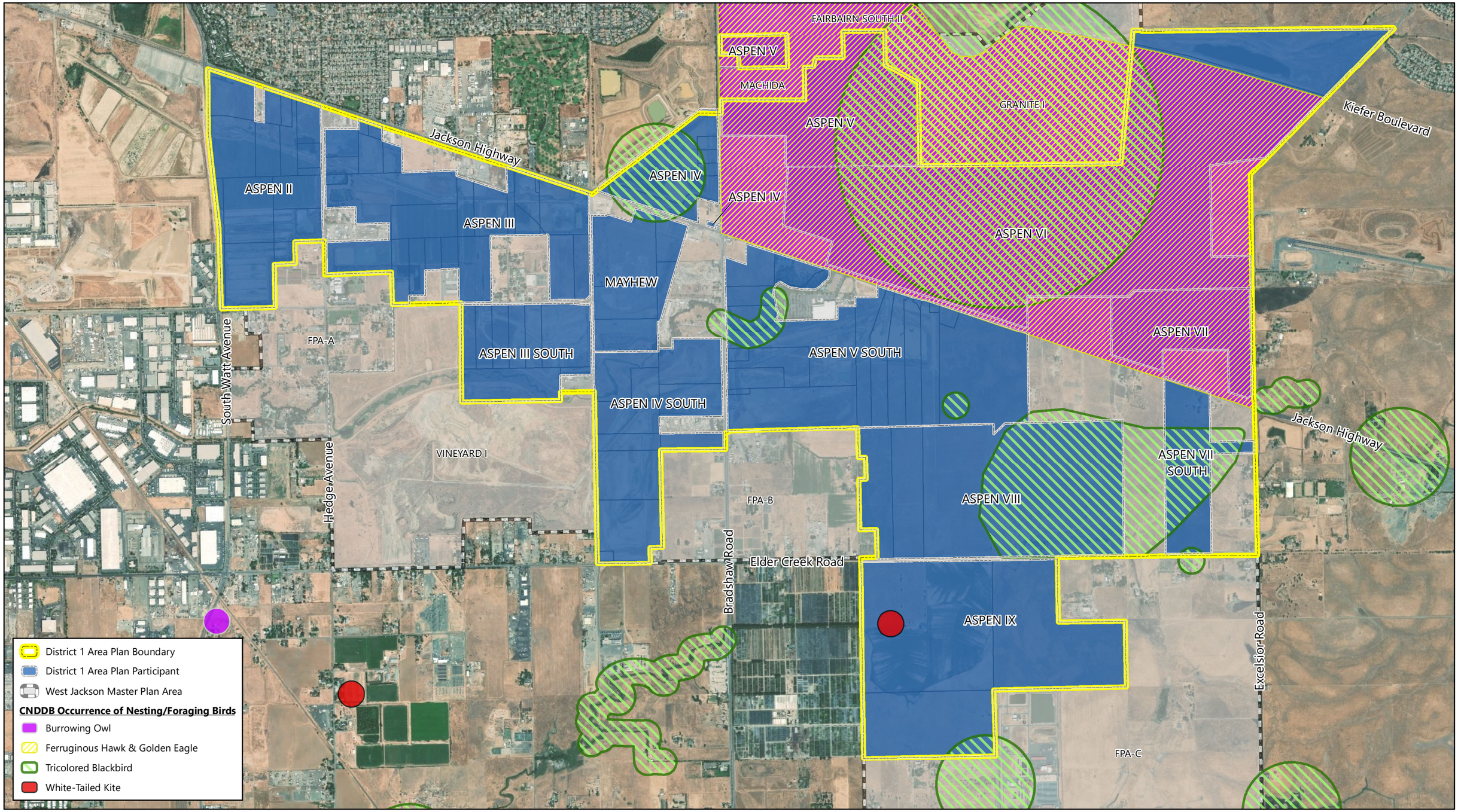
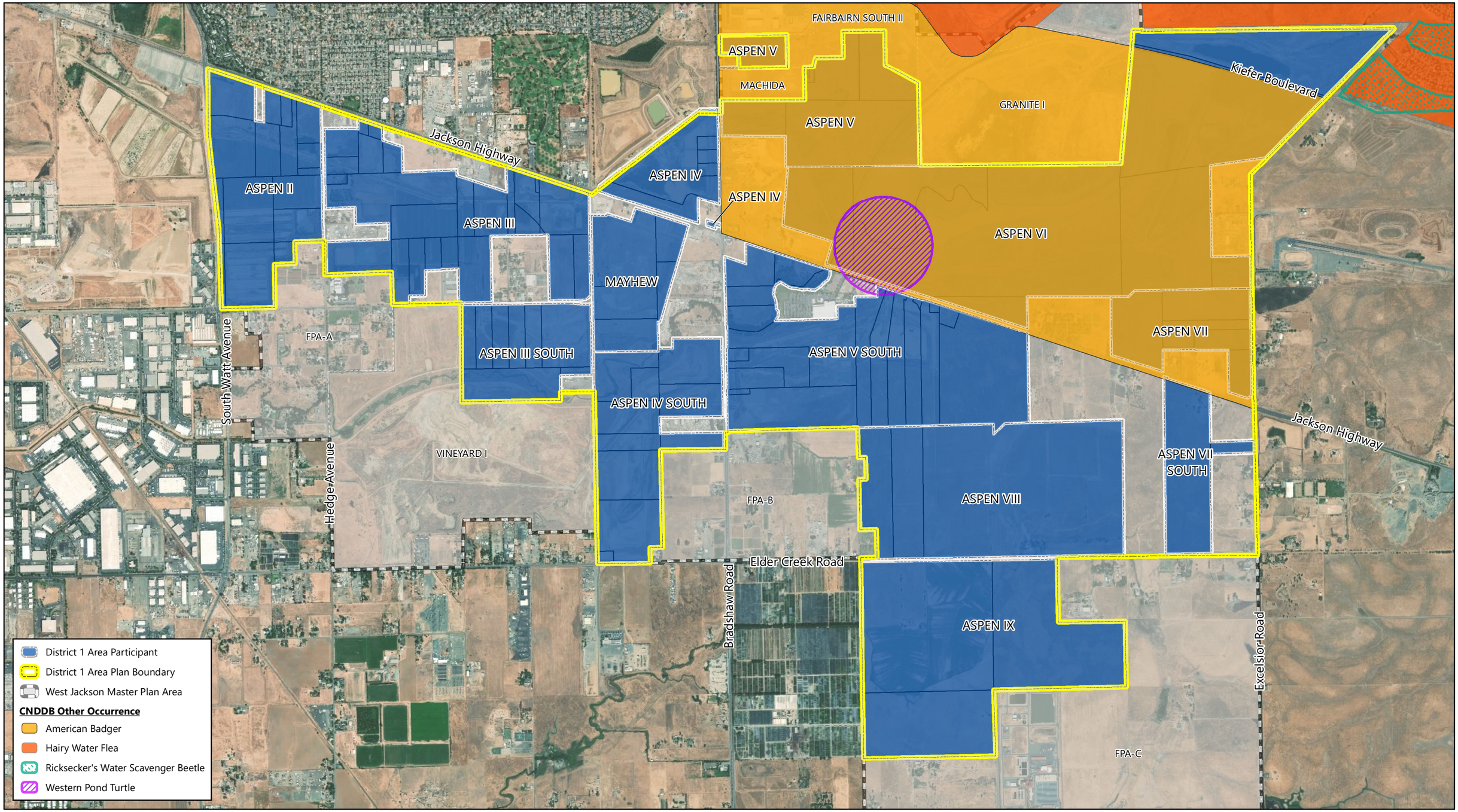


Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 16
District 1 Area Plan
Existing CNDDB Occurrences of Nesting/Foraging Birds

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

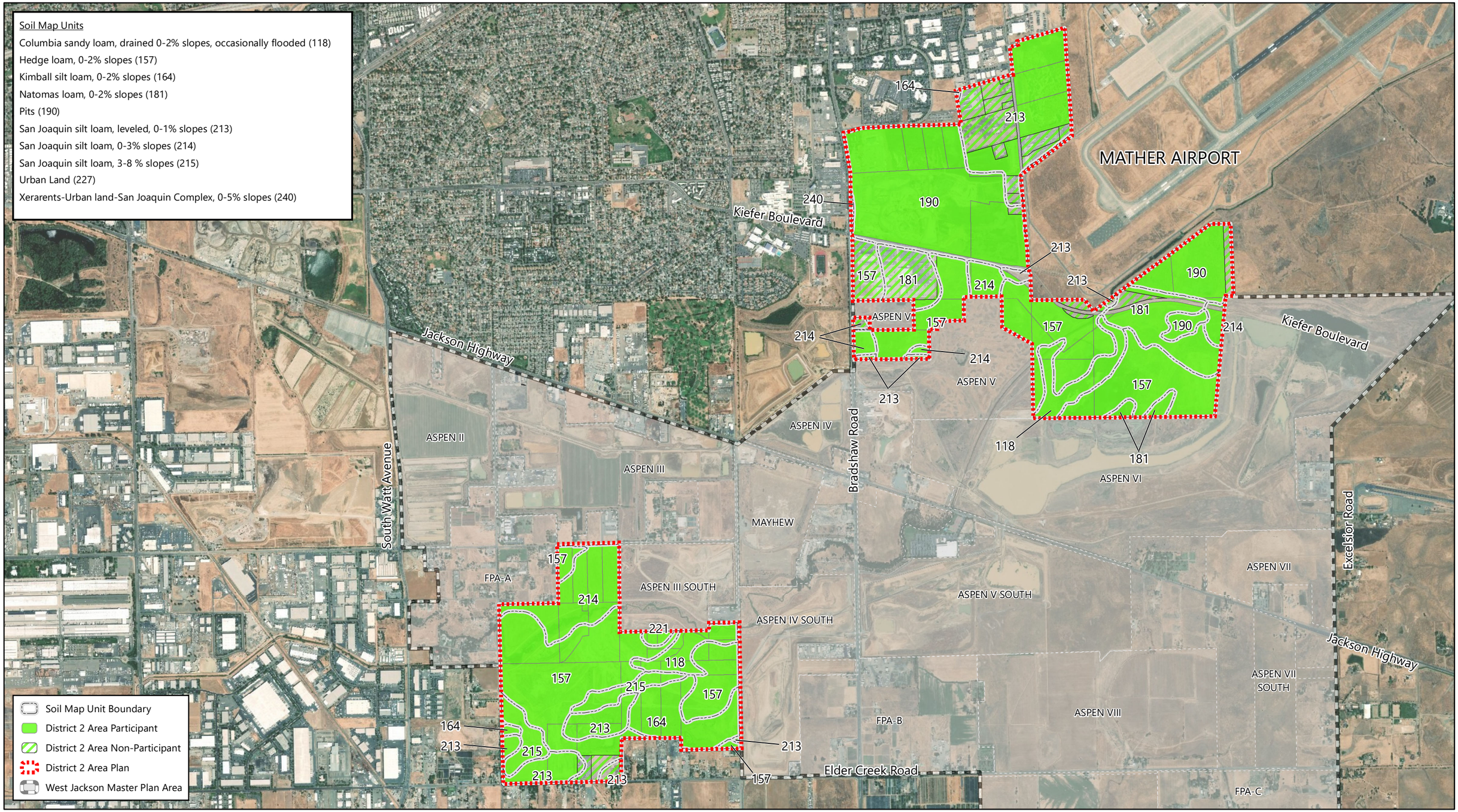


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 17
District 1 Area Plan
Existing Other CNDDB Occurrences

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING



Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Soil Survey Source: *USDA, Soil Conservation Service. Soil Survey Geographic (SSURGO) Database for Sacramento County, California,* 2007
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 18
District 2 Area Plan Soils

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

District 2 Area Participant
District 2 Area Non-Participant
District 2 Area Plan Boundary
West Jackson Master Plan Area

Existing Landcover Conditions

Constructed/Restored Lands
- Constructed Channel & Adjacent Wetlands
- Constructed Emergent Marsh
- Restored Riparian Woodland
- Constructed Vernal Pool

Undeveloped Lands
- Annual Grasslands
- Channel
- Riparian Woodland

Developed Lands
- Commercial/Residential/Industrial/Institutional

Mining Areas
- Disturbed Mining Area
- Industrial Pond
- Industrial Yard

Note: Site specific features shall be confirmed prior to impacts.
Habitat types have been derived in part based on the best available GIS parcel data provided by Sacramento County.

HAPPY LANE
MATHER AIRPORT
FAIRBAIRN
Kiefer Boulevard
FAIRBAIRN SOUTH II
GRANITE I
ASPEN V
MACHIDA
ASPEN V
GRANITE I
Kiefer Boulevard
Jackson Highway
ASPEN II
ASPEN IV
Bradshaw Road
ASPEN III
ASPEN VI
South Watt Avenue
MAYHEW
Excelsior Road
ASPEN VII
FPA-A
ASPEN III SOUTH
ASPEN V SOUTH
ASPEN IV SOUTH
Jackson Highway
VINEYARD
ASPEN VII SOUTH
ASPEN VIII
FPA-B
Elder Creek Road
FPA-C

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Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 19
District 2 Area Plan Participant Properties
Existing Landcover Conditions

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

District 2 Area Non-Participant
District 2 Area Participant
District 2 Area Plan Boundary
West Jackson Master Plan Area

Existing Landcover Conditions

Constructed/Restored Lands

Constructed Channel & Adjacent Wetlands

Undeveloped Lands

Annual Grasslands
Seasonal Wetland Swale
Vernal Pool

Developed Lands

Commercial/Residential/Industrial/Institutional

Note: Site specific features shall be confirmed prior to impacts.
Habitat types have been derived in part based on the best available GIS parcel data provided by Sacramento County.

HAPPY LANE
MATHER AIRPORT
FAIRBAIRN
Kiefer Boulevard
FAIRBAIRN SOUTH II
GRANITE I
ASPEN V
MACHIDA
ASPEN V
GRANITE I
Kiefer Boulevard
Jackson Highway
ASPEN II
ASPEN IV
Bradshaw Road
ASPEN III
ASPEN VI
South Watt Avenue
MAYHEW
Excelsior Road
FPA-A
ASPEN III SOUTH
ASPEN V SOUTH
ASPEN VII
ASPEN IV SOUTH
Jackson Highway
VINEYARD
ASPEN VII SOUTH
ASPEN VIII
FPA-B
Elder Creek Road
FPA-C

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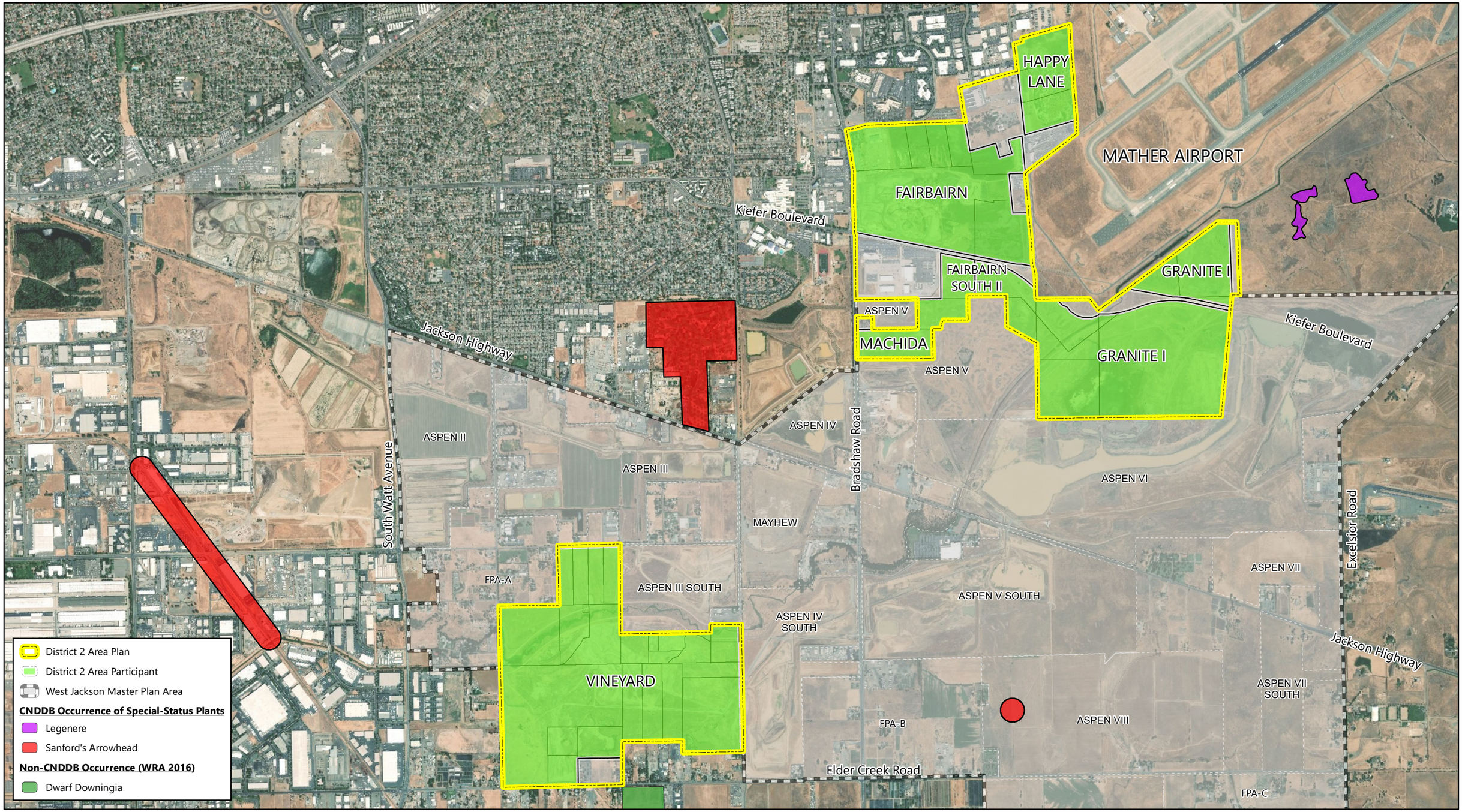
Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 20
District 2 Area Plan Non-Participant Properties
Existing Landcover Conditions

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING



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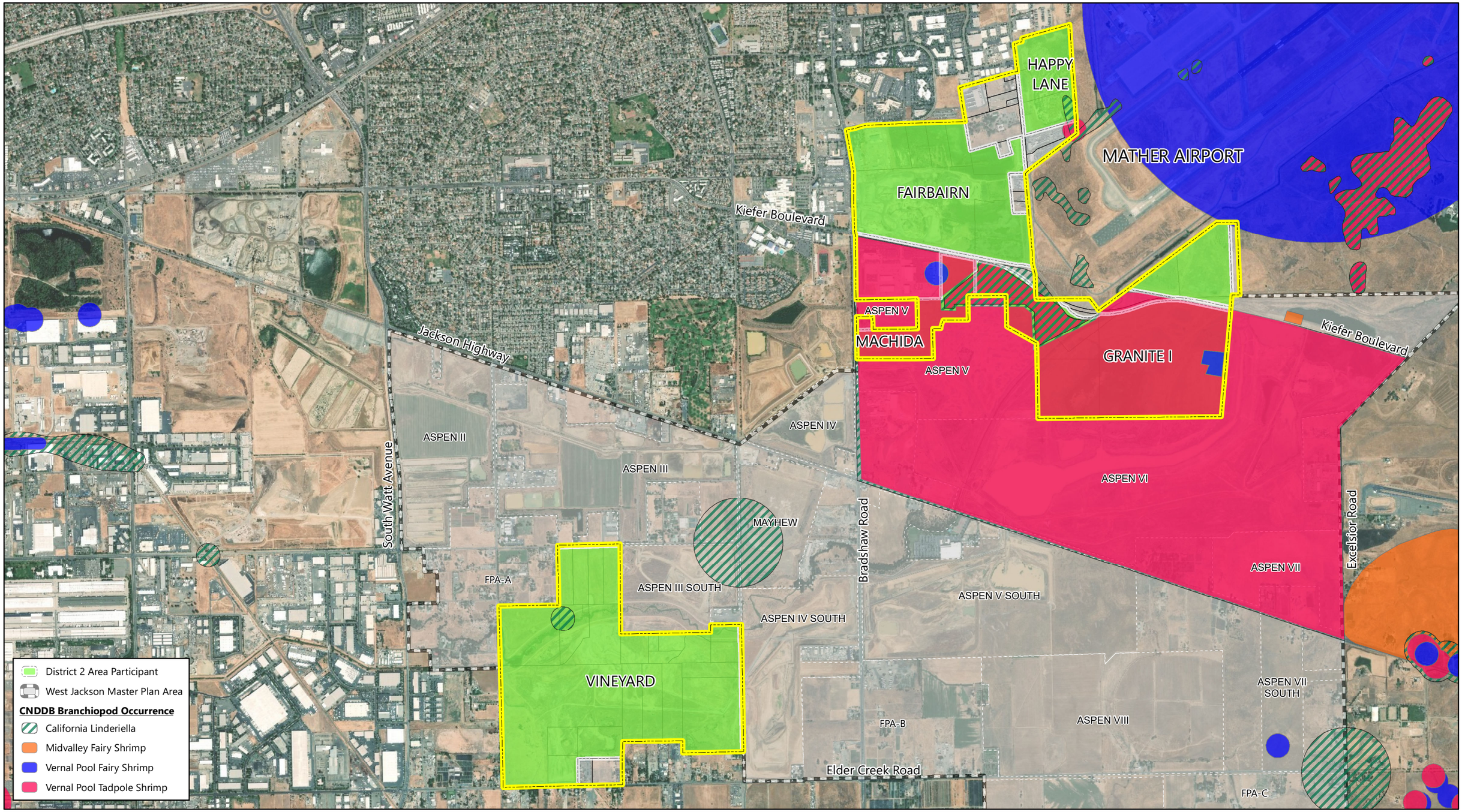
Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 21
District 2 Area Plan
Existing Occurrences of Special-Status Plants

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

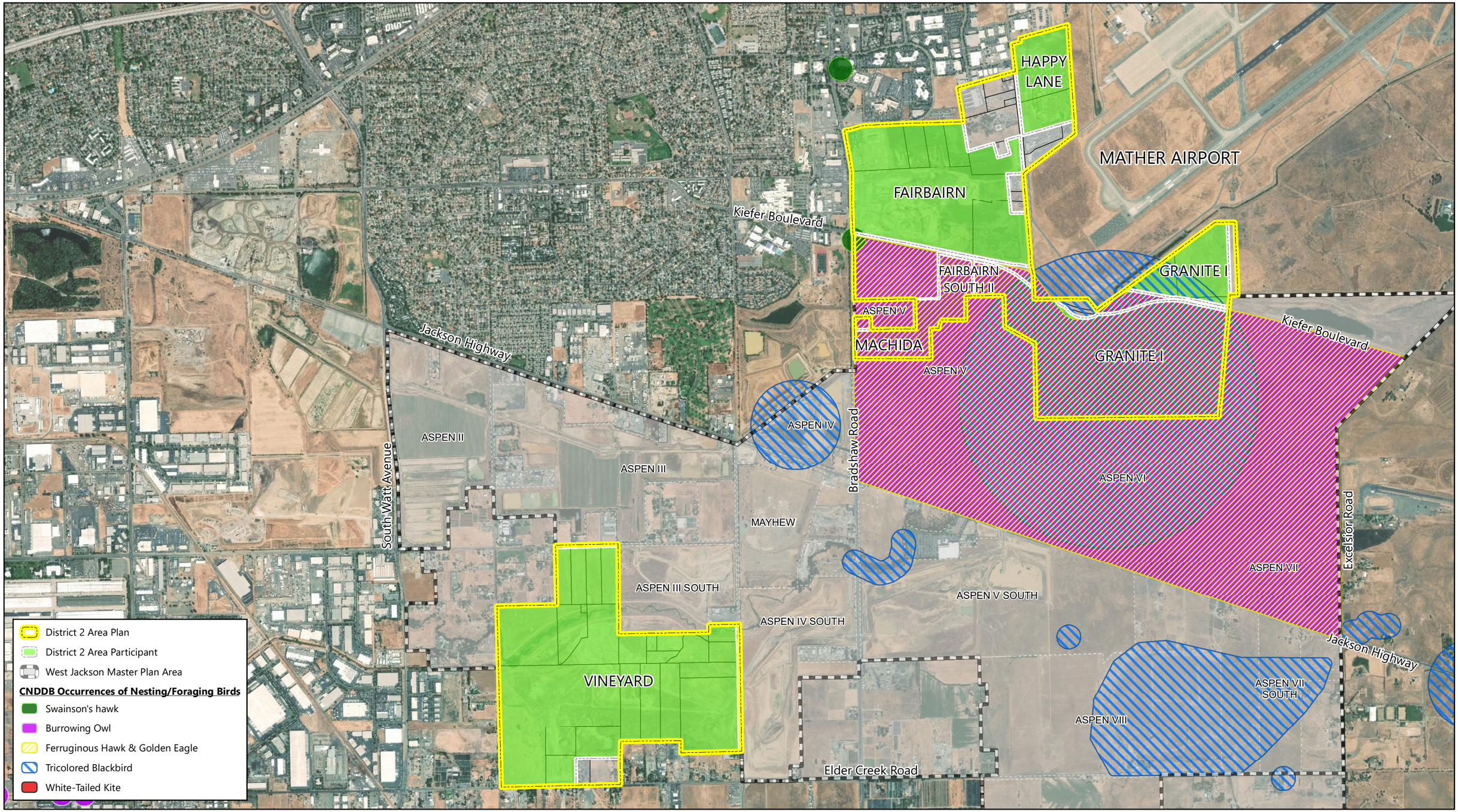


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 22
District 2 Area Plan
Existing CNDDB Vernal Pool Branchiopod Occurrences

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

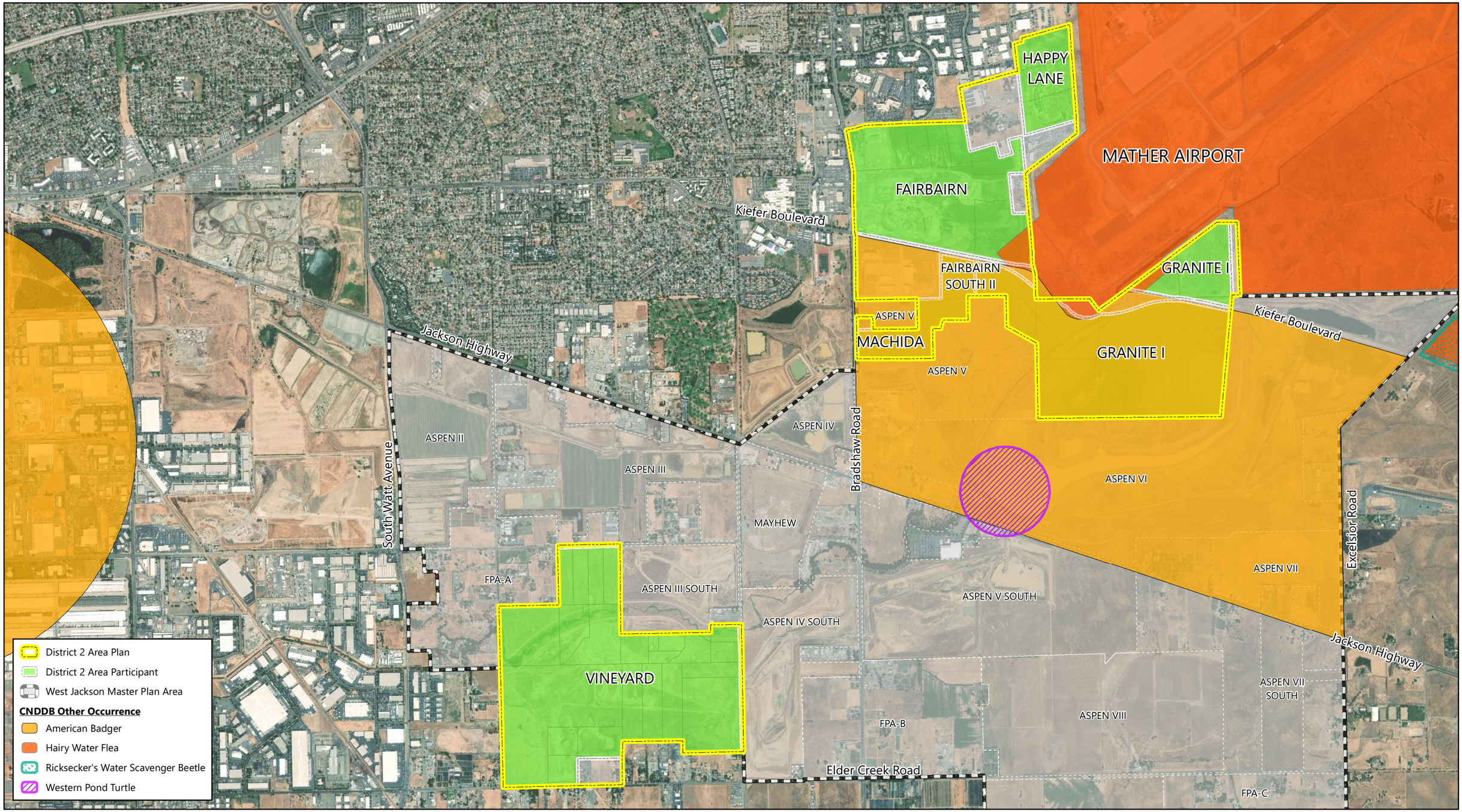


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 23
District 2 Area Plan
Existing CNDDB Occurrences of Nesting/Foraging Birds

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

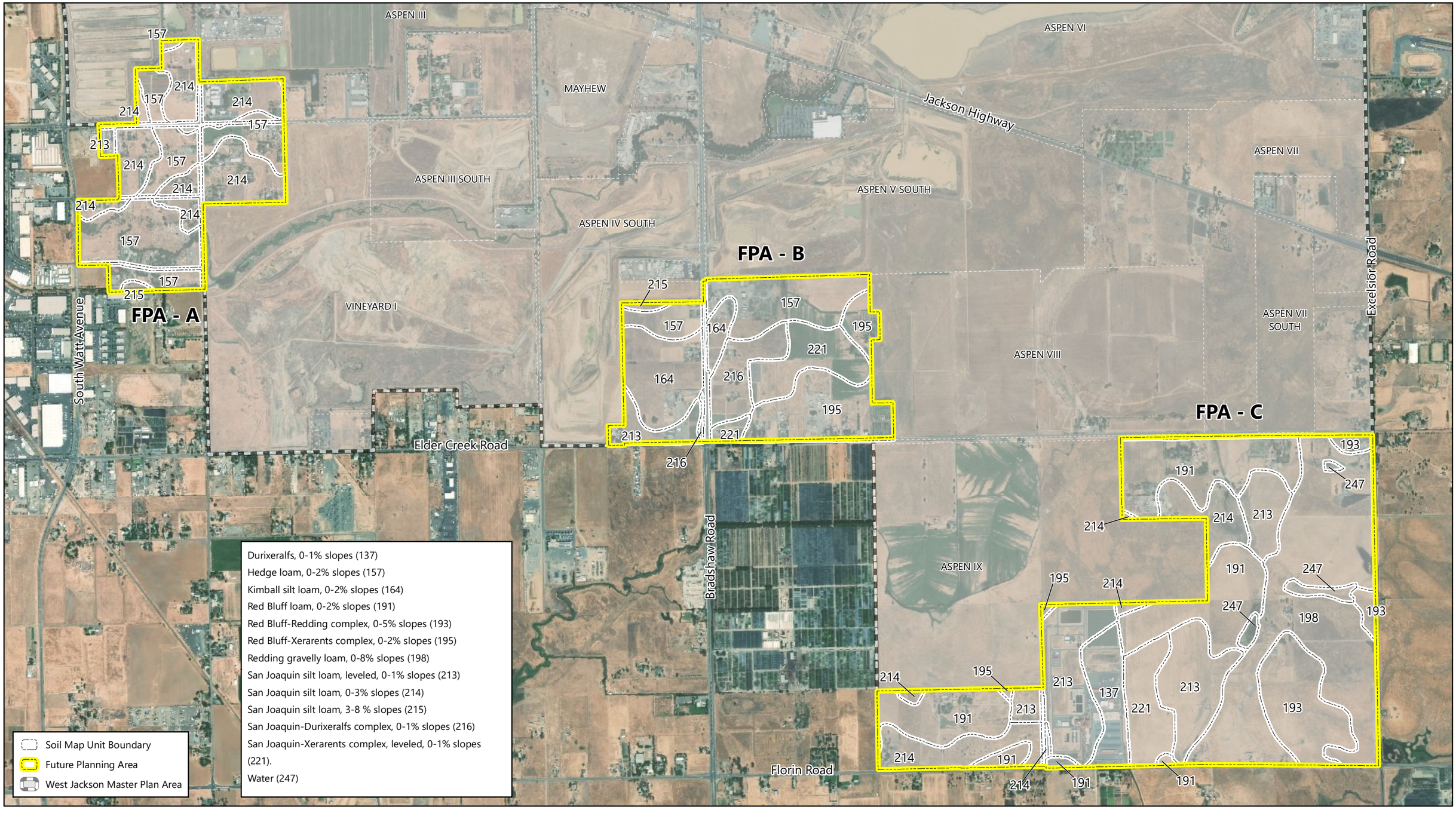


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 24
District 2 Area Plan
Existing Other CNDDB Occurrences

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

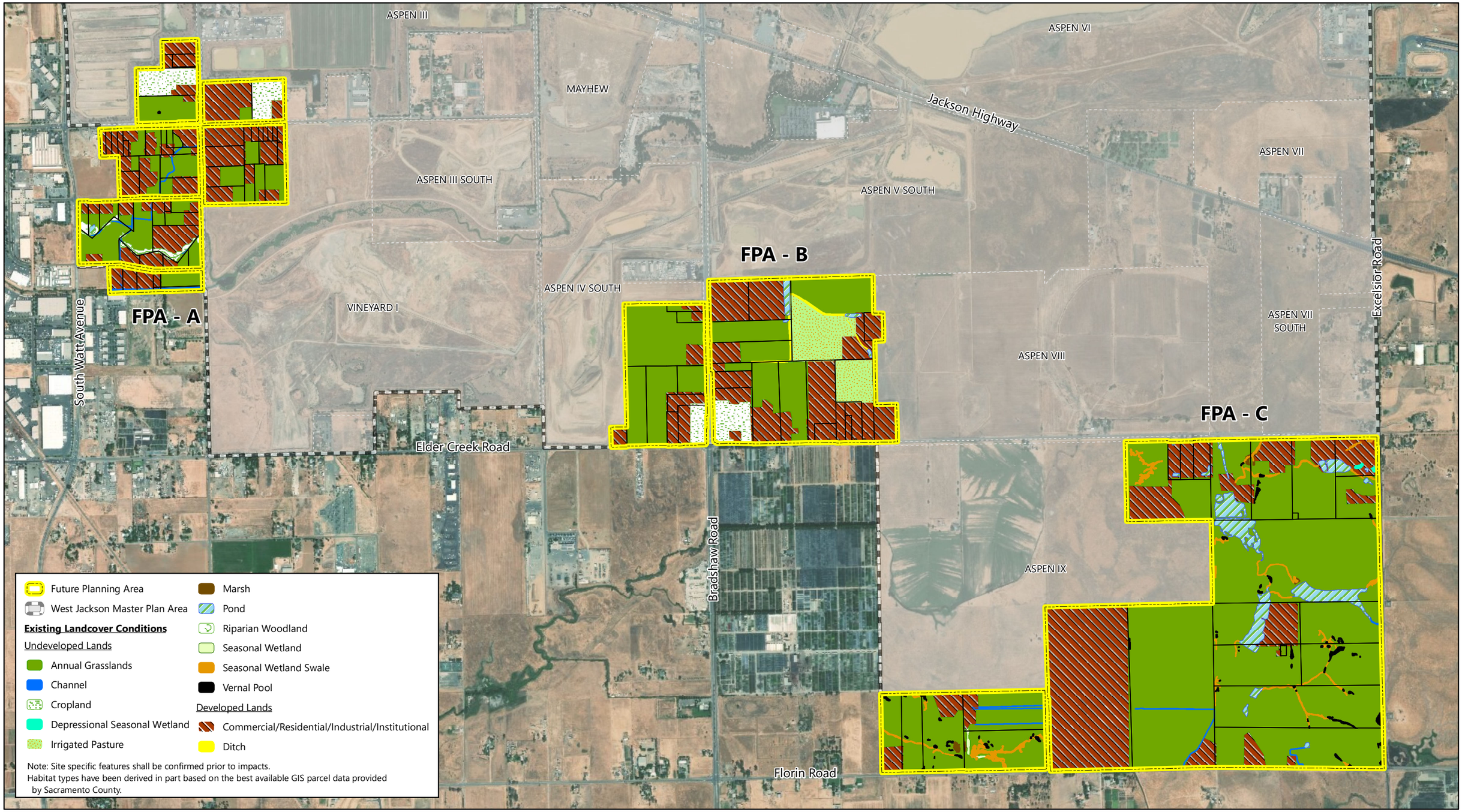


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Soil Survey Source: *USDA, Soil Conservation Service. Soil Survey Geographic (SSURGO) Database for Sacramento County, California*, 2007
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 25
Future Planning Areas Soils

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

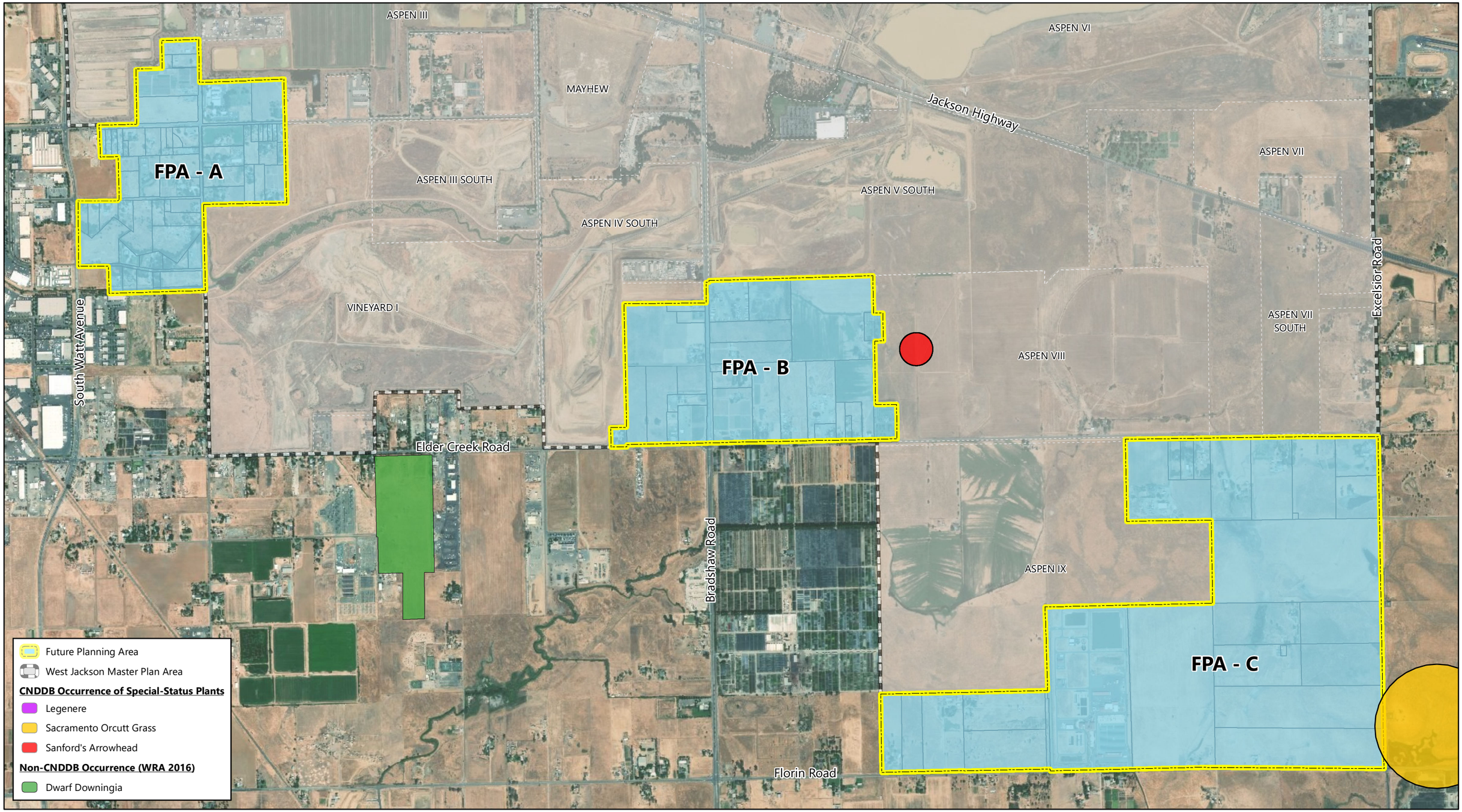


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 26
Future Planning Areas
Existing Landcover Conditions

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

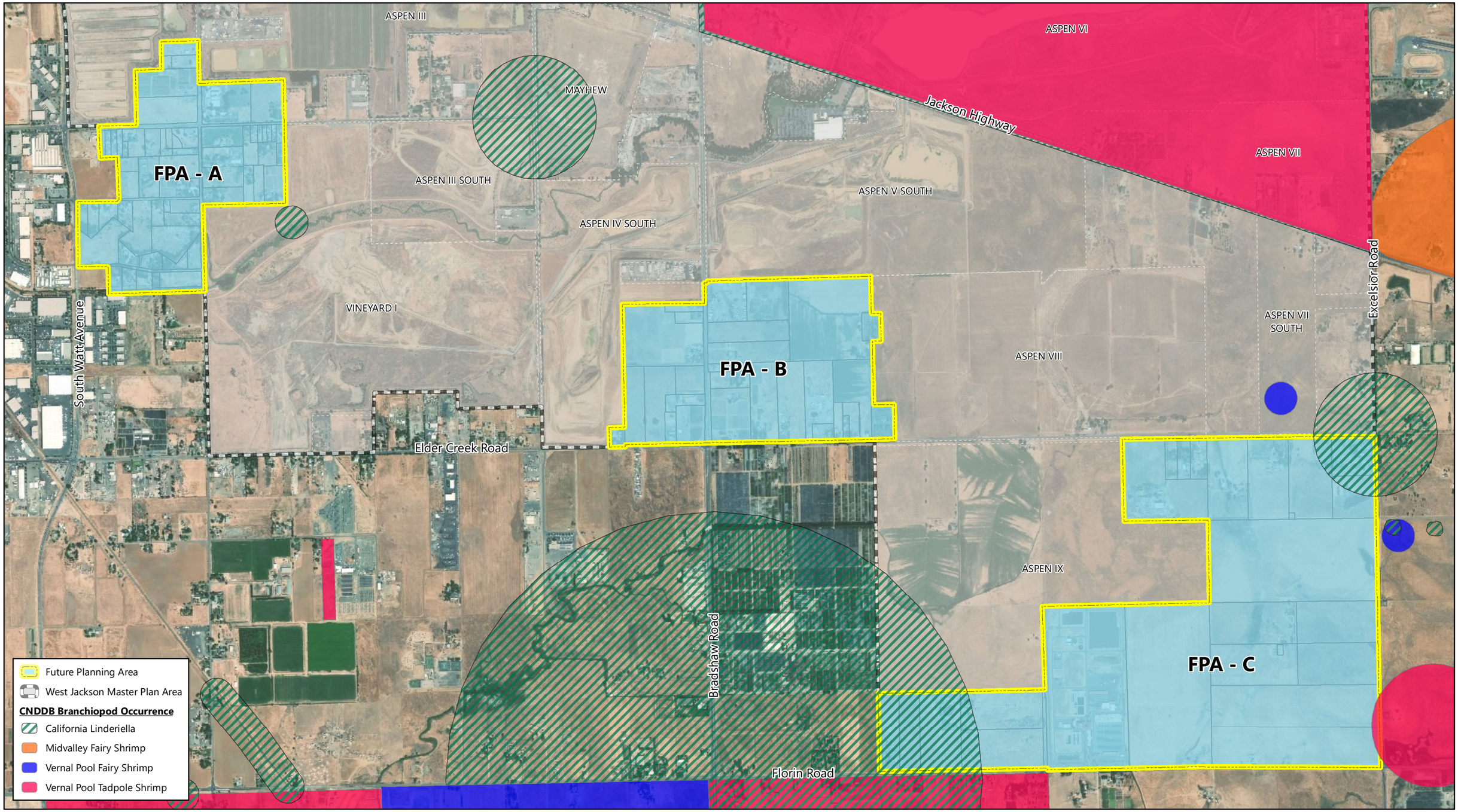


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 27
Future Planning Areas
Existing Occurrences of Special-Status Plants

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

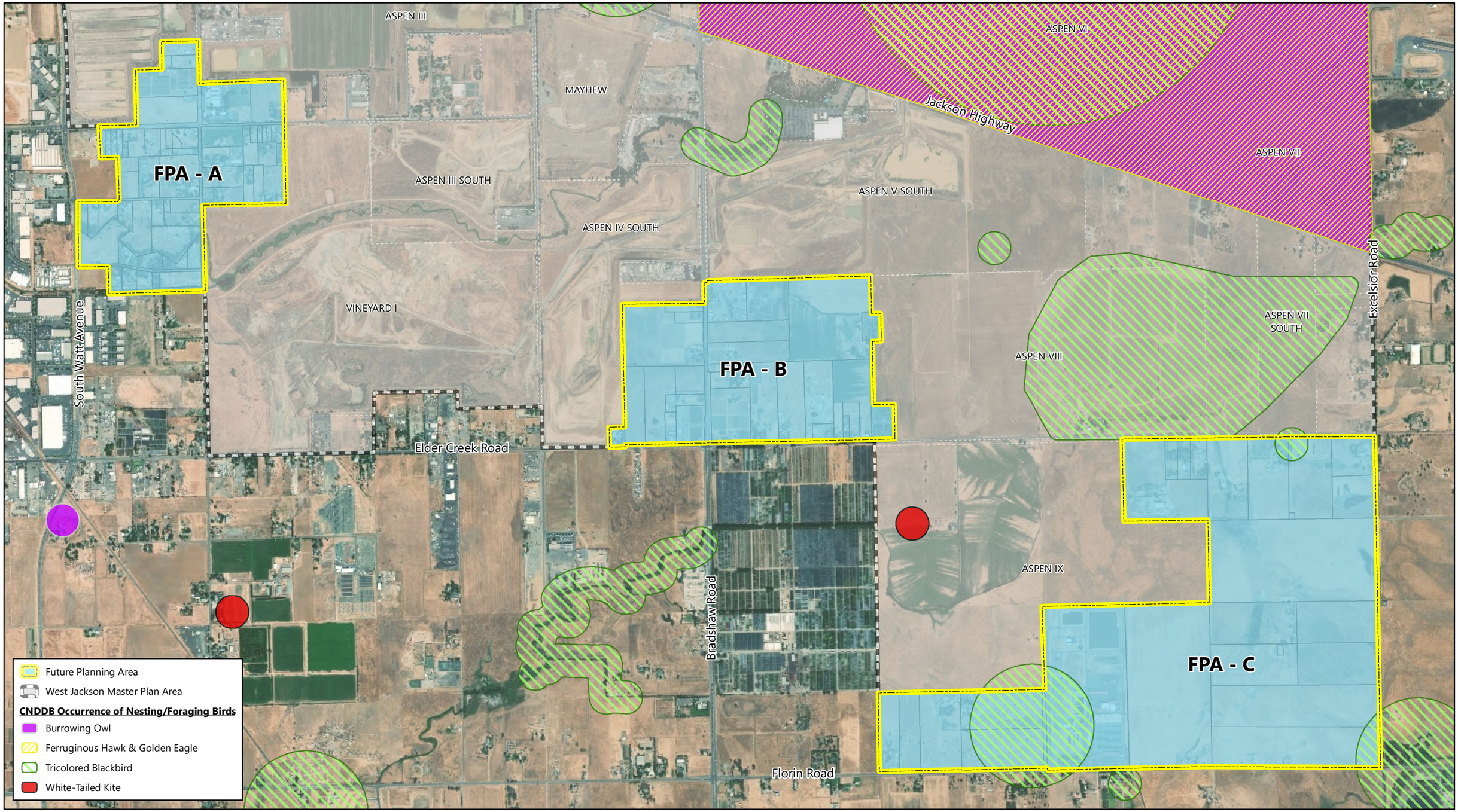


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 28
Future Planning Areas
Existing CNDDB Vernal Pool Branchiopod Occurrences

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

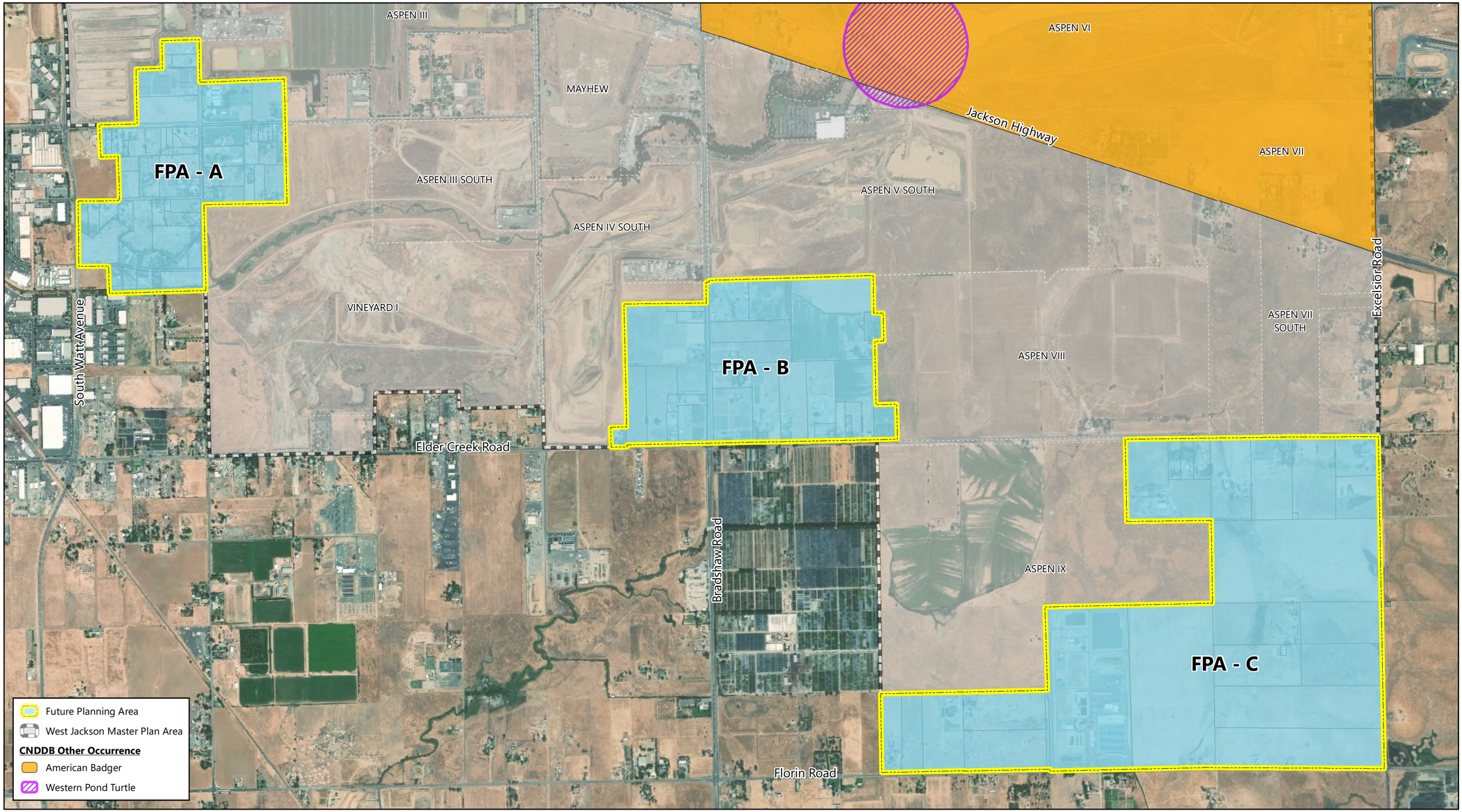


Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 29
Future Planning Areas
Existing CNDDB Occurrences of Nesting/Foraging Birds

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING



N

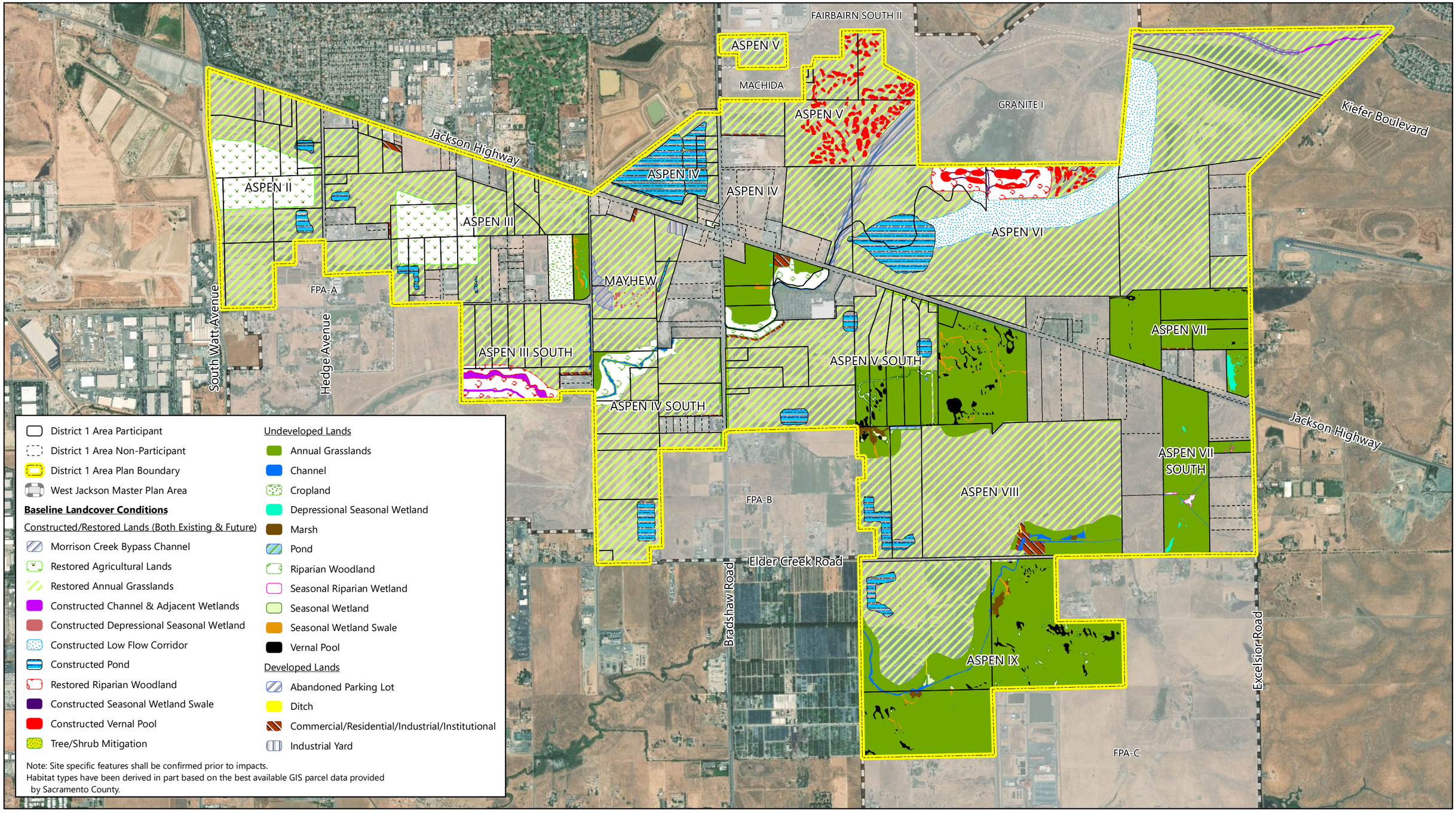
Miles
0 0.25 0.5

Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Source: *California Department of Fish and Wildlife*, March 2018
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 30
Future Planning Areas
Existing Other CNDDB Occurrences

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING



Aerial Source: *USDA, National Agriculture Imagery Program*, 19 July 2016
Parcel Data: *Sacramento County GIS Department*, July 2017

Figure 31
District 1 Area Plan Participant Properties
Baseline Landcover Conditions

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

District 2 Area Participant
District 2 Area Non-Participant
District 2 Area Plan Boundary
West Jackson Master Plan Area

Baseline Landcover Conditions

Constructed/Restored Lands (Both Existing & Future)

Morrison Creek Bypass Channel
Restored Annual Grasslands
Constructed Channel & Adjacent Wetlands
Constructed Emergent Marsh
Constructed Low Flow Corridor
Constructed Pond
Restored Riparian Woodland
Constructed Vernal Pool

Undeveloped Lands

Riparian Woodland

Developed Lands

Commercial/Residential/Industrial/Institutional

Note: Site specific features shall be confirmed prior to impacts.
Habitat types have been derived in part based on the best available GIS parcel data provided by Sacramento County.

HAPPY LANE
MATHER AIRPORT
FAIRBAIRN
Kiefer Boulevard
FAIRBAIRN SOUTH II
GRANITE I
ASPEN V
MACHIDA
Jackson Highway
GRANITE I
Kiefer Boulevard
ASPEN V
ASPEN II
ASPEN IV
Bradshaw Road
South Watt Avenue
ASPEN III
ASPEN VI
MAYHEW
ASPEN VII
Excelsior Road
FPA-A
ASPEN III SOUTH
ASPEN V SOUTH
ASPEN IV SOUTH
Jackson Highway
VINEYARD
ASPEN VII SOUTH
ASPEN VIII
FPA-B
Elder Creek Road
FPA-C

N

Miles
0 0.25 0.5

Aerial Source: *USDA, National Agriculture Imagery Program,* 19 July 2016
Parcel Data: *Sacramento County GIS Department,* July 2017

Figure 32
District 2 Area Plan Participant Properties
Baseline Landcover Conditions

West Jackson Highway Master Plan
Biological Resources Assessment

MADRONE ECOLOGICAL CONSULTING

Appendix

Appendix A. Revised Project Land Use Plan - West Jackson Highway Master Plan

Appendix A

Revised Project Land Use Plan - West Jackson Highway Master Plan

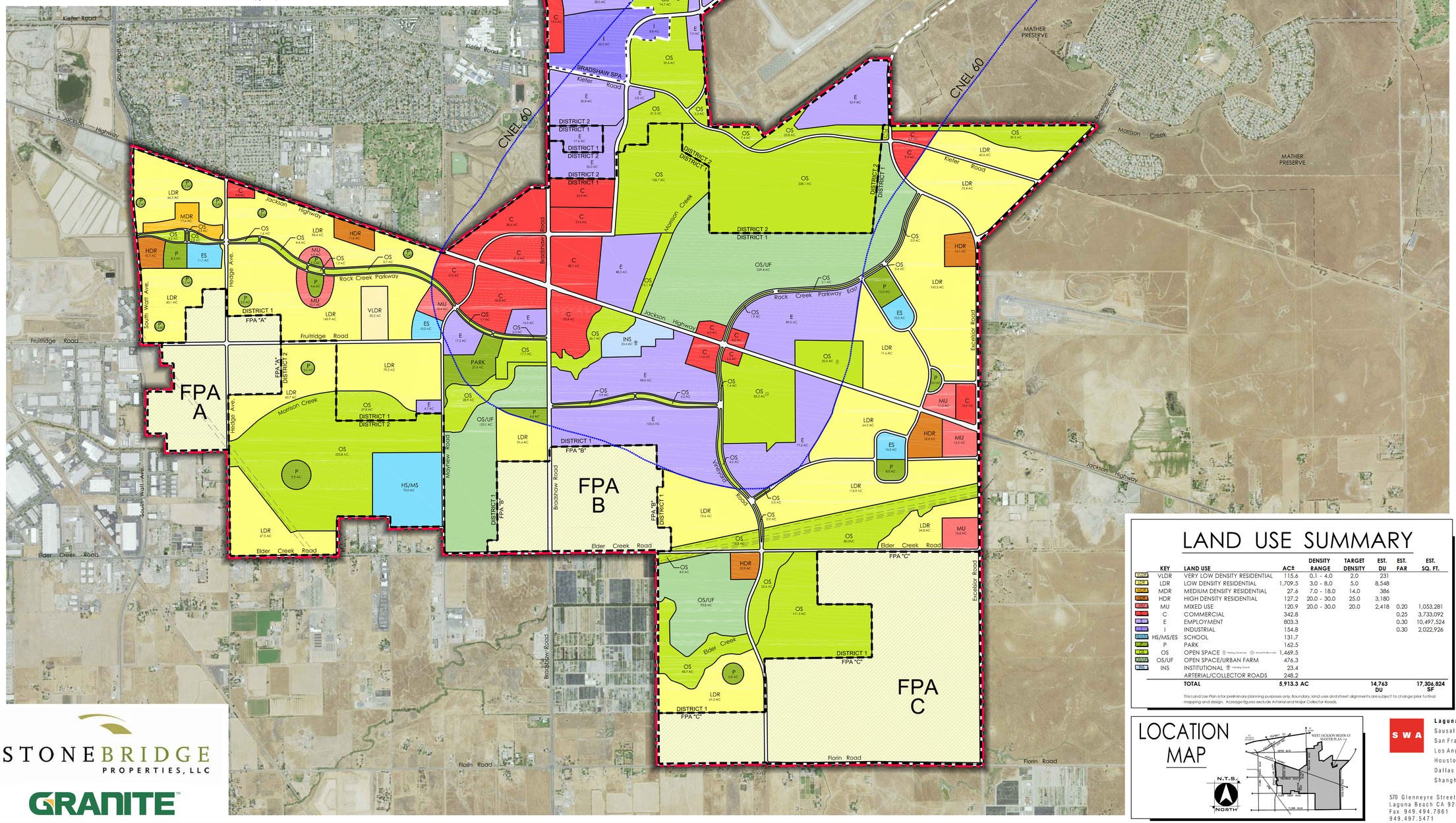
FIGURE 6

REVISED PROJECT LAND USE PLAN

WEST JACKSON HIGHWAY MASTER PLAN

COUNTY OF SACRAMENTO, CALIFORNIA

APRIL 5, 2017



SUMMARY-DISTRICT ONE

KEY	LAND USE	ACRES	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	20.2	0.1 - 4.0	2.0	40		
LDR	LOW DENSITY RESIDENTIAL	1,162.8	3.0 - 8.0	5.0	5,814		
MDR	MEDIUM DENSITY RESIDENTIAL	17.6	7.0 - 18.0	14.0	246		
HDR	HIGH DENSITY RESIDENTIAL	65.7	20.0 - 30.0	25.0	1,643		
MU	MIXED USE	69.4	20.0 - 30.0	20.0	1,388	0.20	604,613
C	COMMERCIAL	312.6				0.23	3,458,214
E	EMPLOYMENT	490.0				0.30	6,453,300
I	INDUSTRIAL	0.0				0.30	
HS/MS/ES	SCHOOL	41.7					
P	PARK	85.0					
OS	OPEN SPACE	476.3					
OS/UF	OPEN SPACE/URBAN FARM	476.3					
INS	INSTITUTIONAL	23.4					
	TOTAL	3,470.7			9,131		10,412,147

PARK REQUIREMENT (CORDOVA PARKS & RECREATION)

6,100 SF DU's x 0.0098 AC/DU	=	53.7 AC REQUIRED	
3,031 MF DU's x 0.0060 AC/DU	=	22.1 AC REQUIRED	
9,131 DU'S		75.8 AC REQUIRED	
		85.8 AC PROVIDED	

ES REQUIRIMENT (ELK GROVE USD)

6,100 SF DU's x 0.3747 P.P.H.		2298 STUDENTS/750 PER ES	= 3.06
3,031 MF DU's x 0.2414 P.P.H.		732 STUDENTS/750 PER ES	= 0.98
9,131 DU'S			4.04 ES NEEDED

MS REQUIRIMENT (ELK GROVE USD)

6,100 SF DU's x 0.1146 P.P.H.		699 STUDENTS/1,200 PER MS	= 0.58
3,031 MF DU's x 0.0853 P.P.H.		259 STUDENTS/1,200 PER MS	= 0.22
9,131 DU'S			0.80 MS NEEDED

HS REQUIRIMENT (ELK GROVE USD)

6,100 SF DU's x 0.2036 P.P.H.		1242 STUDENTS/2,200 PER HS	= 0.56
3,031 MF DU's x 0.1431 P.P.H.		434 STUDENTS/2,200 PER HS	= 0.20
9,131 DU'S			0.77 HS NEEDED

-ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS

SUMMARY-DISTRICT TWO

KEY	LAND USE	ACRES	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	0.0	0.1 - 4.0	2.0	0		
LDR	LOW DENSITY RESIDENTIAL	128.2	3.0 - 8.0	5.0	641		
MDR	MEDIUM DENSITY RESIDENTIAL	0.0	7.0 - 18.0	14.0	0		
HDR	HIGH DENSITY RESIDENTIAL	16.5	20.0 - 30.0	25.0	413		
MU	MIXED USE	0.0	20.0 - 30.0	20.0	0	0.20	0
C	COMMERCIAL	18.2				0.23	198,198
E	EMPLOYMENT	244.6				0.30	3,437,793
I	INDUSTRIAL	74.8				0.30	977,486
HS/MS/ES	SCHOOL	70.0					
P	PARK	14.0					
OS	OPEN SPACE	615.1					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	0.0					
	TOTAL	1,209.4			1,054		4,633,477

PARK REQUIREMENT (SOUTHGATE PARKS & RECREATION)

641 SF DU's x 0.0146 AC/DU	=	9.4 AC REQUIRED	
		11.5 AC PROVIDED	

PARK REQUIREMENT (CORDOVA PARKS & RECREATION)

0 SF DU's x 0.0098 AC/DU	=	0.0 AC REQUIRED	
413 MF DU's x 0.0060 AC/DU	=	2.5 AC REQUIRED	
413 DU'S		2.5 AC REQUIRED	
		2.5 AC PROVIDED	

ES REQUIRIMENT (ELK GROVE USD)

641 SF DU's x 0.3747 P.P.H.		241.0 STUDENTS/750 PER ES	= 0.32
413 SF DU's x 0.2414 P.P.H.		99.7 STUDENTS/750 PER ES	= 0.13
1,054 DU'S			0.45 ES NEEDED

MS REQUIRIMENT (ELK GROVE USD)

641 SF DU's x 0.1146 P.P.H.		73.5 STUDENTS/1,200 PER MS	= 0.06
413 SF DU's x 0.0853 P.P.H.		35.2 STUDENTS/1,200 PER MS	= 0.03
1,054 DU'S			0.09 MS NEEDED

HS REQUIRIMENT (ELK GROVE USD)

641 SF DU's x 0.2036 P.P.H.		130.5 STUDENTS/2,200 PER HS	= 0.06
413 MF DU's x 0.1431 P.P.H.		59.1 STUDENTS/2,200 PER HS	= 0.03
1,054 DU'S			0.09 HS NEEDED

-ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS

SUMMARY-FPA A

FPA "A"

KEY	LAND USE	ACRES	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	0.0	0.1 - 4.0	2.0	0		
LDR	LOW DENSITY RESIDENTIAL	80.0	3.0 - 8.0	5.0	400		
MDR	MEDIUM DENSITY RESIDENTIAL	0.0	7.0 - 18.0	14.0	0		
HDR	HIGH DENSITY RESIDENTIAL	12.0	20.0 - 30.0	25.0	300		
MU	MIXED USE	2.0	20.0 - 30.0	20.0	40	0.20	17424
C	COMMERCIAL	0.0				0.23	0
E	EMPLOYMENT	48.7				0.30	636412
I	INDUSTRIAL	0.0				0.30	0
HS/MS/ES	SCHOOL	0.0					
P	PARK	9.5					
OS	OPEN SPACE	27.0					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	0.0					
	TOTAL	179.2			740		653,836

PARK REQUIREMENT (CORDOVA PARKS & RECREATION)

400 SF DU's x 0.0098 AC/DU	=	3.9 AC REQUIRED	
740 MF DU's x 0.0060 AC/DU	=	2.5 AC REQUIRED	
740 DU'S		6.5 AC PROVIDED	
		9.5 AC PROVIDED	

ES REQUIREMENT (ELK GROVE USD)

400 SF DU's x 0.3747 P.P.H.		151 STUDENTS/750 PER ES	= 0.20
340 MF DU's x 0.2414 P.P.H.		82 STUDENTS/750 PER ES	= 0.11
740 DU'S			0.32 ES NEEDED

MS REQUIREMENT (ELK GROVE USD)

400 SF DU's x 0.1146 P.P.H.		46 STUDENTS/1,200 PER MS	= 0.04
340 MF DU's x 0.0853 P.P.H.		29 STUDENTS/1,200 PER MS	= 0.02
740 DU'S			0.06 MS NEEDED

HS REQUIREMENT (ELK GROVE USD)

400 SF DU's x 0.2036 P.P.H.		81 STUDENTS/2,200 PER HS	= 0.04
340 MF DU's x 0.1431 P.P.H.		49 STUDENTS/2,200 PER HS	= 0.02
740 DU'S			0.06 HS NEEDED

-ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS

SUMMARY-FPA B

FPA "B"

KEY	LAND USE	ACRES	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	0.0	0.1 - 4.0	2.0	0		
LDR	LOW DENSITY RESIDENTIAL	125.7	3.0 - 8.0	5.0	629		
MDR	MEDIUM DENSITY RESIDENTIAL	0.0	7.0 - 18.0	14.0	0		
HDR	HIGH DENSITY RESIDENTIAL	20.0	20.0 - 30.0	25.0	500		
MU	MIXED USE	15.0	20.0 - 30.0	20.0	300	0.20	130,680
C	COMMERCIAL	0.0				0.23	0
E	EMPLOYMENT	0.0				0.30	0
I	INDUSTRIAL	0.0				0.30	0
HS/MS/ES	SCHOOL	10.0					
P	PARK	22.2					
OS	OPEN SPACE	34.0					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	0.0					
	TOTAL	226.9			1,429		130,680

PARK REQUIREMENT (SOUTHGATE PARKS & RECREATION)

629 SF DU's x 0.0146 AC/DU	=	9.2 AC REQUIRED	
800 MF DU's x 0.0100 AC/DU	=	8.0 AC REQUIRED	
1,429 DU'S		17.2 AC REQUIRED	
		22.3 AC PROVIDED	

ES REQUIRIMENT (ELK GROVE USD)

629 SF DU's x 0.3747 P.P.H.		237 STUDENTS/750 PER ES	= 0.32
800 MF DU's x 0.2414 P.P.H.		193 STUDENTS/750 PER ES	= 0.26
1,429 DU'S			0.58 ES NEEDED

MS REQUIRIMENT (ELK GROVE USD)

629 SF DU's x 0.1146 P.P.H.		72 STUDENTS/1,200 PER MS	= 0.06
800 MF DU's x 0.0853 P.P.H.		68 STUDENTS/1,200 PER MS	= 0.06
1,429 DU'S			0.11 MS NEEDED

HS REQUIRIMENT (ELK GROVE USD)

629 SF DU's x 0.2036 P.P.H.		128 STUDENTS/2,200 PER HS	= 0.06
800 MF DU's x 0.1431 P.P.H.		114 STUDENTS/2,200 PER HS	= 0.05
1,429 DU'S			0.11 HS NEEDED

-ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS

SUMMARY-FPA C

FPA "C"

KEY	LAND USE	ACRES	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	95.4	0.1 - 4.0	2.0	191		
LDR	LOW DENSITY RESIDENTIAL	512.8	3.0 - 8.0	5.0	1564		
MDR	MEDIUM DENSITY RESIDENTIAL	10.0	7.0 - 18.0	14.0	140		
HDR	HIGH DENSITY RESIDENTIAL	13.0	20.0 - 30.0	25.0	325		
MU	MIXED USE	34.3	20.0 - 30.0	20.0	490	0.20	300,564
C	COMMERCIAL	12.0			0	0.23	120,680
E	EMPLOYMENT	0.0			0	0.30	0
I	INDUSTRIAL	80.0			0	0.30	1,045,440
HS/MS/ES	SCHOOL	0.0					
P	PARK	31.0					
OS	OPEN SPACE	89.2					
OS/UF	OPEN SPACE/URBAN FARM	0.0					
INS	INSTITUTIONAL	0.0					
	TOTAL	586.9			2,410		1,476,684

PARK REQUIREMENT (SOUTHGATE PARKS & RECREATION)

1,395 SF DU's x 0.0146 AC/DU	=	20.4 AC REQUIRED	
1,015 MF DU's x 0.0100 AC/DU	=	10.2 AC REQUIRED	
2,410 DU'S		30.5 AC REQUIRED	
		31.0 AC PROVIDED	

ES REQUIREMENT (ELK GROVE USD)

1,395 SF DU's x 0.3747 P.P.H.		520 STUDENTS/750 PER ES	= 0.70
1,015 MF DU's x 0.2414 P.P.H.		245 STUDENTS/750 PER ES	= 0.33
2,410 DU'S			1.03 ES NEEDED

MS REQUIREMENT (ELK GROVE USD)

1,395 SF DU's x 0.1146 P.P.H.		160 STUDENTS/1,200 PER MS	= 0.13
1,015 MF DU's x 0.0853 P.P.H.		87 STUDENTS/1,200 PER MS	= 0.07
2,410 DU'S			0.21 MS NEEDED

HS REQUIREMENT (ELK GROVE USD)

1,395 SF DU's x 0.2036 P.P.H.		284 STUDENTS/2,200 PER HS	= 0.13
1,015 MF DU's x 0.1431 P.P.H.		145 STUDENTS/2,200 PER HS	= 0.07
2,410 DU'S			0.20 HS NEEDED

-ACREAGE SHOWN EXCLUDES ARTERIAL AND MAJOR COLLECTOR ROADS

LAND USE SUMMARY

	KEY	LAND USE	AC±	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	0.1 - 4.0	2.0	231		
LDR	LDR	LOW DENSITY RESIDENTIAL	1,709.5	3.0 - 8.0	5.0	8,548		
MDR	MDR	MEDIUM DENSITY RESIDENTIAL	27.6	7.0 - 18.0	14.0	386		
HDR	HDR	HIGH DENSITY RESIDENTIAL	127.2	20.0 - 30.0	25.0	3,180		
MU	MU	MIXED USE	120.9	20.0 - 30.0	20.0	2,418	0.20	1,053,281
C	C	COMMERCIAL	342.8				0.25	3,733,092
E	E	EMPLOYMENT	803.3				0.30	10,497,524
I	I	INDUSTRIAL	154.8				0.30	2,022,926
HS/MS/ES	HS/MS/ES	SCHOOL	131.7					
P	P	PARK	162.5					
OS	OS	OPEN SPACE ① Existing Cemeteries ② Natomas Basin Conservancy	1,469.5					
OS/UF	OS/UF	OPEN SPACE/URBAN FARM	476.3					
INS	INS	INSTITUTIONAL ③ Existing Church	23.4					
		ARTERIAL/COLLECTOR ROADS	248.2					
		TOTAL	5,913.3 AC			14,763 DU		17,306,824 SF

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

LOCATION MAP

STONEBRIDGE PROPERTIES, LLC

GRANITE™

SWA

Laguna Beach
Sausalito
San Francisco
Los Angeles
Houston
Dallas
Shanghai

NORTH

0 1,400 700 2,100

570 Glenneyre Street
Laguna Beach CA 92651
Fax 949.494.7861
949.497.5471

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DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C St, Bldg. 100-B Tel 916.341.7760
Sacramento, CA 95816 Fax 916.341.7767

APPENDIX F

SOUTH SACRAMENTO HABITAT CONSERVATION PLAN AND MINIMIZATION MEASURES

5.4.1 General Avoidance and Minimization Measures

General AMMs are designed to avoid or minimize effects of Covered Activities on SSHCP land cover types and Covered Species.

Condition 1. Avoid and Minimize Urban Development Impacts to Watershed Hydrology and Water Quality

National Pollution Discharge Elimination System permits are issued by the Regional Water Quality Control Board to jurisdictions in the region, including the jurisdictions that are also SSHCP Land Use Authority Permittees (i.e., County of Sacramento, and Cities of Rancho

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[16] In a situation like this, the Local Land Use Authority Permittee will suspend one or more local permits (e.g., grading permit, building permit) until compliance with terms of all SSHCP requirements is demonstrated.

[17] Post-construction monitoring by the Land Use Authority Permittee could continue for several years.

Cordova and Galt). The National Pollution Discharge Elimination System permit is issued to each of the Land Use Authority Permittees every 5 years, and is referred to as the Municipal Separate Storm Sewer System (MS4) permit. MS4 permits contain specific design measures required for all projects constructed within the region. The Stormwater Quality Design Manual for the Sacramento and South Placer Regions (Stormwater Manual) outlines planning tools and requirements to reduce urban runoff from new development and redevelopment projects within the region (Sacramento Stormwater Quality Partnership 2007). The Stormwater Manual is used as a general guidance document to aid with the selection, siting, design, operation, and long-term maintenance of stormwater quality control measures. The Stormwater Manual contains control measures intended to meet the standard of "reducing pollutants in urban runoff to the maximum extent practicable" set forth in the local agencies' MS4 permits issued by the Central Valley Regional Water Quality Control Board. AMM LID-1 (see below) is designed to ensure compliance with MS4 requirements by requiring Third-Party Project Proponents to minimize increases of peak discharge of stormwater and to eliminate or reduce runoff of pollutants.

Development Covered Activities may adversely alter watershed hydrology and degrade water quality, which, in turn, could diminish or eliminate the conservation benefits provided by the SSHCP Preserve System. Condition 1 is designed to conserve and/or rehabilitate on-site natural creeks and streams. This condition will require the provision of BMPs and low-impact development (LID) drainage control measures to ensure that runoff from developed lands will closely mimic the pre-development hydrograph and retain most pre-development hydrologic functions. Condition 1 will accomplish the hydrograph and hydrologic objectives through application of the listed AMMs to all UDA Covered Activities that occur at the parcel, subdivision, or master plan scale.

LID-1 (Stormwater Quality): When the size of a Covered Activity project exceeds the thresholds established by the State Water Resources Control Board (SWRCB) (see the most recent Stormwater Quality Design Manual for the Sacramento and South Placer Regions, or future SWRCB-approved design manuals applicable to the Plan Area), incorporate stormwater management into site design to satisfy the requirements outlined in the most recent Stormwater Quality Design Manual for the Sacramento and South Placer Regions. Stormwater management may include groundwater recharge (LID-2) and natural site features (LID-3).

LID-2 (Groundwater Recharge): When siting SSHCP Preserves containing Riparian, Open Water, or Freshwater Marsh SSHCP land cover types, the Implementing Entity will prioritize locations that are suitable for groundwater recharge.

LID-3 (Natural Site Features): Incorporate preservation of a site's natural aquatic features (such as creeks and streams) into project design to retain natural hydrologic patterns and to retain habitat that might be used by Covered Species.

Condition 2. Avoid and Minimize Urban Development Direct and Indirect Impacts to Existing Preserves and SSHCP Preserves

Development Covered Activities adjacent to Preserves may adversely impact species that use the Preserve, and erode or eliminate the conservation benefits provided by the Preserve. Condition 2 seeks to avoid or minimize the following Covered Activity environmental stressors that may result in direct and indirect impacts to the SSHCP Preserve System:

- Alterations to landscape hydrology from new impervious surfaces may adversely affect natural communities in the lower watershed, the ecology of a Preserve, and/or downstream aquatic resources.
- Water runoff from development or from roadways directed into Preserves may introduce harmful substances into Preserves. Unseasonal and/or additional water entering a Preserve may eliminate vernal pools and other seasonal wetlands native to the region by converting them to low-functioning perennial wetlands.
- Development adjacent to Preserves may partially to fully remove the soil's "perched aquifer" (see Chapter 3) and reduce or eliminate the micro-watersheds that support the hydrology of vernal pools within the Preserve boundary. These changes may adversely affect the existing hydrologic regime of vernal pools by changing the timing, depth, and/or duration of vernal pool saturation and/or ponding, causing long-term changes to a suite of vernal pool functions. For example, changes to water chemistry could adversely affect species habitat. Although the vernal pools remain, the environmental conditions of the pools may no longer provide habitat for vernal pool Covered Species, or provide the benefit of other wetland functions (e.g., stormwater attenuation) compared to pre-project conditions.
- Introduction or proliferation of non-native or invasive plant and wildlife species may displace native species.
- Landscaping in the interface of a development and a Vernal Pool–Grassland Preserve often includes native or non-native trees and other plant species that are not found in California grasslands and, therefore, cannot survive on the Vernal Pool–Grassland Preserve border without intensive irrigation and cultivation. In addition to adverse effects from irrigation and landscape maintenance, adult trees may become landscape barriers that inhibit species movement and may act to isolate individual Preserves from the larger SSHCP Preserve System.
- Recreational use of Preserves near developed areas may compact soils, eliminate vegetation, impair hydrologic functions, introduce weeds or invasive plant species, and disturb plants and wildlife.

- Introduction of light, noise, or vibrations may disrupt normal nocturnal and diurnal cycles of native species.

AMMs associated with Condition 2 must be applied to all UDA Covered Activities that border an existing Preserve or planned SSHCP Preserve.

EDGE-1 (Compatible Land Uses): To the maximum extent practicable, development project Covered Activities will locate compatible land uses (e.g., designated open space such as parks and ball fields, detention basins, and other land uses with less-intensive human activity) in areas immediately adjacent to existing or planned Preserve boundaries. The compatible land use will provide additional buffering of Preserves from potential indirect effects of adjacent urban development. The soil surfaces in a compatible land use area may be re-contoured provided that the soil restrictive layer remains undamaged and most of the soil profile above the restrictive layer remains intact. The Land Use Authority will determine when it is not practicable to locate a compatible land use adjacent to existing or planned Preserve boundaries.

EDGE-2 (Single-Loaded Streets): To the maximum extent practicable, the design of Urban Development Covered Activities will locate single-loaded streets adjacent to existing or planned Preserve. The Land Use Authority will determine when single-loaded streets are not practicable.

EDGE-3 (Preserve Setbacks): Urban Development Covered Activities constructed adjacent to existing or planned Preserves must establish a minimum 50-foot-wide setback outward from the boundary of any existing Preserve or planned SSHCP Preserve. This minimum 50-foot-wide setback will function as a transition between Urban Development and the Preserve, and must be managed to maintain the natural community of vegetation present in the adjacent Preserve. As much of the setback as possible should remain in the same natural habitat as the Preserve.

However, as discussed in Section 5.2.5, Covered Activities in Preserve Setbacks in the UDA, where an existing or planned Preserve is adjacent to an existing roadway (e.g., collectors, arterials, thoroughfares), the 50-foot Preserve Setback will not be required, and any bicycle or pedestrian trail will be established in the road right-of-way. In addition, where a planned roadway crosses an existing or planned Preserve, no Preserve Setback will be required, and any bicycle or pedestrian trail will be established in the road right-of-way.

EDGE-3a (Setback Recreational Trails): Trails are best suited outside of the setback; however, certain types of recreational trails or facilities (e.g., benches, trash receptacles, shade structures, fencing) that can be constructed with minimum ground disturbance and in compliance with EDGE-7 may be allowed within a Preserve Setback, as specified in Section 5.2.5, Covered Activities in Preserve Setbacks in the UDA. Preserve Setback design must locate trails on the side nearest development, away from the Preserve boundary. Trails may be permeable or semi-permeable hiking trails or paved community trials. The maximum trail width will be 16 feet total, including 2-foot-wide shoulders. Post and cable fencing, split rail, or other open fencing will be installed adjacent to recreation trails to keep pedestrians on the trail.

EDGE-3b (Setback Firebreaks): If approved by the local authorities, the Preserve Setback trail may also be used as a firebreak. In instances where a trail cannot act as a firebreak, the firebreak will be located between the trail and the Preserve boundary (see Section 5.2.7). Firebreaks allowed inside the setbacks must be created by methods that will not disturb the soil's restrictive layer, such as mowing, minor scraping of surface vegetation, or shallow tilling, to comply with EDGE-7. Firebreak width within Preserve Setbacks is the minimum width needed to comply with applicable local codes.

EDGE-3c (Setback Shade Trees and Landscaping): To prevent potential impacts from irrigation water or from accumulation of leaf litter onto the grasslands or vernal pools of a Preserve, planting of shade trees or landscaping vegetation will be limited to the area of the Preserve Setback located between the recreation trail and the adjacent urban development (i.e., away from Preserves).

- Only drought-tolerant plant species will be planted. The planting pallet used for Preserve Setback landscaping will not include invasive plant species listed in the California Invasive Plant Council's (Cal-IPC) California Invasive Plant Inventory Database or listed in the Cal-IPC California Invasive Plant Watch List (see http://www.cal-ipc.org/paf/). Any shade trees planted along Preserve Setback trails will be native species that are found in California grasslands and that can survive in the Vernal Pool–Grassland border without long-term irrigation or fertilization (e.g., valley oak, black oak, blue oak, oracle oak). In general, no more than 30% of any 1,000-foot-long segment of a Preserve Setback trail will have canopy cover from tree plantings (to be consistent with maximum tree densities naturally found within native California grasslands and savanna).

- Drip irrigation will be allowed for a maximum of 5 years to establish shade trees or landscape vegetation between the recreation trail and adjacent urban development. The Implementing Entity has the discretion to allow irrigation to continue past 5 years if extenuating circumstances necessitate it (e.g., during a drought) and the continuance of irrigation will not affect the Preserve. Any irrigation systems located within Preserve Setbacks will be inspected quarterly to determine if such systems are affecting soils or vegetation not part of the intended plantings. Irrigation system repairs will be completed immediately if it is determined that the irrigation system is affecting vegetation or soil moisture not part of the intended tree planting.
- If, during annual monitoring of the adjacent Preserve (see Chapter 8), adverse indirect effects (e.g., leaf litter accumulation, irrigation runoff, plant encroachment) of the Preserve Setback's planted vegetation are detected, then the SSHCP Implementing Entity, the Preserve Manager, and the entity responsible for the Preserve Setback will identify appropriate adaptive management of the Preserve Setback tree or landscape plantings in accordance with the Preserve Setback Easement (see Section 5.2.5 and Chapter 9).

EDGE-4 (Locate Stormwater Control Outside Preserves): Roads, sidewalks, and other impermeable surfaces of Urban Development Covered Activities adjacent to existing or planned Preserves will slope away from Preserves and Preserve Setbacks or intercept drainage with swales or curbs and gutters to preclude drainage from entering Preserves and Preserve Setbacks. Stormwater flows must be directed away from Preserves and Preserve Setbacks and directed into stormwater control facilities inside the development (outside Preserves and Preserve Setbacks)[18] (see EDGE-6 for exception to EDGE-4 in certain SSHCP Linkage Preserves).

EDGE-5 (Stormwater Control in Preserve Setbacks): If trails are established in any Preserve Setback in compliance with EDGE-3, the trail must be sloped away from the Preserve, and rainwater leaving the trail surface must flow into an adjacent low-velocity bio-retention swale or cell to keep rainwater runoff and trail contaminants from entering the Preserve. Low-velocity bio-retention swales or cells are typically small linear features placed on one or both sides of a trail. As required by EDGE-3, trails and their adjacent bio-retention swales or cells must be located on the side of the Preserve Setback nearest development.

[18] Detention basins are allowed in some Linkage Preserves consistent with the requirements of EDGE-6. At the time of SSHCP preparation, seven Linkage Preserves with drainages are planned SSHCP Preserves: L1, L2, L4, L7, L8, L9, and L10 (see Section 5.2.7 and Section 7.5). Also see project-specific measures in Section 5.5.1.

EDGE-6 (Detention Basins in Linkage Preserves): Because planned SSHCP Linkage Preserves L1, L2, L4, L7, L8, L9, and L10 (see Section 7.5) surround natural creeks or streams that must receive stormwater from planned adjacent Urban Development Covered Activities, a limited number of stormwater detention basins will be allowed on those Linkage Preserves. Detention basins within Linkage Preserves (see Section 5.2.7) will be designed and constructed with fill material to build up the perimeter of the detention basin so as not to impact the soil restrictive layer (duripan or hardpan) and function of the soil perched aquifer. Detention basins within Linkage Preserves will capture stormwater flows and runoff, and will discharge water to the stream/creek or percolate collected water to the soil perched aquifer. Detention basin structures that collect stormwater entering the basin or convey stormwater leaving the basin must be designed to avoid and minimize effects to Covered Species habitat in the Linkage Preserve.

EDGE-7 (Hardpan/Duripan Protection): To protect the soil perched aquifer and the micro-watersheds supporting existing vernal pool hydrology, activities that have the potential to cut into, disrupt, or remove the soil's restrictive layer (hardpan or duripan) will not occur within Preserves or Preserve Setbacks. However, in certain circumstances, the Covered Activities defined in Section 5.2.6, Covered Activities in Stream Setbacks in the UDA, and Section 5.2.8, Covered Activities in the Laguna Creek Wildlife Corridor of the Preserve System, may result in punctures[19] or other minor disruptions of the soil hardpan or duripan if approved by the Implementing Entity and the Technical Advisory Committee according to the process described in Chapter 9 of the SSHCP. If a Covered Activity on a Preserve or Preserve Setback results in a puncture or other disruption to the soil hardpan or duripan, the puncture will be sealed using bentonite clay or other material that maintains the functionality of the soil's restrictive layer and associated perched aquifer.

EDGE-8 (Outdoor Lighting): All outdoor lighting in Urban Development Covered Activity projects will be designed to minimize light pollution into existing and planned Preserves, except where a Land Use Authority Permittee determines lighting is necessary for public safety or security. Minimization measures may include light fixture placement (e.g., as low to the ground as possible), lamp designs (e.g., shielding, low glare, or no lighting), directing light away from Preserves, or other means to avoid or minimize light pollution. The Third-Party Project Proponent will use the best information available at the time of project design to minimize effects of light pollution on target SSHCP Covered Species (e.g., western spadefoot (*Spea*

[19] Punctures may include small holes that penetrate the soil hardpan or duripan such as might occur when digging or drilling holes for the installation of fence posts, sign posts, or trees.

hammondii), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*)).

EDGE-9 (Livestock Access to Preserves): Urban Development Covered Activity projects that include on-site Preserves will include in their design an adequate number of access points and facilities for delivery and pick up of grazing animals (livestock), such that these activities will not significantly alter the Preserve's habitat and are consistent with the protection of livestock and protection of adjacent public property, and include adequate public safety measures.

EDGE-10 (Prevent Invasive Species Spread): Completed Covered Activities (including roads) will be maintained in a manner that avoids the spread of invasive species into Preserve and Open Space areas. Such maintenance measures will include the following:

- To prevent the transport of non-native invasive species onto Preserves, before bringing any equipment onto an SSHCP Preserve or Preserve Setback, equipment must be cleaned of mud, dirt, and plant material. Cleaning will occur in the infested area or another appropriate location as approved by a Plan Permittee.
- Mowing rotation will start in un-infested areas and move to infested areas.
- Invasive plant prevention techniques will be incorporated into maintenance plans.
- The SSHCP Implementing Entity will survey road shoulders, ditches, and rights-of-way that border SSHCP Preserves for invasive weeds or other exotic plant species. Where roadside weed infestations have reached a critical control point, the Implementing Entity or Land Use Authority Permittee will apply the appropriate manual, mechanical, or chemical treatment.

Condition 3. Implement Construction Best Management Practices

AMMs associated with Condition 3 must be applied to all UDA Covered Activities.

BMP-1 (Construction Fencing): Orange construction fencing will be installed to ensure that ground disturbance does not extend beyond the allowed construction footprint (i.e., the limit of project construction plus equipment staging areas and access roads). Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will mark the outer boundary of any Preserve Setback or Stream Setback adjacent to or within the project site with orange construction fencing prior to ground disturbance. This fencing will remain in place until project completion, as identified by the Plan Permittee.

BMP-2 (Erosion Control): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will install temporary control measures for sediment, stormwater, and pollutant runoff as required by the Plan Permittee to protect water quality and species habitat. Silt fencing or other appropriate sediment control device(s) will be installed downslope of any Covered Activity that disturbs soils.

Fiber rolls and seed mixtures used for erosion control will be certified as free of viable noxious weed seed. As discussed in Section 5.4.2, Covered Species Take Avoidance and Minimization Measures, erosion controls installed in or adjacent to Plan Area modeled habitat for giant gartersnake (*Thamnophis gigas*), western pond turtle (*Actinemys marmorata*), California tiger salamander (*California tiger salamander*), or western spadefoot (see Chapter 3) must be of appropriate design and materials that will not entrap the species (e.g., not contain mesh netting). Regular monitoring and maintenance of the project's erosion control measures will be conducted until project completion to ensure effective operation of erosion control measures.

BMP-3 (Equipment Storage and Fueling): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will ensure that equipment storage and staging will occur in the development footprint only (not sited in any existing on-site Preserve, planned on-site Preserve, Preserve Setback, Stream Setback, or aquatic land cover type). Fuel storage and equipment fueling will occur away from waterways, stream channels, stream banks, and other environmentally sensitive areas within the development footprint.

However, certain equipment storage and fueling activities can be allowed on Preserves within habitat re-establishment/establishment sites (refer to Section 5.2.7) if no location outside of the site is available. If a Covered Activity results in a spill of fuel, hydraulic fluid, lubricants, or other petroleum products, the spill will be absorbed and waste disposed of in a manner to prevent pollutants from entering a waterway, Preserve, Preserve Setback, or Stream Setback.

BMP-4 (Erodible Materials): Plan Permittees and Third-Party Project Proponents implementing Covered Activities must not deposit erodible materials into waterways. Vegetation clippings, brush, loose soils, or other debris material will not be stockpiled within stream channels or on adjacent banks. Erodible material must be disposed of such that it cannot enter a waterway, Preserve, Preserve Setback, Stream Setback, or aquatic land cover type. If water and sludge must be pumped from a subdrain or other structure, the material will be conveyed to a temporary settling basin to prevent sediment from entering a waterway.

BMP-5 (Dust Control): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will water active construction sites regularly, if warranted, to avoid or minimize impacts from construction dust on adjacent vegetation and wildlife habitats. No surface water will be used from aquatic land covers; water will be obtained from a municipal source or existing groundwater well.

BMP-6 (Construction Lighting): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will direct all temporary construction lighting (e.g., lighting used for security or nighttime equipment maintenance) away from adjacent natural habitats, and particularly Riparian and Wetland habitats and wildlife movement areas.

BMP-7 (Biological Monitor): If a Covered Activity includes ground disturbance within Covered Species modeled habitat, an approved biologist will be on site during the period of ground disturbance, and may need to be on site during other construction activities depending on the Covered Species affected. After ground-disturbing project activities are complete, the approved biologist will train an individual to act as the on-site construction monitor for the remainder of construction, with the concurrence of the Permitting Agencies. The on-site monitor will attend the training described in BMP-8. The approved biologist and the on-site monitor will have oversight over implementation of Avoidance and Minimization Measures, and will have the authority to stop activities if any of the requirements associated with those measures are not met. If the monitor requests that work be stopped, the Wildlife Agencies will be notified within one working day by email. The approved biologist and/or on-site monitor will record all observations of listed species on California Natural Diversity Database field sheets and submit them to the California Department of Fish and Wildlife. The approved biologist or on-site monitor will be the contact source for any employee or contractor who might inadvertently kill or injure a Covered Species or who finds a dead, injured or entrapped individual. The approved biologist and on-site monitor's names and telephone numbers will be provided to the Wildlife Agencies prior to the initiation of ground-disturbing activities. Refer to species-specific measures for details on requirements for biological monitors.

BMP-8 (Training of Construction Staff): A mandatory Worker Environmental Awareness Program will be conducted by an approved biologist for all construction workers, including contractors, prior to the commencement of construction activities. The training will include how to identify Covered Species that might enter the construction site, relevant life history information and habitats, SSHCP and

statutory requirements and the consequences of non-compliance, the boundaries of the construction area and permitted disturbance zones, litter control training (SPECIES-2), and appropriate protocols if a Covered Species is encountered. Supporting materials containing training information will be prepared and distributed by the approved biologist. When necessary, training and supporting materials will also be provided in Spanish. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all of the Avoidance and Minimization Measures. Written documentation of the training must be submitted to the Implementing Entity within 30 days of completion of the training, and the Implementing Entity will provide this information to the Wildlife Agencies.

BMP-9 (Soil Compaction): After construction is complete, all temporarily disturbed areas will be restored similar to pre-project conditions, including impacts relating to soil compaction, water infiltration capacity, and soil hydrologic characteristics.

BMP-10 (Revegetation): Plan Permittees and Third-Party Project Proponents implementing ground-disturbing Covered Activities will revegetate any cut-and-fill slopes with native or existing non-invasive, non-native plants (e.g., non-native grasses) suitable for the altered soil conditions and in compliance with EDGE-2 and EDGE-8, if applicable.

BMP-11 (Speed Limit): Project-related vehicles will observe the posted speed limits on paved roads and a 10-mile-per-hour speed limit on unpaved roads and during travel in project areas. Construction crews will be given weekly tailgate instruction to travel only on designated and marked existing, cross-country, and project-only roads.

Condition 4. Avoid and Minimize Impacts that May Result from Implementation of Covered Transportation Projects

Urban Development transportation project and Rural Transportation Project Covered Activities, including bridge projects, can affect Covered Species. AMMs included for Condition 4 seek to avoid or minimize direct and indirect impacts that may result from construction of roadways or roadway improvements. Condition 4 applies to all transportation-related Covered Activities (see Sections 5.2.1 and 5.2.3).

Plan Permittees and Third-Party Project Proponents implementing Urban Development transportation or Rural Transportation Project Covered Activities must comply with the roadway siting, design, and construction AMMs described below.

ROAD-1 (Road Project Location): Road projects will be located in the least environmentally sensitive area to avoid, to the maximum extent practicable, impacts on Covered Species, Covered Species habitat, and waters of the United States. Road project alignments will follow existing roads, road easements, and rights-of-way, or be sited in disturbed areas to minimize habitat loss and additional habitat fragmentation.

ROAD-2 (Wildlife Crossing Structures): Road projects that are Urban Development Covered Activities (see Section 5.2.1) (including the Capital Southeast Connector, see Section 5.2.1.1) or are Rural Transportation Covered Activities (see Section 5.2.3) will include an adequate number of wildlife crossing structures, as depicted in Figure 5-10. An adequate number of wildlife crossing structures within the Urban Development Area (UDA) and outside the UDA will provide for continued dispersal and movement of native wildlife throughout the SSHCP Plan Area, as required by the SSHCP Biological Goals and Objectives (see Chapter 7).

The Plan defines "wildlife crossing structure" as a physical structure specifically designed or retrofitted to facilitate undercrossing for target wildlife species. The Plan further classifies wildlife crossings as hydrologic crossings and dry crossings. Hydrologic crossings are built where there is an existing stream, creek, or intermittent drainage to maintain existing hydrologic connectivity within the Plan Area. As described below, hydrologic crossings require specialized features to be built into the crossing structure, such as elevated platforms to allow wildlife to pass under a crossing structure when it is inundated with water. Dry wildlife crossings are built where there is no hydrologic feature but where a crossing is needed to provide for overland connectivity. SSHCP wildlife crossing structures may include structures such as bridges, arches, or box and pipe culverts.

Plan Permittees expect that future wildlife movement and dispersal within the UDA will occur almost entirely within the boundaries of the future interconnected SSHCP Preserve System (see Section 7.5). Therefore, wildlife crossings are needed wherever a roadway crosses (bisects) the conceptual SSHCP Preserve System (see Figure 5-10). Wildlife crossing structures inside the UDA will be sized to accommodate movement of a highly mobile native indicator species (i.e., coyote (*Canis latrans*)). By designing UDA wildlife crossing structures to meet the movement and dispersal requirements of coyote, the Plan Permittees anticipate that the crossing structure will also accommodate most native wildlife species that currently occupy the UDA (see Chapter 3).

The Plan Permittees expect that most of the Plan Area outside of the UDA will remain as Open Space over the 50-year Permit Term (see Chapter 4). Therefore,

the Plan Permittees expect that the Rural Transportation Project Covered Activities proposed outside the UDA will have a relatively small effect on the movement and dispersal of larger or more mobile native wildlife species, including coyote. Consequently, the Plan Permittees anticipate that the design of Rural Transportation Project Covered Activities outside the UDA will need to include wildlife crossing structures primarily where the Rural Transportation Project Covered Activities occur within California tiger salamander modeled habitat (see CTS-3 and also Chapter 3, Figure 3-16).

The design and location of wildlife crossing structures both inside the UDA and outside the UDA will be determined by collaboration between the Third-Party Project Proponent, the Land Use Authority, and the Implementing Entity. Crossing design will use the best available scientific and commercial information for the target species. The design of crossing structures will be based on demonstrated effectiveness of design for the target species when such information is available, or will be designed with a high level of certainty of success based on studies of similar taxa in similar environmental settings. The proposed wildlife crossing structures designs will be reviewed and approved by the Implementing Entity prior to final design.

The Implementing Entity will develop a Wildlife Crossing Maintenance Manual to be provided to the entity responsible for maintaining the wildlife crossing. The Wildlife Crossing Maintenance Manual will identify vegetation management, clearing of obstructions, and other techniques to maintain the desired movement and hydrologic connectivity, and to avoid effects to adjacent Preserves.

All SSHCP wildlife crossing structures in the UDA will include the following design elements:

- Open-bottom bridges or arches where the roadway crosses a river or stream. Where an open-bottom bridge or arch is used, the span of the crossing will be at least 1.2 times the bankfull width of the stream and span the banks to allow for dry wildlife passage along each side of the stream and to avoid or minimize piers or footings within the stream. (Bankfull width refers to the width of a stream channel at the point where over-bank flow begins during a flood event.)
- Any wildlife crossing structure that also maintains hydrologic connectivity will be designed to maintain pre-construction water capacity, depth, and velocity. The crossing structure will not restrict or impede normal flows or flood flows, unless a primary purpose of the structure is to manage such

flow(s). Wildlife crossing structures must be designed to provide a dry passage (e.g., a platform ledge) higher than flows for a 10-year storm event to allow wildlife to pass through an inundated crossing structure.

- Wildlife crossing structures in the UDA will be designed and sized to accommodate movement of at least medium-sized mammals (e.g., coyote). The opening must be at least 3 feet high and the crossing structure must have a minimum openness ratio of at least 0.4.
- Vegetation leading up to the entrance of a crossing structure and the substrate leading into and within the crossing structure will be natural and appropriate to provide for continuity of habitat, attract the target animal species for which the crossing is designed, and facilitate use of the crossing structure.
- A wildlife crossing under six-lane roads or larger will be designed to provide ambient light and temperature in the longer crossing structures (e.g., either by providing a larger opening or a grate at the top of the structure to improve the attractiveness of the crossing to certain Covered Species and wildlife that may hesitate to cross through dark, confined structures or one with a temperature gradient (Jackson and Griffin 2000)). If a road is less than six lanes in width, these designs will be optional.
- Lighting will not be placed at or near the entrance of a wildlife crossing structure to maintain natural ambient light conditions at night and to increase chances of wildlife use. However, a Land Use Authority Permittees may allow lighting if necessary for human health or safety.

Outside the UDA, wildlife crossing structures may be required for California tiger salamander (refer to CTS-1), and could also be required for other native species.

ROAD-3 (Roadside Pesticide Use[20]): If pesticide use is necessary along roadsides, the appropriate SSHCP Permittee will ensure that the pesticide application strictly complies with the pesticide label and all other applicable federal, state, and local authorities pertaining to the use, safety, storage, disposal, and reporting of the pesticide. Where roadside weed infestations have reached a critical control point, the Implementing Entity or a Land Use Authority Permittee will apply the appropriate manual, mechanical, or chemical treatment. In addition, the Implementing Entity or appropriate Land Use Authority Permittee will post signs along road shoulders adjacent to sensitive areas that are within the SSHCP

[20] Use of pesticides (including rodenticides and herbicides) is not an SSHCP Covered Activity. However, pesticide use specified in Section 5.3 is an allowed land management tool, provided the pesticide application is otherwise legal and conforms to all conditions in Section 5.4.

Preserve System (e.g., California tiger salamander breeding ponds, endemic plant populations, vertebrates that rely on insects for part of their diet). The signs will identify pesticide use restrictions or other roadside maintenance restrictions.

Condition 5. Avoid and Minimize Impacts that Result from Public Use of Low-Impact Nature Trails in Preserves

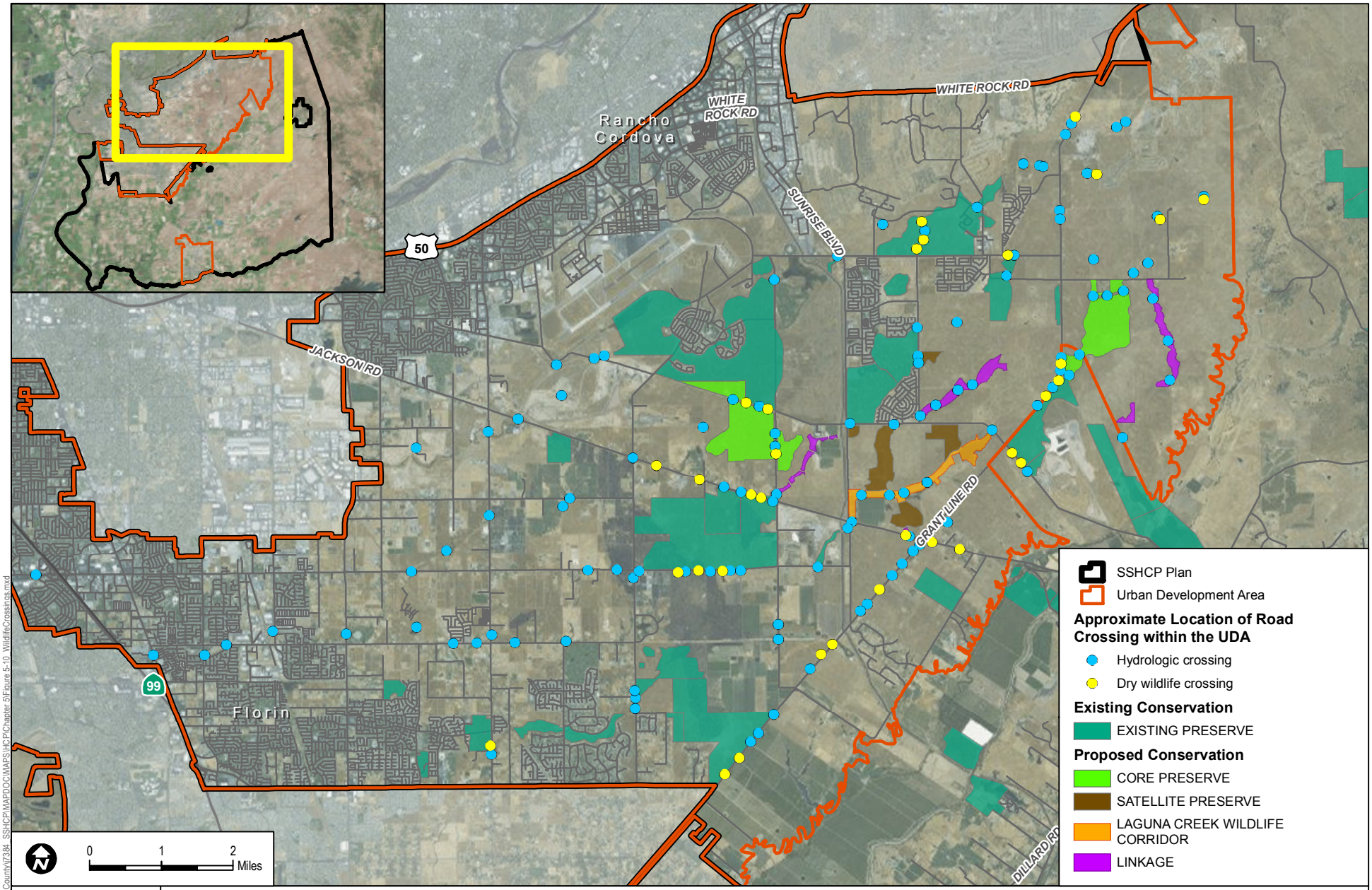
Preserves within the UDA are likely to be surrounded by urban development. As discussed in Section 5.2.7, allowing limited use of SSHCP Preserves will help to foster a sense of community ownership and will provide an opportunity to educate the community about the natural resources to be protected within the SSHCP Preserve System.

Low-impact nature trails will be designed following the AMMs outlined below.

NATURE TRAIL-1 (Nature Trail Plan): A nature trail plan must be prepared for each Preserve where a trail is allowed by the Preserve Management Plan. Nature trails will be unpaved trails that vary in width depending on terrain and existing constraints, but will never exceed 4 feet in width. Where a trail crosses a swale, wooden walkways elevated to a height no greater than 2 feet will be installed. Trail improvements may include mowing vegetation to create or maintain a trail, minor grading to remove trip hazards, and signs providing directional and educational information. Public access to land acquired for preservation will be prohibited until a trail plan can be prepared by the Implementing Entity and approved by the Permitting Agencies. A trail plan will include the following:

- Maps identifying areas that contain sensitive habitats or species occurrences.
- Maps that show the location and footprint of proposed trails.
- Methods used to control public access.
- Trail and use monitoring methods, schedules, and responsibilities.
- Trail operation and maintenance guidelines and responsibilities.
- Clear triggers for use restrictions or closure based on sensitive biological indicators (e.g., seasonal closures of some trails on the basis of activity periods of Covered Species or sensitive species).

NATURE TRAIL-2 (Nature Trail Protection of Duripan): Nature trails will be sited and constructed so as not to interfere with existing soil duripan and the perched aquifer that support the existing hydrologic regime of the Vernal Pool–Grassland, and will not interfere with existing pool hydrology. Trails within Preserves will not be paved.



Path: Z:\Projects\Sacramento_County\7384_SSHCP\MAPDOC\MAPS\HCP\Chapter 5\Figure 5-10_WildlifeCrossings.mxd

SOURCE: ESRI, County of Sacramento 2014, USFWS 2015

FIGURE 5-10

Wildlife Crossings

SOUTH SACRAMENTO HABITAT CONSERVATION PLAN

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NATURE TRAIL-3 (Nature Trail Location): Nature trails will be located away from sensitive natural resources (e.g., vernal pools, riparian habitat, woodland habitat, Covered Species occurrences, raptor nesting sites, tricolored blackbird (*Agelaius tricolor*) colony sites). The Wildlife Agencies will determine the distance necessary to avoid impacts to sensitive natural resources.

NATURE TRAIL-4 (Biological Studies Prior to Nature Trail Design): Biological studies will be conducted within the area being considered for nature trail construction prior to project design. The studies will include land cover type mapping and focused species surveys and/or wetland delineations. The biological studies will include assessments of potential effects of trail construction on Preserve System resources, and recommendations for avoidance and minimization that may be incorporated into project siting, design, construction, and operation.

NATURE TRAIL-5 (Monitoring of Nature Trail Impacts): Impacts that could result from use of a nature trail within a Preserve will be monitored according to the Preserve Management Plan (Chapter 8) to ensure that uses do not conflict with the individual Preserve Management Plan. If use of a trail is found to conflict with the individual Preserve Management Plan, use of that trail will be discontinued until adjustments in the use can be made to reduce or eliminate conflicts. The Implementing Entity will make decisions about discontinuing or modifying use of a trail in consultation with the Preserve Manager or other applicable Preserve management agency or organization.

Condition 6. Avoid and Minimize Impacts When Re-Establishing or Establishing Wetlands

As discussed in Chapter 7, the Plan Permittees anticipate that 389 acres of Vernal Pool habitat will be re-established or established[21] within the Plan Area as part of the SSHCP Conservation Strategy. Although re-establishment or establishment of vernal pools is a Measurable Objective under this Plan, if not done correctly, the action could have an adverse impact on existing vernal pools.

RE-ESTABLISHMENT/ESTABLISHMENT-1 (Vernal Pool): Re-establish or establish Vernal Pool Wetland according to the following guidelines:

- Re-establishment will always take priority over establishment of vernal pools. Establishment will be permitted only after it has been determined that sites with the potential to re-establish vernal pools no longer exist in the Plan Area or cannot be acquired through a willing seller/buyer agreement.

[21] In the context of this Plan, "establish" is synonymous with "create."

- When possible, re-established or established sites will be located adjacent to an existing Preserve(s) to maximize connectivity and Preserve area.
- Re-establishment or establishment will not result in direct or indirect adverse impacts to the hydrologic regime of existing vernal pools. Vernal pool re-establishment or establishment actions will not remove more than 10% of any existing vernal pool watershed, as defined by the SSHCP LIDAR analysis (see Section 3.3 and Conservation Action VPI1.2 in Table 7.1).
- Vernal pool re-establishment will attempt to restore the historical density and range of vernal pool sizes to the maximum extent feasible using historical aerial photography of the site, if available. Where aerial photography of the site's historical conditions is not available, vernal pool re-establishment will include a range of pool sizes (area and depth) to accommodate the different habitat needs and life history characteristics of the vernal pool invertebrate Covered Species.
- Established vernal pools must be located on sites with vernal pool soils, defined as any Plan Area soil type where vernal pools currently exist.
- Established vernal pool sites will include a range of pool sizes to accommodate the different habitat needs and life history characteristics of the three vernal pool invertebrate Covered Species.
- The total density of vernal pools will not exceed 10% of the suitable soil areas in any vernal pool re-establishment and/or establishment site, unless it can be shown that the suitable areas of that site historically supported greater densities.
- Re-establishment or establishment may include inoculation when it is likely that no seed or cyst bank of vernal pool species remains at a site. Vernal Pool inocula will come from nearby vernal pools that are on the same geologic formation and soil type.

RE-ESTABLISHMENT/ESTABLISHMENT-2 (Vernal Pool Inocula Bank): Vernal pool re-establishment or establishment may include "soil inoculation" when it is likely that no seed or cyst bank of vernal pool species remains at a re-establishment or establishment site.

- During conversion of Urban Development Area vernal pools to a developed land cover type, project proponents will excavate and retain soil from vernal pools following protocols developed by the SSHCP Technical Advisory Committee (Chapter 9).

- Inocula applied in re-established or established vernal pools must be harvested from a vernal pool that is on the same geologic formation and soil type shown on the County General Soil Map as the re-establishment/establishment site. Geologic formations and soil types will follow U.S. Department of Agriculture Soil Conservation Service's 1993 Soil Survey of Sacramento County, California. Proposed off-site inocula sources must be approved by the Wildlife Agencies.

RE-ESTABLISHMENT/ESTABLISHMENT-3 (Re-Establishment/Establishment of Freshwater Marsh or Open Water Near Airports): During review of proposed re-establishment/establishment projects for freshwater marsh or open water on SSHCP Preserves, the Implementing Entity shall consider the potential for the location of the re-establishment/establishment projects to increase the risk of wildlife strikes or generation of ground fog at airports. If a re-establishment/ establishment project would result in (1) a net increase in open water or freshwater marsh acreage over baseline conditions[22] within 5 miles of Mather Field, Sacramento Executive Airport, or Franklin Field; or (2) replacement of open water/freshwater marsh habitat that is located 2 or more miles from Mather Field or Sacramento Executive Airport with open water/freshwater marsh habitat that is located less than 2 miles from those airports, a qualified biologist shall prepare a concise letter report. The letter report shall summarize the biologist's findings regarding (1) the species likely to use the re-established/established habitat, (2) a rough order of magnitude estimate on the peak number of birds that might use the re-established/established habitat, and (3) potential movement patterns for birds using the re-established/established habitat and whether they might cross through the airport safety zones (e.g., to reach foraging habitat or another wildlife attractant). The letter report will also provide recommendations to the Implementing Entity on how they could reduce any of the identified wildlife hazards if there are any feasible means to do so that would not conflict with the biological goals and measurable objectives of the Conservation Plan.

Condition 7. Avoid and Minimize Impacts to Streams and Creeks

AMMs associated with Condition 7 must be applied to all Covered Activities where a stream or creek is located within a project footprint.

[22] For purposes of establishing baseline conditions, Freshwater Marsh and Open Water acreages will be calculated using that version of the SSHCP Land Cover Type Map in existence as of the date that the SSHCP permit was issued to the Plan Permittees by the USFWS.

STREAM-1 (Laguna Creek Wildlife Corridor): A 150-foot setback measured from the top of the bank on both sides of the stream will be applied to Laguna Creek within the Urban Development Area (minimum 300-foot corridor width). If trails are located within the Laguna Creek Wildlife Corridor, the nearest edge of the trail will be located at least 80 feet from the top of the bank.

STREAM-2 (UDA Stream Setbacks): A 100-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all streams listed in Table 5-1 (see also Figure 2-4). If a stream reach supports woody riparian vegetation, the setback will be equal to the riparian edge plus 25 feet or will be the setback defined above, whichever is greater. If trails are located within the Stream Setback, the nearest edge of the trail will be located at least 50 feet from the top of the bank.

Table 5-1
Stream Setback Minimum Requirements in the Urban Development Area

Stream	Minimum Setback (from the Top of Bank Measured in Aerial Perspective) on Both Sides of the Stream
Elder Creek	100 feet
Frye Creek	100 feet or as depicted as part of the NewBridge development project hardline Preserve (see Appendix K)
Gerber Creek	100 feet
Morrison Creek	100 feet
Central Paseo	100 feet or as depicted as part of the Cordova Hills development project hardline Preserve (Appendix K)
Sun Creek	100 feet or as depicted as part of the Sun Creek development project hardline Preserve (see Appendix K)

STREAM-3 (Minor Tributaries to UDA Streams): A 25-foot setback measured from the top of the bank on both sides of the stream channel will be applied to all avoided first and second order tributaries to the streams listed in Table 5-1 and Laguna Creek. Refer to Objective W6 in Chapter 7 (Table 7-1) regarding avoided first and second order tributaries. Trails are not permitted within headwater ephemeral Stream Setbacks.

STREAM-4 (Minimize Effects from Temporary Channel Re-Routing): When an Urban Development Covered Activity temporarily re-routes a stream, creek, or drainage, the re-routing will be completed in a manner that minimizes impacts to beneficial uses and habitat. The following measures will be employed to minimize disturbances that will adversely impact water quality:

- No equipment will be operated in areas of flowing or standing water.
- Construction materials and heavy equipment must be stored outside of the active flow of any waters.

- When work within waters is necessary, the entire stream flow will be diverted around the work area.
- In the event of rain, the disturbed in-water work area will be temporarily stabilized before water body flow exceeds the capacity of the diversion structure. The disturbed water body will be stabilized so that the disturbed areas will not come in contact with the flow.
- Once construction is complete, all project-introduced material (e.g., pipes, gravel, cofferdam, sandbags) must be removed, leaving the water as it was before construction. Excess materials will be disposed of at an appropriate disposal site.
- All work areas will be effectively isolated from stream flows using suitable control measures before commencement of any in-water work. The diverted stream flow will not be contaminated by construction activities. Structures for isolating the in-water work area and/or diverting the stream flow (e.g., cofferdam, geo-textile silt curtain) will not be removed until all disturbed areas are cleaned and stabilized.
- Any flow diversion used during construction will be designed in a manner to prevent pollution and minimize siltation, and will provide flows to downstream reaches. Flows will be maintained to support existing aquatic life, riparian wetlands, and habitat that may be located upstream and downstream from any temporary diversion.
- All surface waters, including ponded waters, will be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity that may result in a discharge to waters.
- All temporary dewatering methods will be designed to have the minimum necessary impacts to waters to isolate the immediate work area. All dewatering methods will be installed such that natural flow is maintained upstream and downstream of the diversion area. Any temporary dams and diversions will be installed such that the diversion does not cause sedimentation, siltation, or erosion upstream or downstream of the diversion area. All dewatering methods will be removed immediately upon completion of diversion activities.
- A method of containment must be used below any bridge, boardwalk, and/or temporary crossing to prevent debris from falling into the waters through the entire duration of a project.

- If temporary surface water diversions and/or dewatering are anticipated, the Third-Party Project Proponent will develop and maintain on site a surface water diversion and/or dewatering plan. The plan(s) must be developed prior to initiation of any water diversions and will include the proposed method and duration of diversion activities. The plan(s) must be made available to Central Valley Water Board staff upon request.
- When work in a flowing stream is unavoidable and any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water will be allowed at all times to pass downstream to maintain beneficial uses of waters below the dam. Construction, dewatering, and removal of temporary cofferdams will not violate the turbidity, settle-able matter, pH, temperature, or dissolved oxygen requirements of any Water Quality Control Plan.
- Any temporary dam or other artificial obstruction will only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel that will cause little or no siltation. Stream flow will be temporarily diverted using gravity flow through temporary culverts or pipes, or pumped around the work site with the use of hoses.

STREAM-5 (Design for Stream Channel Re-Routing, Widening, or Deepening): When an Urban Development Covered Activity alters a stream, creek, or drainage by re-routing, widening, or deepening a channel, the project design will include the following:

- The main channel of a re-routed channel will be free to migrate laterally over its active and terrace floodplain.
- Channel geometry (plan, profile, and cross-section) of the site will be appropriate for the watershed location and physical/hydrologic condition.
- Local, native materials will be used as fill material to the extent practicable.
- Bioengineering techniques will be used for construction and maintenance of bank stabilization. Bioengineered bank stabilization structures will use vegetation in combination with bank reshaping; biodegradeable geotextile materials; and, in some cases, a minimal amount of rock or wood to the extent practicable to dissipate erosive energy. Third-Party Project Proponents will consult a professional engineer when considering using bioengineering techniques.
- All re-routed, widened, or deepened streams are required to establish Stream Setbacks with minimum widths required under STREAM-1, STREAM-2, or STREAM-3. All re-routed, widened, or deepened streams must re-establish/

establish and maintain native Woody Riparian land cover and/or native Grassland Riparian land cover in the entire Stream Setback.

Condition 8. Avoid and Minimize Impacts to Covered Species from Utility and Utility Maintenance Covered Activities

AMMs associated with Condition 8 must be applied to all Covered Activities associated with construction and maintenance of infrastructure projects.

UTILITY-1 (Avian Collision Avoidance): Installation of new, or relocation of existing, utility poles, lines, and cell towers located within the Preserve System or within 1,000 feet of a Preserve boundary will be coordinated with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. The applicant or relevant utility/service provider will install utility poles, lines, and cell towers in conformance with Avian Powerline Interaction Committee (APLIC) standards for collision-reducing techniques, as outlined in Reducing Avian Collisions with Power Lines: State of the Art in 2012 (APLIC 2012), or any superseding document issued by the APLIC.

UTILITY-2 (Utility Maintenance on Preserves): Utility maintenance inside SSHCP Preserves and SSHCP Preserve Setbacks containing vernal pools will occur only when vernal pools have been dry for 30 days, except in emergency situations related to human health and safety.

UTILITY-3 (Trenchless Construction Methods): Where a pipeline or conduit crosses an existing or planned Preserve or will be located between adjacent Preserves (e.g., under a roadway that has a Preserve on both sides), trenchless construction methods will be used to minimize impacts to the existing soil profile (including impacts to a hardpan or duripan) to maintain the perched aquifer in Vernal Pool Grassland land cover type.

UTILITY-4 (Siting of Entry and Exit Location): The entry and exit locations for the trenchless construction method (see Utility-3) will be sited to avoid impacts to vernal pools and Riparian Woodland, and to avoid direct take of SSHCP Covered Species.

Condition 9. Avoid and Minimize Impacts That Might Result From Removing or Breaching Levees to Establish or Re-establish Riparian Habitat

LEVEE-1 (Preparation of Hydrologic Analysis): Prior to approving a draft Preserve Management Plan that includes (1) modifying or breaching an existing levee, or (2) would place a potential impedance to high-water event flood-flows on the water side of an existing levee (including new riparian vegetation plantings or

other new Preserve facilities), a hydrologic analysis will be conducted. The Preserve activity will only be implemented if the hydrologic analysis concludes that the activity will not result in a substantial increase in flood stage elevations or flood risk on lands outside the Preserve.

Condition 10. Avoid and Minimize Impacts That Might Result From Potential Residual Contamination of Preserves and Related Exposure of People to Such Hazardous Materials

HAZARDOUS MATERIALS-1 (Preparation of Phase I Environmental Site Assessment): Prior to the acquisition of a preserve site or implementation of a stream or riparian restoration project, a Phase I Environmental Site Assessment shall be conducted in general accordance with the American Society for Testing and Materials Standard Practice E1527-05. The purpose of this Environmental Site Assessment is to identify, to the extent feasible pursuant to the American Society for Testing and Materials Standard, recognized environmental conditions in connection with the potential site. The term "recognized environmental condition" means the presence or likely presence of hazardous substances or petroleum products on the property under conditions that may indicate an existing release, a past release, or a material threat of release of these substances to the property. If the Phase 1 Environmental Site Assessment indicates the presence of a recognized environmental condition, the Implementing Entity shall consider the following options.

- Determine that the acquisition/project can proceed on the basis that the Habitat Plan goals and objectives can be met on the site even with the presence of a recognized environmental condition.
- Conduct a Phase II Environmental Site Assessment, including soil and groundwater testing, to further study the potential for contamination to limit the Implementing Entity's management activities.
- If the results of the Phase I (or Phase II) Environmental Site Assessment indicate that the Habitat Plan goals and objectives cannot be met on the site, the Implementing Entity should not acquire the site.

HAZARDOUS MATERIALS-2 (Contingency Plan): As part of each Preserve Management Plan or site restoration plan, a Contingency Plan shall be prepared to address the actions that would be taken during construction in the event that unexpected contaminated soil or groundwater is discovered. The Contingency Plan shall include health and safety considerations, handling and disposal of wastes, reporting requirements, and emergency procedures. The Contingency Plan shall include a requirement that if evidence of contaminated materials is encountered

during construction, construction would cease immediately and applicable requirements of the Comprehensive Environmental Release Compensation and Liability Act and the California Code of Regulations Title 22 regarding the disposal of waste would be implemented.

5.4.2 Covered Species Take Avoidance and Minimization Measures

The following section describes measures to avoid or minimize effects of Covered Activities on specific SSHCP Covered Species. Species-specific AMMs include species surveys, pre-construction surveys, and construction monitoring. Most species-specific AMMs require that species surveys be conducted if Covered Species modeled habitat is within the proposed Covered Activity footprint or within a specified distance of the proposed Covered Activity. Section 3.4 provides maps and descriptions of modeled habitat for each Covered Species. The AMMs described below apply to Covered Activities when Covered Species modeled habitat or a Covered Species occurrence are at a project site. The Implementing Entity and Wildlife Agencies may update specific SSHCP AMMs over the Permit Term to provide the best and most appropriate protective measures for a Covered Species.

General Covered Species Take Avoidance and Minimization Measures

The following AMMs will apply to all Covered Activities that are required to implement Covered Species take AMMs.

SPECIES-1 (Litter Removal Program): A litter control program will be instituted for the entire project site. All workers will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed trash containers. All garbage will be removed from the project site at the end of each work day, and construction personnel will not feed or otherwise attract wildlife to the area where construction activities are taking place.

SPECIES-2 (No Pets in Construction Areas): To avoid harm and harassment of native species, workers and visitors will not bring pets onto a project site.

SPECIES-3 (Take Report): If accidental injury or death of any Covered Species occurs, workers will immediately inform the approved biologist or on-site monitor and site supervisor. The approved biologist or on-site monitor will phone the appropriate contact person at the Implementing Entity. The Implementing Entity will immediately contact the Wildlife Agencies by telephone. A memorandum will be provided to the Implementing Entity and Wildlife Agencies within 1 working day of the incident. The report will provide the date and location of the incident, number of individuals taken,

the circumstances resulting in the take, and any corrective measures taken to prevent additional take.

SPECIES-4 (Post-Construction Compliance Report): A post-construction compliance report will be submitted to the SSHCP Implementing Entity within 30 calendar days of completion of construction activities or within 30 calendar days of any break in construction activity that lasts more than 30 days. The report will detail the construction start and completion dates, any information about meeting or failing to meet species take Avoidance and Minimization Measures (AMM), effectiveness of each AMM that was applied at the project site, and any known project effects to Covered Species.

Rare Plants

PLANT-1 (Rare Plant Surveys): If a Covered Activity project site contains modeled habitat for Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii)*, Bogg's Lake hedge-hyssop (*Gratiola heterosepala)*, dwarf downingia (*Downingia pusilla)*, Legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii)*, or Sanford's arrowhead (*Sagittaria sanfordii*), the Covered Activity project site will be surveyed for the rare plant by an approved biologist and following the California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or the most recent CDFW rare plant survey protocols. An approved biologist will conduct the field surveys and will identify and map plant species occurrences according to the protocols. See Chapter 10 for the process to submit survey information to the Plan Permittee and the Permitting Agencies.

PLANT-2 (Rare Plant Protection): If a rare plant listed in AMM PLANT-1 is detected within an area proposed to be disturbed by a Covered Activity or is detected within 250 feet of the area proposed to be disturbed by a Covered Activity, the Implementing Entity will assure one unprotected occurrence of the species is protected within a SSHCP Preserve before any ground disturbance occurs a the project site.

Sacramento and Slender Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is a federally and state endangered species and is ranked by the California Native Plant Society as a California Rare Plant Rank 1B.1 species. Slender Orcutt grass (*Orcuttia tenuis*) is a federally threatened and state endangered species and is ranked by the California Native Plant Society as a California Rare Plant Rank 1B.1 species. Both Orcutt grasses are very rare, and the likelihood of finding new occurrences within the Plan Area is low. Due to their rarity, take of either of these species is not permitted under the SSHCP, with the exception of take related to Preserve management and monitoring (see Section 5.2.7, SSHCP Preserve System Covered Activities).

ORCUTT-1 (Orcutt Grass Surveys): If a Covered Activity project site is located within 1 mile of the Mather Core Recovery Area and contains the Vernal Pool land cover type, the project site will be surveyed for Sacramento and slender Orcutt grass by an approved biologist following California Department of Fish and Wildlife (CDFW) rare plant survey protocols (CDFG 2009) or most recent CDFW guidelines to determine if Sacramento and/or slender Orcutt grass is present. An approved biologist will conduct the field investigation to identify and map occurrences. See Chapter 10 for the process to conduct and submit survey information.

ORCUTT-2 (Orcutt Grass Protection): Where known or new Sacramento or slender Orcutt grass occurrences are found, they will be protected within an SSHCP Preserve that is at least 50 acres. The occurrence will be located interior to the Preserve at a distance of no less than 300 feet from the edge of the Preserve boundary. If a Third-Party Project Proponent encounters a previously undiscovered occurrence of Sacramento or slender Orcutt grass on a Covered Activity project site, the Third-Party Project Proponent will contact the Implementing Entity or Land Use Authority Permittee with authority over the project, who will coordinate with the Wildlife Agencies for written concurrence of avoidance to ensure that the project does not cause take of the species.

California Tiger Salamander

To avoid direct and indirect effects of Covered Activities on California tiger salamander (*Ambystoma californiense*), the following AMMs will be implemented.

CTS-1 (California Tiger Salamander Daily Construction Schedule): Ground-disturbing Covered Activities within California tiger salamander modeled habitat (Figure 3-16) will occur outside the breeding and dispersal season (occur after July 31 and before October 15), to the maximum extent practicable. If Covered Activities must be implemented in modeled habitat (Figure 3-16) during the breeding and dispersal season (after October 15 and before July 31), construction activities will not start until 30 minutes after sunrise and must be complete 30 minutes prior to sunset.

CTS-2 (California Tiger Salamander Exclusion Fencing): If a Covered Activity must be implemented in modeled habitat (Figure 3-16) during the breeding and dispersal season (after October 15 and before July 31), exclusion fencing will be installed around the project footprint before October 15. Temporary high-visibility construction fencing will be installed along the edge of work areas, and exclusion fencing will be installed immediately outside of the temporary high-visibility construction fencing to exclude California tiger salamanders from entering the construction area or becoming entangled in the construction fencing. Exclusion fencing will be at least 1 foot tall and be buried

at least 6 inches below the ground to prevent salamanders from going under the fencing. Fencing will remain in place until all construction activities within the construction area are complete. No project activities will occur outside the delineated project footprint. An approved biologist must inspect the exclusion fencing and project site every morning before 7:00 a.m. for integrity and for any entrapped California tiger salamanders. If a California tiger salamander is encountered, refer to CTS-5, below. (However, the Implementing Entity may, with approval of the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), determine that it is appropriate for a Covered Activity project to not implement CTS-2 for certain long and linear roadway Covered Activity projects if it appears that the exclusion fencing will likely trap individuals or cause more take of California tiger salamander than it would prevent.)

CTS-3 (California Tiger Salamander Monitoring): If Covered Activities must be implemented in modeled habitat (Figure 3-16), an approved biologist experienced with California tiger salamander identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place, and will inspect the project site for California tiger salamander every morning before 7:00 a.m., or prior to construction activities. As required by BMP-8 (Training of Construction Staff), the approved biologist will also train construction personnel on the required California tiger salamander avoidance procedures, exclusion fencing, and correct protocols in the event that a California tiger salamander enters an active construction zone. If a California tiger salamander is encountered, refer to CTS-5, below.

CTS-4 (Avoid California Tiger Salamander Entrapment): If Covered Activities must be implemented in modeled habitat, all excavated steep-walled holes or trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes or trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within California tiger salamander modeled habitat will be inspected for California tiger salamanders by the approved biologist prior to being moved. If a California tiger salamander is encountered, refer to CTS-5, below.

CTS-5 (California Tiger Salamander Encounter Protocol): If a California tiger salamander is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately (California Department of Fish and Wildlife (CDFW)

and U.S. Fish and Wildlife Service (USFWS)). Construction activities will be suspended in a 100-foot radius of the animal until the animal is relocated by an approved biologist with appropriate handling permits from the Wildlife Agencies. Prior to relocation, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the salamander, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to USFWS and CDFW immediately. Any worker who inadvertently injures or kills a California tiger salamander or who finds dead, injured, or entrapped California tiger salamander(s) must immediately report the incident to the approved biologist.

CTS-6 (Erosion Control Materials in California Tiger Salamander Habitat): If erosion control (BMP-2) is implemented within California tiger salamander modeled habitat (Figure 3-16), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that salamanders are not trapped (no monofilament). Coconut coir matting and fiber rolls with burlap are examples of acceptable erosion control materials. This limitation will be communicated to the contractor through use of special provisions included in the bid solicitation package.

CTS-7 (Rodent Control): CTS-7 only applies to projects that are within California tiger salamander modeled habitat (Figure 3-16) and on Covered Activities. Rodent control will be allowed only in developed portions of a Covered Activity project site. Where rodent control is allowed, the method of rodent control will comply with the methods of rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.

Western Spadefoot

To avoid direct and indirect effects of Covered Activities on western spadefoot (*Spea hammondii*), the following AMMs will be implemented.

WS-1 (Western Spadefoot Work Window): Ground-disturbing Covered Activities within western spadefoot modeled habitat (Figure 3-17) will occur outside the breeding and dispersal season (after May 15 and before October 15), to the maximum extent practicable.

WS-2 (Western Spadefoot Exclusion Fencing): If Covered Activities must be implemented in modeled habitat (Figure 3-17) after October 15 and before May 15, exclusion fencing

will be installed around the project footprint before October 15, and the project site must be monitored by an approved biologist following rain events. Temporary high-visibility construction fencing will be installed along the edge of work areas, and silt fencing will be installed immediately behind the temporary high-visibility construction fencing to exclude western spadefoot from entering the construction area. Fencing will remain in place until all construction activities within the construction area are completed. No project activities will occur outside the delineated project footprint. If a western spadefoot is encountered, refer to WS-6, below.

WS-3 (Western Spadefoot Monitoring): If Covered Activities must be implemented in modeled habitat (Figure 3-17) in the breeding and dispersal season (after October 15 and before May 15), an approved biologist experienced with western spadefoot identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place, and will inspect the project site daily for western spadefoot prior to construction activities. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western spadefoot enters an active construction zone (i.e., outside the buffer zone). If a western spadefoot is encountered, refer to WS-6, below.

WS-4 (Avoid Western Spadefoot Entrapment): If a Covered Activity occurs in western spadefoot modeled habitat (Figure 3-17), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western spadefoot modeled habitat will be inspected for western spadefoot by the approved biologist prior to being moved. If a western spadefoot is encountered, refer to WS-6, below.

WS-5 (Erosion Control Materials in Western Spadefoot Habitat): If erosion control (BMP-2) is implemented within western spadefoot modeled habitat (Figure 3-17), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that western spadefoots are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

WS-6 (Western Spadefoot Encounter Protocol): If Covered Activities must be implemented in modeled habitat (Figure 3-17) during the breeding and dispersal season (after October 15 and before May 15), and a western spadefoot is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the western spadefoot within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife immediately. Any worker who inadvertently injures or kills a western spadefoot or who finds dead, injured, or entrapped western spadefoot(s) must immediately report the incident to the approved biologist.

Giant Gartersnake

To avoid direct and indirect effects of Covered Activities on giant gartersnake (*Thamnophis gigas*), the following AMMs will be implemented.

GGS-1 (Giant Gartersnake Surveys): If the SSHCP giant gartersnake modeled habitat maps (Figure 3-18) show that modeled habitat for giant gartersnake is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate giant gartersnake aquatic habitat within the project footprint and adjacent areas within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-18, giant gartersnake aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, agricultural ditches, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide these maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated giant gartersnake habitat must also be noted on plans that are submitted to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as giant gartersnake habitat is identified and fully avoided. Otherwise, Covered Activities must comply with GGS-2 through GGS-8, below. See Chapter 10 for the process to conduct and submit survey information.

GGS-2 (Giant Gartersnake Work Window): Covered Activities that do not fully avoid giant gartersnake modeled habitat (Figure 3-18) will be conducted during the snake's active

season. Construction and ground-disturbing activities will be initiated after May 1 and will end prior to September 15. If it appears that construction activities may go beyond September 15, the Third-Party Project Proponent or Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1. The Local Land Use Permittee and the Implementing Entity will discuss with the Wildlife Agencies additional measures necessary to minimize take.

GGS-3 (Giant Gartersnake Monitoring): If a Covered Activity is occurring in giant gartersnake modeled habitat (Figure 3-18), an approved biologist experienced with giant gartersnake identification and behavior will monitor the project site, including the integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for giant gartersnake prior to construction activities. If a giant gartersnake is encountered, refer to GGS-7. The approved biologist will also train construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a giant gartersnake enters an active construction zone (i.e., outside the buffer zone).

GGS-4 (Giant Gartersnake Habitat Dewatering and Exclusion): If construction activities will occur in giant gartersnake aquatic habitat, aquatic habitat will be dewatered and then remain dry and absent of aquatic prey (e.g., fish and tadpoles) for 15 days prior to initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to giant gartersnake. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent snakes from attempting to move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify the construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Giant gartersnake habitat outside construction fencing will be avoided by all construction personnel. The fencing and the work area will be inspected by the approved biologist to ensure that the fencing is intact and that no snakes have entered the work area before the start of each work day. The fencing will be maintained by the contractor until completion of the project. If giant gartersnake is encountered, refer to GGS-7, below.

GGS-5 (Avoid Giant Gartersnake Entrapment): If a Covered Activity occurs in giant gartersnake modeled habitat (Figure 3-18), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or

provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within giant gartersnake modeled habitat will be inspected for giant gartersnake by the approved biologist prior to being moved. If a giant gartersnake is encountered, refer to GGS-7.

GGS-6 (Erosion Control Materials in Giant Gartersnake Habitat): If erosion control (BMP-2) is implemented within giant gartersnake modeled habitat (Figure 3-18), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure snakes are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

GGS-7 (Giant Gartersnake Encounter Protocol): If a giant gartersnake is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the giant gartersnake within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a giant gartersnake or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.

GGS-8 (Giant Gartersnake Post-Construction Restoration): After completion of ground-disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation. Refer to the U.S. Fish and Wildlife Service's (USFWS) Guidelines for the Restoration and/or Replacement of Giant Gartersnake Habitat (USFWS 1997), or the most current USFWS guidelines at the time of the

activity. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.

Western Pond Turtle

To avoid direct and indirect effects of Covered Activities on western pond turtle (*Actinemys marmorata*), the following AMMs will be implemented.

WPT-1 (Western Pond Turtle Surveys): If the SSHCP western pond turtle modeled habitat maps (Figure 3-19) show that modeled habitat for western pond turtle is present within a Covered Activity's project footprint or within 300 feet of a project footprint, then an approved biologist will conduct a field investigation to delineate western pond turtle aquatic habitat within the project footprint and within 300 feet of the project footprint. In addition to the SSHCP land cover types shown in Figure 3-19, western pond turtle aquatic habitat includes, but is not limited to, low-gradient streams and creeks, open water, freshwater marsh, and rice fields. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential sites and provide those maps to the Local Land Use Permittees and the Implementing Entity. Locations of delineated western pond turtle habitat must also be noted on plans that are submitted to a Local Land Use Permittee. The applicant will use this information to finalize project design. Covered Activities may occur throughout the year as long as western pond turtle habitat is identified and fully avoided. Otherwise, Covered Activities must comply with WPT-2 through WPT-9. See Chapter 10 for the process to conduct and submit survey information.

WPT-2 (Western Pond Turtle Work Window): Maintenance and improvements to existing structures may occur throughout the year as long as western pond turtle habitat is identified and avoided, and movement of equipment is confined to existing roads. Otherwise, construction and ground-disturbing Covered Activities must be conducted outside of western pond turtle's active season. Construction and ground-disturbing activities will be initiated after May 1 and will commence prior to September 15. If it appears that construction activities may go beyond September 15, the appropriate Plan Permittee will contact the Local Land Use Permittee and the Implementing Entity as soon as possible, but not later than September 1, to determine if additional measures are necessary to minimize take.

WPT-3 (Western Pond Turtle Monitoring): If a Covered Activity is occurring in western pond turtle modeled habitat (Figure 3-19), an approved biologist experienced with western pond turtle identification and behavior will monitor the project site, including the

integrity of any exclusion fencing. The approved biologist will be on site daily while construction-related activities are taking place in aquatic habitat or within 300 feet of aquatic habitat, and will inspect the project site daily for western pond turtle prior to construction activities. The approved biologist will also training construction personnel on the required avoidance procedures, exclusion fencing, and protocols in the event that a western pond turtle enters an active construction zone (i.e., outside the buffer zone).

WPT-4 (Western Pond Turtle Habitat Dewatering and Exclusion): If construction activities will occur in western pond turtle aquatic habitat, aquatic habitat for the turtle will be dewatered and then remain dry and absent of aquatic prey (e.g., crustaceans and other aquatic invertebrates) for 15 days prior to the initiation of construction activities. If complete dewatering is not possible, the Implementing Entity will be contacted to determine what additional measures may be necessary to minimize effects to western pond turtle. After aquatic habitat has been dewatered 15 days prior to construction activities, exclusion fencing will be installed extending a minimum of 300 feet into adjacent uplands to isolate both the aquatic and adjacent upland habitat. Exclusionary fencing will be erected 36 inches above ground and buried at least 6 inches below the ground to prevent turtles from attempting to burrow or move under the fence into the construction area. In addition, high-visibility fencing will be erected to identify construction limits and to protect adjacent habitat from encroachment of personnel and equipment. Western pond turtle habitat outside construction fencing will be avoided by all construction personnel. The fencing and work area will be inspected by the approved biologist to ensure that the fencing is intact and that no turtles have entered the work area before the start of each work day. Fencing will be maintained by the contractor until completion of the project. If, after exclusion fencing and dewatering, western pond turtles are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will discuss the next best steps with the Implementing Entity and Wildlife Agencies.

WPT-5 (Avoid Western Pond Turtle Entrapment): If a Covered Activity occurs within western pond turtle modeled habitat (Figure 3-19), all excavated steep-walled holes and trenches more than 6 inches deep will be covered with plywood (or similar material) or provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each work day or 30 minutes prior to sunset, whichever occurs first. All steep-walled holes and trenches will be inspected by the approved biologist each morning to ensure that no wildlife has become entrapped. All construction pipes, culverts, similar structures, construction equipment, and construction debris left overnight within western pond turtle modeled habitat will be inspected for western pond turtle by the approved biologist prior to being moved.

WPT-6 (Erosion Control Materials in Western Pond Turtle Habitat): If erosion control (BMP-2) is implemented within western pond turtle modeled habitat (Figure 3-19), non-entangling erosion control material will be used to reduce the potential for entrapment. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material will be used to ensure that turtles are not trapped (no monofilament). Coconut coir matting and fiber rolls containing burlap are examples of acceptable erosion control materials.

WPT-7 (Western Pond Turtle Modeled Habitat Speed Limit): Covered Activity construction and maintenance vehicles will observe a 20-mile-per-hour speed limit within western pond turtle modeled upland habitat (Figure 3-19).

WPT-8 (Western Pond Turtle Encounter Protocol): If a western pond turtle is encountered during construction activities, the approved biologist will notify the Wildlife Agencies immediately. Construction activities will be suspended in a 100-foot radius of the animal until the animal leaves the project site on its own volition. If necessary, the approved biologist will notify the Wildlife Agencies to determine the appropriate procedures related to relocation. If the animal is handled, a report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the turtle, within 1 business day to the Wildlife Agencies. The biologist will report any take of listed species to the U.S. Fish and Wildlife Service immediately. Any worker who inadvertently injures or kills a western pond turtle or who finds one dead, injured, or entrapped must immediately report the incident to the approved biologist.

WPT-9 (Western Pond Turtle Post-Construction Restoration): After completion of ground-disturbing Covered Activities, the applicant will remove any temporary fill and construction debris and will restore temporarily disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Implementing Entity. Restoration work may include replanting emergent aquatic vegetation and placing appropriate artificial or natural basking areas in waterways and wetlands. A photo documentation report showing pre- and post-project conditions will be submitted to the Implementing Entity 1 month after implementation of the restoration.

Tricolored Blackbird

To avoid direct and indirect effects of Covered Activities on tricolored blackbird (*Agelaius tricolor*), the following AMMs will be implemented.

TCB-1 (Tricolored Blackbird Surveys): If modeled habitat for tricolored blackbird is present within a Covered Activity's project footprint or within 500 feet of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential nesting or foraging sites are present within the project footprint and adjacent areas within 500 feet of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Within the Plan Area, potential tricolor blackbird nest sites are often associated with freshwater marsh and seasonal wetlands, or in thickets of willow, blackberry, wild rose, thistle, and other thorny vegetation. Tricolored blackbirds are also known to nest in crops associated with dairy farms. Foraging habitat is associated with annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields (such as large tracts of alfalfa and pastures with continuous haying schedules and recently tilled fields), cattle feedlots, and dairies. The Third-Party Project Proponent will map all existing or potential nesting or foraging sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

TCB-2 (Tricolored Blackbird Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 500 feet of a project footprint if existing or potential nest sites were found during design surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and within 3 days of ground-disturbing activities, and within the proposed project footprint and 500 feet of the proposed project footprint to determine the presence of nesting tricolored blackbird. Pre-construction surveys will be conducted during the breeding season (March 1 through August 31). Surveys conducted in February (to meet pre-construction survey requirements for work starting in March) must be conducted within 14 days and 3 days in advance of ground-disturbing activities. If a nest is present, then TCB-3 and TCB-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and the Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

TCB-3 (Tricolored Blackbird Nest Buffer): If active nests are found within the project footprint or within 500 feet of any project-related Covered Activity, the Third-Party Project Proponent will establish a 500-foot temporary buffer around the active nest until the young have fledged.

TCB-4 (Tricolored Blackbird Nest Buffer Monitoring): If nesting tricolored blackbirds are present within the project footprint or within 500 feet of any project-related Covered

Activity, then an approved biologist experienced with tricolored blackbird behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place near the disturbance buffer. Work within the nest disturbance buffer will not be permitted. If the approved biologist determines that tricolored blackbirds are exhibiting agitated behavior, construction will cease until the buffer size is increased to a distance necessary to result in no harm or harassment to the nesting tricolored blackbirds. If the biologist determines that the colonies are at risk, a meeting with the Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will be held to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a tricolored blackbird flies into an active construction zone (i.e., outside the buffer zone).

TCB-5 (Timing of Pesticide Use and Harvest Timing on Agricultural Preserves): On SSHCP Agricultural Preserves, pesticides (including herbicides) will not be applied from January 1 through July 15.

Swainson's Hawk

To avoid direct and indirect effects of Covered Activities on Swainson's hawk (*Buteo swainsoni*), the following AMMs will be implemented.

SWHA-1 (Swainson's Hawk Surveys): If modeled habitat for Swainson's hawk (Figure 3-25) is present within a Covered Activity's project footprint or within 0.25 mile of a project footprint, then an approved biologist will conduct a survey to determine if existing or potential nesting sites are present within the project footprint and adjacent areas within 0.25 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Nest sites are often associated with Riparian land cover, but also include lone trees in fields, trees along roadways, and trees around structures. Nest trees may include, but are not limited to, Fremont's cottonwood (*Populus fremontii*), oaks (*Quercus* spp.), willows (*Salix* spp.), walnuts (*Juglans* spp.), eucalyptus (*Eucalyptus* spp.), pines (*Pinus* spp.), and Deodar cedar (*Cedrus deodara*). The Third-Party Project Proponent will map all existing and potential nesting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

SWHA-2 (Swainson's Hawk Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present within a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites were found during initial surveys and construction activities will occur during the breeding season (March 1 through September 15). An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities to determine presence of nesting Swainson's hawk. Pre-construction surveys will be conducted during the breeding season (March 1 through September 15). If a nest is present, then SWHA-3 and SWHA-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

SWHA-3 (Swainson's Hawk Nest Buffer): If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.25 mile disturbance buffer around the active nest until the young have fledged, with concurrence from the Wildlife Agencies.

SWHA-4 (Swainson's Hawk Nest Buffer Monitoring): If nesting Swainson's hawks are present within the project footprint or within 0.25 mile of any project-related Covered Activity, then an approved biologist experienced with Swainson's hawk behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting Swainson's hawks begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a Swainson's hawk flies into an active construction zone (i.e., outside the buffer zone).

Greater Sandhill Crane

To avoid direct and indirect effects of Covered Activities on greater sandhill crane (*Grus canadensis*), the following AMMs will be implemented.

GSC-1 (Greater Sandhill Crane Surveys): If modeled habitat for greater sandhill crane (Figure 3-22) is present within a Covered Activity's project footprint or within 0.5 mile of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential roosting sites are present within the project footprint and adjacent areas within 0.5 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Roosting sites within the Plan Area are often associated with flooded fields, seasonal wetlands, and freshwater marsh. The Third-Party Project Proponent will map all existing or potential roosting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Roosting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

GSC-2 (Greater Sandhill Crane Pre-Construction Surveys): Pre-construction surveys will be required to determine if active roosting sites are present within a project footprint or within 0.5 mile of a project footprint if existing or potential roosting sites were found during initial surveys and construction activities will occur when wintering flocks are present within the Plan Area (September 1 through March 15). An approved biologist will conduct pre-construction surveys within 15 days of ground-disturbing activities, and within 0.5 mile of a project footprint, to determine presence of roosting greater sandhill cranes. Pre-construction surveys will be conducted September 1 through March 15, when wintering flocks are present within the Plan Area. If birds are present, then GSC-3, GSC-4, and GSC-5 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

GSC-3 (Greater Sandhill Crane Roosting Buffer): If active roosting sites are found within the project footprint or within 0.5 mile of any project-related Covered Activity, the Third-Party Project Proponent will establish a 0.5 mile temporary roosting disturbance buffer around the roosting site until the cranes have left.

GSC-4 (Greater Sandhill Crane Visual Barrier): Greater sandhill cranes have low tolerance for human disturbance, and such disturbance has caused cranes to abandon foraging and roosting sites. Repeat disturbance affects their ability to feed and store energy needed for survival. If project-related activities occur within 0.5 mile of a known roosting site as identified by surveys conducted during implementation of GSC-1 or GSC-2, a visual barrier will be constructed.

GSC-5 (Greater Sandhill Crane Roosting Buffer Monitoring): If roosting sites are found within the project footprint or within 0.50 mile of any project-related Covered Activity, an

approved biologist experienced with greater sandhill crane behavior will be retained by the Third-Party Project Proponent to monitor the roosting site throughout the roosting season and to determine when the birds have left. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary disturbance buffer can only occur with the written permission of the Implementing Entity and Wildlife Agencies. If greater sandhill cranes are abandoning their roosting and/or forage sites, the approved biologist will have the authority to shut down construction activities. If roost abandonment occurs, the approved biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid harm and harassment of individuals. The approved biologist will also train construction personnel on the avoidance procedures, buffer zones, and protocols in the event that greater sandhill cranes move into an active construction zone (i.e., outside the buffer zone).

Western Burrowing Owl

To avoid direct and indirect effects of Covered Activities on western burrowing owl (*Athene cunicularia*), the following AMMs will be implemented.

WBO-1 (Western Burrowing Owl Surveys): Surveys within modeled habitat are required for both the breeding and non-breeding season. If the project site falls within modeled habitat, an approved biologist will survey the project site and map all burrows, noting any burrows that may be occupied. Occupied burrows are often (but not always) indicated by tracks, feathers, egg shell fragments, pellets, prey remains, and/or excrement. Surveying and mapping will be conducted by the approved biologist while walking transects throughout the entire project site plus all accessible areas within a 250-foot radius from the project site. The centerline of these transects will be no more than 50 feet apart and will vary in width to account for changes in terrain and vegetation that can preclude complete visual coverage of the area. For example, in hilly terrain with patches of tall grass, transects will be closer together, and in open areas with little vegetation, they can be 50 feet apart. This methodology is consistent with current survey protocols for this species (California Burrowing Owl Consortium 1993). Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If suitable habitat is identified during the initial survey, and if the project does not fully avoid the habitat, pre-construction surveys will be required. Burrowing owl habitat is fully avoided if project-related activities do not impinge on a 250-foot buffer established by the approved biologist around suitable burrows. See Chapter 10 for the process to conduct and submit survey information.

WBO-2 (Western Burrowing Owl Pre-Construction Surveys): Prior to any Covered Activity ground disturbance, an approved biologist will conduct pre-construction surveys in all areas that were identified as suitable habitat during the initial surveys. The purpose of the pre-construction surveys is to document the presence or absence of burrowing owls on the project site, particularly in areas within 250 feet of construction activities. To maximize the likelihood of detecting owls, the pre-construction survey will last a minimum of 3 hours. The survey will begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total), or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required for large project sites. A minimum of two pre-construction surveys will be conducted (if owls are detected on the first survey, a second survey is not needed). All owls observed will be counted and their location will be mapped. Surveys will conclude no more than 2 calendar days prior to construction. Therefore, the Third-Party Project Proponent must begin surveys no more than 4 days prior to construction (2 days of surveying plus up to 2 days between surveys and construction). To avoid last-minute changes in schedule or contracting that may occur if burrowing owls are found, the Third-Party Project Proponent may also conduct a preliminary survey up to 15 days before construction. This preliminary survey may count as the first of the two required surveys as long as the second survey concludes no more than 2 calendar days in advance of construction.

WBO-3 (Burrowing Owl Avoidance): If western burrowing owl or evidence of western burrowing owl is observed on the project site or within 250 feet of the project site during pre-construction surveys, then the following will occur:

During Breeding Season: If the approved biologist finds evidence of western burrowing owls within a project site during the breeding season (February 1 through August 31), all project-related activities will avoid nest sites during the remainder of the breeding season or while the nest remains occupied by adults or young (nest occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance is establishment of a minimum 250-foot buffer zone around nests. Construction and other project-related activities may occur outside of the 250-foot buffer zone. Construction and other project-related activities may be allowed inside of the 250-foot non-disturbance buffer during the breeding season if the nest is not disturbed, and the Third-Party Project Proponent develops an avoidance, minimization, and monitoring plan that is approved by the Implementing Entity and Wildlife Agencies prior to project construction based on the following criteria:

- The Implementing Entity and Wildlife Agencies approve of the avoidance and minimization plan provided by the project applicant.

- An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction).
- The same approved biologist monitors the owls during construction and finds no change in owl nesting and foraging behavior in response to construction activities.

If there is any change in owl nesting and foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer. Construction cannot resume within the 250-foot buffer until any owls present are no longer affected by nearby construction activities, and with written concurrence from the Wildlife Agencies.

If monitoring by the approved biologist indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use, the non-disturbance buffer zone may be removed if approved by the Wildlife Agencies. The approved biologist will excavate the burrow in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl to prevent reoccupation after receiving approval from the Wildlife Agencies.

The Implementing Entity and Wildlife Agencies will respond to a request from the Third-Party Project Proponent to review the proposed construction monitoring plan within 21 days.

During Non-Breeding Season: During the non-breeding season (September 1 through January 31), the approved biologist will establish a minimum 250-foot non-disturbance buffer around occupied burrows. Construction activities outside of this 250-foot buffer will be allowed. Construction activities within the non-disturbance buffer will be allowed if the following criteria are met to prevent owls from abandoning over-wintering sites:

- An approved biologist monitors the owls for at least 3 days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).
- The same approved biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.
- If there is any change in owl foraging behavior as a result of construction activities, the approved biologist will have authority to shut down activities within the 250-foot buffer.
- If the owls are gone for at least 1 week, the Third-Party Project Proponent may request approval from the Implementing Entity and Wildlife Agencies that an approved biologist excavate usable burrows and install one-way exclusionary

devices to prevent owls from re-occupying the site. After all usable burrows are excavated, the buffer zone will be removed and construction may continue.

Monitoring must continue as described above for the non-breeding season as long as the burrow remains active.

WBO-4 (Burrowing Owl Construction Monitoring): During construction of Covered Activities, 250-foot construction buffer zones will be established and maintained around any occupied burrow. An approved biologist will monitor the site to ensure that buffers are enforced and owls are not disturbed. The approved biologist will also train construction personnel on avoidance procedures, buffer zones, and protocols in the event that a burrowing owl flies into an active construction zone.

WBO-5 (Burrowing Owl Passive Relocation): Passive relocation is not allowed without the express written approval of the Wildlife Agencies. Passive owl relocation may be allowed on a case-by-case basis on project sites during the non-breeding season (September 1 through January 31) with the written approval of the Wildlife Agencies if the other measures described in this condition preclude work from continuing. Passive relocation must be done in accordance with the latest California Department of Fish and Wildlife guidelines for burrowing owl. Passive relocation will only be proposed if the burrow needing to be removed or with the potential to collapse from construction activities is the result of a Covered Activity. If passive relocation is approved by the Wildlife Agencies, an approved biologist can passively exclude birds from their burrows during the non-breeding season by installing one-way doors in burrow entrances. These doors will be in place for 48 hours to ensure that owls have left the burrow, and then the biologist will excavate the burrow to prevent reoccupation. Burrows will be excavated using hand tools only. During excavation, an escape route will be maintained at all times. This may include inserting an artificial structure into the burrow to avoid having materials collapse into the burrow and trap owls inside. Other methods of passive relocation, based on best available science, may be approved by the Wildlife Agencies over the 50-year Permit Term.

WBO-6 (Burrowing Owl Timing of Maintenance Activities): All activities adjacent to existing or planned Preserves, Preserve Setbacks, or Stream Setback areas will be seasonally timed, when safety permits, to avoid or minimize adverse effects on occupied burrows.

WBO-7 (Rodent Control): Rodent control will be allowed only in developed portions of a Covered Activity project site within western burrowing owl modeled habitat. Where rodent control is allowed, the method of rodent control will comply with the methods of

rodent control discussed in the 4(d) Rule published in the U.S. Fish and Wildlife Service's (2004) final listing rule for tiger salamander.

Covered Raptor Species

To avoid direct and indirect effects of Covered Activities on covered raptor species, the following AMMs will be implemented. This measure applies to Cooper's hawk (*Accipiter cooperii*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), and white-tailed kite (*Elanus leucurus*). The following AMMs do not apply to ferruginous hawk (*Buteo regalis*), as they do not nest in the Plan Area. The following AMMs also do not apply to Swainson's hawk or burrowing owl, as specific AMMs have been developed for these covered raptor species.

RAPTOR-1 (Raptor Surveys): If modeled habitat for a covered raptor species (Figures 3-20, 3-23, 3-24, or 3-28) is present within a Covered Activity's project footprint or within 0.25 mile of a project footprint, then an approved biologist will conduct a field investigation to determine if existing or potential nesting sites are present within the project footprint and adjacent areas within 0.25 mile of the project footprint. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. The Third-Party Project Proponent will map all existing or potential nesting sites and provide these maps to the Local Land Use Permittees and Implementing Entity. Nesting sites must also be noted on plans that are submitted to a Local Land Use Permittee. See Chapter 10 for the process to conduct and submit survey information.

RAPTOR-2 (Raptor Pre-Construction Surveys): Pre-construction surveys will be required to determine if active nests are present with a project footprint or within 0.25 mile of a project footprint if existing or potential nest sites are found during initial surveys and construction activities will occur during the raptor breeding season. An approved biologist will conduct pre-construction surveys within 30 days and 3 days of ground-disturbing activities within the proposed project footprint and within 0.25 mile of the proposed project footprint to determine presence of nesting covered raptor species. Pre-construction surveys will be conducted during the raptor breeding season. If a nest is present, then RAPTOR-3 and RAPTOR-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

RAPTOR-3 (Raptor Nest/Roost Buffer): If active nests are found within the project footprint or within 0.25 mile of any project-related Covered Activity, the Third-Party Project

Proponent will establish a 0.25 mile temporary nest disturbance buffer around the active nest until the young have fledged.

RAPTOR-4 (Raptor Nest/Roost Buffer Monitoring): If project-related Covered Activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then an approved biologist experienced with raptor behavior will be retained by the Third-Party Project Proponent to monitor the nest throughout the nesting season and to determine when the young have fledged. The approved biologist will be on site daily while construction-related activities are taking place within the disturbance buffer. Work within the temporary nest disturbance buffer can occur with the written permission of the Implementing Entity and Wildlife Agencies. If nesting raptors begin to exhibit agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, the approved biologist/monitor will have the authority to shut down construction activities. If agitated behavior is exhibited, the biologist, Third-Party Project Proponent, Implementing Entity, and Wildlife Agencies will meet to determine the best course of action to avoid nest abandonment or take of individuals. The approved biologist will also train construction personnel on the required avoidance procedures, buffer zones, and protocols in the event that a covered raptor species flies into an active construction zone (i.e., outside the buffer zone).

Western Red Bat

To avoid direct and indirect effects of Covered Activities on western red bat (*Lasiurus blossevillii*), the following AMMs will be implemented.

BAT-1 (Winter Hibernaculum Surveys): If modeled habitat (Figure 3-30) for western red bat is present within 300 feet of a Covered Activity's project footprint, then an approved biologist will conduct a field investigation of the project footprint and adjacent areas within 300 feet of a project footprint to determine if a potential winter hibernaculum is present, and to identify and map potential hibernaculum sites. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. If potential hibernaculum sites are found, the Third-Party Project Proponent will note their locations on project designs and will design the project to avoid all areas within a 300-foot buffer around the potential hibernaculum sites. Winter hibernaculum habitat is fully avoided if project-related activities do not impinge on a 300-foot buffer established by the approved biologist around an existing or potential winter hibernaculum site. See Chapter 10 for the process to conduct and submit survey information.

BAT-2 (Winter Hibernaculum Pre-Construction Surveys): If the Third-Party Project Proponent elects not to avoid potential winter hibernaculum sites within the project footprint plus a 300-foot buffer, additional surveys are required. Prior to any ground disturbance related to Covered Activities, an approved biologist will conduct a pre-construction survey within 3 days of ground-disturbing activities within the project footprint and 300 feet of the project footprint to determine the presence of winter hibernaculum sites. Pre-construction surveys will be conducted during the winter hibernaculum season (November 1 through March 31). If a winter hibernaculum is present, then BAT-3 and BAT-4 will be implemented. The approved biologist will inform the Land Use Authority Permittee and Implementing Entity of species locations, and they in turn will notify the Wildlife Agencies.

BAT-3 (Winter Hibernaculum Buffer): If active winter hibernaculum sites are found within the project footprint or within 300 feet of the project footprint, the Third-Party Project Proponent will establish a 300-foot temporary disturbance buffer around the active winter hibernaculum site until bats have vacated the hibernaculum and the Implementing Entity and Wildlife Agencies concur.

BAT-4 (Bat Eviction Methods): An approved biologist will determine if non-maternity and non-hibernaculum day and night roosts are present on the project site. If necessary, an approved biologist will use safe eviction methods to remove bats if direct impacts to non-maternity and non-hibernaculum day and night roosts cannot be avoided. If a winter hibernaculum site is present, Covered Activities will not occur until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to the Wildlife Agencies.

APPENDIX G

PRELIMINARY GEOTECHNICAL AND GEOLOGICAL CONSULTATION

PRELIMINARY GEOTECHNICAL AND GEOLOGICAL CONSULTATION WEST JACKSON HIGHWAY MASTER PLAN AREA

Prepared For:
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Prepared By:
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22 January 2014
731611701

LANGAN TREADWELL ROLLO

22 January 2014

Mr. Josh Leachman
StoneBridge Properties LLC
3500 American River Drive
Sacramento, California 95864

Mr. Kevin Molloy
Granite Construction Company
8950 Cal Center Drive, Suite 201
Sacramento, California 95826

Re: Preliminary Geotechnical Report
West Jackson Highway Master Plan Area
Sacramento, California
Langan Project No.: 731611701

Dear Mr. Leachman and Mr. Molloy:

Langan Treadwell Rollo (T&R) is pleased to submit this report presenting the results of our preliminary geotechnical and geological consultation for the West Jackson Highway Master Plan (WJHMP) Area in Sacramento County, California. The WJHMP Area includes properties owned by Teichert Land Co. (Teichert) and Granite Construction Company (Granite) (collectively, the Participant Properties) as well as properties not owned by these companies (collectively, the Non-Participant Properties). The WJHMP Area is located south of Jackson Highway between South Watt Avenue and Excelsior Road and north of Jackson Highway between Mayhew and Excelsior Roads. The project encompasses approximately 5,913 acres.

The majority of the properties owned by Teichert and Granite are in various stages of gravel mining (active sand and gravel extraction areas, sedimentation ponds, drying beds, material conveyance, reclamation, etc.), scheduled to be mined in the near future, or not planned to be mined.

The results of our studies indicate the site conditions generally fall into one of two categories: 1) undisturbed areas, and 2) historically or actively mined areas. Undisturbed areas are underlain by native soil consisting of medium dense silty and clayey sand and very stiff sandy clay and sandy silt underlain by medium dense to very dense clayey sand with gravel and dense sandy gravel, which is in turn underlain by medium dense to very dense sand and silty sand with varying amounts of silt and clay.

Some of the mined areas have variable thicknesses of fill. The fill includes documented and undocumented fill, drying beds and sediment within wash water ponds. Documented fill typically consists of compacted stiff to hard clay, sandy clay, and clayey silts with varying amounts of sand. Undocumented or uncontrolled fill typically consists of clay, sandy clay, clayey silts with varying amounts of sand and variable stiffness/density and moisture content. Drying bed material is generally soft to medium stiff, wet, and considered to be moderately compressible. The fill and drying bed materials are underlain by native soil consisting of stiff to hard clay with varying amounts of sand, gravel and cobbles, and clay, and silt with varying amounts of sand, gravel, and cobbles, and layers of medium dense to very dense sand and silty sand with varying amounts of silt and clay.

Based on the results of this study, we conclude the primary geotechnical concerns affecting the design and construction of improvements within the Master Plan area are;

- the presence of undocumented fill,
- sediment in existing ponds,
- settlement of drying bed material and undocumented fill under the weight of new fill and building loads,
- slope inclination and potential for exposed granular layers in side slopes,
- and presence of expansive soil.

This report contains preliminary conclusions regarding subsurface conditions and soil characteristics at the site based on our review and interpretation of available reports and data. Detailed geotechnical studies should be performed during final design for proposed structures to be built on the properties. These studies could include subsurface exploration within the site, laboratory testing of representative soil samples, and engineering evaluations to develop geotechnical recommendations for the proposed structures.

We appreciate the opportunity to be of service to you on this project. If you have any questions, please call.

Sincerely,
Langan Treadwell Rollo

Roman D. Nelson, P.E.
Senior Staff Engineer

Haze Rodgers, G.E.
Senior Project Engineer



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1.0 INTRODUCTION

This report presents the results of our preliminary geotechnical and geological consultation for the West Jackson Highway Master Plan (WJHMP) Area (Project) located in Sacramento County, California. The objective of our consultation is to provide geotechnical and geological information for preliminary planning and preparation of an Environmental Impact Report (EIR) for the Project. Numerous geotechnical and geological studies have been performed for portions of the Project and where available these reports were collected and reviewed; this report compiles data from several sources.

2.0 BACKGROUND

The Project encompasses approximately 5,913 acres and includes properties owned by Teichert Aggregates (Teichert) and Granite Construction Company (Granite) and properties owned by others (Non-Participant). Collectively, Teichert and Granite represent the Participant properties. As shown on Figure 1, the majority of the area is south of Jackson Highway between South Watt Avenue and Excelsior Road, the remainder of the area is north of Jackson Highway between Mayhew and Excelsior Roads. The Participant properties owned by Teichert include: Aspen 2, Aspen 3, Aspen 3 South, Aspen 4, Aspen 4 South, Mayhew Property, Aspen 5, Aspen 5 South, Aspen 6, Aspen 7, Aspen 7 South, Aspen 8, and Aspen 9 as shown on Figure 2. The Participant properties owned by Granite include: Bradshaw, Happy Lane, Fairbairn, Granite 1, Machida, and Vineyard 1, as shown on Figure 2. These properties are in various operational stages of gravel mining including: active removal of sand and gravel, processes associated with mining (sedimentation ponds, drying beds, material conveyance, reclamation, wetland mitigation, etc.). In addition, some Participant properties are un-mined (Aspen 4 South, Aspen 7, Aspen 7 South, Aspen 8, and Aspen 9). The non-Participant properties are not owned by either Teichert or Granite, and are not expected to be mined for the purposes of this report.

The elevation of the ground surface in the currently un-mined Participant and Non-Participant properties ranges from about 40 to 115 Feet[1], sloping gently towards the west. However, much of the WJHMP Area has previously been mined for aggregate resulting in the ground surface within the mined areas of the Participant properties being approximately 20 to 35 feet lower than the surrounding ground surface and roadways. Morrison Creek flows from the

[1] Elevations referenced to Mean Sea Level.

northeast boundary through mining areas to the southwest boundary of the site. Portions of Morrison Creek have been re-aligned to flow through a manmade channel that has been constructed as part of the reclamation operations for the mines.

3.0 PROJECT DESCRIPTION

The West Jackson Highway Master Plan was initiated by the Sacramento County Board of Supervisors on April 17, 2012. In accordance with the requirements of General Plan Land Use Element Policy LU-119, StoneBridge Properties, LLC, a subsidiary of Teichert Land Co., and Granite Construction Company, a California corporation ("Participant Properties") have initiated the Master Plan process for all land encompassed within the proposed Master Plan Area (referred to herein as the "Plan Area"). Of the entire 5,913± acres of the Plan Area, the Participant Properties collectively own 4,079± acres – Teichert owns 3,106± acres and Granite owns 1,063± acres. Thus, Participant Properties represent 69% of the total Plan Area acreage. These properties primarily include aggregate mining sites used for sand and gravel extraction, many of which have already been reclaimed. Although most of the mining is complete, some of the Participant Properties continue to support various mining related activities.

In addition to mining areas, the Plan Area is comprised of a mixture of rural residential, institutional, agricultural and industrial properties located along State Route 16 (Jackson Highway) in the geographic center of Sacramento County. The Plan Area boundaries are generally Jackson Highway, Kiefer Boulevard and Goethe Road to the north, portions of Elder Creek Road and Florin Road to the south, the City of Sacramento to the west and Excelsior Road to the east. As a result of the mining activities which have dominated the landscape since the 1930's, the Plan Area has largely been bypassed by development. Just over 80% of the Plan Area boundary abuts the existing Sacramento County Urban Policy Area and the Sacramento City Limits.

As illustrated by Figure 3, the Master Plan has been designed to provide a mixture of residential, commercial, recreational, farming, and employment nodes intended to reduce vehicle miles traveled (VMT) within the Master Plan Area and support the provision and use of transit alternatives. The Master Plan establishes a framework and strategy for all future land use within the Plan Area, including general land use and development standards, policies, land use allocations, infrastructure, and public service planning. Within the Master Plan, two District Area Plans are established, in addition to three Future Planning Areas (FPA's). District Area Plans primarily consist of Participant properties, while Future Planning Areas are comprised of

Non-Participant property owners (Figure 3). Teichert owns 3,106± acres within District 1. Granite owns 1,063± acres within District 2.

The District Plans establish specific land uses, policies and development standards for the properties within the District Areas. Although future land uses for the FPAs will be established in gross by the Master Plan, specific land uses, policies, and development standards for these areas are not provided by the Master Plan. It is anticipated that the landowners within the FPAs will initiate District Plans or Specific Plans in the future. Should the landowners in those areas contemplate changing existing land uses within the FPA, such future use must be consistent with the provisions of the Master Plan.

4.0 SCOPE OF SERVICES

Our services were performed in accordance with our proposal dated 15 May 2013. For Participant properties our services included reviewing available documents including: reports, test data, reclamation plans, maps, aerial photographs, aerial satellite imagery and surveys; performing a site reconnaissance and preliminary engineering analyses. For Non-Participant properties we reviewed available documents including: reports, maps, aerial photographs, aerial satellite imagery and surveys. The results of our studies are included in this summary report. This report *presents* the following:

- subsurface conditions (soil and groundwater)
- presence of naturally occurring hazardous soil and rocks (asbestos containing soil and rocks, radon potential, etc.)
- seismic hazards (ground shaking, fault rupture, liquefaction, settlements, slope displacements, etc.)
- stability evaluation of existing slopes (static and seismic)
- potential problematic soil conditions (sedimentation ponds, undocumented fills, etc.)
- appropriate ground improvement/mitigation techniques for identified hazards (if necessary)
- general ground surface settlement characteristics due to new and existing loads including fills and anticipated foundations

Subsurface explorations and developing detailed conclusions and recommendations for design and construction of the proposed developments was not included as part of our current scope of services. Detailed geotechnical studies should be performed during final design of each improvement proposed to be constructed.

5.0 PREVIOUS GEOTECHNICAL INVESTIGATIONS FOR PARTICIPANT PROPERTIES

Multiple geotechnical investigations were performed for portions of the project between 1979 and 2013. These geotechnical studies mainly addressed developing portions of the WJHMP Area for commercial and residential use, mining and reclaiming Participant properties including realignment of Morrison Creek. The quality of the data and scope of the information in these reports varies greatly including some locations with limited or no subsurface information.

The summary has been broken down into reports that pertain to General Site development (Table 1) and reports that pertain to Morrison Creek (Table 2).

5.1 General Site Development Reports

The reports addressing general site development (Table 1) provided conclusions and recommendations for Aspen 2, Aspen 3, Aspen 4, Aspen 5, Aspen 6, Aspen 7, Aspen 8, Mayhew, and Vineyard 1 properties. The conclusions and recommendations presented in the reports for Aspens 2 and 3, and Mayhew considered the construction of office, commercial, retail and residential developments as well as development of drainage to direct storm water to retention ponds and open space areas. The reports for the Vineyard 1 properties provided conclusions and recommendations for future residential developments.

TABLE 1
Summary of General Site Development Geotechnical Reports

Property Owner	Report Area	Report Reference
Teichert	Aspen 2, 3, and 4	*Geotechnical Engineering Report, Aspen Properties Reclamation-Phase 1* by Wallace Kuhl & Associates Inc. dated 24 June 2003.
	Aspen 2, 3, 3 South, 4 (southern portion), 4 South, 5 , 6, 7, 8	*Draft Preliminary Geotechnical Engineering Report, Rock Creek County* by Wallace Kuhl Associates dated 10 August 2009.
	Aspen 2, 3, and Mayhew	*Preliminary Geotechnical Engineering Report Update, Aspen I New Brighton Project, City of Sacramento, California* by Mid Pacific Engineering, Inc. dated 8 November 2010.
	Aspen 1, 2, 3, and Mayhew	*Preliminary Geotechnical Investigation, Aspen I - New Brighton Project, Sacramento, California* by Treadwell & Rollo dated 1 April 2011.
	Aspen 1, 2, and 4	*Summary of Geotechnical Field Observations and Testing, Geotechnical Consultation and On-Call Testing, Aspen Properties Reclamation, Sacramento, California* by Treadwell & Rollo dated 29 January 2013.
Granite	Vineyard 1	*Geotechnical Engineering Evaluation Study, Proposed Quarry Reclamation, Development Area 1, Vineyard Aggregate Quarry, 9210 Fruitridge Road, Sacramento, California* by Consolidated Engineering Laboratories dated 3 July 2012.
		Geotechnical Engineering Evaluation Study, Proposed Mine Reclamation, Development Areas 2 and 3, Vineyard Aggregate Mine, 9210 Fruitridge Road, Sacramento, California by Consolidated Engineering Laboratories dated 6 November 2012.

5.2 Summary of Morrison Creek Reports

The reports addressing Morrison Creek Re-alignment (Table 2) provide information pertinent to construction of up to 40 foot high embankments composed of engineered fill. To mitigate potential slope instability, the reports recommend limiting slopes to no steeper than 2:1 (horizontal:vertical), limiting finished side slopes for mining pits to no steeper than 1.5:1 (H:V), and providing compaction requirements including placement of fill in 6-inch lifts to 90 percent

relative compaction at or near the optimum moisture content. The reports also indicated that portions of the realignment channel within Aspen 3 South and Vineyard 1 properties have been completed.

TABLE 2
Summary of Morrison Creek Geotechnical Studies

Property Owner	Report Area	Report Reference
Teichert and Granite	Morrison Creek (south of Jackson Highway)	*Final Environmental Impact Report, Environmental Impact Statement, Morrison Creek Mining Reach Downstream (South) of Jackson Highway* dated 7 July 1999.
		Geotechnical Investigation For Slope Evaluation, Morrison Creek Realignment Project, Sacramento County, California by Geocon Consultants, Inc. dated 6 February 2008.
		Final Supplemental Environmental Impact Report dated September 2012.
	Morrison Creek (north of Jackson Highway)	*Geotechnical Engineering Report, Teichert/Granite Mining and Reclamation Project, Sacramento County, California*, by Wallace Kuhl and Associates dated 14 August 1989.

5.3 Other Reports

In addition we reviewed excerpts of the original reclamation plans for the Bradshaw and Fairbairn properties. These reports were not described in the preceding sections since they were generally developed in conjunction with reclamation activities and were focused on returning mining properties into interim open space or agricultural uses.

6.0 SITE HISTORY AND AERIAL PHOTOGRAPH REVIEW

As described in Section 3.0 (Project Description) of this report, the Master Plan Area is characterized by Participant Properties and Non-Participant Properties. In most cases, Participant Properties have been owned and maintained by either Teichert or Granite for an extended period of time, with many of those properties undergoing numerous physical changes over the years related to on-going surface mining activities, as reflected by the summary presented in Sections 6.1,6.2, and 6.3. Non-Participant properties are not owned or maintained by either Teichert or Granite, and thus have generally not undergone surface mining activities.

As a result, aerial photography reveals a more subtle transition for many of these properties into agricultural, agricultural residential, commercial, industrial, and institutional land uses, as described in the following sections.

6.1 Aerial Photograph Review of Participant Properties

We reviewed historical aerial photos from the UC Davis collection, taken between 1937 and 1999. Both single and stereo-paired photos were reviewed; a table documenting the date, photo number and scales of the aerial photos reviewed is presented in Table 3. Digital satellite imagery was viewed for site activity after 1999.

TABLE 3
List of Reviewed Aerial Photographs

Date	Photo Number	Scale
10-10-1937	ABC46-22-27, -62-67, and ABC47-22-25	1:20,000
7-19-1953	ABC3K-61	1:20:000
9-9-1957	ABC60T-177-178, and ABC68T-21-23	1:20,000
5-19-1964	ABC2EE-61-62, 16-17, 92-94	1:20,000
6-28-1972	A400607-58-59, 172-173 and 176	1:40,000
4-20-1984	WAC84C8-84-86, 17-130-135	1:60,222
5-28-1992	WAC92CA22-149,151,180	1:31,680
4-13-1999	WAC99CA1-100	1:24,000

On the basis of our review of aerial photos of the Project area, it appears that light mining/grading activities began between 1937 and 1953 in Granite 1 and Aspen 6. Mining activity had increased by 1964 and continues today. The realignment of Morrison Creek north of Jackson Highway appears to have started between 1992 and 1999.

The 1937 photos indicate that no mining was in progress in the project area; however Mather Air Force Base (AFB) is in operation near the north end of the project site. The remainder of the area appears to be occupied by farms, associated structures and grasslands.

The 1953 set of photos was incomplete, consequently limiting our review of the project site to a few areas. However, mining operations appear to have begun in Granite 1, north of the original Morrison Creek alignment and near the eastern boundary between Granite 1 and Aspen 6.

In 1957, mining is evident in the northern portion of Granite 1 (triangular area immediately adjacent to the southern boundary of Mather AFB) and appears to be related to construction at the airfield, where the runway was being extended toward the southwest. A pond is evident along the eastern boundary of the triangular area, as well as stockpiled material in the southwest corner. Mining in the Granite 1 area was observed in the 1953 photo.

The 1964 photos indicate continued mining in Granite 1, and water has ponded in the southeast corner, where excavations appear deepest. Steep cuts bound the quarry along access roads to the south (proposed future alignment of Kiefer Road) and east. Processing plant structures are located toward the front of the property. In Aspen 5, the ground east of Morrison Creek appears to be potentially undergoing light mining or grading. The ground surface throughout the rest of the area appears to have been previously disturbed, and is possibly an inactive borrow area. There are several scattered areas with depressions, disturbed ground, a possible irrigation channel and generally hummocky terrain. Mining activity appears to have started in Aspen 5 and Aspen 6.

In 1972, the photos indicate mining has begun in the Bradshaw property. Mining in northern Granite 1 appears dormant, with some areas filled in and several access roads constructed across the site. Light borrow and other graded areas are visible in Granite 1, with one small but relatively deep excavation. In Aspen 5, the mined area south of the Machida property (see Figure 4) that was visible in the 1964 photos appears to have been mostly filled in, and more structures now occupy the property. Mining is in progress in Aspen 2, with a deep pit excavated adjacent to South Watt Avenue and terminating before Fruitridge Road.

The 1984 photos show the Bradshaw property being extensively mined. Some light mining has resumed in northern Granite 1. Aspen 2 appears to have been returned to agricultural use; fields are evident throughout most of the site. Mining is in progress in Aspen 3, within the area to the north of Fruitridge Road and east of Hedge Avenue. The mine appears to be accessed from Jackson Road. Grading has started at the southwest corner of Aspen 4. In Aspen 6, a pit has been excavated in the eastern portion of the site, behind residences along Excelsior Road.

A number of photos from the 1992 set were missing and therefore not all areas were viewed from that year. The available photos show ponds in the southeastern portion of the Bradshaw property. Mining is in progress in the area east of Bradshaw Road and north of the Machida property. Mining is also in progress in Aspen 4, with three ponds aligned along Bradshaw Road, which remain as their current configuration. Aspens 2 and 3 appear to both be in use as agricultural farmland. Photos showing the areas east of Aspen 3 and south of Jackson Road were not available for this year.

In the 1999 photo, a pond is visible in the western portion of Aspen 6, which appears to slightly overlap the boundary with Aspen 5. Extensive mining is in progress in both Aspen 6 and Aspen 5. In Aspen 6, a portion of Morrison Creek near Jackson Road has been realigned. A smaller pond can be seen in Aspen 5, and is located roughly in the middle of the property. This pond remains in its current configuration.

6.2 Digital Satellite Imagery Review of Participant Properties

To supplement our aerial photo review we reviewed available digital satellite imagery.

In 1993, larger ponds are visible at the southeastern corner of the Bradshaw property, with some two smaller ponds near the northwestern corner. Extensive mining on the Mayhew property is in progress.

In 1999, mining is in progress in Happy Lane, and appears to have started sometime between 1998 and 1999. With the exception of a non-Participant property, mining activities span the entire area east of Bradshaw Road and north of Jackson Road to the western portions of Granite 1 and Aspen 6; Morrison Creek has been realigned through these properties into its current alignment, and mining has started in the northern portion of Aspen 3 South.

The 2002 imagery shows a large portion of the Bradshaw property occupied by ponds, mostly located in the eastern half of the property and along the north, east and south property boundaries. These ponds appear to be in their current configurations and are separated in areas by embankments. Mining has extended east in Granite 1 and Aspen 6; ponds are visible adjacent to a conveyor belt in Aspen 6, just north of Jackson Road. Another small pond has appeared at the eastern boundary of Aspen 6, behind a non-Participant property along Excelsior Road. The original alignment of Morrison Creek is still visible traversing through the property. Grading for a conveyor belt system is seen extending from Aspen 6 into Aspen 5 South before turning west and extending into Aspen 4 South and terminating at Mayhew Road.

Aspen 4 is almost completely covered by four distinct ponds, all separated by levees. Mining is in progress in Mayhew and Aspen 3 South. Small ponds are visible in Aspen 3 and Aspen 3 South, located in small isolated areas.

6.3 Aerial Photograph and Digital Satellite Imagery Review of Non-Participant Properties

We reviewed aerial photographs and digital satellite imagery of the Non-Participant properties. The majority of Non-Participant properties have been primarily used for agricultural, agricultural residential and light commercial purposes. These areas have generally experienced no mining activities and except for new building construction, little change in topography has occurred to these properties.

Exceptions are the Non-Participant properties located to the southwest and the northeast of the intersection of Jackson and Bradshaw Roads. These properties appear to have experienced significant grading, mining and/or related mining activities.

The property located southwest of the intersection of Jackson and Bradshaw Roads is bound by Bradshaw Road to the east, Non-Participant properties to the north and south and Mayhew Property to the west. This property appears to have been an extension of Mayhew and experienced grading and/or mining activities starting prior to 1993. The activities at this property appear to have ceased around 2002 at about the same time as the Mayhew Property. Since 2004 the site appears to be used as a stockpile/storage yard for fill and construction related debris.

The property located northeast of the intersection of Jackson and Bradshaw Roads is bound by Bradshaw to the west, Non-Participant properties to the south and Aspen 5 to the north and east. Portions of this property appear to have been excavated prior to 1993 and have been used as a processing plant and stockpile site since.

7.0 FIELD RECONNAISSANCE OF PARTICIPANT PROPERTIES

On 28-30 August 2013, we conducted a general site reconnaissance of the Participant properties within the Project area that have been or are being mined. The purpose of the site reconnaissance was to observe the existing site conditions, with respect to the proposed land uses for the Participant properties within the WJHMP Area, and identify features such as ponds, areas of active mining or grading, slope instability, or other conditions that may potentially impact future proposed site developments. For clarity we have divided our

observations between Teichert owned properties and Granite owned properties. Our observations are presented on Figure 4 and summarized below. Detailed geologic mapping was not performed.

7.1 Teichert Properties

Aspen 2

The site is lower than adjacent street grades. The property appears to be in use for agricultural purposes and drying bed operations.

Site slopes were observed to be approximately 2:1 in most areas; with a few isolated areas inclined downward into the property at 1:1 and 1.5:1 inclinations. Slopes bordering ponds in the northern half of the property were observed to have erosional rills and some minor surficial slip-outs, with some scarps reaching the access road at crest of the slopes. Slip-outs were also observed above a small pond at the southeastern corner. Gradients on the access road appear to be inclined toward the ponds, potentially directing surface run-off toward them and contributing to slope erosion. Gradients on access roads at the southern half of the property were observed to be inclined away from the slopes; no erosional rills were observed on the slopes in this location. An irrigation channel along the toe of slope at the southeastern corner (at Fruitridge Road) has incised vertical banks, but no instability was noted on the slope above it.

Aspen 3

The majority of the site is below adjacent street grades. Drying beds are being used and contain varying amounts of water. Site slopes were observed to have inclinations of 2:1 or shallower, and appeared in relatively good condition. A section of slope at the northeastern corner of the site appears to have inclinations of approximately 1.5:1; a few slip-outs, deep rills and erosional scars were noted on the slope in this location.

Aspen 3 South

The majority of the property is currently below adjacent street grades, and mining is still actively occurring on the site. The realigned and elevated Morrison Creek extends across the property and appears to terminate just short of the southeastern corner; the embankment bounding the system along the north bank rises approximately 35 to 40 feet above adjacent

grades. A large pipe (dimensions not measured) extends through the base of the realigned creek channel embankment and appears to discharge to the south. No water was observed discharging from the pipe during our site visit. Fill has been placed roughly in the middle of the property, to the north of the new Morrison Creek alignment.

Vertical cut slopes up to approximately 20 feet tall were observed in several areas, including within close proximity to Mayhew Road, previous excavation areas around the site, and behind a non-Participant property along Mayhew Road; a top of cut failure was observed in this area. At the southeastern corner of the property, the base of the southern fill embankment confining the new creek system is eroded and incised. The configuration of the southern embankment in this area appears to be coincident with the original creek bank; fill for the new embankment may have been placed directly on top of the existing creek bank.

Aspen 4

This site is dominated by wash water ponds which serve the on-site prewash facility, which all appeared to be near capacity.

The embankments separating the ponds were observed to be steep and undercut in areas, with occasional deep rills. Some of the rills have been filled in with cobbles, and rip-rap has been placed along the banks of the northernmost pond. Slopes bordering the northwest limits of Aspen 4 were observed to be inclined at approximately 1.5:1, with numerous slip-outs and other erosional features.

Aspen 5

Active mining has not occurred in Aspen 5 for many years. However, mining related activities, such as the conveyor system transports materials through the site to the prewash facility west of Bradshaw.

Aspen 5 South

Active mining in the western half of the site was in progress during our site visit, resulting in excavations that extend below the adjacent street grade. A strip of undisturbed ground along

the western boundary is currently occupied by a parking area and construction trailers. The eastern half of the property appeared undisturbed. A pond is present near in the center of the property.

Slopes appeared to be inclined at approximately 2:1. Vertical cuts were observed along the limits of current mining activities at the southern property boundary. The pond banks were noted to be near vertical, with numerous surficial slip-outs and various erosional features.

Aspen 6

Most of Aspen 6 are lower than adjacent street grades, associated with previous mining activity. Grading was in progress during our site visit, and fill was being placed near the northern end of the property. Recent grading activity was also observed near the southwestern corner of Aspen 6. A portion of the realigned Morrison Creek extends through the site.

Shallow slip-outs were observed along the slope below Excelsior Road; a slope angle measurement taken in this area resulted in a slope inclination of approximately 1.3:1. Vertical cuts were observed in isolated areas around the site, mainly in areas of active grading.

Ponds with varying amounts of water were observed.

Mayhew

Site topography appears to be as depicted on the topographic survey, with most of the site below adjacent street grades. Inclinations between 1.75:1 and 2:1 were noted on slopes along the northern portion of the property, and 1.5:1 on slopes near the southwestern corner of the property. Minor rills were noted in each of these locations. Some erosion and sloughing was noted at the top of a short vertical cut at the northwestern corner. Pond locations were observed to be dry.

Aspen 4 South, Aspen 7, Aspen 7 South, Aspen 8, Aspen 9

Site reconnaissance visits were not made to Aspen 4 South, Aspen 7, Aspen 7 South, Aspen 8 and Aspen 9 since based on our review of aerial photographs and satellite imagery these areas generally have not been mined and have experienced little change to the topography or subsurface conditions.

7.2 Granite Properties

Bradshaw Property

Several areas around most of the property are lower than surrounding street grade elevations. Slopes bordering excavated areas around the site were observed to be inclined from approximately 1.5:1 (H:V) to greater than 2:1. We did not observe instability of the slopes. However, we did observe a crack at the crest of the southern embankment of the pond in the northeastern corner of the site. Significant amounts of fill have been placed to form pond embankments and backfill the former quarry excavation.

Happy Lane

Most of this property is dominated by a large wash water pond created at the base of the former sand and gravel mine. The slopes appeared to be inclined at 1.5:1 (H:V) as per the approved mine reclamation plan. Evidence of surficial creep and some shallow slip-outs were observed on south-facing slope. Subtle and discontinuous cracks were observed in the access road above this area. The area was used as a wash water pond, but contained little water during our site visit; however, a discharge pipe was noted at the southwestern corner of the pond, with a small amount of water trickling into the excavation.

Machida

The site is lower than the adjacent street grades. Site slopes appear to be inclined at 1.5:1 as per the approved Grading Plan. Erosional rills were observed on all sides, with several shallow but extensive slip-outs and deep erosional scars on the north-facing slope. These erosional features appear to be isolated to areas with granular material exposed in the slope faces.

Fairbairn

Most of the Fairbairn property was observed to be lower than adjacent street grades. Slopes appear to be inclined at 1.5:1 as per the approved mine reclamation plan and appeared to be in relatively good condition at the time of our visit.

Granite 1

Morrison Creek has undergone realignment through this property, and is currently confined within a reconstructed channel. Running water was observed within the realigned channel at the time of our site visit. A marsh was observed adjacent to the southern boundary of Granite 1.

Vineyard 1

Fill was being placed in the northern portion of the site during our visit. Material was being stripped at the southern end of the property and placed in the northern portion of the property. A portion of Morrison Creek has been realigned toward Hedge Avenue. The creek in this area has been constructed. The reconstructed Morrison Creek channel crests approximately 35 to 40 feet above the adjacent grades. At the time of our site visit, the creek had not yet been redirected into the new channel.

The outer bank slopes of the Morrison Creek Realignment are 2:1 (H:V) as per the approved improvement plans. The banks of the Morrison Creek Realignment gently slope toward the creek centerline.

8.0 SUBSURFACE CONDITIONS

The following sections describe the subsurface conditions below the Participant and Non-Participant properties. The information presented in the following sections is based on our review of the available documents, aerial photographs, our site reconnaissance and our experience in the vicinity of the project.

8.1 Subsurface Conditions – Participant Properties

The subsurface conditions at the site fall into two general categories which include 1) undisturbed areas and 2) historically or actively mined areas. Figure 4 shows the approximate locations of undisturbed soil areas, the mined areas, and documented features; fills, wash water ponds, drying beds, etc.

Undisturbed areas typically consist of native soil ranging from about 5 to 14 feet of medium dense silty and clayey sand and very stiff sandy clay and sandy silt underlain by medium dense to very dense clayey sand with gravel and dense sandy gravel. The sand and gravel layer varies in thickness, but is typically around 25 to 30 feet thick. The sand and gravel layer is underlain by

medium dense to very dense sand and silty sand with varying amounts of silt and clay. The native fine grained soil (silts and clays) generally have a low to moderate expansive potential.

Some of the mined areas are underlain by fill ranging from zero to approximately 41 feet. The fill includes documented[2] and undocumented fill, drying bed soil, wash water pond sediment, and temporary water pond sediment of varying thicknesses. Documented fill generally consists of compacted stiff to hard clay, sandy clay, and clayey silts with varying amounts of sand. On the basis of our review of the available documentation, the documented fills generally were compacted to a relative compaction[3] greater than or equal to 90%.

The drying bed material is processed and compacted, and is a documented fill; however, due to the process, the material is generally soft to medium stiff, wet, and considered to be moderately compressible under new loads from fill or foundations. The drying bed material has generally high moisture content and is typically saturated. Undocumented fill typically consists of clay, sandy clay, clayey silts with varying amounts of sand with variable stiffness or density and moisture. The drying bed material and sediment within the water ponds has low to high potential for expansion due to moisture content fluctuations. The fill and drying bed material is underlain by native soil consisting of stiff to hard clay with varying amounts of sand, gravel and cobbles, and clay, and silt with varying amounts of sand, gravel, and cobbles, which are interbedded with layers of medium dense to very dense sand and silty sand with varying amounts of silt and clay.

Based on our review of available groundwater data published by Sacramento County, and California Department of Water Resources, the groundwater table beneath the site is variable. The groundwater is generally shallower on the north side of the site and slopes down to the south/southwest. Based on our review of the available groundwater data from 1990 to 2010 the groundwater beneath the site varied from approximate elevation -59 to -10 feet Mean Seal Level (MSL) (corresponding to approximate depths of 30 to 100 feet bgs). The average groundwater elevation of the data reviewed is approximately -28 feet MSL (corresponding to a depth of 36 to 49 feet bgs).

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2 Documented fills have been placed, compacted, observed, and tested during placement by a qualified testing agency or engineer.

3 Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557-00 laboratory compaction procedure.

8.2 Subsurface Conditions – Non-Participant Properties

The Non-Participant properties, excluding the two properties northeast and southwest of the intersection of Jackson and Bradshaw Roads (Section 6.3) that appear to have undergone significant grading and/or mining activities, typically consist of undisturbed native soil. We anticipate the undisturbed native soil at these properties consists of about 5 to 14 feet of medium dense silty and clayey sand and very stiff sandy clay and sandy silt underlain by medium dense to very dense clayey sand with gravel and dense sandy gravel. The sand and gravel layer varies in thickness, but is typically around 25 to 30 feet thick. The sand and gravel layer is underlain by medium dense to very dense sand and silty sand with varying amounts of silt and clay. The native fine grained soil (silts and clays) generally have a low to moderate expansive potential.

No information was available for our review regarding the characteristics of the material below the below the two Non-Participant properties that appear to have undergone significant grading and/or mining. However, we anticipate a variable thickness of fill consisting of soil and construction debris is present. The fill is likely underlain by native soil consisting of stiff to hard clay with varying amounts of sand, gravel and cobbles, and clay, and silt with varying amounts of sand, gravel, and cobbles, which are interbedded with layers of medium dense to very dense sand and silty sand with varying amounts of silt and clay.

The groundwater level at the Non-Participant properties is anticipated to be consistent with the adjacent Participant properties described in the previous section.

9.0 REGIONAL SEISMICITY – PARTICIPANT AND NON-PARTICIPANT PROPERTIES

We evaluated the regional seismicity for the Project site. The information contained in the following sections is applicable to both the Participant and Non-Participant properties. The major active faults in the area are the Great Valley, Hunting Creek-Berryessa, and Concord-Green Valley Faults. These and other active faults in the vicinity of the project are shown on Figure 5. For each of the active faults, within 100 kilometers, the distance from the site and estimated mean characteristic Moment magnitude[4] [2007 Working Group on California Earthquake Probabilities (WGCEP) (2007) and Cao et al. (2003)] are summarized in Table 4.

[4] Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

TABLE 4
Regional Faults and Seismicity

Fault Segment	Approx. Distance from fault (km)	Direction from Site	Mean Characteristic Moment Magnitude
Great Valley 4a, Trout Creek	58.0	West	6.6
Great Valley 4b, Gordon Valley	60.0	West	6.8
Great Valley 5, Pittsburg Kirby Hills	62.0	West	6.7
Great Valley 3, Mysterious Ridge	65.0	West	7.1
Green Valley 6, Connected	75.0	West	6.8
Hunting Creek-Berryessa	76.0	West	7.1
Greenville Connected	84.0	Southwest	7.0
West Napa	89.0	West	6.7
Great Valley 7	90.0	South	6.9
Mount Diablo Thrust	95.0	Southwest	6.7
Total Calaveras	99.0	Southwest	7.0

The Coast Ranges-Central Valley Fault (Great Valley) system is characterized by a poorly defined series of thrust faults and blind thrust faults. The fault system is defined by diffuse seismicity, distinct geomorphic expression of mountain-front faulting, and seismic reflection profiles. The thrust system trends northwest-southeast and is believed to extend 640 kilometers, forming the western boundaries of the Sacramento and San Joaquin Valleys. In general, the fault system dips westward. An earthquake on the Coast Ranges-Central Valley Fault system could cause low to moderate seismic shaking at the project site. A number of large historic earthquakes have occurred on this fault system, including the 1892 Vacaville (M_w = 6.8), 1889 Antioch (M_w = 6.3), and the 1983 Coalinga (M_w = 6.5) earthquakes. Geologists have estimated a slip rate ranging from 0.2 to 3 mm/yr. Estimated moment magnitudes of earthquakes along the thrust fault system are between 6.0 and 6.7.

The Green Valley faults consist of a highly complex zone with a potential for either one major event or two smaller events to the northwest and southeast of Suisun Bay. A single event model involving a rupture along the Concord and Green Valley faults is estimated to be capable of producing an M_w 6.9 event every 180 years. An alternate model involves independent Concord and Green Valley fault ruptures that would produce a M_w 6.5 event every 110 years and an M_w 6.7 event every 150 years, respectively (USGS 2000).

The Mount Diablo blind thrust underlying the Livermore and Sycamore Valleys is the source of major fold structures, including the Mount Diablo and Tassajara anticlines (Unruh and Sawyer 1997). The folds and the underlying fault are assumed to be active because they deform late

Pleistocene and early Holocene sediments. The geometry and slip rate on the thrust are inferred largely from structural modeling, although the existence of the thrust is consistent with seismic reflection data from the southeastern Tassajara Hills (Unruh 2000). Unruh and Sawyer (1997) hypothesize that this system has formed a left-stepping transpressional step-over between the right-lateral Greenville and Concord-Green Valley faults, and propose a kinematic model in which slip on the Greenville fault is transferred via the Mount Diablo thrust to the Concord Fault. Present modeling results constrain estimates for the minimum slip rate on the Mount Diablo thrust to a range of 1.3 to 2.4 mm/yr.

10.0 DISCUSSIONS AND CONCLUSIONS FOR PARTICIPANT PROPERTIES

On the basis of our studies, we conclude there are no geological and geotechnical conditions that preclude the proposed land uses for the development of the Participant properties of the WJHMP Area. However, there are several issues that should be addressed in detailed geotechnical studies performed during final design of each improvement. These issues include:

- Seismic hazards (ground shaking, liquefaction, settlements, etc.)
- Settlement of new and existing fill due to new loads (weight of additional fill, foundations, etc.)
- Presence of undocumented fill, and soft/deleterious material in existing water ponds, embankments, and planned building areas
- Presence of moderately to highly expansive soil
- Demolition of existing improvements
- Slope steepness and potential for erosion of exposed granular layers in retention basin side slopes
- Relatively low permeability of fine grained soil that exists throughout the project
- Potential for the presence of naturally occurring hazardous soil
- New foundations
- Preliminary ground improvement techniques
- Construction considerations

These and other geotechnical issues as they pertain to the proposed development are discussed in following sections.

10.1 Seismic Hazards

10.1.1 Ground Shaking

The seismicity of the site is governed by the activity of the Great Valley, Hunting Creek-Berryessa, and Concord-Green Valley Faults. However, ground shaking from future earthquakes on any of the regional faults could be felt at the site. The intensity of earthquake ground motions at the site will depend upon the characteristics of the generating fault, distance from the rupture, magnitude and duration of the earthquake, and specific subsurface conditions. We judge ground shaking at the site during a major earthquake on one of the nearby regional faults will be low to moderate. To reduce the potential for damage associated with earthquake-induced ground shaking, new structures should be designed in accordance with the current California Building Code (CBC) seismic design requirements.

10.1.2 Fault Rupture

Historically, ground surface displacements closely follow the trace of geologically young faults. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no active faults have been mapped at the site. Therefore, we conclude that the risk for fault rupture at the site is low.

10.1.3 Liquefaction and Liquefaction-Induced Settlements

We have made a preliminary evaluation of the potential for seismic hazards at the site, such as those associated with soil liquefaction, lateral spreading,[5] and cyclic densification[6] to occur within the Master Plan Area. We used the results of our preliminary geotechnical investigation to evaluate the potential of these phenomena to occur. The results of our evaluation indicate that in general the fill and native soil at the site are not saturated and are sufficiently stiff and dense to resist soil liquefaction, lateral spreading, and cyclic densification with the exception of sediments in the wash water ponds. We anticipate that some of the sediments in the wash water ponds may consist of fine grained, loose silty sand and sand. We conclude the potential for seismic hazards at the site is low, except for the wash water ponds. The magnitude of

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[5] Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces.

[6] Cyclic densification is a phenomenon in which non-saturated, cohesionless soil is densified by earthquake vibrations, causing ground-surface settlement.

liquefaction induced settlement is dependent upon the thickness of liquefiable layers, engineering characteristics of the material, and level of ground shaking. At this time there is not sufficient data available to evaluate the magnitude of liquefaction induced settlements of the sediment in the wash water ponds.

10.2 Settlement

Settlements at the site will result from compression of the new fills due to self-weight, existing fill and underlying native material due to the weight of new fills and foundation pressures, and consolidation related settlement of the drying bed material and sediment in the wash water ponds. The magnitude and rate of settlement are dependent upon many factors including the amount of new fill placed, type of foundation system, foundation loads, and thickness of drying bed material, where present. Preliminary estimates of the magnitude and rate at which these settlements are estimated to occur at the site are discussed in the following sections.

10.2.1 Compression from New Fill

We estimated the amount of post construction settlement that may occur due to the placement of new fill. Within the project area we anticipate that fills be required to construct new roadways in portions of Mayhew, at the storm water pond in Aspen 5 South, portions of Aspen 6, with the maximum amount of fill on the order of about 35 feet in the Aspen 6 wash water pond. The proposed Vineyard Road realignment may also require fill in the Bradshaw, Fairbairn, Aspen 5 South, and Aspen 6 properties, with a maximum of about 25 feet of fill at the wash water pond in Aspen 6. Within the mined properties we anticipate site grades will be similar to their existing grades, and any fill placed will be relatively thin (less than 5 feet thick).

The magnitude of the actual post construction settlement will be related to the amount of new fill placed, whether or not the area is underlain by a drying bed and the compressibility of the underlying soil. Areas where new fill is placed on top of drying beds will have additional settlement due to consolidation of the drying bed material. Compression of new fill may range from ½ inch for fill up to 5 feet thick to about 5 inches for fill on the order of 35 feet thick. We anticipate that the majority of the compression will occur during and shortly following construction.

10.2.2 Drying Bed Consolidation Settlement

Drying beds are primarily located in Aspen 2, Aspen 3, Aspen 4 properties. As discussed above in Sections 8, the drying bed material is saturated and considered compressible. We anticipate that typical site grades over the drying beds will be raised approximately 5 to 20 feet, with some portions of the site requiring up to 30 feet of fill.

We anticipate the magnitude of consolidation settlement of the drying bed material due to the weight of the proposed fill may range from approximately 1.5 to 12 inches. The amount of settlement is dependent upon the thickness of drying bed material and amount of proposed fill. The rate at which the drying bed material will settle depends upon the thicknesses of the drying bed material and new fill.

10.2.3 Foundation Settlement

Additional foundation settlement will occur primarily from compression of new and existing fills, and from consolidation of drying bed material and wash water pond sediments (compressible material). Building foundations underlain by 15 or more feet of new fill are not anticipated to have significant additional settlement due to relatively light foundation pressures. The magnitude and rate of the foundation settlement will depend on the type of foundation, magnitude of foundation pressure, and thickness of the compressible material (if present). We estimate approximately ½ inch of total and differential settlement may occur in areas underlain by existing fill and native soil. Areas with less than 15 feet of new fill underlying building foundations and underlain by drying bed material may settle an additional ¼ to 2/3 inches. Differential settlement will vary dependent on location, and should be determined on a site specific basis following site specific geotechnical studies.

10.2.4 Estimating Total Settlement Magnitudes

The amount of settlement that will occur at a given location depends upon many factors including the amount of new fill placed, type of foundation system, foundation loads, and thickness of drying bed material (if present). The estimated settlements presented in the sections above consider only the individual material discussed. The total amount of settlement for areas where new fill will be placed over existing drying beds will be a sum of the compression of the new fill and native material and consolidation of the drying bed material. As discussed above the majority of this settlement is anticipated to occur shortly after construction.

10.3 Undocumented Fill and Disturbed Native Soil

The ability of the undocumented fills and disturbed Native soil to safely support planned structures should be evaluated on a case-by-case basis considering the results of site specific geotechnical studies. Depending upon the proposed structure, over excavation and re-compaction of the near surface material may be required, and that some additional settlement of the undocumented material may still occur.

10.4 Expansive Soil Considerations

The existing near-surface soil and the majority of fill at the site consists of sand, clay and silt with a low to moderate expansion potential. Some of the soil in the drying beds, and wash water ponds consists of sand, clay, and silt with moderate to high expansion potential. Moisture fluctuations in expansive soil could cause the soil to expand or contract resulting in deflection and potential damage to foundations, slabs, and pavements. Potential causes of moisture fluctuations include seasonal changes, drying during construction, and subsequent wetting from rain, capillary rise, and landscape irrigation. The actual expansion potential of the soil should be determined once the finished grades have been reached and/or the location of the new building has been determined. Where encountered, material with a high expansion potential should not be used as engineered fill below building foundations or near the finished ground surface.

Mat foundations or post-tensioned (P-T) slabs should be designed to resist movements associated with seasonal moisture changes. The appropriate design parameters should be provided as part of the site specific geotechnical studies for proposed structures.

10.5 Demolition of Existing Improvements & Ponds

Existing foundations, pavements, and underground utilities to be abandoned should be removed, and the resulting excavations properly backfilled. Existing wash water and temporary water ponds are likely to have soft compressible soil, vegetation and other deleterious material in them. Soft and deleterious material, if encountered, should be removed and properly disposed of. The ponds and resulting excavations should be properly backfilled.

10.6 Slope Stability

Based on our understanding of the proposed improvements, we anticipate that cut and fill slopes will be constructed as part of the site grading. Our site reconnaissance identified existing slopes that range from isolated regions with near vertical temporary cuts in actively

mined areas to 2:1 (horizontal:vertical) and shallower slopes throughout most properties within the site. The slopes range in height from around 5 feet to upwards of 35 to 45 feet. During our site reconnaissance, we observed slopes with inclinations of 1.5:1 or steeper also appeared to exhibit the most erosional features. Slopes at 2:1 appeared to be in good condition.

We analyzed the static and seismic slope stability using the existing grades and generalized subsurface data from our review of available reports of the site. We selected areas that represented the tallest and steepest slopes including temporary cut slopes that are vertical and 1:1 (H:V) and permanent fill slopes that are 1.5:1 and 2:1 (H:V). We performed our slope stability analysis using the program SLOPE W version 6.22 developed by GEOSLOPE International. Our analyses indicates that temporary vertical and 1:1 (H:V) slopes have a Factor of Safety ranging from 1.01 to 1.52 for static conditions. Permanent slopes in the range of 1.5:1 to 2:1 (H:V) have a Factor of Safety ranging from 1.65 to 1.88 for static conditions. Our seismic stability evaluation resulted in yield accelerations greater than 0.15 times gravity; and therefore we conclude that the risk of permanent lateral displacement of the slopes inclined at 1.5:1 (H:V) or shallower during a strong earthquake is low.

The minimum static factor of safety for permanent slopes should typically be 1.5 or greater. Temporary slopes designed for short-term stability may have lower values of factor of safety. The results of our analyses are consistent with earthwork construction practices that have taken place within the site and general vicinity for many years.

It should be noted that granular material (sand and gravel) exposed at the face of slopes may be susceptible to erosion and shallow surficial instability such as sloughing or slumping. These types of failures are expected to be generally less than 5 feet thick and pose no risk to the overall stability of the slopes; they can be mitigated by making the slope shallower, landscaping, installing slope armor such as rip rap, and/or by performing routine maintenance.

10.7 Low Permeability of Near Surface Soil

As discussed in Section 8.0, we anticipate the near surface soil to generally consist of silty and clayey sands, and sandy Clays and silts. The permeability and therefore the infiltration of surface water at the site will depend upon the characteristics and type of soil exposed at the ground surface. In general soil with a high silt and clay content have a lower permeability than soil that is primarily sand. We anticipate the permeability of the near surface soil will be relatively low throughout much of the site. Site specific infiltration testing should be performed for the design of storm water and Low Impact Development (LID) features.

10.8 Potential for the Presence of Naturally Occurring Hazardous Soil

We reviewed maps of the Sacramento Valley region provided by the USGS for the presence of naturally occurring asbestos containing soil, and natural radon potential. The USGS maps for the Sacramento County region indicate that the site has a low potential for naturally occurring asbestos containing soil and low potential for radon.

10.9 New Foundations

Preliminary design loads for buildings were not available at the time of this report. We anticipate the majority of new buildings will be two and three story commercial, office, school, retail, and mixed use or high density residential buildings, and single and two story wood-framed residential structures with relatively lightweight foundation pressures. Bridges associated with the backbone improvements are anticipated to be single span concrete structures.

On the basis of the results of our studies to-date, we conclude the buildings can be supported on stiffened shallow foundation systems such as post tensioned slabs (P-T slabs), conventional continuous and spread footings, and/or reinforced mat foundations. The appropriate foundation system should be determined in a location specific manner based on the results of site specific geotechnical explorations and studies for specific proposed structures.

Disturbed native soil and undocumented fill is typically not suitable for support of proposed residential and commercial buildings. We anticipate building pads planned for areas in disturbed native soil and undocumented fill may require over excavation and re-compaction to provide uniform support of new structures. In addition, lots and/or building pads spanning or located near cut/fill transitions may require additional over-excavation and fill placement to create acceptable transitions. An alternative to removal and re-compaction may be to improve the material using an appropriate ground improvement technique. Preliminary ground improvement techniques are discussed in Section 10. 10.

Tall or heavy structures (bridges and multi-story buildings) may require deep foundations (drilled shafts, driven or drilled piles). We anticipate bridges will be required for new roadways to span the realigned Morrison Creek and possibly Jackson Highway. Typical deep foundations for new bridges will likely be either driven piles or drilled piers.

Site specific geotechnical explorations and studies will be required to provide recommendations for the design of foundations once the structure (i.e. – building or road) types, locations and foundation loads become available.

10.10 Preliminary Ground Improvement Techniques

Ground improvement or supporting the proposed structures on deep foundations may be used as an alternative to removal and re-compaction. The most appropriate ground improvement technique will depend upon the many factors including characteristics of the materials present, desired performance, and anticipated foundation pressures. Ground improvement techniques are described in the following sections.

10.10.1 Pre-Consolidation with Temporary Surcharge and Vertical Drains or Lightweight Fill

Post-construction settlements may be reduced by pre-consolidating the drying bed material and/or using light weight fill to raise site grades or support proposed structures. Pre-consolidation uses a temporary surcharge and prefabricated vertical drains to accelerate consolidation settlements. Light weight fill, such as geo-foam or light weight Controlled Density Fill may be used to reduce the long term consolidation settlement of the proposed structures, and their influence on adjacent areas. The location, horizontal extents, and thickness of the light weight fill will depend upon the weight of the structures, amount of new fill required to raise site grades, location of the building relative to the improvement of concern, type of light weight fill, and the settlement tolerance of the improvements.

10.10.2 Soil Cement Mixed Columns

Soil cement mixed columns (SCMC) consist of mixing soil and cement using a specialized drill rig to create a column of strengthened soil. For mitigation of compressible soil, piers are typically installed at a spacing of approximately 8 to 10 feet center to center.

10.10.3 Drilled Displacement Columns

Displacement aggregate piers are a soil improvement method, which when installed at footing locations, densify the soil surrounding the pier and transfer the support of building loads through the piers to deeper more competent soil. They may be installed in a regular grid pattern to provide floor slab support if settlement of the floor slab is deemed unacceptable. Displacement aggregate piers are constructed by drilling a vertical shaft and

ramming/compacting thin, successive lifts of crushed aggregate in the open shaft, resulting in a very dense aggregate pier to support column and floor slab loads. Displacement aggregate piers are proprietary and trademarked by Geopier Foundation Company.

10.10.4 Densification (Deep Dynamic Compaction (DDC) and Rapid Impact Compaction (RIC)

Densifying the drying bed material to an acceptable degree may be performed using a technique such as Deep Dynamic Compaction (DDC) or Rapid Impact Compaction (RIC). Deep dynamic compaction, also referred to as heavy tamping, involves repeated tamping with heavy weights onto the ground surface. The weight is usually lifted and dropped by a conventional crane using a single cable with a free spool to allow a near free drop. The weights used for DDC may be concrete blocks, steel plates, or thick steel shells filled with concrete or sand. Weights up to 200 tons and drop heights up to 120 feet have been used.

RIC is typically performed using a track-mounted machine that imparts energy by dropping an approximately 7.5-ton weight from a controlled height, about one meter, onto a patented foot. The energy is delivered at a rate of 40 to 60 blows per minute. Typically RIC can improve the soil to depths of approximately 15 feet, although this depends on several issues such as soil type, degree of saturation, soil stiffness and other factors.

10.10.5 Rammed Aggregate Piers (RAP)

Aggregate Piers (Rammed, Vibro-displacement, Stone Columns, etc.) are installed by either drilling a hole or vibrating a probe in the ground and backfilling the void with densified aggregate. For mitigation of the compressible drying bed material, piers are typically installed at a spacing of approximately 8 to 10 feet center to center to reduce the magnitude of total and differential settlements of structures founded on improved soil.

10.11 Construction Considerations

Existing improvements to be abandoned at the site and soft weak and/or deleterious material in the existing ponds, and temporary water ponds should be removed and properly disposed of. The material removed from existing ponds is anticipated to be wet and difficult to work with and unlikely to support heavy equipment. Any loose or weak existing utility trench backfill material encountered during future site grading should be removed and replaced with properly compacted fill. Fill slopes constructed against existing slopes should be benched into the

existing slopes. The benches should be made only in competent stable material. Any existing weak or loose material should be removed prior to cutting the bench. Benches should be limited to a maximum vertical height of 5 feet and may be constructed as the fill slope is built.

If site grading is performed during wet weather, the exposed soil subgrade may become wet and difficult to compact. The grading contractor should be prepared to repair the weak and wet subgrade, if required.

Ground vibration due to soil improvement methods including DDC/RIC, and deep foundation installation such as driven piles, may damage buildings or other sensitive structures near the construction site. Vibration monitoring should be performed during these construction activities to measure vibrations and ensure that vibrations are maintained within acceptable levels.

11.0 DISCUSSIONS AND CONCLUSIONS FOR NON-PARTICIPANT PROPERTIES

On the basis of the results of our studies, we conclude there are no geological and geotechnical conditions that preclude the proposed land uses for the development of the Non-Participant properties within the WJHMP Area. However, there are several issues that should be addressed in detailed geotechnical studies performed during final design of each improvement. These issues include:

- Seismic hazards (ground shaking, liquefaction, settlements, etc.)
- Settlement of new and existing fill due to new loads (weight of additional fill, foundations, etc.)
- Presence of undocumented fill, and soft/deleterious material in ponds
- Presence of moderately to highly expansive soil
- Demolition of existing improvements
- Slope Stability
- Relatively low permeability of fine grained soil that exists throughout the project
- Potential for the presence of naturally occurring hazardous soil
- New Foundations
- Construction considerations

These and other geotechnical issues as they pertain to the proposed development are discussed in following sections.

11.1 Seismic Hazards

11.1.1 Ground Shaking

The seismicity of the site is governed by the activity of the Great Valley, Hunting Creek-Berryessa, and Concord-Green Valley Faults. However, ground shaking from future earthquakes on any of the regional faults could be felt at the site. The intensity of earthquake ground motions at the site will depend upon the characteristics of the generating fault, distance from the rupture, magnitude and duration of the earthquake, and specific subsurface conditions. We judge ground shaking at the site during a major earthquake on one of the nearby regional faults will be low to moderate. To reduce the potential for damage associated with earthquake-induced ground shaking, new structures should be designed in accordance with the current California Building Code (CBC) seismic design requirements.

11.1.2 Fault Rupture

Historically, ground surface displacements closely follow the trace of geologically young faults. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no active faults have been mapped at the site. Therefore, we conclude that the risk for fault rupture at the site is low.

11.1.3 Liquefaction and Liquefaction-Induced Settlements

We have made a preliminary evaluation of the potential for seismic hazards at the site, such as those associated with soil liquefaction, lateral spreading,[7] and cyclic densification[8] to occur within the Master Plan Area. We used the results of our preliminary geotechnical investigation to evaluate the potential of these phenomena to occur. The results of our evaluation indicate that in general the native soil at the site are not saturated and are sufficiently stiff and dense to resist soil liquefaction, lateral spreading, and cyclic densification.

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[7] Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces.

[8] Cyclic densification is a phenomenon in which non-saturated, cohesionless soil is densified by earthquake vibrations, causing ground-surface settlement.

11.2 Settlement

Settlements at the site will result from compression of the new fills due to self-weight, existing fill and underlying native material due to the weight of new fills and foundation pressures. The magnitude and rate of settlement are dependent upon many factors including the amount of new fill placed, type of foundation system, foundation loads. Preliminary estimates of the magnitude and rate at which these settlements are estimated to occur at the site are discussed in the following sections.

11.2.1 Compression from New Fill

We estimated the amount of post construction settlement that may occur in the Non-Participant properties due to the placement of new fill. We anticipate site grades will be similar to their existing grades, and any fill placed will be relatively thin (less than 5 feet thick).

The magnitude of the actual post construction settlement in the Non-Participant properties will be related to the amount of new fill placed. Compression of new fill is anticipated to less than ½ inch for fill up to 5 feet thick. We anticipate that the majority of the compression will occur during and shortly following construction.

11.2.2 Foundation Settlement

Additional foundation settlement will occur primarily from compression of new and existing fills. The magnitude and rate of the foundation settlement will depend on the type of foundation, magnitude of foundation pressure, and thickness of the compressible material (if present). We estimate approximately ½ inch of total and differential settlement may occur in areas underlain by existing fill and native soil. Differential settlement will vary dependent on location, and should be determined on a site specific basis following site specific geotechnical studies.

11.2.3 Estimating Total Settlement Magnitudes

The amount of settlement that will occur at a given location depends upon many factors including the amount of new fill placed, type of foundation system, and foundation loads. The estimated settlements presented in the sections above consider only the individual material discussed. As discussed above the majority of this settlement is anticipated to occur shortly after construction.

11.3 Undocumented Fill and Disturbed Native Soil

The ability of the undocumented fills and disturbed Native soil to safely support planned structures should be evaluated on a case-by-case basis considering the results of site specific

geotechnical studies. Depending upon the proposed structure, over excavation and re-compaction of the near surface material may be required, and that some additional settlement of the undocumented material may still occur.

11.4 Expansive Soil Considerations

The existing near-surface soil and the majority of fill at the site consists of sand, clay and silt with a low to moderate expansion potential. Moisture fluctuations in expansive soil could cause the soil to expand or contract resulting in deflection and potential damage to foundations, slabs, and pavements. Potential causes of moisture fluctuations include seasonal changes, drying during construction, and subsequent wetting from rain, capillary rise, and landscape irrigation. The actual expansion potential of the soil should be determined once the finished grades have been reached and/or the location of the new building has been determined. Where encountered, material with a high expansion potential should not be used as engineered fill below building foundations or near the finished ground surface.

Mat foundations or post-tensioned (P-T) slabs should be designed to resist movements associated with seasonal moisture changes. The appropriate design parameters should be provided as part of the site specific geotechnical studies for proposed structures.

11.5 Demolition of Existing Improvements & Retention Ponds

Existing foundations, pavements, and underground utilities to be abandoned should be removed, and the resulting excavations properly backfilled. Existing wash water and storm water retention ponds are likely to have soft compressible soil, vegetation and other deleterious material in them. Soft and deleterious material, if encountered, should be removed and properly disposed of. The ponds and resulting excavations should be properly backfilled.

11.6 Slope Stability

In general, since the Non-Participant properties are relatively level, we do not anticipate cut or fill slopes greater than a couple feet in height.

11.7 Low Permeability of Near Surface Soil

As discussed in Section 8.0, we anticipate the near surface soil to generally consist of silty and clayey sands, and sandy Clays and silts. The permeability and therefore the infiltration of surface water at the site will depend upon the characteristics and type of soil exposed at the ground surface. In general soil with a high silt and clay content have a lower permeability than

soil that is primarily sand. We anticipate the permeability of the near surface soil will be relatively low throughout much of the site. Site specific infiltration testing should be performed for the design of storm water and Low Impact Development (LID) features.

11.8 Potential for the Presence of Naturally Occurring Hazardous Soil

We reviewed maps of the Sacramento Valley region provided by the USGS for the presence of naturally occurring asbestos containing soil, and natural radon potential. The USGS maps for the Sacramento County region indicate that the site has a low potential for naturally occurring asbestos containing soil and low potential for radon.

11.9 New Foundations

Preliminary design loads for buildings were not available at the time of this report. We anticipate the majority of new buildings will be two and three story commercial, office, school, retail, and mixed use or high density residential buildings, and single and two story wood-framed residential structures with relatively lightweight foundation pressures.

On the basis of the results of our studies to-date, we conclude the buildings can be supported on stiffened shallow foundation systems such as post tensioned slabs (P-T slabs), conventional continuous and spread footings, and/or reinforced mat foundations. The appropriate foundation system should be determined in a location specific manner based on the results of site specific geotechnical explorations and studies for specific proposed structures.

Disturbed native soil and undocumented fill is typically not suitable for support of proposed residential and commercial buildings. We anticipate building pads planned for areas in disturbed native soil and undocumented fill may require over excavation and re-compaction to provide uniform support of new structures. In addition, lots and/or building pads spanning or located near cut/fill transitions may require additional over-excavation and fill placement to create acceptable transitions. An alternative to removal and re-compaction may be to improve the material using an appropriate ground improvement technique. Preliminary ground improvement techniques are discussed in Section 11.9.

Tall or heavy structures (bridges and multi-story buildings) may require deep foundations (drilled shafts, driven or drilled piles). Site specific geotechnical explorations and studies will be required to provide recommendations for the design of foundations once the structure (i.e. – building or road) types, locations and foundation loads become available.

11.10 Construction Considerations

Existing improvements to be abandoned at the site and soft weak and/or deleterious material in the existing retention ponds, wash water ponds, and temporary water ponds should be removed and properly disposed of. The material removed from existing ponds is anticipated to be wet and difficult to work with and unlikely to support heavy equipment. Any loose or weak existing utility trench backfill material encountered during future site grading should be removed and replaced with properly compacted fill. Fill slopes constructed against existing slopes should be benched into the existing slopes. The benches should be made only in competent stable material. Any existing weak or loose material should be removed prior to cutting the bench. Benches should be limited to a maximum vertical height of 5 feet and may be constructed as the fill slope is built.

If site grading is performed during wet weather, the exposed soil subgrade may become wet and difficult to compact. The grading contractor should be prepared to repair the weak and wet subgrade, if required.

Ground vibration due to soil improvement methods including DDC/RIC, and deep foundation installation such as driven piles, may damage buildings or other sensitive structures near the construction site. Vibration monitoring should be performed during these construction activities to measure vibrations and ensure that vibrations are maintained within acceptable levels.

12.0 ADDITIONAL GEOTECHNICAL SERVICES

Our conclusions are preliminary and are to be used for the feasibility and initial design studies. Detailed geotechnical studies should be performed during final design of each improvement. The studies should include subsurface exploration within the site, laboratory testing of representative soil samples to provide geotechnical parameters, and engineering studies to develop geotechnical recommendations specifically for the improvement(s).

13.0 LIMITATIONS

The conclusions presented in this report result from limited engineering studies based on our interpretation of the existing geotechnical conditions and available subsurface data. Actual subsurface conditions may vary. More detailed information concerning the proposed structures and site development is required to further refine design and foundation recommendations. If

any variations or unforeseen conditions are encountered during construction, or if the proposed construction will differ from that which is described in this report, T&R should be notified so that supplemental recommendations can be made.

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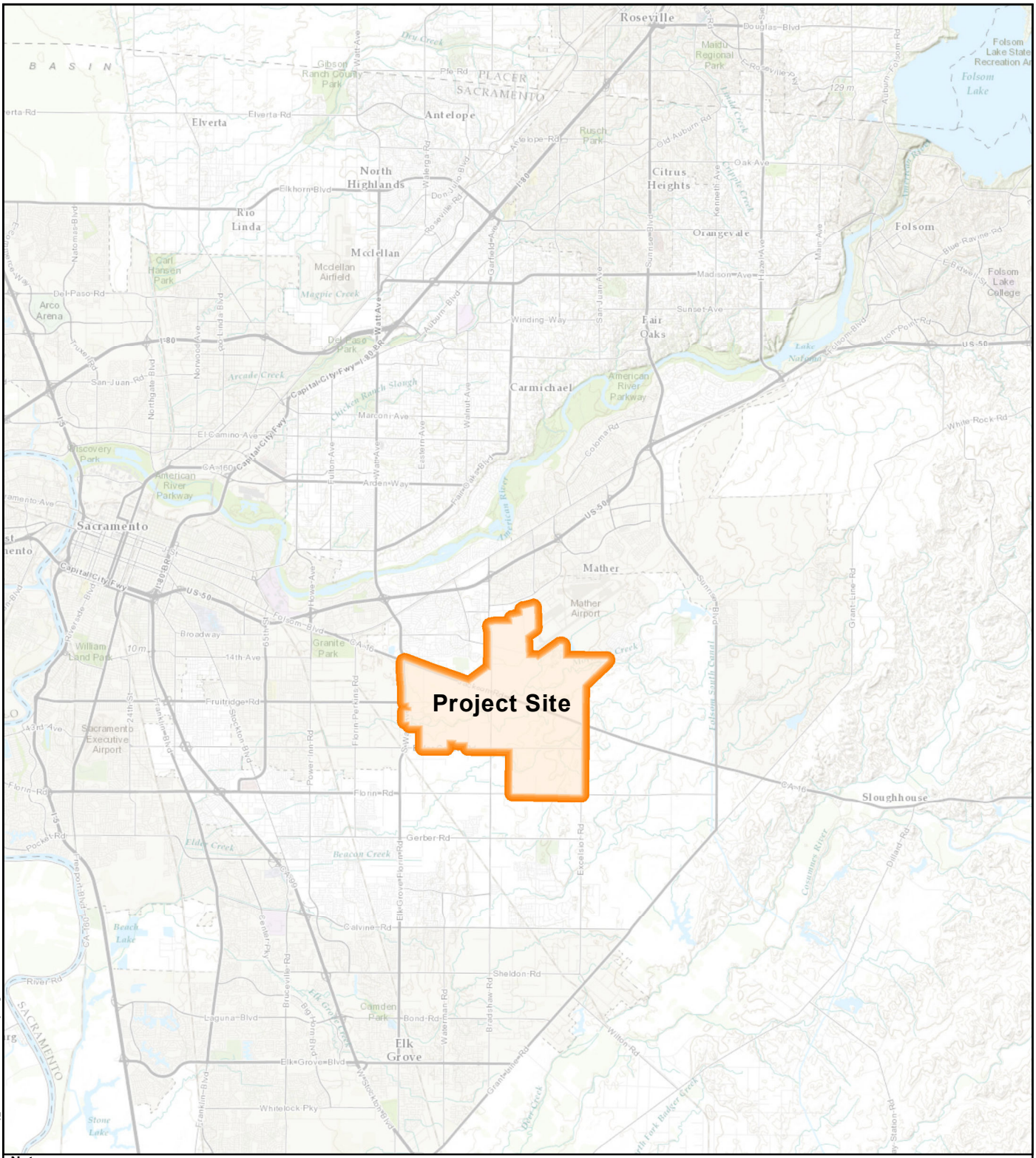
FIGURES


Project Site
Roseville
Antelope
North Highlands
Citrus Heights
Folsom
Rio Linda
Mcclellan
Orangevale
Fair Oaks
Carmichael
Sacramento
Mather
Elverta
Elk Grove
Sloughhouse
Gibson Ranch County Park
Maidu Regional Park
Folsom Lake
Folsom Lake College
Mcclellan Airfield
Carl Hansen Park
Arco Arena
Del Paso Park
American River Parkway
Discovery Park
William Land Park
Granite Park
Sacramento Executive Airport
Mather Airport
Camden Park
Stone Lake
Beach Lake
Capital City Fwy
Auburn Blvd
Watt Ave
Folsom Blvd
Florin Rd
Elk Grove Florin Rd
Bradshaw Rd
Sunrise Blvd
Madison Ave
Sunset Ave
Winding Way
Arden Way
Marconi Ave
El Camino Ave
Fruitridge Rd
Broadway
14th Ave
Florin-Rd
Gerber Rd
Calvine Rd
Sheldon Rd
Laguna Blvd
Elk Grove Blvd
Whitelock Pky
Douglas Blvd
Elverta Rd
Antelope Rd
Oak Ave
Folsom Blvd
White Rock Rd
Grant Line Rd
Excelsior Rd
Dry Creek
Arcade Creek
Chicken Ranch Slough
Magpie Creek
Beacon Creek
Elder Creek
Morrison Creek
Laguna Creek
Elk Grove Creek
American River
Cosumnes River
Dillard Rd
Lake Natoma
Folsom Lake
Rusch Park
Del Paso Rd
San Juan Rd
Northgate Blvd
Norwood Ave
Walnut Ave
Eastern Ave
Fulton Ave
Howe Ave
Power Inn Rd
Stockton Blvd
Franklin Blvd
Waterman Rd
Bruceville Rd
Elk Grove-Florin Rd
Hazel Ave
Main Ave
Kenneth Ave
Garfield Ave
Roseville Rd
Walerga Rd
Don Julio Blvd
Elkhorn Blvd
Pleasant Grove Creek Canal
Folsom South Canal
Natomas Blvd
Truxel Rd
Riverside Blvd
Freeport Blvd
Grant Line Rd
Dillard Rd
Franklin Blvd
Whitelock Pky
Elk Grove Blvd
Laguna Blvd
Bond Rd
Florin Rd
Fruitridge Rd
Broadway
14th Ave
Marconi Ave
Arden Way
Winding Way
Sunset Ave
Madison Ave
Oak Ave
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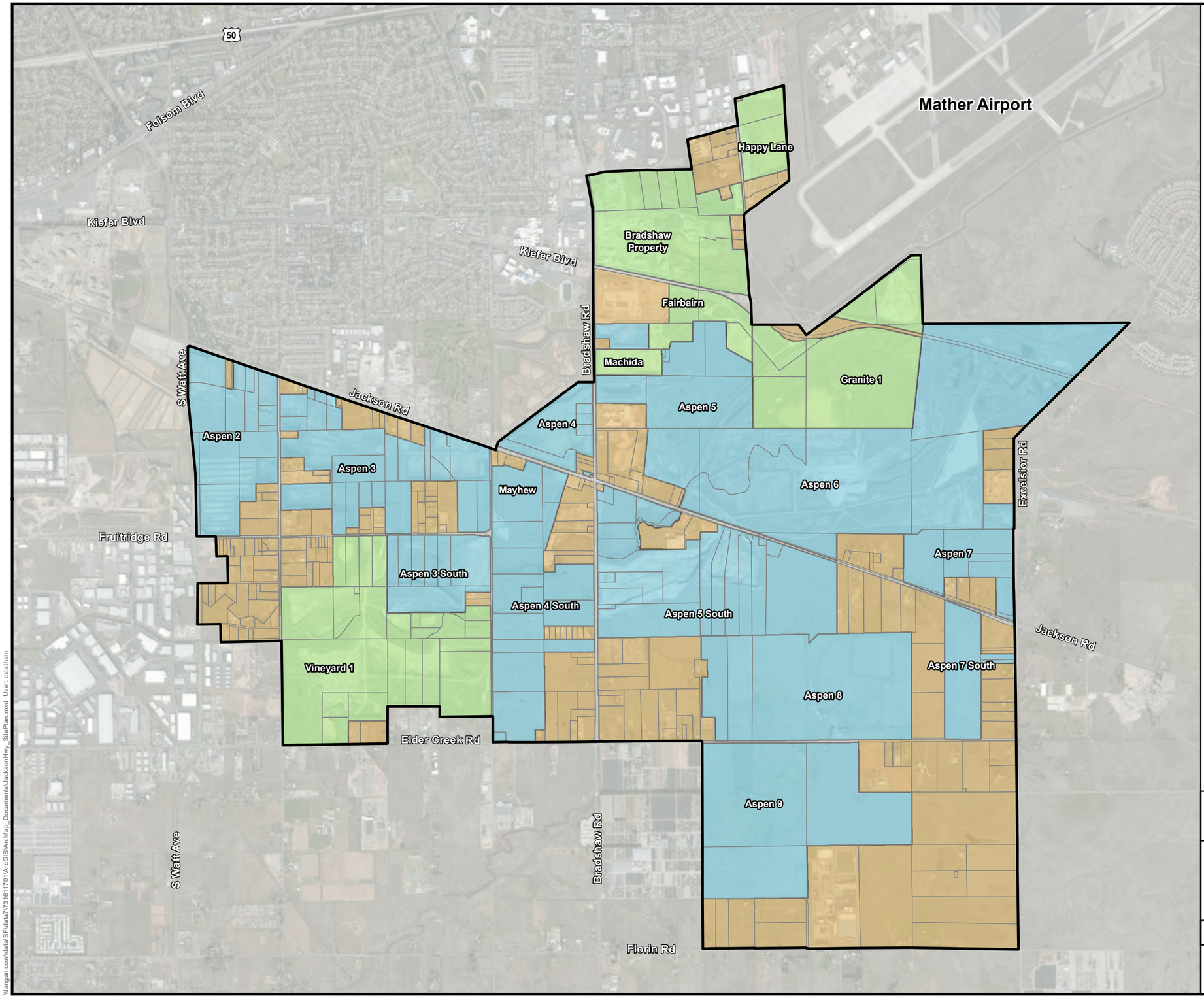
Antelope



Legend

- Master Plan Boundary
- Teichert - Participating Properties
- Granite - Participating Properties
- Non-Participating Properties

Notes:

1. World aerial imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source of aerial imagery is Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community.
2. Map displayed in California State Plane Coordinate System, Zone II, North American Datum of 1983 (NAD83), US Survey Feet.

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WEST JACKSON HIGHWAY MASTER PLAN
Sacramento County, California

SITE PLAN

Date 1/17/2014	Project 731611701	Figure 2

LANGAN TREADWELL ROLLO

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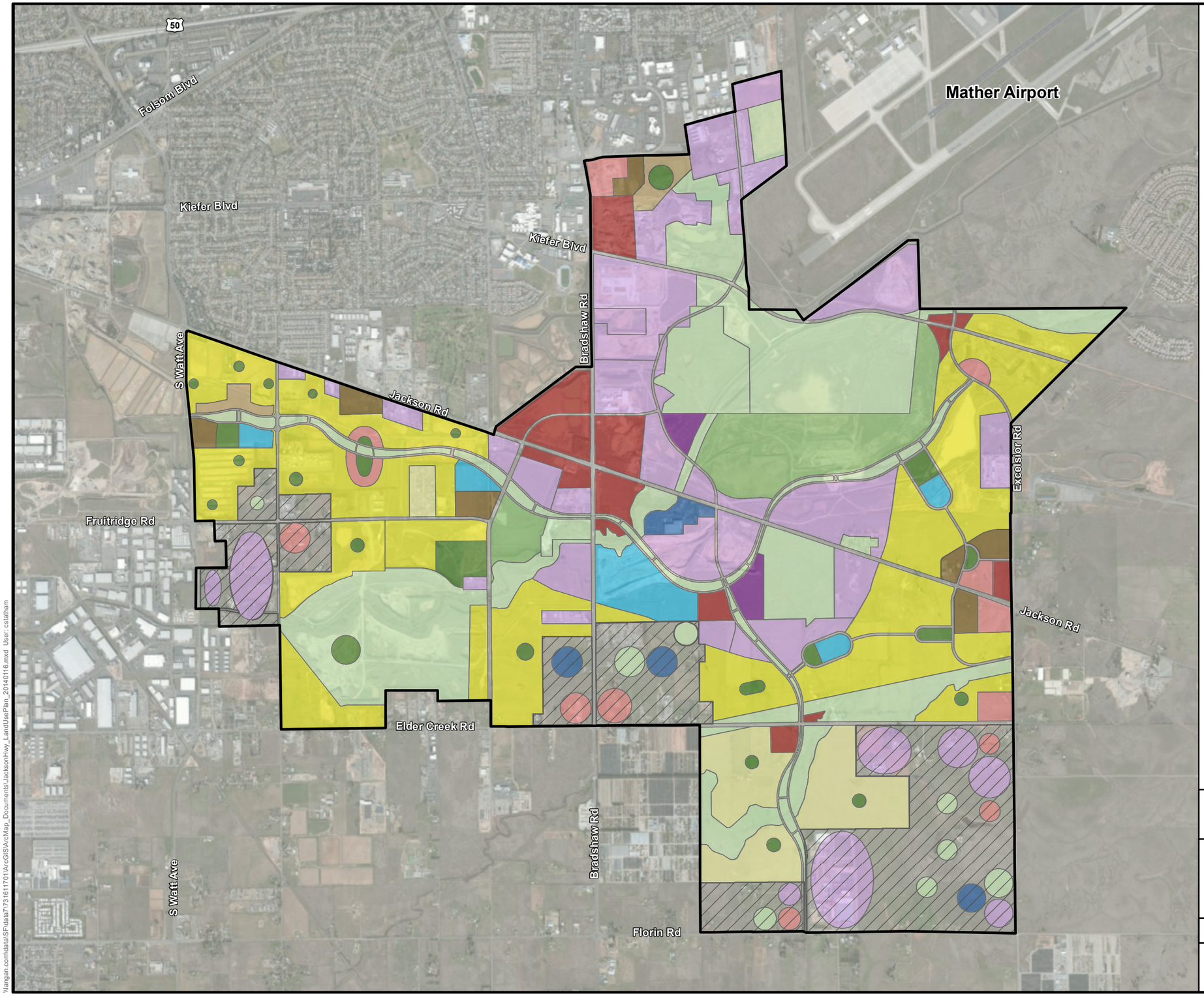

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Legend

- Master Plan Boundary

Land Use Plan

- FPA
- Commercial
- Industrial
- Mixed Use
- Employment
- Institutional
- High Density Residential
- Medium Density Residential
- Low Density Residential
- Very Low Density Residential
- Open Space
- Open Space/Urban Farm
- Park
- School

Notes:

1. World aerial imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source of aerial imagery is Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community.
2. Map displayed in California State Plane Coordinate System, Zone II, North American Datum of 1983 (NAD83), US Survey Feet.

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WEST JACKSON HIGHWAY MASTER PLAN
Sacramento County, California

LAND USE PLAN

Date 1/17/2014	Project 731611701	Figure 3

LANGAN TREADWELL ROLLO

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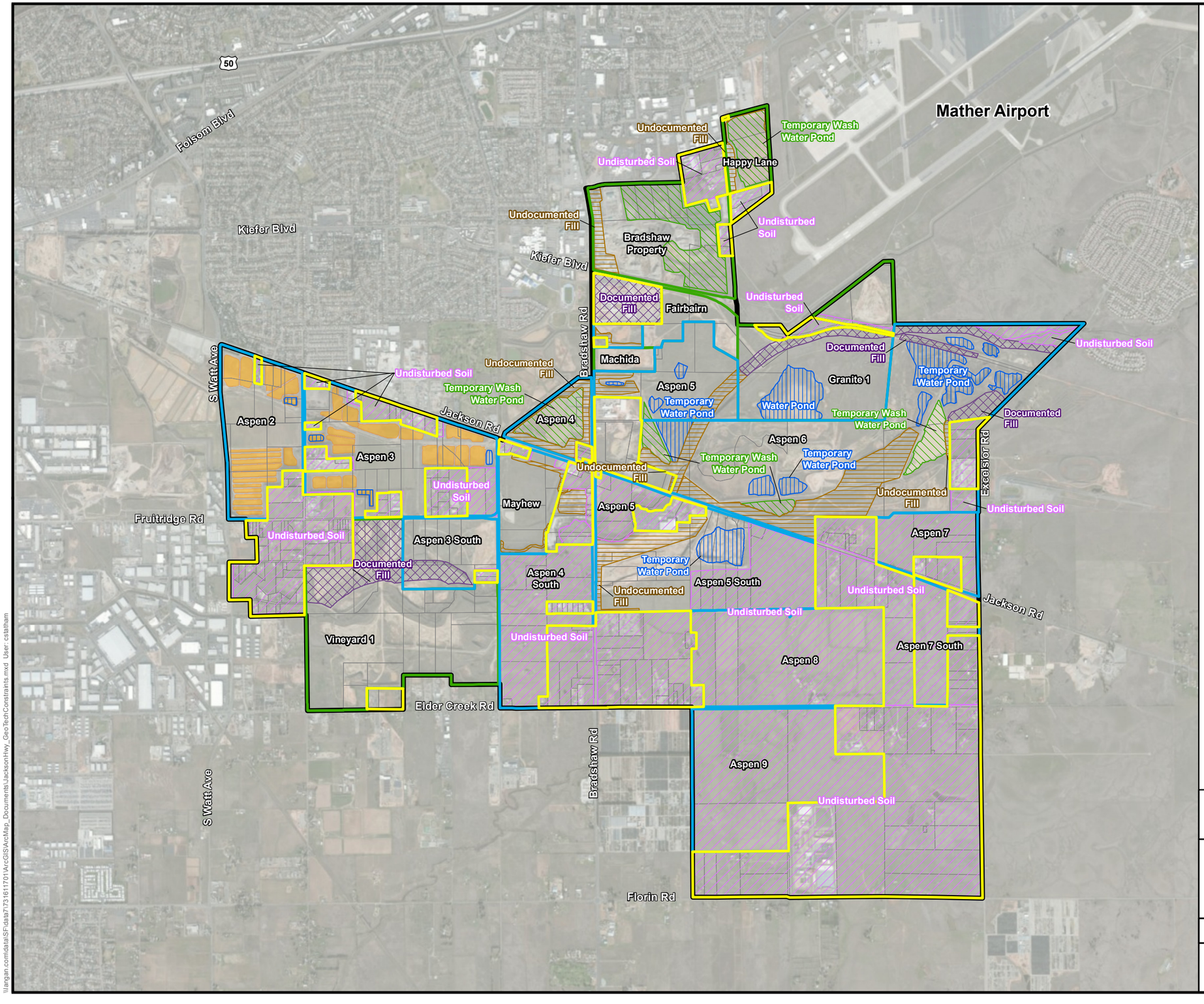

Legend

- Master Plan Boundary
- Documented Fill
- Temporary Water Pond
- Undisturbed Soil
- Undocumented Fill
- Temporary Wash Water Pond
- Drying Beds
- Granite Properties
- Teichert Properties
- Non-Participating Property

Notes:

1. Size and location of identified features are approximate and representative of their locations. Future conditions may be different.
2. World aerial imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source of aerial imagery is Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community.
3. Map displayed in California State Plane Coordinate System, Zone II, North American Datum of 1983 (NAD83), US Survey Feet.

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Miles

WEST JACKSON HIGHWAY MASTER PLAN
Sacramento County, California

GEOTECHNICAL CONSTRAINTS

Date 1/17/2014	Project 731611701	Figure 4

LANGAN TREADWELL ROLLO

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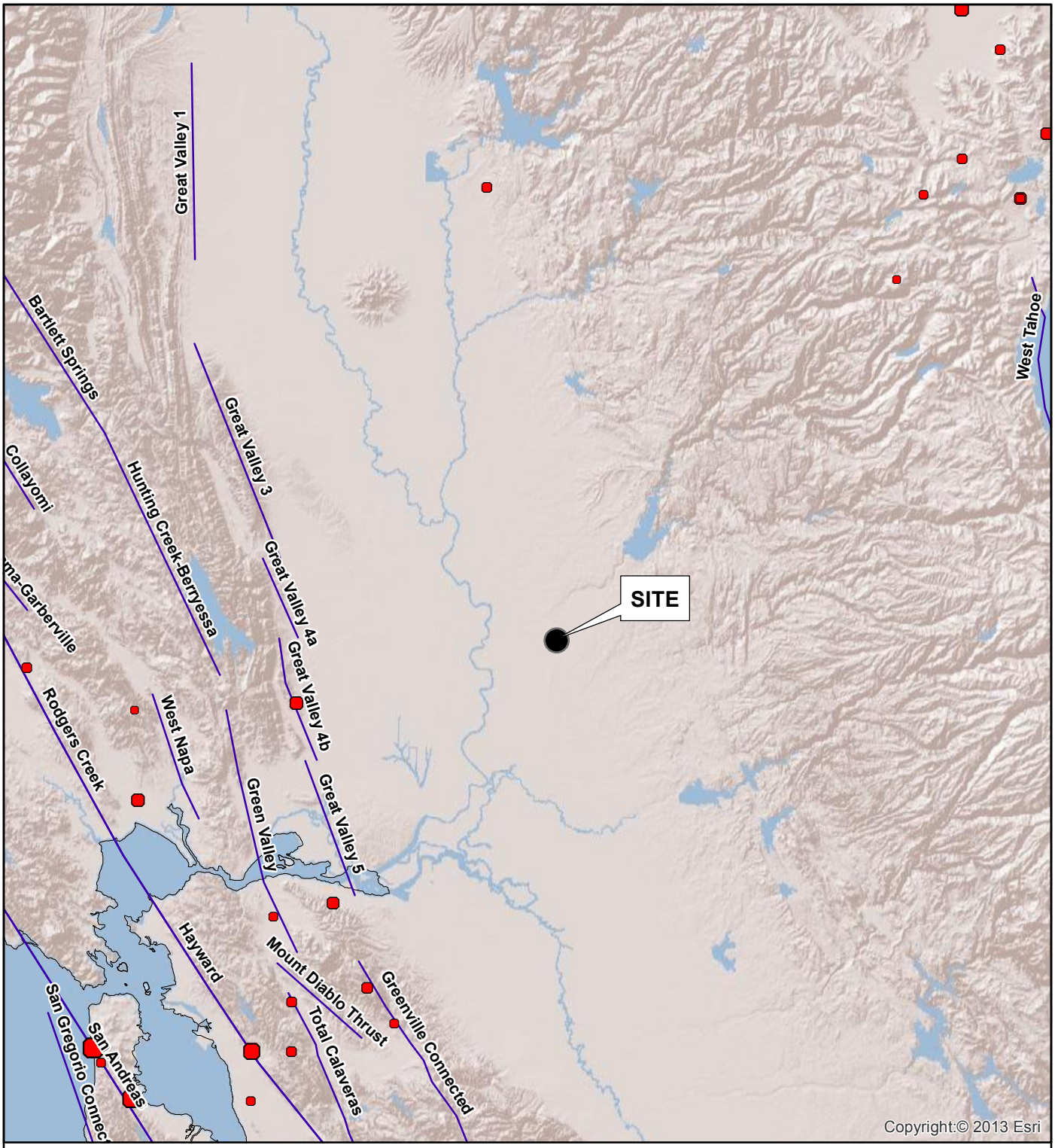

Legend

- Earthquake Epicenter - Magnitude 5
- Earthquake Epicenter - Magnitude 6
- Earthquake Epicenter - Magnitude 7
- Earthquake Epicenter - Magnitude 8

NOTES:

1. Digitized data for fault coordinates and earthquake catalog was developed by the California Geological Survey. The historic earthquake catalog includes events from January 1800 to December 2000.

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WEST JACKSON HIGHWAY MASTER PLAN AREA
Sacramento, California

MAP OF MAJOR FAULTS AND EARTHQUAKE EPICENTERS IN THE CENTRAL VALLEY

LANGAN TREADWELL ROLLO

Date 1/17/2014	Project 731611701	Figure 5

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QUALITY CONTROL REVIEWER:



Richard D. Rodgers, G.E.
Managing Principal

APPENDIX H

WEST JACKSON HIGHWAY MASTER PLAN DRAINAGE AND FLOOD CONTROL STUDY

David Defanti
Deputy County Executive

Department of Water Resources
Michael L. Peterson, Director

Ann Edwards
County Executive

County of Sacramento

Date: 04/06/2023

To: **Michael Motroni, P.E.**
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Michael Isle
Teichert/Stonebridge Properties
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Compass Land Group/Granite Construction

Subject: West Jackson Highway Master Drainage Study – 4th Submittal (dated 12/02/2022) Comments

The Sacramento County Department of Water Resources (County DWR) has reviewed the subject master drainage study and found it to be technically sufficient to support the proposed drainage master plan and initial entitlements.

Additional analyses and details will be required to support eventual Tentative Maps and improvement plans. A general list of these additional requirements is provided in the aforementioned study and will be further described in the Conditions of Approval for the initial entitlements. Note that County DWR will provide Conditions of Approval after the required preliminary levee geotechnical study has been reviewed and approved.

In accordance with the Sacramento County Drainage Study Requirements document, prior to commencing work on subsequent drainage studies, contact County DWR to initiate the drainage study scoping process.

Please feel free to call if you have any questions.

Sincerely,

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West Jackson Highway Master Plan
Master Drainage & Flood Control Study

December 2, 2022



Prepared for

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and

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GLOSSARY

2-Year	Having a 50% chance of occurrence in any given flood season
10-Year	Having a 10% chance of occurrence in any given flood season
100-Year	Having a 1% chance of occurrence in any given flood season
200-Year	Having a 0.5% chance of occurrence in any given flood season
500-Year	Having a 0.2% chance of occurrence in any given flood season
44 CFR 65.10	Code of Federal Regulations pertaining to levees
BASH	Bird/Wildlife Aircraft Strike Hazard program
CDFW	California Department of Fish and Wildlife
CFS	Cubic Feet per Second
CLOMR	Conditional Letter of Map Revision (FEMA assessment of future conditions)
CVFED	Central Valley Floodplain Evaluation and Delineation program (California)
CVFPB	The Central Valley Flood Protection Board
CVRWQCB	Central Valley Regional Water Quality Control Board – under the SWRCB
DSOD	The California Division of Safety of Dams
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIA	Flood Improvement Area
FIRM	Flood Insurance Rate Map, published by FEMA
FPA	Future Planning Area
Freeboard	Height of a flood facility above the design water surface elevation
GIS	Geographic Information System
HEC-1	A US Army Corps of Engineers hydrology program
HEC-RAS	A US Army Corps of Engineers hydraulics program
HGL	Hydraulic Grade Line – water surface elevations in channels and pipes
Hydromodification	The human-induced alteration of the natural flow of water through a landscape
LiDAR	Light Detection and Ranging (topographic data collection method)
NAVD 88	North American Vertical Datum 1988
NFIP	National Flood Insurance Program – administered by FEMA
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
Orographic	Pertaining to the effects of elevation and changing terrain on precipitation
Plan Area	West Jackson Highway Master Plan
SacCalc	Hydrologic pre-processor program developed by SCDWR
SAFCA	Sacramento Area Flood Control Agency
SAHM	Sacramento Area Hydrology Model
SCDWR	Sacramento County, Department of Water Resources
SMUD	Sacramento Municipal Utilities District
SWRCB	California State Water Resources Control Board
ULDC	Urban Levee Design Criteria in the state of California
ULOP	Urban Level of Protection associated with flooding in California
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey (federal agency)
WJHMP	West Jackson Highway Master Plan
WJP#	West Jackson Pumped Watershed
WJG#	West Jackson Gravity Drained Watershed
XPSWMM	A private stormwater management modeling software

1.0 Executive Summary

This drainage study has been prepared at the request of Stonebridge Properties, LLC and Granite Construction Company and submitted to the Sacramento County Department of Water Resources (SCDWR) in support of the West Jackson Highway Master Plan (WJHMP or Plan Area). The WJHMP encompasses approximately 5,913± acres of land along the Jackson Road corridor roughly between Watt Avenue and Excelsior Road, ultimately draining into portions of Morrison Creek and Elder Creek. The WJHMP includes a land plan that provides a balanced mixture of land uses that will foster a sustainable community and complement adjacent existing neighborhoods.

The purpose of this study is to assist SCDWR in the evaluation of existing conditions and the drainage and flood control facilities planned for WJHMP to support proposed development conditions. This study is a part of the Master Plan effort. As such this study is intended to satisfy the requirements of Sacramento County for a large-scale drainage master plan for the project. Design level detail that is normally associated with the review and approval of small lot tentative maps will accompany future entitlement efforts. Accordingly, this study addresses the following:

1. The existing regulatory environment.
2. The models employed and the assumptions and methodology utilized in the development of the models.
3. The results for the existing conditions analysis.
4. The planned internal project drainage improvements (e.g. detention basins and trunk drainage improvements).
5. The allowable discharges and on-site safety standards required for the planned conditions.
6. The planned conditions flood control improvements for the Morrison and Elder Creek systems.
7. A summary of how the planned project improvements achieve consistency with allowed discharge and design standards.

8. An analysis of how climate change could impact this analysis and how the master plan is resilient to the potential effects of climate change.

9. A discussion of future considerations, including operations and maintenance and probable costs.

This study demonstrates that the planned drainage and flood control facilities for the WJHMP maintain downstream drainage impacts at or below existing conditions and provide flood control that meets or exceeds 200-year standards for the Plan Area. Based on the current Sacramento County Hydrology Standards, this study presents sufficient detail to establish the backbone drainage and flood control system, pre-development (post-mining condition) and post development flows, flood control, and water quality.

Within the Plan Area, the mined areas (below grade of Morrison Creek) that historically gravity drained to Morrison Creek will utilize detention basins and pump stations to pump back into Morrison Creek at reduced flows compared to their historical predevelopment drainage flows. Some previously mined areas are planned to be filled above the floodplain to allow gravity drainage back to Morrison Creek.

In general, this study demonstrates how the project will:

1. Comply with the latest SCDWR requirements and appropriate engineering standard of care.

2. Establish hydraulic modeling of Morrison Creek.

3. Attenuate developed condition peak flows to predevelopment levels or show that increases in water surface elevations are within levee containment and freeboard requirements.

4. Reclaim portions of the Plan Area from the 100-year floodplain.

5. Identify the required levees and internal detention basins, pump stations and drainage systems necessary to provide a 200-year level of flood protection.

6. Accommodate Climate Change through resiliency.

2.0 Introduction

2.1 Project Location

The Plan Area is located in the southeast portion of Sacramento County, generally oriented along Jackson Road, and bound by Kiefer Boulevard and Goethe Road to the north, portions of Elder Creek Road and Florin Road to the south, the City of Sacramento to the west, and Excelsior Road to the east. Refer to **Figure 2.1: Project Vicinity** for the location of the project.

2.2 Purpose and Intent

Wood Rodgers has prepared this drainage study in support of the West Jackson Highway Master Plan (WJHMP) or Plan Area. The master plan encompasses approximately 5,913± acres of land along the Jackson Road corridor roughly between Watt Avenue and Excelsior Road. The Plan Area is tributary to portions of Morrison Creek and Elder Creek and includes large tracts of land that have been mined and reclaimed. The planned project proposes to reuse previously mined and reclaimed lands with a balanced mix of land uses that will foster a sustainable community and complement the adjacent existing neighborhoods.

This study has been prepared to accompany the planned master plan and provide technical analyses to support the transition of land uses and the WJHMP environmental study by evaluating and providing a description of the following:

1. The existing regulatory environment.
2. The models employed and the assumptions and methodology utilized in the development of the models.
3. The results for the existing conditions analysis.
4. The planned conditions internal project drainage improvements (e.g. detention basins and trunk drainage improvements).
5. The allowable discharges and on-site safety standards that will be required for planned conditions.

6. The planned conditions flood control improvements for the Morrison and Elder Creek systems.

7. A summary of how the planned project improvements achieve consistency with allowed discharges and design standards.

8. An analysis of how climate change could impact this analysis and how the master plan is resilient to the potential effects of climate change.

9. A discussion of future considerations, including operations and maintenance and probable costs.

While more detailed studies[1] will be required to accompany tentative map submittals, this report contains adequate analysis to support the environmental analysis and approval of the master plan. This study will provide estimates for the maximum allowable discharge into the receiving waterways, detention basins, and major drainage infrastructure in addition to setting forth planned improvements necessary to achieve a 200-year level of flood protection for the Plan Area.

2.3 Project Background

The WJHMP Master Plan Application was accepted by the Sacramento County Board of Supervisors on April 17, 2012. In accordance with the requirements of the County's General Plan Land Use Element Policy LU-119, StoneBridge Properties, LLC, a subsidiary of Teichert Land Co. (Teichert), and Granite Construction Company (Granite) (collectively, Participating Owners) have initiated the Master Plan process for all land encompassed within the planned Plan Area, encompassing 5,913± acres. The Participating Owners collectively own 4,079± acres – Teichert owns 3,106± acres and Granite owns 1,063± acres. Participating Owners and their land holdings have been provided common names for reference in this study. Refer to **Figure 2.2: Participating Properties**. The Participating Owners represent 69% of the total Plan Area acreage. These properties primarily include mining sites used for sand and gravel extraction, many of which have already been reclaimed. Although most of the mining is complete, some of the Participating Owners' properties continue to support various mining related activities. The mining

[1] Detailed studies at tentative map stage are intended to provide a localized drainage analysis to support planned internal street and grading design. Internal street and grading design will occur at tentative map stage.

activities have dominated the landscape since the 1930's. As a result, much of the Plan Area has largely been bypassed by development. Just over 80% of the Plan Area boundary abuts the existing Sacramento County Urban Policy Area and the Sacramento City Limits. In addition to mining areas, the Plan Area is comprised of a mixture of rural residential, institutional, agricultural, and industrial properties located along the Jackson Road corridor.

Today the extraction of the sand and gravel resources associated with the ancient alluvial channels is nearing completion, and the Plan Area is surrounded by existing and planned development. Current permitted sand and gravel resources found in mines in the Plan Area are expected to be depleted in approximately 10 years. As a result of the surface mining, many areas within the Plan Area are excavated lower than adjacent natural ground and the waterways which historically drained the area. Many of these excavated areas have no current drainage outlet and collect storm water runoff. The removal of storm water relies on the process of evaporation and infiltration. This drainage study identifies drainage needs based upon the remnant mining topography and a design solution that works in conjunction with the planned land uses for the Plan Area.

2.4 Regulatory Setting

The project must meet certain Federal, State and local standards with respect to mitigating flood impacts and providing storm water quality treatment. The following is a discussion of the regulatory programs which will affect this project.

Federal

FEMA - The Federal Emergency Management Agency (FEMA) oversees the National Flood Insurance Program (NFIP) and establishes the 1% annual chance floodplain for purposes of administering this insurance program, doing so in cooperation with local communities. This established floodplain cannot be increased without the acknowledgement of the communities involved, in this case the City of Sacramento and County of Sacramento, and without the notification of impacted property owners. Therefore, this Federal mapping standard establishes the threshold for downstream impacts and mitigation for the 1%

annual chance (100-year) storm[2]. It is important to note that FEMA's mapping can be corrected if better information establishing the existing flood hazard is made available to all parties.

Clean Water Act - The Federal government also establishes the standards for complying with the Clean Water Act through the National Pollution Discharge Elimination System (NPDES) under the US Environmental Protection Agency (USEPA). The USEPA has delegated the responsibility for administering and enforcing this program to the State of California and its Regional Water Quality Control Boards.

The Federal Aviation Administration (FAA) - FAA periodically provides updated guidance for airport operators related to the location and management of wildlife attractants such as landfills, agricultural facilities and stormwater management areas. The intent of the program is to prevent the formation of new bird habitat through frequent and prolonged inundation (flooding). The WJHMP will include detention storage for drainage, which can create new habitat if not drained properly. The criteria to prevent frequent and prolonged inundation is to evacuate, by gravity or pumping, the 2-year 24-hour event in less than 48 hours after rainfall has ceased. As larger events are considered less frequent, the evacuation of larger storms can be longer than 48 hours. For longer storm durations, the basin designs are anticipated to preclude habitat.

State

The State of California oversees the safety of dams and levees, and storm water and other pollutant discharges. The State establishes the standards for such facilities and discharges.

California Division of Safety of Dams (DSOD) – DSOD is responsible for defining a dam that falls under its purview and regulates the safety of structures which meet established minimum thresholds. There are currently no jurisdictional dams within the Morrison Creek watershed affecting the project. Sacramento County recently modified the spillway of Mather Lake to reduce the height of the previous dam and the lake's water surface elevation, therefore bringing it below the jurisdictional threshold of a dam. This existing mapped hazard for failure of the Mather Dam was defined by Sacramento County and can be identified to

[2] Refer to FEMA floodplain discussion in Section 9.3 and Figure 9.1: FEMA Floodplain Map.

all properties within the Plan Area. County Staff has raised the issue of planned detention areas within the Plan Area being modified in such a way as to be potentially considered a reservoir / dam in the eyes of the State. The project proponents will coordinate with County Staff and DSOD to ensure that no new dam structures are created as part of this project. Containment of detention areas is anticipated to fall under local design criteria. Refer to **Appendix L** regarding DSOD determination for the Granite 1 / Aspen 6 detention basin.

Folsom Dam failure inundation mapping shows the western portion of the Plan Area within the inundation zone as shown in **Figure 2.3: Folsom Dam Failure Inundation Map**. While the potential for dam failure is low, damage and potential loss of life is high. For the areas within the inundation zone, evacuation maps and rescue plans will be prepared prior to development within such inundation areas.

Central Valley Flood Protection Board (CVFPB) – CVFPB oversees the levees within the State Plan of Flood Control and has established the Urban Level of Flood Protection (ULOP) and the Urban Levee Design Criteria (ULDC) for the construction of levees to protect populations at risk. These standards establish the 200-year storm as the design event for determining levee design conditions[3]. While the levees that exist within the WJHMP today do not fall under CVFPB jurisdiction, when the WJHMP is developed the levees still in operation will need to meet State design criteria. Approval in the form of an encroachment permit from CVFPB is required before work is allowed within the regulated streams of both Morrison Creek and Elder Creek. Permits for work at bridges shall include conditions that meet the requirements of the ULDC. The ULDC document, which is referenced for this study, provides guidance for all critical levee design criteria including through-seepage, under-seepage, freeboard, and other criteria. This document is currently available online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Urban-Levee-Design-Criteria--2012.pdf

State Water Resources Control Board (SWRCB) – SWRCB functions through regional boards, with the Central Valley Regional Water Quality Control Board (CVRWQCB) overseeing water quality programs for

[3] Subject to areas as shown in Appendix D: 200-Year ULOP Applicability Area of the Sacramento County Floodplain Management Ordinance, effective January 13, 2017.

the Plan Area. The County of Sacramento recently revised and approved the use of the Stormwater Quality Design Manual for the Sacramento Region in July 2018, to meet current CVRWQCB permitting requirements.

California Department of Fish and Wildlife (CDFW) – CDFW oversees the permitting process for the alteration of any lake or streambed that would potentially impact fish and wildlife or their habitat. If a project will substantially change the bed, channel, or bank of any river, stream, or lake or use the materials from a streambed, the developer must notify the CDFW and follow the conditions of a Lake and Streambed Alteration Agreement, if determined to be necessary by CDFW, pursuant to Section 1602 of the California Fish and Game Code to protect fish and wildlife resources. Even if the streambed is dry during construction, CDFW is responsible for ensuring that the streambed condition will not add erodible sediment to the environment, remove streambed habitat, or create conditions that are otherwise detrimental to the health of fish and aquatic mammal populations.

Local

Hydraulics & Hydrology - The County of Sacramento oversees all local considerations with respect to drainage, flooding and storm water quality. County staff has established extensive drainage and design criteria for assessing hydrology and hydraulics related to flood/drainage structures, with published rainfall and hydrologic parameters. These design standards and parameters can be found in the County's Hydrology Manual, which can be found online at:

http://www.waterresources.saccounty.net/Pages/DrainageManualVolume2.aspx

Improvement Standards - The design standards for sizing storm drainage infrastructure utilized as the basis for this study are per the County of Sacramento Improvement Standards. The Improvement Standards can be found online at:

http://www.engineering.saccounty.net/Pages/ImprovementStandards.aspx

Water Quality Treatment - Storm water quality mitigation is an ever-expanding requirement to ensure that streams, creeks and rivers do not degrade as a result of new development. Storm water quality not only

looks at pollutants generated from new development, but also the potential for runoff to worsen downstream erosion. Treatment of storm runoff deals primarily with removing pollutants generated from new development. Hydromodification and runoff reduction measures deal with limiting the release of runoff offsite, and demonstrating how the planned project will discharge under a range of storm conditions (frequencies and durations) without worsening erosion. In July of 2018, as required by the State's CVRWQCB, Sacramento County adopted a revised storm water quality design manual to address post-project water quality issues. This document is published online at:

http://www.beriverfriendly.net/newdevelopment/stormwaterqualitydesignmanual/

Low Impact Development (LID)

The drainage system(s) in the post-development condition is anticipated to incorporate Low-Impact Design and hydromodification principles where determined practical to reduce urban runoff, improve water quality, and implement the County's Municipal Storm Water Permit (MS4 Permit). Implementation will utilize the tool known as the Sacramento Area Hydrology Model (SAHM) by Clear Creek Solutions, Inc., dated March 2013. Low impact development measures are intended to be implemented at the project-level during subsequent entitlement processing and design. This master plan does not detail which LID facilities will be utilized or where they will be located, but assumes that these measures can and will be implemented within the framework laid out in this plan. Specific LID facilities are anticipated to be planned during subsequent entitlement applications.

2.5 Previous Studies

Wood Rodgers used other studies in preparation of this report. These studies are referenced below and indicated by reference number where applicable within the report:

1. Jackson Township Drainage Report, December 2017, prepared by Civil Engineering Solutions Inc.: This proposed 1,391± development, to the east of WJHMP, has submitted its application and prepared a drainage study. Part of the Jackson Township property drains naturally west towards the Granite 1 / Aspen 6 basin. The drainage study, including modeling, has been provided by Civil Engineering

Solutions for use in defining Jackson Township drainage areas and runoff parameters. This model is applicable to both Morrison Creek and Elder Creek watersheds. (**Reference 1**)

2. Drainage Report, Aspen 1, Prepared for City of Sacramento, California (May 2013), by Wood Rodgers: The total area of the Aspen I project is 232± acres located at the southwest corner of Jackson Road and South Watt Avenue. Aspen 1 is a planned mixed-use residential development within the City of Sacramento. This study provides hydrologic and hydraulic design of the onsite drainage system, as well as feasibility of utilizing reconfigured offsite retention east of South Watt Avenue to collect and store stormwater runoff from Aspen 1. (**Reference 2**).

3. Technical Memorandum: SMUD Corporation Yard Drainage Requirements, by Wood Rodgers (February 2011): The purpose of this technical memorandum is to size drainage facilities to serve the 51± acre SMUD Corporation Yard project, located east of Bradshaw Road and south of Kiefer Blvd. The offsite trunk drainage system from Kiefer Boulevard to Morrison Creek conveys flow from the SMUD project and adjacent properties. This technical memorandum is utilized to define the offsite flow into the Plan Area. (**Reference 3**).

4. Drainage Master Plan, Rio Del Oro dated August 2005 by Wood Rodgers, Inc: Rio Del Oro is a 3,828± acre Specific Plan located upstream within the City of Rancho Cordova. This study / document provides modeling and analysis for developed runoff conditions in the northern portion of the watershed of the upper Morrison Creek system. Runoff from the Rio Del Oro project flows to Morrison Creek. This study was utilized to establish baseline and ultimate developed conditions that affect runoff reaching the Plan Area. (**Reference 4**)

5. Drainage Master Plan, Montelena dated September 2007, prepared by Wood Rodgers: Montelena is a 252± acre project upstream within the City of Rancho Cordova. Montelena drainage runoff flows to Morrison Creek. This study / document provides modeling and analysis for baseline and ultimate developed runoff conditions in the southern portion of the upper Morrison Creek system. (**Reference 5**)

6. Elder Creek HEC-RAS Modeling, developed by Civil Engineering Solutions Inc, (updated 2018) for the Sacramento County Department of Water Resources: Initial model of Elder Creek watershed utilized as part of this analysis. No report was provided. (**Reference 6**)

2.6 Procedural Memoranda and Future Studies

The applicant team intends to develop a procedural memorandum to address FEMA 100-year flood protection, ULOP 200-year flood protection, and the County Floodplain Management Ordinance. The procedural memorandum will identify land areas subject to FEMA and ULOP flood plain conditions, specific conditions for those identified land areas, and required findings to be made. The conditions are anticipated to include those to meet FEMA standards, ULOP findings, and County requirements. The findings to be made include both General Plan Consistency Findings and ULOP Findings. The procedural memorandum will also address the timing and need for future studies and the process for addressing flood control facilities when obtaining subsequent approvals. It is anticipated that the Procedural Memoranda will be approved prior to or concurrent with the Master Plan.

Prior to the approval of building permits for development in areas that are subject to Morrison Creek flood inundation, an existing conditions Letter of Map Revision (LOMR) may be prepared and submitted to SCDWR and FEMA. The existing conditions model prepared as part of this study is anticipated to be utilized as part of the basis for the LOMR. This will result in the remapping of the Morrison Creek floodplain to reflect existing flooding conditions. As a result, subsequent Conditional Letter of Map Revision (CLOMR) applications can be processed without the need to re-evaluate the entire creek corridor. It is not intended to be a requirement of the applicant to submit an existing conditions LOMR prior to submittal of a CLOMR or LOMR-F. There are aspects of the plan area that are not subject to or are minimally influenced by Morrison Creek and may be developed without a comprehensive existing conditions FEMA floodplain update. It is important to note, that any development within floodplain areas shown on the effective FIRM will require a CLOMR or LOMR-F. This is applicable to both the Morrison Creek and Elder Creek floodplains.

With the submittal of tentative subdivision maps or other discretionary development applications, additional design detail will be required. This detail will show and locate proposed interior drainage infrastructure and provide a preliminary grading plan for all streets and pads. To support this higher level of design, future drainage studies are anticipated to accompany subsequent entitlement applications. It is anticipated that future drainage studies will do the following:

- Provide preliminary interior hydrology and hydraulics to establish preliminary sizing for storm drain conveyance systems in accordance with local design standards. It is anticipated that this will include modeling the 10-year design storm event in the channel and performing a Nolte analysis for storm drain systems.
- Delineate areas of high ground versus areas that may require additional flood protection.
- Show that proposed pads will have adequate freeboard from various flood events.
- Provide a location as well as higher level of detail for sizing of interior drainage basins and where applicable, pumping characteristics. Initial storage conditions for interior detention basins may need to be re-evaluated to comply with current SCDWR standards.
- Provide preliminary low impact design and hydromodification solutions as required by current design standards, including storm water quality design.
- Show consistency with allowed discharge and design standards as referenced in this report.
- For areas along Elder Creek, future analyses will have to rely on the latest approved HEC-RAS model of Elder Creek to demonstrate that the project does not cause adverse impacts. This will include the latest modeling of ultimate conditions drainage facilities and land use throughout the Elder Creek watershed.
- The Morrison Creek Zone 2-3 HEC-RAS model and Zone 1 HEC-RAS model may have to be combined to demonstrate that the project does not cause adverse impacts downstream.
- Investigate the suitability for the Aspen VI weir to function as a permanent structure.

- Provide a sensitivity analysis in HEC-RAS using the floating debris calculator and horizontal obstructions from the bottom of the channel in addition to the vertical obstructions evaluated in this report for levee design.

- Evaluate the full range of pump redundancy scenarios applicable to current SCDWR standards.

- An adequate creek monitoring station design and operation plan. This may include provisions for emergency pumping of detention while the creek is still above design thresholds as well as additional storage capacity for detention basins to provide a factor of safety as directed by SCDWR.

- Design of future road crossings at Rock Creek Parkway, Kiefer Boulevard, Vineyard Road, Mayhew Road, and Hedge Avenue need to avoid hydraulic interaction with the creek or additional detailed hydraulic analysis will need to be provided for review and approval.

- Where modelling in this drainage study shows that creek water surface elevations are not contained adjacent to proposed development, modelling may need to be revised to incorporate proposed grading from the tentative map.

- The drainage trunkline conveying flows from Jackson Township to the Aspen 6 / Granite 1 basin should be designed at the tentative map stage to adequately convey ultimate condition flows from the Jackson Township Drainage Study.

- Reassess flows from the planned Rio Del Oro drainage master plan to verify assumptions used in this drainage study are valid.

Nonetheless, the analysis and conclusions in this report are adequate for this planning level of analysis to show consistency with the design standards. It is important to note, that the project's Public Facilities Financing Plan (PFFP) will detail the fee programs and mechanisms for constructing the backbone improvements specified in this study. The anticipated fee program is intended to distribute and apportion drainage and flood improvement costs to those land use areas that benefit from the proposed improvements.

PROJECT VICINITY

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

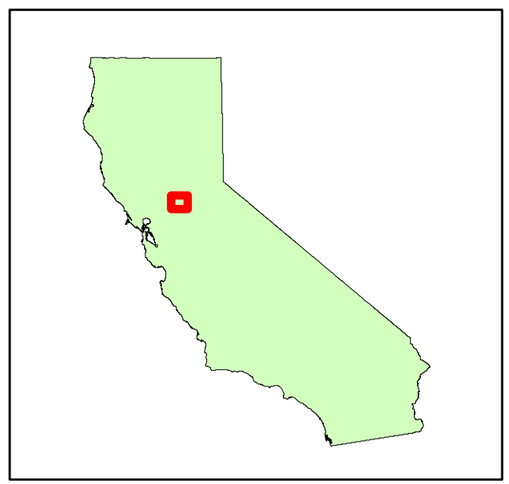


0 5,000 10,000

Feet

Legend

- Highways
- WJHMP Project Boundary
- Other Developments
- Cities
- Creeks
- Creeks



WOOD RODGERS

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2020 WJHMP\Figures-Report\Figure 2.1 Project Vicinity.mxd 12/2/2022 8:07:32 AM mberggren

FIGURE 2.1

PARTICIPATING PROPERTIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

0 1,000 2,000

Feet

Legend

- Granite Property
- Teichert Property
- WJHMP Project Boundary

HAPPY LANE

BRADSHAW PLANT

KIEFER BLVD

FAIRBAIRN SOUTH

GRANITE I "TRIANGLE"

ASPEN V

MACHIDA

ASPEN V

GRANITE I

ASPEN VI

KIEFER BLVD

MAYHEW RD

ASPEN I

ASPEN II

ASPEN IV

ASPEN III

ASPEN IV

ASPEN VI

ASPEN I

MAYHEW

FRUITRIDGE RD

ASPEN III SOUTH

BRADSHAW RD

JACKSON RD

ASPEN IV SOUTH

ASPEN V SOUTH

VINEYARD I

MAYHEW RD

ASPEN VIII

ASPEN VII

ELDER CREEK RD

GRANITE
CONSTRUCTION COMPANY

HEDGE AVE

ASPEN IX

S WATT AVE

KNOX RD

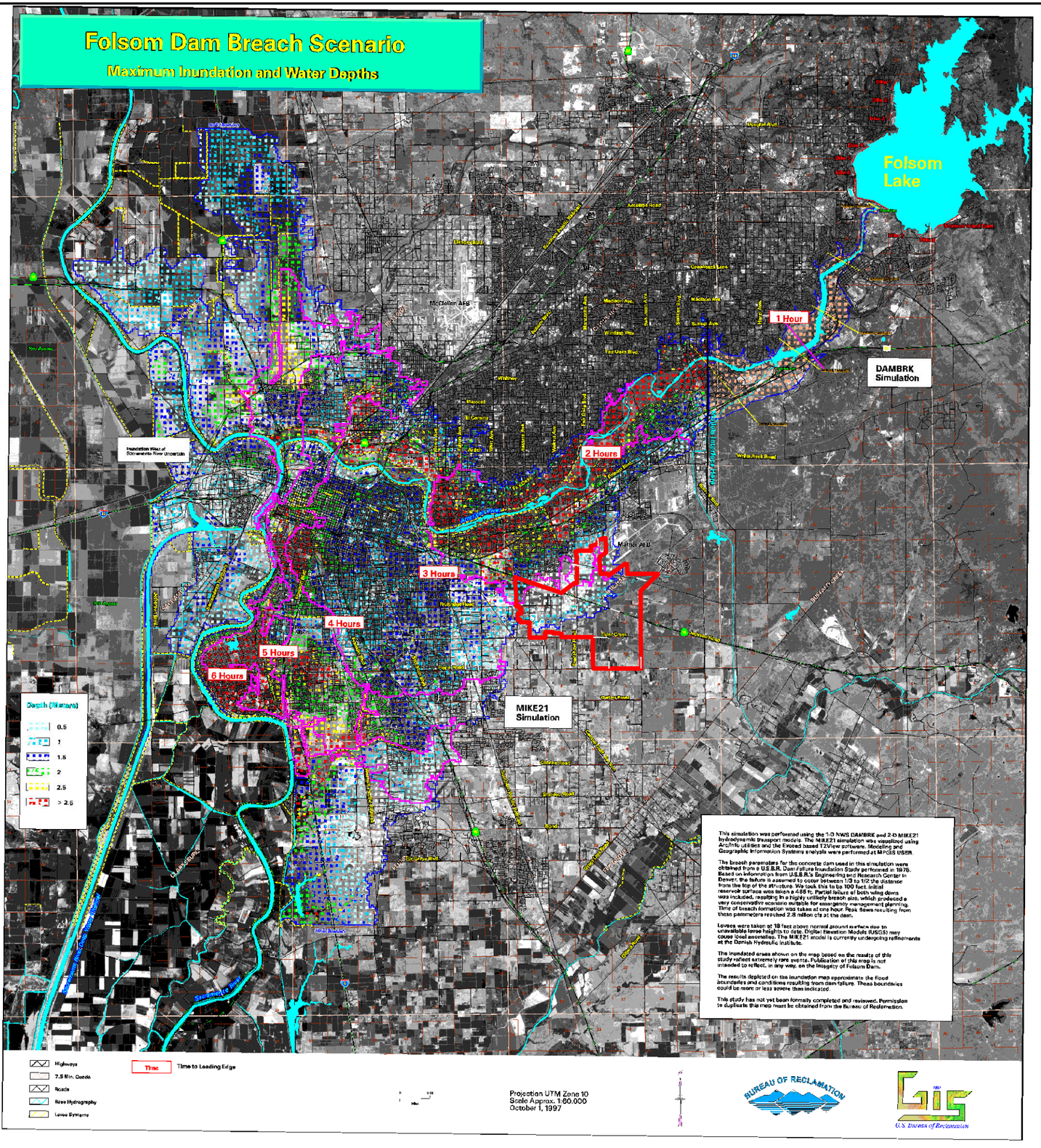
EXCELSIOR RD

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2021 WJHMP\Figures-Report\Figure 2.2 Participating Properties.mxd 12/2/2022 8:07:44 AM mberggren

FIGURE 2.2



FOLSOM DAM BREACH INUNDATION MAP

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 10,000 20,000

Feet

Legend

WJHMP Project Boundary

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2020 WJHMP\Figures-Report\Figure 2.3 Folsom Dam Breach Inundation Map.mxd 12/2/2022 8:07:54 AM mberggren

FIGURE 2.3

3.0 Modeling and Assumptions

This section provides an overview of the modeling utilized in preparing this study. The primary focus is on the modeling for Morrison Creek which was specifically developed for this work effort. Secondary emphasis is on the previously developed modeling for the watershed south of Florin Perkins Road as well as Elder Creek. Specifically discussed are the modeling inputs, including assumptions for land use, soil types, topography, water sheds and hydrology.

3.1 Purposes for which Model Employed

Define Existing and Planned Flooding Conditions

This study utilizes extensive modeling to ascertain the drainage and flood control environment for the following conditions:

- Existing[4] Flow and Water Surface conditions
- Post Project Interior Drainage Conditions
- Post Project Offsite Discharge and Flood Safety Conditions
- Ultimate Flow and Water Surface conditions

Each of these drainage conditions is important for the overall analysis contained in this report. To be specific: the existing flow conditions are employed to establish flows into the site which are then used to establish discharge volumes and potential flood hazards. Finally, post project drainage and flood conditions, following the construction of various project improvements, are considered to determine whether the allowed onsite and offsite discharges are acceptable as well as whether flood control standards are met. Next, ultimate buildout of the watershed is assumed to evaluate the ultimate flow and water surface conditions within Morrison Creek. Evaluating ultimate buildout included modifying hydrology consistent with planned development upstream of the project as well as incorporating results from previous drainage master plan studies for upstream developments.

[4] Existing conditions is considered as the time of the Notice of Preparation date of April 26, 2017.

The Aspen 8 and Aspen 9 post-mining condition model was used to evaluate flow and water surface conditions in Elder Creek including weir spills into the project area. Ultimate watershed build-out condition of Elder Creek was previously modeled to support the development of Jackson Township. Ultimate conditions for Jackson Township were compared with the existing conditions and post-mining conditions of Elder Creek and were found to create similar peak flows and peak water surface elevations along the reach of Elder Creek adjacent to the plan area. The maximum water surface elevations between the post-mining condition and ultimate conditions were used for preliminary design. This study assumes that each facility separately mitigating to existing flow conditions in Elder Creek will not have an impact on peak conditions in Elder Creek. Future analyses will have to consider the most current ultimate condition modeling along Elder Creek.

The modeling and results contained within this report are intended to clearly identify and substantiate that planned drainage and flood control improvements meet or exceed the desired levels of discharge and flood protection. **Section 5.0 Design Standards to be Achieved** set forth the permitted discharge and on-site design standards for the project, while **Section 7.0 Consistency with Allowed Discharge and Design Standards** illustrates how these standards are met through the implementation of planned improvements.

3.2 Modeling Programs Utilized

This study utilizes different modeling platforms as part of analyzing the project. These modeling programs are commonly utilized in the drainage industry to estimate and model hydrology and hydraulics. While this study develops a comprehensive model for a large portion of the Morrison Creek watershed, other existing models were also utilized as part of the analysis. All models provided by others have previously been reviewed by the County and are found to be accurate, complete, and acceptable to the various agencies having jurisdiction over the watershed.

Hydrology

Hydrologic modeling for Morrison Creek included the entire watershed upstream of Florin-Perkins Road using the SacCalc program, developed by Sacramento County. The SacCalc Program uses HEC-1 (a US Army Corps of Engineers hydrology program developed by the Hydrologic Engineering Center) to perform

calculations, develop runoff hydrographs for each drainage shed, and create Data Storage System files containing the resultant hydrographs. Other components such as weirs, junctions, detention basins and pumps are also included. Inputs in the watersheds are total area, mean elevation, length of longest water course, length of longest water course to centroid, slope, soil groups, and channel development.

Hydraulics – Morrison Creek

As part of this study, a comprehensive HEC-RAS model for the Morrison Creek watershed was developed by Wood Rodgers. The downstream terminus of this model is Florin-Perkins Road with various reaches extending upstream to approximately the Folsom South Canal. HEC-RAS modeling downstream of Florin-Perkins Road was provided by the City of Sacramento.

Hydraulics – Elder Creek

Civil Engineering Solutions developed a HEC-RAS model for SCDWR to represent existing flooding conditions along Elder Creek. The intent of this model was for a future submittal to FEMA to revise the published effective floodplain.

Hydraulics – Onsite

Hydraulic modeling for sizing onsite detention basins, pumping, and trunk storm drain was accomplished utilizing XPSWMM (2017) modeling software. Flows were generated for onsite developed conditions using SacCalc and inputted into XPSWMM by Wood Rodgers. The model utilizes an unsteady stage hydrograph[5] as the downstream boundary condition and inflow into the model as the upstream boundary condition. The software produces hydrographs that are utilized to establish flow and stage conditions throughout the Plan Area.

3.3 Assumptions: Pre-Mining Conditions

Prior to mining, land in the Plan Area drained by gravity through existing natural waterways. The pre-mining condition assessment helps to estimate the historical gravity runoff into the creek systems from undeveloped and unmined land within the WJHMP boundary. It is important to document the historical

[5] The unsteady stage hydrograph shows the water surface elevation varying over time at a particular location.

drainage patterns that once existed prior to mining as part of the consideration for the reestablishment of discharges to the creeks from these same lands in the future. For purposes of this study, the runoff occurring within the undeveloped mined areas today is assumed to be roughly equivalent to the undeveloped runoff that was occurring under pre-mining conditions. Therefore, the watershed analysis for currently mined areas will be used to characterize the volume of runoff that pre-mining conditions produced. For purposes of this master plan, it is recognized that the mined areas are allowed to drain back to the creek consistent with the pre-mining condition.

3.4 Assumptions: Existing Conditions

For purposes of defining existing hydrologic conditions, the Morrison Creek watershed was divided into four major zones described below and shown in **Figure 3.1: Drainage Zones**.

- Zone 1: Morrison Creek watershed downstream of the WJHMP
- Zone 2: Watershed within the WJHMP Plan Area.
- Zone 3: Morrison Creek watershed area upstream of the Plan Area and downstream of the Folsom South Canal.
- Zone 4: Morrison Creek watershed area upstream of the Folsom South Canal.

The sub-watershed delineations within Zones 2, 3 and 4 are show in **Figure 3.2: Watershed Map** and also provided in GIS format in **Appendix A**.

Land Use

In establishing inflow conditions and water surface elevations, various land uses were assigned to properties to establish the level of imperviousness and runoff present on each parcel. Wood Rodgers utilized the current parcel outlines and land use designations available from the County online GIS portal and reviewed the land use assignments for assessing runoff conditions. Wood Rodgers made a detailed comparison of available aerial photography and determined that much of the development present in the watershed did not match the zoned land use designations from a hydrologic and runoff perspective. Through examination of the aerial photography, Wood Rodgers used engineering judgement to assign

levels of imperviousness (percentage of land coverage) for each portion of the contributing watershed upstream and within the WJHMP.

Table 3.1: Existing Land Use by Zone for Morrison Creek provides a summary overview of existing land uses within the watershed for Zones 2, 3, and 4. The imperviousness assumed as present in the Morrison Creek watershed under existing conditions is documented in **Figure 3.3: Existing Conditions Watershed Imperviousness**.

Table 3.1: Existing Land Use by Zone for Morrison Creek

Land Use Description	Morrison Creek Watershed Existing Conditions (acres)		
	Zone 2	Zone 3	Zone 4
Highways, Parking	139.3	757.7	466.2
Commercial, Offices	33.7	548.3	48.8
Intensive Industrial	81.5	41.0	561.3
Apartments, HDR	0.0	0.0	0.0
Mobile Home Park	155.0	134.5	11.5
Condominiums, MDR	7.3	17.3	5.9
Residential: 8 -10 du/acre, Ext Industrial	21.1	6.3	37.5
Residential: 6 - 8 du/acre, LDR, School	125.3	41.9	26.1
Residential: 4 - 6 du/acre	0.0	419.7	400.7
Residential: 3 - 4 du/acre	26.9	272.7	10.1
Residential: 2 - 3 du/acre	15.1	44.2	0.0
Residential: 1 - 2 du/acre	80.1	97.4	0.1
Residential: 0.5 - 1 du/acre	50.0	27.9	28.0
Residential: 0.2 - 0.5 du/acre, Ag Res	30.8	182.4	1.1
Residential: < 0.2 du/acre, Recreation	148.6	241.3	11.5
Open Space, Woodland, Natural	4,432.6	6,049.6	10,825.7
Total Acreage	5,347.2[6]	8,882.4	12,434.6

Soils

Sacramento County has adopted the soil mapping and classifications published by Natural Resources Conservation Service (NRCS). The soils within the Morrison Creek and Elder Creek watersheds are derived from the latest NRCS data, shown in **Figure 3.4: Soil Conditions and Infiltration**. This figure

[6] Represents the total area within the Plan Area that lies within the Morrison Creek watershed. It excludes the Plan Area that lies within the Elder Creek watershed.

denotes where the NRCS data is not valid, due to inaccessible conditions during the soil survey or mining. These areas are assumed to be Class D soils, which are considered to produce the greatest rate of runoff. Additionally, adjustments to the soil classifications were made based on field observations of the soil types.

Topography

Topographic mapping representing the watershed under existing conditions is comprised of two primary topographic data sources. The first source is the LiDAR obtained in December 2015 for the area shown in **Figure 3.5: Watershed Topography**. The second source captures the remainder of the watershed upstream of the project is captured within the topographic data collected in 2008 by the California Department of Water Resources under the Central Valley Floodplain Evaluation and Delineation (CVFED) program. Both topographic sources were defined by the same company utilizing the same horizontal and vertical datums and accuracies. In general, the horizontal accuracy is +/- 0.1 feet using the North American Datum of 1983 (NAD83) California State Plane Zone 2 horizontal coordinate system. The vertical accuracy is +/- 0.3 feet using the North American Vertical Datum of 1988 (NAVD88) vertical datum. Downstream topography was not required by the SCDWR as hydrology and hydraulic modeling downstream was provided by the City of Sacramento.

Morrison Creek stream cross sections and structures were surveyed in 2015 and 2016 downstream of Excelsior Road. The stream cross sections between Excelsior Road and Folsom South Canal were extracted from CVFED LiDAR topography. The low-flow portion of the channels were modified to provide stream continuity between hydraulic structures represented within the approved FEMA models.

Watersheds and Hydrology

As identified above, the available topographic data and the County's database for existing underground storm drains were utilized to delineate drainage areas and flow directions. Field verification was performed, where appropriate, to identify existing culvert crossings that affect existing in-stream attenuation estimates and downstream peak flows.

Approximately 1,700 acres of land were identified as producing no storm runoff. This land, located north of White Rock Road, was previously dredged for gold in the early 1900's. Dredging of this land resulted in

a highly permeable landscape with topography that is self-contained with no storm runoff crossing White Rock Road. Nevertheless, SCDWR requested that this 1,700 acres of land located north of White Rock Road be included as part of the Morrison Creek watershed and assumed to discharge runoff according to its assigned land use. As a result, the soils from theses permeable landscapes were assigned a NRCS classification of Class A. The Class A designation assumes a lower runoff potential from the existing mining tailings but does allow future runoff to occur. Therefore, runoff from this watershed is included in the sizing of downstream facilities.

3.5 Assumptions: Post Project Interior Drainage

Interior project modeling was performed to evaluate the efficacy of the planned interior trunk drainage and detention basin improvements. These particular improvements are intended to manage appropriately and safely release the onsite drainage stemming from design storms. For the purposes of this study, planned flood improvements to the Morrison Creek and Elder Creek network are not defined as interior and are therefore not included in this section of the report. Rather, modeling assumptions for planned flood conditions in the Morrison Creek and Elder Creek systems are contained in Section 3.6 below.

The modeling performed for establishing interior drainage utilized SCDWR accepted SacCalc program for evaluating hydrology and the XP-SWMM modeling program for interior hydraulic analysis of detention basins and preliminary storm drain trunk layout. Where the creek flow impacts interior drainage facilities, the modeling described under Section 3.6 of this document is utilized to quantify creek overflows.

Table 3.2: Proposed Land Use by Zone (Morrison Creek Watershed) summarizes the land uses for proposed conditions within the Morrison Creek watershed.

Table 3.2: Proposed Land Use by Zone (Morrison Creek Watershed)

Land Use Description	Morrison Creek Ultimate Conditions (acres)		
	Zone 2	Zone 3	Zone 4
Highways, Parking	186.3	472.8	680.1
Commercial, Offices	902.6	614.3	935.0
Intensive Industrial	3.3	2,634.6	520.3
Apartments, HDR	55.4	317.1	246.6
Mobile Home Park	15.8	0.0	0.0
Condominiums, MDR	17.6	0.0	0.0
Residential: 8 -10 du/acre, Ext Industrial	187.8	267.5	2,900.6
Residential: 6 - 8 du/acre, LDR, School	1541.5	309.5	2,763.9
Residential: 4 - 6 du/acre	43.2	1,131.4	2,066.6
Residential: 3 - 4 du/acre	0.0	0.0	0.0
Residential: 2 - 3 du/acre	0.0	0.0	0.0
Residential: 1 - 2 du/acre	31.6	0.0	0.0
Residential: 0.5 - 1 du/acre	0.0	0.0	0.0
Residential: 0.2 - 0.5 du/acre, Ag Res	20.2	0.0	0.0
Residential: < 0.2 du/acre, Recreation	126.9	32.9	0.0
Open Space, Woodland, Natural	1465.3	3,102.4	2,321.4
Total Acreage	4,597.4[7]	8,882.4	12,434.6

General Shed Definition / Correlation

Urbanization typically increases the imperviousness of the soil, causing runoff to increase within a particular watershed. However, with proper design or mitigation, post-development peak flows can be reduced to match pre-development / existing conditions. One of the viable methods for reducing peak flows is the construction of detention or retention basins, where a portion of runoff volume is stored on a temporary basis, thereby reducing peak flows. This approach is planned for the Plan Area, where a total of twenty-six detention basins are anticipated, with seven of these detention basins requiring pumping facilities.

In order to simplify the modeling approach for the purposes of this study, the entire Plan Area in the Morrison Creek and Elder Creek watersheds has been broken into 18 sub-shed areas as shown in **Figure 3.6:**

[7] Represents the total area within the Plan Area that lies within the Morrison Creek watershed. It excludes the Plan Area that lies within the Elder Creek watershed. Plan area based on Land Use Alternative 1A dated January 17, 2022.

WJHMP Future Conditions Watersheds. These sub-sheds are named WJP# and WJG#, with "P" denoting pumped watersheds and "G" denoting gravity drained watersheds. The Morrison Creek corridor is designated as sub-shed WJG0. The total area of each individual sub-shed areas ranges between 21± acres and 1,372± acres. Sub-watershed boundaries were created based on the pre-development major roadways and other topographical features in order to facilitate the comparison of flows for both existing and post-development conditions. Within each sub-watershed, minor shed areas have been further delineated.

Post-development condition watersheds were developed and modified to represent future anticipated terrain separations and were utilized to establish pre-development shed boundaries. This was done to define and compare pre-development and post-development runoff.

Infiltration and Imperviousness

Infiltration and imperviousness are important parameters affecting the amount of surface runoff generated from a rainfall event. Proper definition of infiltration helps to estimate how much water is absorbed by the soil during a rainfall event. Water lost to the ground lessens the amount of surface runoff that must be carried through storm drainage systems. Proper definition of imperviousness within a watershed helps to estimate how much of the terrain is covered by impermeable materials, such as pavement. Impervious areas block rainfall from reaching underlying infiltrative soil.

The initial infiltration losses for the soils used in the hydrologic calculations are 0.10, 0.20, and 0.40 inches per hour for 100-year, 10-year, and 2-year storm events respectively. These losses were taken from Table 5-1 of the Sacramento City and County Drainage Manual, Volume 2: Hydrology Standards, December 1996. The constant losses used in the hydrologic calculations are dependent on the soil cover type and soil group. These losses can be found in Table 5-2 of the Sacramento City and County Drainage Manual.

Each land use type has a certain percentage of imperviousness as shown in **Table 3.3: Impervious Factors & Basin 'n' for Unit Hydrograph Lag Equation**. In a particular sub-shed, a composite percentage of imperviousness is calculated internally in the model based on the weighted area of each land use or cover type.

Table 5-2 does not contain infiltration rates for Soil Type A and includes a footnote that says Sacramento County does not contain significant areas of Type A soils. For this reason, all the soils labeled with Type A are modeled as Type B as this approach is more conservative, with the exception of soils north of White Rock Road. The Type A soils north of White Rock Road were modeled with a constant 0.3 inches per hour infiltration rate which is based on the minimum rate for Type A soils per NRCS Technical Report 55. Additionally, soil type labeled C/D in **Figure 3.4: Soil Conditions and Infiltration** is modeled as Type D, to be more conservative. **Figure 3.4** also shows unlabeled soil type with blue color designated as "Other". These unlabeled soil types are modeled as Type D. While detailed soil information has been gathered within the mining areas and limited portions of the watershed, most of these areas do not discharge to the creek system and therefore do not affect model results. For consistency, the soil information will reflect Sacramento County standards.

Lag Time

The lag time of a basin is required to calculate runoff hydrographs or the amount of runoff over a storm duration. The lag time was calculated using Basin "n" (or terrain roughness) in the hydrologic model. The Basin "n" values are shown in **Table 3.3: Impervious Factors & Basin 'n' for Unit Hydrograph Lag Equation.** This table shows the Basin "n" can be reduced by half as the sub-shed is channelized. With the shortened lag time, the speed of flow discharge increases through the watershed.

Table 3.3: Impervious Factors & Basin 'n' for Unit Hydrograph Lag Equation
Source: Table 7-1 of City and County of Sacramento Drainage Manual, Volume 2

Basin Land Use	% Impervious	Channelization Description	
		Developed Pipe/Channel	Undeveloped Natural
Highways, Parking	95	0.03	0.067
Commercial, Offices	90	0.031	0.07
Intensive Industrial	85	0.032	0.071
Apartments, High Density Res.	80	0.033	0.072
Mobile Home Park	75	0.034	0.073
Condominiums, Med. Density Res.	70	0.035	0.074
Residential 8-10 du/acre (20-25 du/ha), Ext Industrial	60	0.037	0.076
Residential 6-8 du/acre (15-20 du/ha), Low Density Res., School	50	0.04	0.08
Residential 4-6 du/acre (10-15 du/ha)	40	0.042	0.084
Residential 3-4 du/acre (7.5-10 du/ha)	30	0.046	0.088
Residential 2-3 du/acre (5-7.5 du/ha)	25	0.05	0.09
Residential 1-2 du/acre (2.5-5 du/ha)	20	0.053	0.093
Residential .5-1 du/acre (1-2.5 du/ha)	15	0.056	0.096
Residential .2-.5 du/acre (0.5-1 du/ha), Ag Res.	10	0.06	0.1
Residential <.2 du/acre (0.5 du/ha), Recreation	5	0.065	0.11
Open Space, Grassland, Ag	2	0.07	0.115
Open Space, Woodland, Natural	1	0.075	0.12
Dense Oak, Shrubs, Vines	1	0.08	0.15
Note: Shaded values are normally not used.[8]			

Prior Improvements (Granite I / Aspen VI and Morrison Creek)

Significant mining activity within the Plan Area has occurred over the last several decades which has modified the landscape and drainage patterns of the watershed. The elevations of the mined areas were lowered below the main Morrison Creek channel, leaving the channel corridor elevation above the mining areas with embankments that function as levees. The mining resulted in the excavation of a large basin within the Granite 1 and Aspen VI mining areas, located just upstream of Jackson Road along the left bank of Morrison Creek, shown as shed WJP1 on **Figure 3.6: WJHMP Future Conditions Watersheds**. Prior to the Granite 1 / Aspen 6 basin being constructed, the flooding from the Morrison Creek watershed was stored in a shallow floodplain upstream of Jackson Road.

[8] Note is consistent with table as published by the County.

In the published FEMA Flood Insurance Study, the peak 100-year flow is reported as 2,755 cfs at Jackson Road and 2,855 cfs at the Central California Traction Railroad (just downstream of Watt Avenue). This FEMA study also reflects the watershed prior to construction of the Granite 1 / Aspen 6 basin.

With the construction of an overflow weir structure on the Granite I property and a large deeply excavated basin area, the 100-year peak flow in Morrison Creek at the Jackson Road crossing is approximately 633 cfs and approximately 833 cfs just downstream of Watt Avenue. The construction of the weir and basin were implemented to mitigate the impacts of channelizing and realigning Morrison Creek between two levees, which allowed for mining to proceed outside of the levees. The excess flow is now stored in the Granite 1 / Aspen 6 detention area, thus preventing it from contributing to peak flooding downstream. The original intent of the Granite 1 / Aspen VI mitigation was to prevent peak flow from increasing downstream due to planned mining activities. The constructed basin and weir structure were over-sized and likely improved downstream conditions In addition to capturing upstream runoff in the Granite 1 / Aspen 6 basin, the effects of mining activities in general reduce tributary contributions by lowering ground and preventing direct runoff from entering the creek via gravity flow. Overall, the Morrison Creek watershed has experienced reduced flows due to mining activities and the construction of the weir on Granite I and the detention basin within Granite I / Aspen VI.

As a result of the realigned channel and weir at the Granite 1 / Aspen 6 basin, flows have been reduced at the intersection of Jackson Road and Morrison Creek by approximately 75% during the 100-year event. As part of this study, post-development conditions include reclaiming a portion of creek flow capacity by pumping previously mined areas back into the creek. These areas were draining by gravity into the creek before mining occurred and can be allowed to drain back into the creek in a controlled manner and with increases in water surface elevation being contained within existing embankments.

Methodology

Reduction of Flow and Volume for Hydromodification

In most cases, undeveloped land naturally stores and infiltrates some amount of rainfall. As rainfall increases, the land can become saturated and forces additional rainfall to flow overland. When development occurs, this natural ability of the land to infiltrate early rainfall can be altered and facilities

which intercept storm runoff can be constructed to contain rainfall volume onsite and restore the pre-development storage capability. The development of the Plan Area is assumed to include similar runoff reduction measures; however, SCDWR does not accept the application of runoff reduction during larger storm events. It is anticipated that hydromodification will be evaluated with future planning efforts and was not considered in this analysis.

The approved Aspen 1 Drainage Study (Reference 2) within the City of Sacramento took into account hydromodification through LID features as part of the proposed flood control. This study removes the effects of LID features as a means of runoff reduction for the purposes of evaluating flooding and mitigation under developed conditions. The storage volume associated with LID features in the Aspen I development (in the City) equates to 1,513 cubic-feet per acre, which can be expressed as a depth of rainfall per acre of 0.42 inches. Refer to **Appendix B** for additional details.

Since SCDWR does not allow for the use of LID features that rely on infiltration or flow-through soil media for flood control, this analysis includes Aspen 1 flows that do not reflect the reduced rainfall. Furthermore, the Aspen 1 shed has been simplified as one lumped watershed using Sacramento County hydrology methods, approximating the detailed routing found in the City's modeling.

Detention Facilities

In most cases, a detention basin is planned at the downstream end of each shed to reduce peak flows to existing conditions. These basins were designed using XP SWMM software. The side slope of the basins are considered as three horizontal to one vertical (3:1). Most of the basin areas are assumed to be rectangular in shape. The downstream invert of the outfall (outlet) pipe is assumed to be one foot above the creek invert, unless otherwise specified. The length of the outfall pipe is assumed to be 100 feet unless otherwise specified. The bottom of the detention basin is assumed as the same invert elevation of the upstream end of the outfall pipe located within the basin. The slope of the outfall pipe is assumed to be 0.5% which translates to a typical detention basin bottom elevation of 1.5 feet higher than the creek flow line elevation. In many cases, multiple outfall pipes are considered instead of a single larger pipe, resulting in the inner pipe crown elevation lower than the peak Hydraulic Grade Line (HGL). Two additional levels of pipe outlets and weirs (for overflow) are also considered to mitigate the varying levels of outflow. For all

outlet pipes, a backflow prevention device (flap gate or other type of check valve) is considered in the XP SWMM models, to prevent the creek receiving waters from backflowing into the basins. The top of the basin elevation is set as the minimum elevation of the adjacent pads.

The bottom area of basins are designed to store the water quality volume within a one-foot depth with the assumption that the basins will be designed for dry-extended water quality treatment. This estimate is utilized to approximate a sufficiently large detention basin footprint to accommodate water quality treatment and hydromodification. To demonstrate that hydromodification requirements could be achieved, a SAHM model was set up to verify the sizing for the detention basin footprint. The SAHM model was utilized as a test case for two gravity basins to verify adequate sizing of the basins. To account for differing land use, one test case represents a watershed that is primarily composed of commercial and industrial land use while the second is primarily residential land use. The water quality volume calculations and SAHM model are included in **Appendix H.**

The actual depth will depend on the depth of the existing creek and the future proposed grade of the watershed tributary to the detention basin. The first one-foot of depth in the basins is considered as dead storage in this analysis. Detention basin depth in this study was estimated from the higher of the 100-year and 500-year storm event freeboard requirements. Although 36-hour and 5-day storm durations were analyzed, the 24-hour and 10-day storm event durations produced the highest water surface elevations. For gravity detention basins, the 24-hour storm event produced the highest water surface elevations and for pumped detention basins, the 10-day storm event produced the highest water surface elevations.

The stage hydrograph for Morrison Creek is obtained from the HEC-RAS (US Army Corps of Engineers hydraulic modeling software) model analyzed under this study. The stage hydrograph at Elder Creek is created from the peak water surface profile given in the modeling provided by Civil Engineering Solutions, included as part of **Appendix C**. The stage hydrograph establishes the changing tailwater conditions to which onsite detention must dynamically discharge. Since there are two sets of unknowns, such as the dimension of the detention basin and the outlet configurations, iterations are performed using the XP SWMM model to optimize output and basin geometry.

For ultimate conditions (full buildout within the watershed), detention basins were located according to existing planning studies / documents. For areas within the watershed that are open space now, but could be developed, detention basins mitigating peak flow to existing conditions are utilized. These detention areas are presumed to decrease peak flow but will add volume to runoff conditions.

Initial pump sizing leaves significant residual volume in the detention basins at the end of a 10-day event. Therefore, based on meeting Bird Aircraft Strike Hazard (BASH) requirements and discussions with SCDWR, the additional requirement of prolonged pumping (after a large event) should not last more than 30 days. After a 10-day storm simulation, storms of lesser degree are assumed to occur and contribute additional volume while the pump station is emptying the detention basin. Current Sacramento County standards do not define storms longer than 10 days. 30-day rainfall estimates and conservative runoff estimates were made, based on comparisons with Solano County depth / duration / frequency estimates, to account for inflow and outflow from each basin over the latter 20-day period. This approach was discussed with SCDWR for use in this study. The pumping rates were increased in basins where the basins were not empty after 30 days of rainfall. Compliance with BASH requirements must be reviewed and accepted by Sacramento County Airports during the design phase of the pumped basins. Any design features discussed in this report that are unacceptable to Sacramento County Airports will need to be modified to meet BASH requirements as well as the flood control objectives described in this report. All pumping will be regulated using monitoring stations in Morrison Creek at the outfalls of the pump station and pumping will be curtailed during peak flow conditions. The analysis for this design consideration is documented in more detail in **Appendix D**.

Detention Basin Starting Conditions

SCDWR requires that the starting water surface conditions for gravity and pumped detention basins be determined to account for the potential for residual volume to be present prior to the evaluation of a design storm event and to account for lost storage due to antecedent rainfall. The methodology provided by SCDWR establishes this starting condition by running a 2-year 10-day duration storm event through the designed system and using the ending water surface elevation from this event as the starting water surface for the flood events required under this master plan. This methodology is not a current Sacramento County

standard, but this approach, or a similar approach, is expected to be adopted in the future. Detention basin starting water surface elevations in future analyses will have to adhere to the adopted methodology at that time. These starting water surfaces are provided as supporting documentation for the modeling under **Appendix E**.

3.6 Assumptions: Planned Conditions Morrison Creek and Elder Creek Flood Control Modeling

This section sets forth the modeling considerations for flood control improvements for the Morrison Creek and Elder Creek systems under planned conditions.

Upstream and Downstream Development

This master plan effort evaluates the existing condition, planned conditions of the Plan Area, and ultimate development of the entire upstream watershed. The downstream watershed is modeled according to the current state of build-out (i.e., existing conditions at time of NOP). After discussion with SCDWR, this assumption was acceptable since any future downstream development would need to mitigate their own impacts. Portions of the upstream watershed, outside existing planning areas and currently undeveloped, are assumed to be 50% impervious consistent with SCDWR modeling standards. To mitigate for the potential of the undeveloped upstream properties to develop, detention facilities are utilized to mitigate peak flow. A significant portion of the upstream watershed is draining into either the Morrison Creek channel or the Elder Creek channel and flowing through the Plan Area. Some upstream mining areas do not flow downstream due to the mined topography. Land use and hydrologic conditions, defined in references identified in Section 2.5 were utilized to establish conditions for assessing runoff affecting the Plan Area. Several upstream watershed areas are unable to reach creek channels without passing through planned development areas within the Plan Area.

The conditions along Elder Creek are not anticipated to increase or change peak flow conditions after development is in place. With primarily gravity basins, future detention can be configured to maintain Elder Creek conditions as they exist today. Additionally, planned development and levees will not encroach into the existing Elder Creek floodplain. Due to these conditions, a LOMR along Elder Creek is not anticipated.

Methodology

HEC-RAS was utilized to evaluate the hydraulic conditions within the main creeks for both existing and post-project conditions using dynamic (unsteady) flow hydrology following Sacramento County hydrology standards. Under post-project conditions (existing plus project and ultimate) the HEC-RAS model was configured with one-dimensional cross sections representing the stream channels. The floodplain areas outside of the Plan Area were defined primarily by one-dimensional cross sections and storage areas. Within the Plan Area, the only "off-channel" area that is modeled using HEC-RAS is the weir flow into the Granite 1 / Aspen 6 basin. Flows generated under post-project conditions for the remaining developed areas within the Plan Area and offsite Jackson Township flows were modeled using XPSWMM. Hydrographs from the XPSWMM modeling effort were inputted into the creek corridors modeled in HEC-RAS.

For levee design considerations, pumping estimates, as well as sizing depressed detention areas receiving creek overflow, the HEC-RAS models were run for various flood frequencies and storm durations. The flood frequency and storm duration range from 2-year 24-hour to 500-year 10-day events per Sacramento County hydrology standards. Assumptions included the following:

- Each event assumes that the ending water surface of the 2-year, 10-day duration is the starting condition in each detention basin.
- Lateral weirs designed to convey flow out of the creek channel and into storage areas are assumed to operate with a weir coefficient of 2.0 for this level of analysis.
- Design roughness coefficients (manning's N values) were assigned to channels according to current SCDWR channel design standards, except for the reach of Morrison Creek between Hedge Avenue and Mayhew Road, which was designed with a roughness coefficient of 0.1 (per prior design requirement and concurrence with SCDWR). The river stationing for these reaches is shown in **Table 3.4: Manning's Roughness Coefficient for Morrison Creek Reaches**

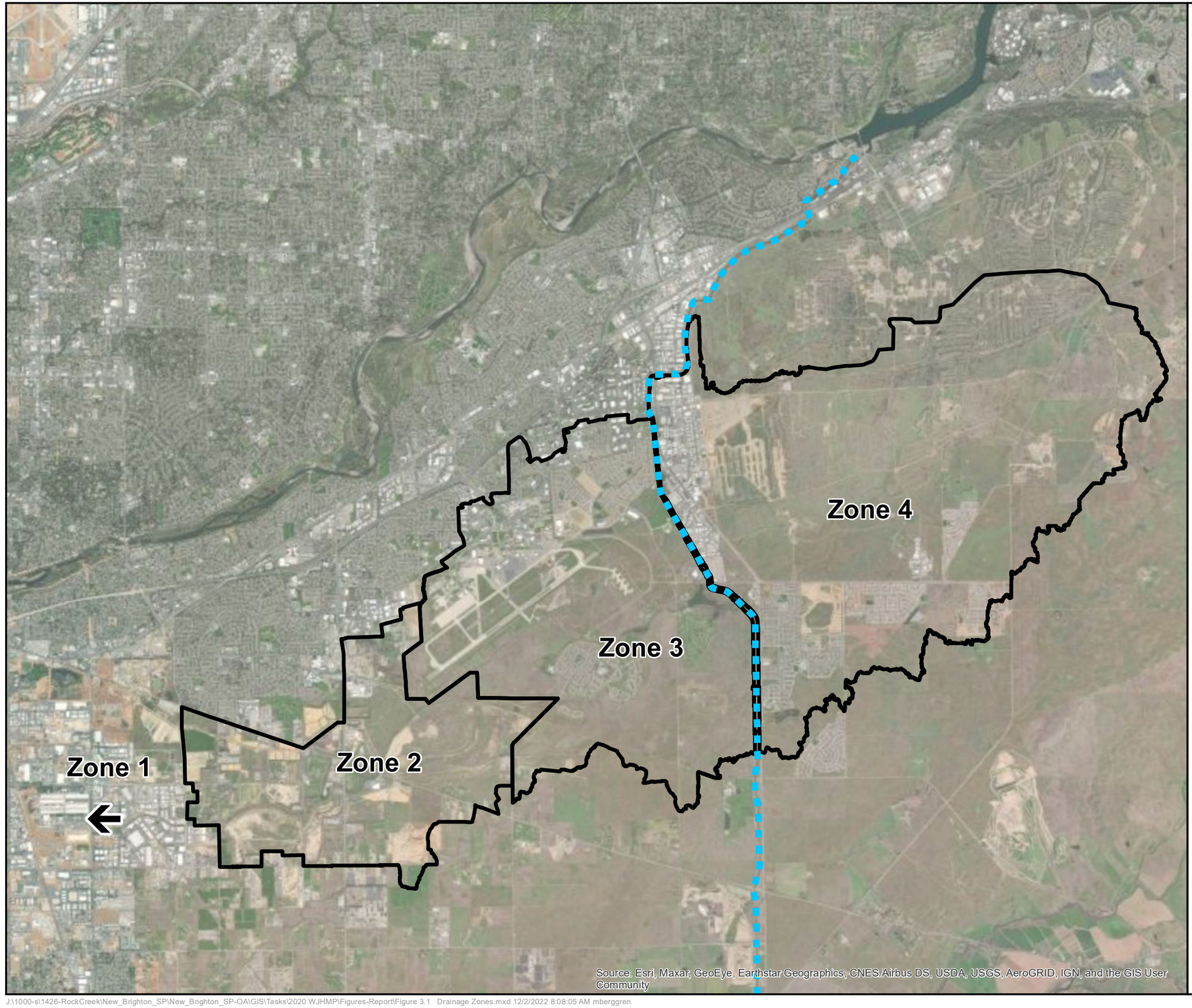
Table 3.4: Manning's Roughness Coefficient for Morrison Creek Reaches

Location	Upstream River Station	Downstream River Station	Roughness Coefficient
Upstream of Mayhew	22.8769 (mile)	10894.8	0.06
Mayhew to Hedge	10894.8	8332.998	0.10
Downstream of Hedge	8332.998	14.50822	0.06

The Plan Area contains temporary creek crossing structures which allow for the movement of vehicles and conveyor belts for mined material. For the purposes of representing the channel conditions, these temporary structures are treated as removed from the Morrison Creek channel upstream of Jackson Road. The removal of these structures results in minimal increase in flood conveyance capacity during larger events. This is substantiated by the Morrison Creek modeling. Model results are included as part of **Appendix E**.

DRAINAGE ZONES

WEST JACKSON HIGHWAY MASTER PLAN
SACRAMENTO CO, CA
DECEMBER 2022



NORTH

0 2,500 5,000

Feet

Folsom South Canal

Hydrologic Zone

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2020 WJHMP\Figures-Report\Figure 3.1 Drainage Zones.mxd 12/2/2022 8:08:05 AM mberggren

FIGURE 3.1

WATERSHED MAP

WEST JACKSON HIGHWAY MASTER PLAN
SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 2,500 5,000
Feet

- wr_HydrologicRoutingReaches
- Routing Model Inflow Location
- Folsom South Canal
- Routing Model Channel
- Outfall
- Flow Path
- Watershed
- Project Boundary

Creek

- Capital Center (CCD)
- Elder Creek (ECr)
- Morrison Creek (MCr)
- Mather West Drain (MDW)
- Main Drain (MDr)
- Mather Lake Tributary (MLT)
- Todd Creek (TCr)
- Tracy Ravine (TRa)
- Todd Creek Tributary (TTr)
- Upper Morrison Creek (UMC)

Zone 1
Zone 2
Zone 3
Zone 2
Zone 3
Zone 4

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2020 WJHMP\Figures-Report\Figure 3.2 Watershed Map.mxd 12/2/2022 8:08:16 AM mberggren

FIGURE 3.2

EXISTING CONDITIONS - MORRISON CREEK WATERSHED IMPERVIOUSNESS

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 2,500 5,000

Feet

Legend

- WJHMP Project Boundary

Percent Impervious

- 2%
- 10%
- 20%
- 25%
- 30%
- 40%
- 50%
- 60%
- 80%
- 90%
- 95%

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2020 WJHMP\Figures-Report\Figure 3.3 Existing Conditions Watershed Imperviousness.mxd 12/2/2022 8:08:23 AM mberggren

FIGURE 3.3

SOIL CONDITIONS AND INFILTRATION

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 2,500 5,000

Feet

Legend

NRCS Soil Type HydroGroup

- Mined A
- Mined C
- Mined D
- Not Available (Assumed D)
- A
- B
- B/D
- C
- C/D
- D

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2020 WJHMP\Figures-Report\Figure 3.4 Soil Conditions and Infiltration.mxd 12/2/2022 8:08:30 AM mberggren

FIGURE 3.4

WATERSHED TOPOGRAPHY
MORRISON CREEK

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

0 2,500 5,000

Feet

Legend

- Morrison Creek Watershed
- **Ground Elevation (ft)**
  - High : 350.8
  - Low : -10.3286
- WJHMP Project Boundary
- Folsom South Canal

NOTE: The area inside the WJHMP Project Boundary reflects Lidar Data from a 2015 survey. The remainder reflects CVFED data, dated 2008.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2020 WJHMP\Figures-Report\Figure 3.5 Watershed Topography.mxd 12/2/2022 8:08:39 AM mberggren

FIGURE 3.5

WJHMP FUTURE CONDITIONS WATERSHEDS

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 1,000 2,000
Feet

Legend

- Creeks
- Offsite Watershed

Gravity Watersheds

- Gravity (WJG#)

Pumped Watersheds

- WJP1
- WJP2
- WJP3
- WJP4
- WJP5
- WJP6
- Overall Basin Watershed

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 3.6 WJHMP Future Conditions Watersheds.mxd 12/2/2022 8:08:47 AM mberggren

FIGURE 3.6

4.0 Existing Conditions: Creek Flow & Stage

Existing Morrison Creek flows and water surface elevations within the channels in Zone 1 and Zone 2 are provided in **Table 4.1: Existing Conditions Morrison Creek Maximum Stage and Flow**, for applicable storm events. For each storm event the 24-hour storm duration produces the highest peak flows within Morrison Creek based on sensitivity analysis discussed later in this report. The 500-year storm was not modeled downstream (Zone 1) of Florin Perkins Road as maximum channel design considerations are determined with the 200-year storm.

Table 4.1: Existing Conditions Morrison Creek Maximum Stage and Flow

Location	River Station	100Yr-24Hr		200Yr-24Hr		500Yr-24Hr	
		Stage (ft)	Flow (CFS)	Stage (ft)	Flow (CFS)	Stage (ft)	Flow (CFS)
At Excelsior	35940	88.3	948.7	88.5	1,088.7	88.7	1,297.8
Downstream of Weir	26947.69	65.5	625.8	65.5	640.0	65.6	655.1
At Jackson Road	22227.15	61.2	633.4	61.2	648.1	61.3	666.2
At Bradshaw	18880.76	59.4	555.8	59.4	562.1	59.5	570.6
At Mayhew Rd	14058.34	56.8	840.1	56.9	893.1	57.1	970.8
At Hedge Ave	8162.703	48.6	766.6	48.8	821.5	49.1	902.2
At Watt Ave.	6142.059	43.5	925.4	43.8	990.7	44.2	1,083.4
At Florin Perkins	14.50822	37.7	1,226.7	38.2	1,358.4	39.0	1,589.9
At Elder Creek Rd[9]	8.567	29.6	2,404.2	30.4	2,738.7	-	-
At Highway 99	6.909	24.2	2,880.7	24.4	3,228.8	-	-
At Brookfield	5.45	17.8	3,385.3	18.1	3,293.9	-	-

The existing conditions Elder Creek system model was provided by Civil Engineering Solutions via SCDWR and has not been modified. A separate model was also provided by Cunningham Engineering that reflects the post-mining condition of the Aspen 8 and Aspen 9 mining areas. The details of this modeling condition are described in a Technical Memo by Cunningham Engineering included in **Appendix M.** Prior to the mining Aspen 8 and Aspen 9, there was a spill leaving the Elder Creek system which passes through the floodplain and storage areas of Morrison Creek before entering the Morrison Creek channel. Flow from this spill was not included in the Morrison Creek model, as excluding this flow produces a lower existing conditions flow in the creek and therefore requires larger mitigation, which is conservative. In Elder Creek, the cutoff of these existing spills due to mining operations are also reflected in the modeling. It was

[9] The 500-year event was not evaluated in Zone 1 due to absence of 500-year hydrological data. Downstream 500-year impacts to the creek are not required by SCDWR.

determined that this post-mining condition creates higher peak flows and water surface elevation in Elder Creek for determining preliminary basin sizing and levee heights compared with the existing conditions model. The existing floodplain spills will be mitigated through improvements to the creek crossing at Elder Creek Road and the construction of a weir that spills high creek flows into the Aspen 8 mining area. The proposed Elder Creek Road crossing improvement and Aspen 8 weir should be constructed prior to any WJHMP development within the Elder Creek watershed. No change to post-mining condition peak flows are planned as part of this plan.

4.1 Existing Conditions Floodplain

Absent planned improvements, the floodplains described in the following section would be approximate. If the floodplain is mapped by FEMA, it is anticipated to be mapped as a flood hazard area.

No Levee Failure Floodplain

Based on hydrology for the existing condition, flow was routed down the creek corridors. Modeling of Morrison Creek downstream of the Folsom South Canal and Elder Creek produced a 100-year floodplain assuming no levee failure. The existing condition floodplain, assuming no levee failure, is shown in **Figure 4.1: Existing Conditions 100-year Flooding - No Levee Failure Flooding**. The portions indicated as "floodplain removed" are portions of the existing floodplain or interim mining drainage facilities that will be removed with the planned project improvements.

The Excelsior Road bridge crossing over Morrison Creek does not have freeboard to the bridge deck for the 100-year design event under existing conditions. The creek does not overtop the bridge deck during the 100-year design event but does overtop the roadway northeast of the bridge. The bridge deck does overtop during the 200-year design event. The WJHMP project does not increase water surface elevations at this location, but future coordination with the Sacramento County Department of Transportation may require improvements to the crossing for emergency access concerns. Similarly, the Bradshaw Road bridge crossing over Elder Creek southwest of the project area overtops during the 100-year design storm event in existing conditions. The WJHMP project does not worsen hydraulic conditions at this crossing, but

future coordination with the Sacramento County Department of Transportation could necessitate improvements to the crossing for emergency access concerns.

Levee Failure Floodplain

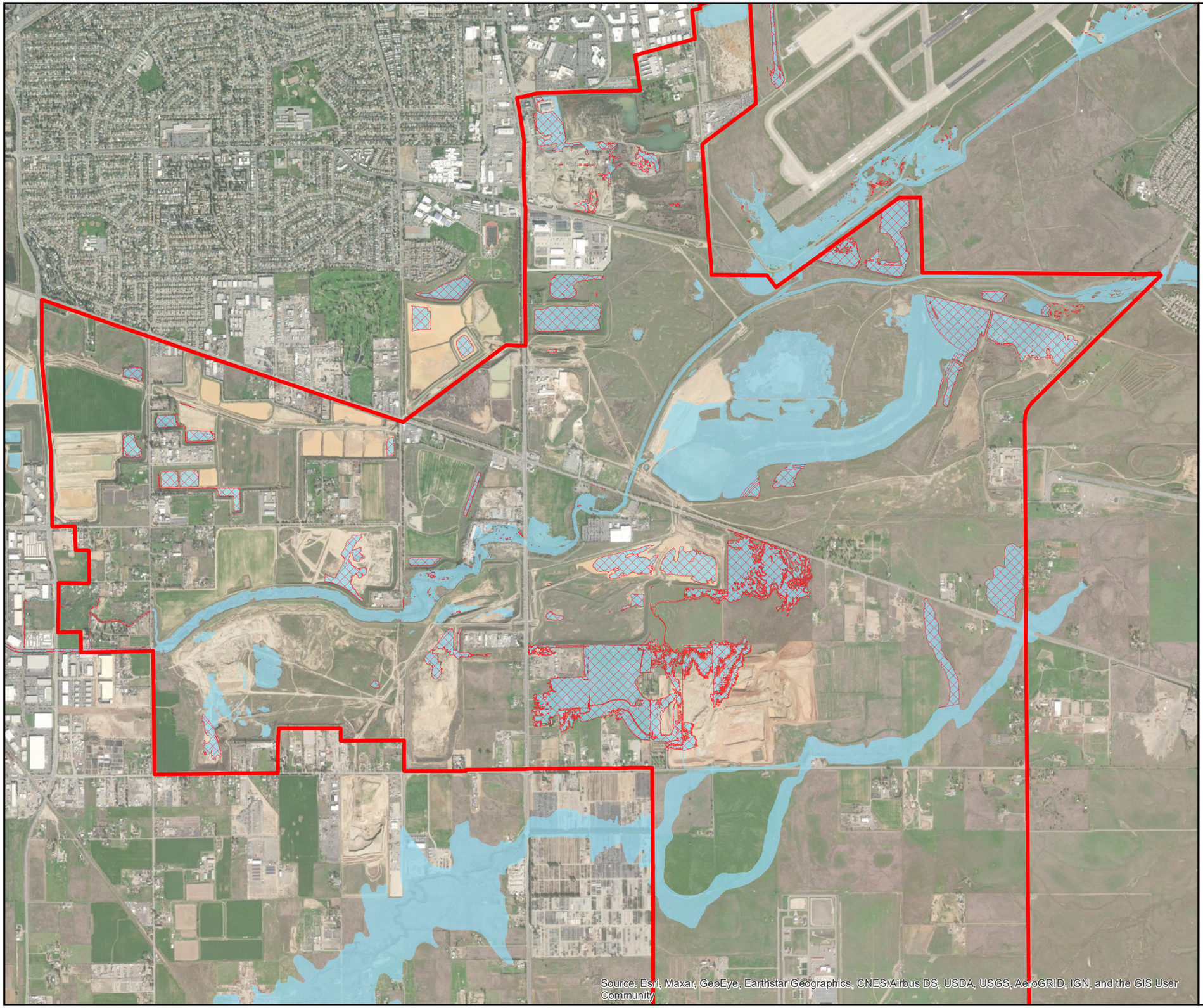
For the purposes of this master planning effort, the existing conditions floodplain that was established based upon the model result (**Figure 4.1**) was modified to take a conservative approach. Therefore, for the purposes of this study, the existing conditions levee failure floodplain is defined by projecting the Morrison Creek and Elder Creek water surface elevations, without consideration of existing levees and the containment of flow within those levees. This mapping technique is only applied within the Plan Area boundary and is considered extremely conservative and not representative of actual conditions as flood volume is not evaluated under this projection. **Figure 4.2: 100 Year Flooding - County Projection** illustrates the existing floodplain within the Plan Area utilizing this method. This analysis is not intended for purposes of establishing the existing condition but was requested by SCDWR.

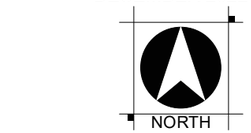
EXISTING CONDITIONS 100-YEAR FLOODING
NO LEVEE FAILURE FLOODING

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022





0 2,500 5,000

Feet

Legend

- Floodplain to be Removed
- Floodplain
- WJHMP Project Boundary

Notes:
1) "Floodplain to be Removed" indicates floodplain that will be removed with planned project improvements

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2021 WJHMP\Figures-Report\Figure 4.1 Existing Conditions 100-year Flooding - No Levee Failure Flooding.mxd 12/2/2022 8:09:05 AM mberggren

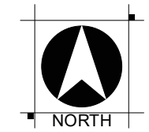
FIGURE 4.1

100-YEAR FLOODING
COUNTY PROJECTION

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022



0 2,500 5,000

Feet

Legend

- Floodplain
- Baseline Floodplain to be Removed
- WJHMP Project Boundary

Notes:
1. This exhibit has been prepared to represent a levee failure floodplain that projects Morrison Creek and Elder Creek water surface elevations without consideration of existing levees or flood volumes and is therefore not representative of the existing condition.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 4.2 100-year Flooding - County Projection.mxd 12/2/2022 8:09:16 AM mberggren

FIGURE 4.2

5.0 Design Standards to be Achieved

Outlined below are the design standards utilized in assessing the project's drainage and flood control facilities. These design standards have been derived from the regulatory documents as described in Section 2.4 Regulatory Setting.

5.1 Interior Design Standards (pumped detention basins)

2-year 24-hour volume discharged to creek in less than 48 hours

Although not a County standard, this criteria is anticipated to support BASH abatement efforts. Meeting this objective does not automatically fulfill BASH requirements and compliance with BASH requirements must be reviewed and approved by the Sacramento County Airport System prior to development.

100-year 10-day flood containment with three feet of freeboard

While not specifically a County standard, standard engineering practice for pumped detention basins is to maintain the 100-year, 10-day storm event with three feet of freeboard to adjacent pads.

500-year 10-day flood containment with no freeboard

While not specifically a County standard, standard engineering practice for pumped detention basins is to maintain the 500-year, 10-day storm event not to exceed adjacent pad elevations.

Pump Station design with pump redundancy and backup power

In order for the floodplain to be considered removed by FEMA, the standard of practice is for pumped basins to require redundancy pump(s) and backup power. The backup pump is intended to provide redundancy and be sized to equal the largest duty pump. **Table 5.1: Pump Station Design Criteria** shown below was provided by SCDWR for future design of pump stations. Based on discussions with SCDWR, the percent failure may be adjusted if the number of duty pumps is increased.

Table 5.1: Pump Station Design Criteria
Source: Sacramento County, Department of Water Resources

Frequency	Duration	Pump Operation	Peak Water Surface Criteria
10-year	All durations	Pumps 1 and 2 Operating	For pipe design and setting on elevation for 3rd pump
100-year	24 and 36 hours	All pumps operating	Minimum 1 foot freeboard in basin (designated flooding storage areas)
100-year	5 and 10 day	All pumps operating	Minimum 1 foot freeboard in basin (designated flooding storage areas)
100-year	24 and 36 hours	50% of pumps not operating	Not to exceed 1 foot over the street gutter flowline
100-year	5 and 10 day	50% of pumps not operating	Not to exceed 1 foot over the street gutter flowline
100-year	24 hour	No pumps operating	Not to exceed finished floor elevations (goal)
500-year	All durations	All pumps operating	Not to exceed pad elevations

Notes:
1. All scenarios do not include the low flow pump operation
2. 50% of pumps not operating; assumes that 2 of the 4 pumps (3 primary and 1 back up) are not operating.
3. Run all scenarios with and without climate change factors applied to rainfall or flow.

5.2 Interior Design Standards (gravity detention basins)

Mitigation of 2-year, 10-year, and 100-year outflows to creek

Hydromodification as required by the County's Hydromodification Management Plan developed in 2011 and revised in 2013 will require a range of flow mitigations. Per discussion with SCDWR, the analysis of hydromodification objectives for each detention basin was not required at this level of analysis. Rather, at this level of analysis, the 2-year, 10-year, and 100-year is mitigated. Additionally, an example detention basin was used to show that the design approach used in this study would not preclude hydromodification objectives in further studies.

100-year flood containment with 1.2-feet of freeboard

As required by County of Sacramento, Improvement Standards, section 9-1-G, the 100-year water surface level must maintain at least 1.2 feet of freeboard to the building pads of proposed structures.

100-year flood containment with 1-foot of freeboard within gravity basin

While not specifically a County standard, standard engineering practice for gravity detention basins is to maintain 1-foot of freeboard within gravity basins for the 100-year storm event.

Overflow release to creek for larger storms

Consistent with standard engineering practice for gravity drainage systems, larger storm events will overland flow into adjacent receiving water bodies.

5.3 Levee Design Standards

Meet all California Urban Levee Design Criteria (ULDC) and Urban Level of Protection (ULOP)

Requirements relating to levee design are regulated by the State. These levee criteria are specifically required per State ULDC and ULOP requirements including containment of the 200-year flood with 3-feet of freeboard. The ULDC also states:

> *Debris loading on bridges must be considered. Bridges with less than 3 feet of clearance above the (design water surface elevation) DWSE may experience extraordinary debris loading that must be evaluated in addition to typical pier/bent debris loading. The evaluation should include historic and potential debris transport in the stream, an analysis of loading on the bridge, and analysis of backwater impacts on the DWSE in the vicinity of the bridge.*

Meet the requirements of 44 CFR 65.10, for mapping of areas protected by levee systems

Federal code of regulations defines specific requirements for levee design to map areas protected by levees as outside of the special flood hazard area.

5.4 Allowed discharges

Maintain all design flow capacities and freeboard requirements for the 200-year flood event through all downstream County / City flood containment (levee) facilities

Existing levees are considered to be regulated by ULDC and ULOP as previously discussed.

No increase to 100-year and 200-year peak flow for downstream areas unless flow is contained within the existing conveyance facilities

Post-development conditions include reclaiming a portion of creek flow capacity by pumping previously mined areas back into the creek. These areas were draining by gravity into the creek before mining occurred and can be allowed to drain back into the creek in a controlled manner and with increases in water

surface elevation being contained within existing embankments. While not a specific standard, it is criteria stipulated by SCDWR in discussions regarding downstream capacities.

5.5 Hydromodification and Storm Water Quality

Meet County of Sacramento requirements to comply with the State Water Resources Control Board's MS4 permit

County requirements are stipulated in the Sacramento Region's Stormwater Quality Design Manual, dated October 2017 for both hydromodification and storm water quality. At this level of analysis, specific details relating to hydromodification and storm water quality are not included in this Master Drainage & Flood Control Study but are anticipated to be accommodated within individual watersheds as onsite facilities during future entitlement stages as required for tentative mapping. However, a conceptual model was tested for the purpose of demonstrating that the detention basin footprints presented in this report are adequate. See **Section 7.5** for this analysis.

6.0 Planned Project & Model Results

The project provides for the repurposing and redevelopment of formerly mined properties. In order to achieve the planned redevelopment for both the mined areas and areas at grade, new drainage infrastructure is required. This section provides a description of the planned project and summarizes the modelling results.

6.1 Development Project Description

Design Vision

The existing condition of the project site provides numerous opportunities to create a land use plan and accompanying drainage improvements that can capture, treat, and detain stormwater. These opportunities benefit the Plan Area and downstream property owners, including Sacramento County and the City of Sacramento. As illustrated by **Figure 6.1: WJHMP Land Use**, the planned land use plan includes a variety of unique features which include:

- Open Space: Extensive open space opportunities within the Plan Area. The Plan Area contains approximately 1,850 acres of open space which has been designed to provide opportunities for detention, water quality and groundwater recharge.

- Preservation of Morrison and Elder Creeks: Morrison and Elder Creeks have been incorporated into the overall project, resulting in an extensive creek and recreational system that traverses the Plan Area while providing flood protection for the Plan Area and downstream property owners.

- Rock Creek Parkway: This parkway has been designed as a long linear roadway and drainage system capable of capturing, treating, and conveying stormwater runoff to local detention basins prior to reentering the Morrison Creek system. Proposed treatment mechanisms will be determined during subsequent entitlement efforts related to the preparation of tentative maps.

- Granite 1 / Aspen 6 Weir and Detention basin: The weir and detention basin located near the northeast portion of the property has been designed to remove a portion of peak flows from Morrison Creek. The peak flows enter the detention basin through the weir prior to pumping back into the Morrison Creek system. The removal of peak flows has been demonstrated to significantly reduce flows downstream in Sacramento County and the City of Sacramento, while providing opportunities to pump drain discharges from within the Plan Area back into the system.

- Interconnected Detention Basins. As a result of the former mining activities which have shaped the Plan Area, future conditions feature detention basins which help capture and treat stormwater prior to being discharged back to the Morrison and Elder Creek system, resulting in treated storm water runoff and reduced downstream flows.

- Efficient stormwater delivery and storage network. The master drainage system features a trunk drainage conveyance system that includes culverts which are designed to distribute stormwater flows to a concentrated network of detention basins. This system provides a focused number of detention basins and planned pump stations which provide a multitude of benefits which include reduced Bird Airstrike (BASH) hazards in the vicinity of Mather Airport, reduced capital outlays for

construction, and significant reductions in the long-term maintenance costs that accompany detention basins and pump stations.

Plan Area Land Use

Planned condition land uses within the Plan Area are comprised of a mixture of land uses including residential, mixed-use, commercial, industrial, institutional, employment, open space, park and educational as shown in **Figure 6.1: WJHMP Land Use** and **Table 6.1** below.

Table 6.1: Plan Area Planned Land Use Summary
Source: West Jackson Highway Master Plan, Land Use Plan 1A, by Wood Rodgers, dated January 17, 2022.

Land Use		Area (acres)	Target Density (DU/acre)	Estimated Dwelling Units (DU)	Estimated Square Feet (SF)
VLDR	Very Low Density Residential	115.6	2.0	230	
LDR	Low Density Residential	1,768	5.0	8836	
MDR	Medium Density Residential	58.6	14.0	820	
HDR	High Density Residential	120.4	30.0	3,612	
MU	Mixed Use	111	30.0	1,997	1,208,790
C	Commercial	290.6			3,164,634
E	Employment	746.7			9,757,876
I	Industrial	154.4			2,017,699
HS/MS/ES	School	132.1			
P	Park	205.1			
OS	Open Space	1,488.5			
OS/UF	Open Space / Urban Farm	392.6			
INS	Institutional	98.9			
	Arterial / Collector Roads	230.8			
Total		5,913.3		15,495 DU	16,148,999 SF

Future Planning Areas

The Plan Area consists of three future planning areas. These planning areas represent non participating land owners, but were required by the County to be part of the Plan Area. For purposes of this study, and consistent with the anticipated allocations identified on the project land use plans, planned land uses have been assigned to each of these planning areas. Since each future planning area is required to submit its own Master Plan amendment or Specific Plan prior to initiating development, it is anticipated that additional floodplain studies will be required prior to development within these future planning areas. For the purpose

of this study, the future plan areas are assigned a percent impervious of 50% without specifying the exact location of development. The following describes the general location of each Future Planning Area:

- Future Planning Area A: South of Fruitridge Road and west of Hedge Avenue and is within the Morrison Creek watershed. The future planning area includes low density residential, high density residential, employment, parks, and open space land uses.

- Future Planning Area B: North of Elder Creek Road and east of Bradshaw Road is within the Morrison Creek watershed. The future planning area includes low density residential, high density residential, a school, parks, and open space land uses.

- Future Planning Area C: North of Florin Road and south of Elder Creek Road within the Elder Creek watershed. The future planning area includes very low density residential, low density residential, high density residential, commercial, industrial, a school, parks, and open space land uses. This area also includes an institutional land use which consists of the Vineyard Water Treatment Plan owned by the County.

Offsite Land Use

For the purposes of developing cumulative build-out conditions for upstream properties, the design team worked with Sacramento County and the City of Rancho Cordova to identify known, approved, and/or in-progress development, and associated land uses. These land uses were identified and then evaluated in accordance with current SCDWR hydrology standards, which dictate that unencumbered open space designations within the watershed and the County Urban Services Boundary are to reflect a 50% level of imperviousness. In addition, certain open space areas within the upstream watershed were designated as not developable due to their identification as closed solid waste landfills. Previous modeling from the preliminary 2005 Rio Del Oro Drainage Master Plan and Montelena Drainage Master Plan were used to evaluate ultimate condition flows from Zone 4. These studies maximized detention basin discharges to the capacity of the Folsom South Canal over chutes. The 2005 Rio Del Oro Drainage Master Plan is being reevaluated at the time of this study. As the existing 2005 study fully utilizes the capacity of the over chutes it is not anticipated that a revised design could increase flows from those evaluated in this study. However,

outflows from the approved Rio Del Oro Drainage Master Plan will be evaluated when available to confirm this assumption. Based upon this analysis of upstream properties, cumulative build-out land use conditions for upstream properties in Zones 3 and 4 are shown on **Figure 6.2: Ultimate Land Use - Zones 3 & 4**.

Land Use Alternatives

The project currently proposes three master plan land use alternatives. This master drainage study evaluates Alternative 1A (dated August 31, 2021) for the purposes of this drainage analysis. Alternatives 1B and 1C are also considerations for the master plan's land use. The following is a summary of the primary difference for each land use alternative:

- Alternative 1A: Includes development of Rock Creek Parkway through Aspen 6 with residential land uses east of the current Mather Airport noise contour. This alternative proposes a setback levee along Rock Creek Parkway to provide protection for uncontrolled flows from Morrison Creek in case of failure of the levee or weir along the Granite 1 / Aspen 6 detention basin.

- Alternative 1B: Omits Rock Creek Parkway through Aspen 6 while keeping residential land uses east of the current Mather Airport noise contour. This alternative proposes utilizing a combination of high ground within Aspen 6 and a setback levee along the development edge to protect low lying areas. This alternative provides more area for Granite 1 / Aspen 6 detention to inundate and results in less impervious area.

- Alternative 1C: Includes development of Rock Creek Parkway through Aspen 6 and allows for residential uses east of the current Mather Airport Nosie Contour (and west of a draft noise contour currently under consideration). Similar to alternative 1A, this alternative proposes a setback levee along Rock Creek Parkway to provide protection for uncontrolled flows from Morrison Creek in case of failure of the levee or weir along the Granite 1 / Aspen 6 detention basin.

Both Alternatives 1B and 1C will produce less runoff than 1A due to less intense land use. Therefore, for the purposes of developing this Master Drainage & Flood Control Study, only alternative 1A is evaluated.

6.2 Description of Interior Drainage Improvements

For the purposes of this report, the following section has been developed in order to describe and illustrate the interior drainage improvements for each sub-shed within the Plan Area. Sub-sheds within the Plan Area have all been designed to include trunk drainage facilities and detention basins that are designed to either gravity drain or pump collected drainage.

Runoff from each shed at different storm events for both existing and proposed conditions is calculated using SacCalc modeling as described in Sections 3.2 and 3.5 of this report. For the purpose of simplicity in comparison, the shed boundary and the flow path is assumed the same for both existing and proposed conditions. Seven design storm events are considered to calculate runoff from the sub-watersheds:

- 2-year-24-hour
- 10-year-24-hour
- 100-year-24-hour
- 100-year 10-day
- 200-year 24-hour
- 500-year-24-hour
- 500-year 10-day.

Interior Watersheds

The following describes each watershed within the Plan Area. For a summary of the planned watershed facilities and detention storage operations under varying storm conditions refer to **Figure 6.3** through **Figure 6.19.** See **Figure 7.1: Interior Drainage Summary** for an overall summary.

Watershed WJP1

Watershed WJP1 is approximately 1,393 acres and comprised of lands tributary to the Granite 1 / Aspen 6 detention basin, located north of Jackson Road and east and south of the Morrison Creek channel system.

This watershed includes a portion of the Jackson Township development that is upstream of the Project. **Figure 6.3** schematically depicts the planned local storm drainage facilities draining into the planned detention area. This includes a portion of watershed located between the two main Morrison Creek tributaries in a roughly triangular parcel (referred to as the Granite 1 Triangle), just south of the Mather Airport. This portion of WJP1 is anticipated to be filled to an elevation above the maximum 500-year 10-day peak detention water surface elevation. The developable portion of Aspen 6 is intended to be protected by a setback levee and/or high ground. In the rare event that the water surface elevation rises above the 500-year storm event, the basin could provide an additional 7.9-feet of storage prior to overtopping Jackson Road at approximate elevation 63.9. The top of levee and/or high ground is assumed to be at elevation 65.9 which allows for one foot of flow over Jackson Road and another foot of freeboard to top of levee.[10]

A portion of the upstream Jackson Township project drains west under Excelsior Road and into the WJP1 detention basin area, which will be pumped back into Morrison Creek near Jackson Road. The crossing under Excelsior Road is currently a 27-inch arch culvert and a triple 42-inch circular culvert crossing is proposed in the Jackson Township drainage study. The project includes linear detention that was modeled as an approximately 2,900-foot channel with a 130-feet top width at the 100-year 24-hour water surface elevation. This channel was simplified as a detention node in the XPSWMM modeling using the total channel volume from the HEC-RAS output tables. The outflows from Jackson Township should be re-examined during the tentative map phase of the WJP1 watershed. The Jackson Township modeling indicates that Excelsior Road currently overtops during flooding events and drainage facilities on the project site would need to accommodate these flows prior to proposed improvements to the crossing indicated in the Jackson Township Drainage Study.

The Granite 1 / Aspen 6 detention basin still has active earthwork and several assumptions were made to determine the available storage capacity of the basin. The stage-storage relationship may need to be re-evaluated at the tentative map level to confirm that the basin has adequate capacity.

[10] As no design standard exists for this scenario, Wood Rodgers consulted with County DWR regarding an appropriate amount of freeboard and depth of flow crossing over Jackson Road. Since the Granite 1 / Aspen 6 basin would need to fill beyond capacity for an overtopping of Jackson Road, this approach is considered conservative.

Refer to **Section 6.3** for discussion regarding a catastrophic Mather Dam failure.

Watershed WJP2

Watershed WJP2 is approximately 366 acres and comprised of lands ultimately tributary to Morrison Creek but that do not drain under existing conditions. A significant portion of this watershed is open space preserved for environmental mitigation and will not be developed. These lands must be able to fill and drain to maintain vernal pool conditions; however, excess flow must be pumped away to protect developing areas within the watershed which are lower than the vernal pools. The north side of Morrison Creek will require a certified levee to protect this area prior to development of this watershed with urbanized land uses.

Figure 6.4 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJP3

Watershed WJP3 is approximately 1,305 acres and comprised of lands tributary to the mined area known formerly as Aspen 4 south, which is labeled as sub-watershed area WJP3 in **Figure 6.5**. This includes the development of Aspen 1 to the west of the Project. The planned detention basin is located just south of the Morrison Creek channel, immediately east of Mayhew Road. This entire watershed is located south of Jackson Road. Several mined areas to the north of Morrison Creek will be regraded, and planned runoff will be conveyed through culverts under Morrison Creek to the planned detention basin. An unlined channel along Rock Creek Parkway will convey the runoff from Aspen 1 as well as the onsite watersheds north of Morrison Creek to the culvert crossing under Morrison Creek. The channels will be approximately 15 feet deep and bounded by the Rock Creek parkway lanes. The channel was assumed to have 4:1 side slopes and an 8-foot bottom width. The major roads of Hedge Ave and Mayhew will be kept at the existing grade– which is well above the planned grading for the development and the channel– and will necessitate maximum culvert lengths of approximately 936 feet and 500 feet, respectively[11]. It is anticipated that final

[11] Refer to technical memorandum title West Jackson Highway Master Plan – Proposed Long Culverts by Wood Rodgers, dated February 14, 2022. It is anticipated that the lengths as shown will not be allowed by SCDWR. For the purposes of this master plan effort, they remain as part of the modeling efforts as they produce conservative modeling results.

gravity culvert configurations, grading, and lengths will be determined during entitlement design. While the land use master plan alternatives anticipate that the drainage corridor would fit between the lanes of Rock Creek parkway, the land use plan may need to be revised in the tentative map to include a drainage corridor outside of Rock Creek Parkway that conforms with entitlement grading plans. Approximately half of the watershed is located east of the detention basin on the same side of Morrison Creek. This area will also drain to an unlined channel that will cross under Bradshaw Road. The channel is approximately 10-feet deep with side slopes of 3:1 and a bottom width of 8-feet. Similar to the channel along Rock Creek Parkway, the land use plan will need to be revised for this area to include this drainage corridor. These drainage corridors must be designed to satisfy SCDWR requirements for maintenance and public safety. The storm water within the detention basin will be pumped back into Morrison Creek near Mayhew Road. **Figure 6.5** depicts the contributing watershed and the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJP4

Watershed WJP4 is approximately 555 acres and is comprised of lands tributary to the Vineyard 1 detention basin, located on the north and south sides of Morrison Creek between Hedge Avenue and Mayhew Road. The portion of the watershed located north of the creek will be conveyed under the creek via culverts[12] to the detention basin. The storm water within the detention basin will be pumped back into Morrison Creek near Hedge Avenue. This watershed will also receive runoff from existing development located north of Elder Creek Road. This area currently drains by gravity northward into the mined area via a channel approximately 1,650 feet east of Hedge Avenue.

Figure 6.6 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

[12] Refer to technical memorandum title West Jackson Highway Master Plan – Proposed Long Culverts by Wood Rodgers, dated February 14, 2022 for anticipated crossing mitigation alternatives.

Watershed WJP5

Watershed WJP5 is approximately 387 acres and is tributary to Elder Creek. The watershed is a pumped basin with all runoff draining to an excavated detention basin area located within the Aspen 8 and Aspen 9 mining area. The Aspen 8 mining operations will result in a 166-acre watershed shift from Morrison Creek to Elder Creek. The watershed shift will not result in flow increases to Elder Creek as the additional runoff will be detained and pumped out at a relatively low rate. The size of the WJP5 detention basin is not anticipated to be increased as the additional flow will be detained in a large open space basin reclaimed from mining operations. This open space area is within a participant property. While mining operations are permitted, they have not been completed, so the final elevation of the basin is not yet defined. As part of the mining permit, the crossing of Elder Creek[13] under Elder Creek Road is planned to increase in size. A weir structure is planned to spill high flows in Elder Creek into the planned detention area to mitigate impacts from the mining operations, which include the removal of floodplain storage and cutting off a basin transfer of floodwaters from Elder Creek to Morrison Creek. Available capacity within the WJP5 detention basin considers inflow from the weir. The detention basin is located just south of Elder Creek Road and upstream of the Village Nurseries property, which is southeast of Bradshaw Road and Elder Creek Road.

Figure 6.7 depicts the planned / estimated local storm drainage facilities draining into the planned detention area

Watershed WJP6

Watershed WJP6 is approximately 148 acres and is located north of Kiefer Road and east of Bradshaw Road. While this is a planned pumped basin, it is intended to drain via planned and an existing pipeline located along Bradshaw Road which is described below as part of watershed WJG2.

Figure 6.8 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

[13] Refer to technical memorandum title West Jackson Highway Master Plan – Proposed Long Culverts by Wood Rodgers, dated February 14, 2022 for anticipated crossing mitigation alternatives.

Watershed WJG1

Watershed WJG1 is approximately 137 acres and is tributary to Morrison Creek by gravity discharge. The watershed is located within the Plan Area immediately west of Mather Airport, north of Jackson Road. These lands will be at elevations above the peak Morrison Creek water surface conditions and can be discharged without pumping. The open space portion of this watershed adjacent to Morrison Creek is not ideal for detention due to the close proximity to the runway at Mather Airport. Due to this constraint, several onsite detention basins will be placed in sub-watersheds prior to entering a new drainage trunkline in Happy Lane and continuing along the proposed Kiefer Boulevard before discharging to Morrison Creek. The watershed contains a sub-watershed, WJG106, with a pumped upstream detention basin which conveys the northern portion of the watershed.

Figure 6.9 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG2

Watershed WJG2 is approximately 202 acres and includes lands along the east and west side of Bradshaw Road and north of Morrison Creek. The watershed drains to the existing gravity pipeline under Bradshaw Road. It also conveys flows from a private pump station serving the existing SMUD facility located just southeast of the intersection of Bradshaw Road and Kiefer Boulevard. The WJP2 basin, described above, will also pump into this gravity storm drain. There is approximately 5.2 acre-feet leaving the banks of Morrison creek that is stored over sub watershed WJG201 and the adjacent open space in existing conditions. A portion of this area will be raised to bring development out of the floodplain resulting in a loss of floodplain storage. It is assumed that mitigation of this floodplain storage would occur through excavation in the adjacent open space in the future, however, storage capacity may be added to basin WJG201 as an alternative. Floodplain effects and proposed grading in this area should be revisited during the tentative map stage.

The drainage pipe in Bradshaw Road is an existing public facility. A previous 2011 analysis for the SMUD facility provided allowable discharge rates for watersheds draining to the pipe based on pre-existing watersheds using a peak discharge ratio based on contributing area. This ratio was 0.5 cfs/acre for gravity

drained watersheds and 0.1 cfs/acre for pumped watersheds. The proposed watershed area of 469 acres draining to the pipe in Bradshaw Road in this master plan is considerably higher than the 375 acres shown in the 2011 analysis. The additional watershed area is possible because detention basins have been designed to be larger than the 2011 study and result in a lower peak discharge ratio.

A Nolte analysis of the existing drainage pipe in Bradshaw Road is required before any future development is permitted to drain to this pipe consistent with current SCDWR standards. This analysis has not been performed in this study. Further, it is anticipated that the trunkline in Bradshaw Road has enough capacity to drain WJG201. If future detailed analysis of the Bradshaw Road trunkline system indicates that there is not capacity, this basin may be altered to drain directly to the creek.

Figure 6.10 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG3

Watershed WJG3 is approximately 55 acres and is located immediately east of Bradshaw Road and north of Jackson Road. Under existing conditions, this area drains directly to the creek and does not access capacity along Bradshaw Road; therefore, it is being planned with a dedicated detention basin and gravity discharge to Morrison Creek to address any impacts created by planned development.

Figure 6.11 depicts the planned / estimated local storm drainage facilities draining into the planned detention area

Watershed WJG4

Watershed WJG4 is approximately 233 acres and is located both east and west of Bradshaw Road, south of Morrison Creek and north of Elder Creek Road. The lands within WJG4 are primarily within the FPA B area and are located on higher ground. Planned development runoff is intended to flow to a planned detention basin and gravity drain along Bradshaw Road to Morrison Creek without pumping.

Figure 6.12 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG5

Watershed WJG5 is approximately 202 acres and is located in the western portion of the Plan Area. The majority of the WJG5 watershed is located around the intersection of Fruitridge Road and Hedge Avenue and is within Future Planning Area A. 7These lands currently drain to Morrison Creek by a series of roadside ditches and culverts, and will be configured to drain by gravity under future development conditions.

Figure 6.13 depicts the planned / estimated local storm drainage facilities draining into the planned detention area

Watershed WJG6

Watershed WJG6 is approximately 33 acres and is located immediately west of Excelsior Road and north of Jackson Road. This land will continue to drain by gravity to Elder Creek, via a planned detention basin.

Figure 6.14 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG7

Watershed WJG7 is approximately 67 acres and is located west of Excelsior Road and immediately south of the main Elder Creek channel. The WJG7 watershed receives runoff from upstream lands east of Excelsior Road, outside of the WJHMP boundary. The watershed proposes a detention basin that will drain by gravity to Elder Creek.

Figure 6.15 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG8

Watershed WJG8 is approximately 201 acres and is located just west of Excelsior Road, south of Elder Creek Road. This watershed conveys runoff through it from an unnamed tributary of Elder Creek located east of Excelsior Road outside of the Plan Area boundary. This watershed is entirely within the FPA C

portion of the WJHMP. The watershed plan proposes a detention basin that will drain by gravity to Elder Creek.

Figure 6.16 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG9

Watershed WJG9 is approximately 428 acres and is located south of the Elder Creek main channel to the west of Excelsior Road and north of Florin Road. The northern portion of this watershed drains naturally to Elder Creek and will not be developed. The southern portion of the watershed is land within the FPA C area. This portion of the watershed drains to an existing channel south of Florin Road via a naturally drainage gravity detention basin.

Figure 6.17 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG10

Watershed WJG10 is approximately 67 acres and is located north of Florin Road in the southeast boundary of the Plan Area south of Elder Creek. The watershed is comprised of Very Low Density Residential land uses and drains by gravity to Elder Creek.

Figure 6.18 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG11

Watershed WJG11 is approximately 156 acres and is located south of Jackson Road immediately west of Excelsior Road draining by gravity to Elder Creek.

Figure 6.19 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Watershed WJG12

Watershed WJG10 is approximately 76 acres and is located immediately north of Florin Road in the southeast boundary of the Plan Area south of Elder Creek. The watershed is comprised of land within the FPA C portion of the Plan Area. The watershed drains to the west through an existing channel tributary to Elder Creek.

Figure 6.18 depicts the planned / estimated local storm drainage facilities draining into the planned detention area.

Interior Watershed Summary

The final assumed pumping capacities and rates for each pumped basin shown in **Figure 6.3** through **Figure 6.8** and are summarized in **Table 6.2: Pump Station Summary**. As pumped discharges can potentially increase creek conditions, the discharges from pumped basins will only occur while creek flows are below peak flow rates. This is achieved by setting creek flow monitoring stations at the discharge points of the pumps and throttling pumps off if at the creek flow threshold. Initial creek shutoff thresholds were estimated by subtracting the pumping rates from the peak flow in the creek. Thresholds were then reduced until no downstream impacts occurred. This approach is necessary as the pumped areas do not currently discharge any runoff to the creek and any additional flow during the peak of flow in the creek will create an adverse impact downstream. Additional pumps in the detention basin will turn on as the stage of the basin increases so that max pumping capacity will only be fully used during less frequent storm events. Setting the pump on/off points was determined utilizing an iterative process and was dependent on the stage and flow within Morrison Creek. The designed gravity outfall structures for gravity detention basins are shown in **Figure 6.9** through **Figure 6.19** and are summarized in **Table 6.3: Gravity Outfall Summary**. The dimensions of the detention basins are summarized in **Table 6.4: Detention Basin Summary**. Detention Basins meet all freeboard requirements[14] for the 100-year and 500-year events and minimum adjacent pad elevations are equal to the top elevation as shown in **Table 6.4**.

[14] Freeboard requirements identified in Section 5.0 Design Standards to be Achieved.

Table 6.2: Pump Station Summary

Basin	Pump Number[15]	Pump Start Water Surface Elevation (feet)	Design Flow (cfs)	Pump Shutoff at Morrison Creek Flow (cfs)
WJP1[16]	1[17]	27.5	65	300
	2	32.2	65	500
	3	35	65	565
WJP2	1	31	4	-
	2	34	4	-
WJP3[18]	1[19]	5.5	15	345
	2	8.5	15	635
	3	15	15	650
WJP4	1	2	7.5	350
	2	10	7.5	550
WJP5	1	11	10	-
WJP6	1	51	4	-
	2	54	4	-
WJG106[20]	1	60	1	-

[15] Table shows duty pumps required for design flows. All pumped basins to have redundancy for the largest required pump.

[16] Full pumping capacity is used when the basin water surface elevation is above 50 feet

[17] Pump turns back on if basin water surface elevation hits 35 feet and Morrison Creek Flow is below 565 cfs in order to accommodate large storm events

[18] Full pumping capacity is used when the basin water surface elevation is above 20 feet

[19] Pump turns back on if basin water surface elevation hits 15 feet and Morrison Creek Flow is below 620 cfs in order to accommodate large storm events

[20] While a pump station will be required for part of the drainage shed, the pump is intended to discharge into a gravity conveyance system and gravity basin prior to discharging to Morrison Creek. Therefore, it is annotated with a gravity designation.

Table 6.3: Gravity Outfall Summary

Basin	Outlet 1		Outlet 2		Weir		Outfall Pipe			
	Diameter	Elev.	Diameter	Elev.	Length	Elev.	Diameter	Elev.	Length	Outlet Elevation
	(inches)	(feet)	(inches)	(feet)	(feet)	(feet)	(inches)	(feet)	(feet)	(feet)
WJG102	6	67.9	12	68.9	-	-	18	66.9	100	65.9
WJG104	6	68.5	18	69.5	-	-	24	67.48	100	66.5
WJG105	6	70.7	12	71.7	-	-	18	69.7	100	68.7
WJG107	6	72.3	18	73.3	-	-	24	71.3	100	70.3
WJG108	6	69.3	-	-	-	-	18	68.3	100	67.3
WJG201	9	60.5	24	62	-	-	30	56	100	55.8
WJG202	9	58.5	24	60	8	64	24	55.5	642	54.8
WJG205	6	60.1	18	63	-	-	24	60.1	50	60.0
WJG3	12	59	24	60.5	8	63	30	56	100	55.5
WJG4	30	57.8	-	-	8	60.5	60	56.8	1809	54.5
WJG5	15	46.5	24	48	10	50.5	48	43.5	100	43.3
WJG6	18	91	24	93	-	-	30	90	100	89.0
WJG7	36	84	-	-	8	87.5	48	83	400	82.0
WJG8	48	83	48	83	-	-	48	82	80	81.9
WJG9	48	74	-	-	10	79	60	73	100	72.0
WJG10	36	71	-	-	-	-	48	70	450	69.0
WJG11	48	85.5	-	-	10	90	48	84.5	750	82.6
WJG12	36	70.5	-	-	8	74	36	69.5	100	69.0

Table 6.4: Detention Basin Summary

Basin	Basin Volume	Basin Footprint	Basin Bottom Area	Bottom Elevation	Top Elevation
	(acre-feet)	(acres)	(acres)	(feet)	(feet)
WJG102	4.5	0.9	0.6	66.9	72.9
WJG104	11.0	2.1	1.6	67.5	73.5
WJG105	6.4	1.3	0.9	69.7	75.7
WJG107	11.0	2.1	1.6	71.3	77.3
WJG108	5.1	1.0	0.7	68.3	74.3
WJG201	25.1	4.0	3.2	59.5	66.5
WJG202	39.8	6.2	5.2	57.5	64.5
WJG205	9.1	1.9	1.3	59.1	65.1
WJG3	22.5	3.9	3.2	58.0	64.5
WJG4	59.9	9.3	8.0	56.8	63.8
WJG5	44.3	6.1	5.0	45.5	53.5
WJG6	10.0	2.1	1.5	90.0	95.5
WJG7	13.9	2.2	1.9	83.0	90.0
WJG8	40.6	7.1	5.8	82.0	88.5
WJG9	76.6	9.0	10.3	73.0	80.0
WJG10	14.8	2.9	2.2	70.0	76.0
WJG11	30.4	5.9	4.7	84.5	90.5
WJG12	13.6	3.2	2.4	69.5	75.0
WJP1	9,250	408.2	27.0	40.0	78.0
WJP2	74.5	6.0	4.0	30.0	45.0
WJP3	740.0	40.0	32.0	5.0	30.0
WJP4	350.0	16.5	12.0	0.0	50.0
WJP5	370.0	75.0	8.0	10.0	20.0
WJP6	62.4	6.5	4.0	50.0	65.0
WJG106	12.2	1.0	0.8	59.0	72.0
WJG207	29.1	0.9	0.8	46.0	59.5

The resulting changes in water surface elevation and flow are included in a spreadsheet in **Appendix F**.

6.3 Description of Morrison Creek and Elder Creek Flood Control Improvements

Planned Levees and Flood Control Facilities

All planned levee and flood control facilities (detention and pumping) behind levees will need to be submitted to FEMA to ensure that structures are designed, constructed, certified, and accredited in accordance with the Code of Federal Regulations 44 CFR 65.10, before FEMA will modify their Flood Insurance Rate Maps (FIRMs). It is anticipated that all flood control facilities must be designed to meet more stringent state ULDC (200-year) requirements. While the specific flood control facilities to meet FEMA

and state ULDC requirements will be analyzed dveuring final design, the planned facilities are described below. Implementation of these flood control improvements will protect the Plan Area from the 100-year and 200-year flood events as shown on **Figure 6.22: Preliminary Levee Locations**. With the phasing of flood control improvements, other improvements are anticipated. These additional improvements are discussed as part of the Flood Improvement Areas later in this section.

Granite 1 / Aspen 6 Detention Basin and Weir

With mining of the Granite 1 / Aspen 6 area, Morrison Creek was channelized and an overflow weir constructed. The purpose of the weir was to mitigate for floodplain losses with the channelizing of Morrison Creek to allow for mining. The weir allows Morrison Creek to overflow into the Granite 1 / Aspen 6 basin. The construction of the weir likely results in over mitigation of the originally intended impacts of the Morrison Creek channelizing. As a result, during large storm events, excess volume spills over the weir and into the Granite 1 / Aspen 6 detention basin. The excess volume flowing into the basin has a direct impact on the developable area within Aspen 6. In addition to the weir allowing Morrison Creek flows to detain in the Granite 1 / Aspen 6 basin, onsite flows and flow from adjacent property that naturally flow to the basin and contribute to the detained storm water volume.

Table 6.5 below shows the volume of storm water entering the Granite 1 / Aspen 6 detention basin for both existing and ultimate conditions from onsite and offsite sources. Additionally, the table shows the increase of volume between existing and ultimate conditions.

The setback levee adjacent to Aspen 6 allows for significant storage capacity within the Granite 1 / Aspen 6 detention basin should the need arise. The water surface elevation within the basin would need to rise to an elevation of 63.9 feet before cresting Jackson Road. At a stage of 63.9 feet, the detention basin has a capacity of 9,250 acre-feet. **Figure 6.20: Granite 1 / Aspen 6 Storage by Source** shows the stage and storage of the Granite 1 / Aspen 6 basin for the 500-year, 10-day duration storm event and includes the source of where the drainage originates.

Table 6.5: Volume Entering Granite 1 / Aspen 6 Detention Basin

Event	Existing Conditions (acre-feet)		Ultimate Conditions (acre-feet)		Increase (acre-feet)	
	Offsite Inflow	Onsite Runoff	Offsite Inflow	Onsite Runoff	Offsite Inflow	Onsite Runoff
100-year	1,497	205	2,312	318	815	113
24 hour	Total = 1,702		Total = 2,630		Total = 928	
200-year	2,096	232	2,709	345	613	113
24 hour	Total = 2,328		Total = 3,054		Total = 726	
500-year	2,528	280	3,301	386	773	106
24 hour	Total = 2,808		Total = 3,687		Total = 879	
100-year	3,318	479	5,220	889	1,902	410
10 day	Total = 3,797		Total = 6,109		Total = 2,312	
200-year	4,011	544	6,105	938	2,094	394
10 day	Total = 4,555		Total = 7,043		Total = 2,488	
500-year	5,196	650	7,620	1,019	2,424	369
10 day	Total = 5,846		Total = 8,639		Total = 2,793	

The Granite 1 / Aspen 6 weir plays an important role in regulating peak flow downstream. As part of this planning effort, modeling has been performed to quantify the additional volume entering Granite 1 / Aspen 6 basin from upstream runoff from future build-out conditions. As shown in **Figure 6.20** and **Table 6.5**, the majority of the current volume and anticipated increase in volume entering the Granite 1 / Aspen 6 basin is sourced from upstream watershed spilling over the weir. The weir consists of an earthen berm and rip-rap that slopes towards a paved access road. The earthen berm was last surveyed in 2016 and was the basis of the weir represented in the modeling for this study. The berm may need to be improved to create a permanent weir structure that is consistent with this study.

Sensitivity Analysis (Channel Capacity-Frequency Estimates)

Within all hydrologic and hydraulic analyses, there is some degree of uncertainty in characterizing peak conditions through frequency analysis and numerical modeling. In an attempt to address these uncertainties, SCDWR has requested a sensitivity analysis to better understand the capacity of the designed facilities. Specifically, the capacity of the Morrison Creek channel, with planned levees, is the focus of the requested analysis.

The Plan Area detains runoff originating from the watershed upstream by spilling large volumes of drainage runoff into the Granite 1 / Aspen 6 detention basin, rather than forcing the additional flow downstream via conveyance. The creek flow spills over a weir structure (approximately 800 feet long), acting as a flow-control device and limiting downstream creek flow. The amount (magnitude and timing) of assumed storm volume reaching the weir, and the available storage with the Granite 1 / Aspen 6 detention basin, are a key focal point for sensitivity analysis within the Plan Area.

In addition to storm frequency, the duration of the storm can affect peak flow and volume accumulation. To satisfy SCDWR requests, the system was tested under the 36-hour and 5-day duration storm events. Analysis of the 500-year storm event indicated that the 24-hour duration results in the highest peak stage and peak flow in Morrison Creek.

The peak 100-year, 200-year and 500-year existing flows in Morrison Creek downstream of the existing weir and immediately upstream are shown in **Table 6.6: Granite 1 / Aspen 6 Weir Sensitivity** below.

Table 6.6: Granite 1 / Aspen 6 Weir Sensitivity

Event	Flow Upstream of Weir (cfs)	Flow Downstream of Weir (cfs)
100-year	2,109	626
200-year	2,287	640
500-year	2,496	655

Variation in flow upstream of the existing weir will have an insignificant impact downstream above a flow threshold of approximately 700 cfs. Therefore, increases in Morrison Creek flow above 700 cfs, are directed to the Granite 1 / Aspen 6 basin under the existing configuration of the weir constructed as part of the mining operations. Future upstream development projects must demonstrate that they do not create adverse impacts to the operation of these detention facilities by increasing peak flows in Morrison Creek.

Mather Dam Failure

The upstream watershed contains a non-jurisdictional dam facility (Mather Dam) which holds approximately 850 acre-feet of storage at a depth of less than six feet. In the event of a catastrophic dam failure, it is

assumed that the Morrison Creek channel has the capacity to convey the flow to the Granite 1 / Aspen 6 weir.

As part of this analysis, a dam failure evaluation was performed using HEC-RAS. This was done to ensure that the Plan Area would not be inundated from high flows in Morrison Creek downstream of Excelsior Road during a 100-year 24-hour storm event. The parameters for failure were determined in collaboration with SCDWR and are listed below:

- Hydrology: 100-year 24-hour storm accounting for watershed infiltration
- Breach Formation Time: 4 hours
- Breach Bottom Width: 20 feet
- Breach Side Slopes: 0.5H:1V
- Breach Bottom Elevation: 131.59 feet (channel invert downstream of dam)
- Breach Trigger Elevation: Mather Lake water surface elevation 4 hours prior to peak
- Breach Location: Earth dam embankment adjacent to new reinforced concrete spillway

The results from this simulation show that the peak water surface elevation at Excelsior Road increases by 0.6 feet to elevation 91.46 feet. It is important to note that Excelsior Road is already overtopped without dam failure during the 100-year flood event. The proposed levee along the south side of Morrison Creek downstream of Excelsior Road provides protection from this modeled condition. The dam failure results in a water surface elevation with a minimum of 2.4-feet of freeboard to the proposed levee. Within the plan area, this condition produces higher water surface elevations compared to the 200-year storm with climate change factors design event for a 500-ft portion of Morrison Creek. This occurs just downstream of Excelsior Road. The design is considered adequate since there is freeboard under a dam break scenario. Elsewhere in the plan area, the effects of the Mather Dam failure breach flows are negligible due to the Granite 1 / Aspen 6 weir. Downstream of the weir, peak water surface rises less than one tenth of a foot and the design heights of the levees maintain at least three feet of freeboard.

As previously discussed, flow above approximately 700 cfs in the Morrison Creek channel would enter the Granite 1 / Aspen 6 basin via the weir. As shown in **Figure 6.20: Granite 1 / Aspen 6 Storage by Source** the Granite 1 / Aspen 6 basin, has the capacity to accommodate the inflow from a catastrophic Mather Dam failure.

Planned Flood Improvement Areas (FIAs)

The implementation of development within the Plan Area will not all occur at once. Due to its large size, the WJHMP area will likely develop over several decades. While the actual phasing of development is unknown at this time, the Plan Area has been divided into two Land Use Districts largely representing the two major participating property owners, as well as three Future Planning Areas (described again later in this section). For areas requiring flood control improvements, the two districts are further divided into Flood Improvement Areas (FIA) as shown on **Figure 6.21: FIA Exhibit**. These FIA's establish the required flood control improvements for sub-areas of the project and assist in future phasing considerations as well as supporting the development of the PFFP. The levee flood control improvements required to support the entire Plan Area are shown in **Figure 6.22: Preliminary Levee Locations.** The post-project flooded areas and residual flooding within the creeks is shown in **Figure 6.23: Post Project Residual Flooding**.

For an illustration of each of the planned flood control improvements within each of the FIA's, refer to **Figure 6.24** through **Figure 6.28**. Anticipated improvements are indicated below by district and flood improvement area. These improvements are anticipated to occur within each individual flood improvement area and were included in the modeling of planned conditions for Morrison Creek.

District #1 – Flood Improvement Area #1

- Planned high ground area to connect into existing high ground
- Tunnel closure structure at Fruitridge Road
- New levees to achieve required flood protection
- Spur levee to tie into existing high ground.

District #1 – Flood Improvement Area #2

A levee is required along Mayhew Road if the southern levee of Morrison Creek within District 2 FIA #1 cannot or is not certified. Where high ground is constructed along the east side of Mayhew Road the levee road can be omitted. If District 2 FIA #1 is constructed, then Mayhew Road would need to be raised. Anticipated improvements are shown below:

- Raise existing ground to above the 200-year water surface elevation of Morrison Creek and the adjacent detention basin.
- Tunnel closure structures at Jackson Road and Bradshaw Road
- Raise existing roads or build levees on land side of existing roads

District #1 – Flood Improvement Area #3

A levee geotechnical analysis must determine whether the portion of Jackson Road between Morrison Creek and the setback levee should be evaluated as a levee. Ultimately, it is anticipated that FEMA will determine whether these potential levees are classified as levees.

- New levees to achieve required flood protection
- Tunnel closure structures at Jackson Road

District #2 – Flood Improvement Area #1

- Raise areas to above floodplain or construct levees / flood wall for protection.

District #2 – Flood Improvement Area #2

- Raise areas to above floodplain or construct levees / flood wall for protection.
- Tunnel closure structure at Bradshaw Road

6.4 Morrison Creek Model Results

For both the planned project and ultimate conditions the 200-year 24-hour storm event and 200-year 10-day storm event were analyzed. Results of these storm events in the planned project and ultimate project

are shown in **Table 6.7** and **Table 6.8** below. These results assume that the improvements planned with this study are constructed and in place.

Table 6.7: Morrison Creek Flow and Stage for 200-year 24-hour Storm Event

Location	River Station	Project		Ultimate	
		Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)
At Excelsior	35940	88.91	1,082	89.07	1,361
Downstream of Weir	26947.69	65.71	679	65.92	728
At Highway 16	22227.15	61.78	694	61.90	739
At Bradshaw Rd	18880.76	59.93	804	60.02	854
At Mayhew Ave	14058.34	56.65	796	56.76	840
At Hedge Ave	8162.703	48.45	713	48.59	755
At Watt Ave	6142.059	43.11	848	43.32	893
Downstream of Plan Area					
At Florin Perkins Road (Okinawa St)	14.50822	37.74	1,248	38.76	1,528
At Commercial Drive	10.209	35.35	2,086	35.41	2,078
At Power Inn Rd	9.975	34.60	2141	34.68	2,153
At Logan St	9.621	33.45	2158	33.53	2,187
At 65th St	8.932	31.35	2710	31.41	2,746
At Elder Creek Rd	8.567	30.17	2641	30.23	2,660
At Stockton Blvd	8.245	28.83	2779	28.92	2,786
At Riza Dr Ped Brdg	7.946	27.45	2769	27.55	2,782
At Steiner Dr	7.53	26.27	2969	26.40	2,980
At Sky Pkwy Ped Br	7.01	24.78	2630	24.90	2,716
At US Highway 99	6.909	24.37	3096	24.47	3,212
At Florin Blvd	6.587	22.73	3232	22.83	3,256
At Center Pkwy	6.362	21.53	3029	21.68	2,977
At Franklin Blvd	6.152	19.68	3242	20.00	3,202
At Shining Star Dr	5.842	18.69	3372	19.03	3,392
At Brookfield Dr	5.45	18.08	3272	18.44	3,385

Table 6.8: Morrison Creek Flow and Stage for 200-year 10-day Storm Event

Location	River Station	Project		Ultimate	
		Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)
At Excelsior	35940	89.03	1,197	89.18	1,559
Downstream of Weir	26947.69	65.66	669	65.95	734
At Highway 16	22227.15	61.76	685	61.94	762
At Bradshaw Rd	18880.76	59.91	798	60.05	873
At Mayhew Ave	14058.34	56.64	791	56.82	861
At Hedge Ave	8162.703	48.45	707	48.71	773
At Watt Ave	6142.059	43.27	834	43.89	981
Downstream of Plan Area					
At Florin Perkins Road (Okinawa St)	14.50822	38.12	1,348	38.64	1,491
At Commercial Drive	10.209	35.50	2,115	35.49	2,111
At Power Inn Rd	9.975	34.77	2,191	34.75	2,186
At Logan St	9.621	33.61	2,224	33.60	2,220
At 65th St	8.932	31.45	2,783	31.45	2,779
At Elder Creek Rd	8.567	30.28	2,681	30.27	2,678
At Stockton Blvd	8.245	28.96	2,807	28.95	2,804
At Riza Dr Ped Brdg	7.946	27.58	2,803	27.57	2,800
At Steiner Dr	7.53	26.43	2,994	26.42	2,993
At Sky Pkwy Ped Br	7.01	24.92	2,729	24.91	2,724
At US Highway 99	6.909	24.49	3,233	24.48	3,224
At Florin Blvd	6.587	22.84	3,264	22.83	3,259
At Center Pkwy	6.362	21.69	2,979	21.68	2,978
At Franklin Blvd	6.152	20.01	3,207	20.01	3,204
At Shining Star Dr	5.842	19.03	3,396	19.03	3,394
At Brookfield Dr	5.45	18.45	3,390	18.45	3,387

6.5 Future Planning Areas

Prior to additional entitlement processing or development of this area, a master plan amendment or specific plan is required which will require floodplain studies. Future Planning Areas A and B are within the Morrison Creek floodplain and subject to shallow flooding. Future Planning Area C is within the Elder Creek floodplain. For purposes of this study, future planning areas have been evaluated as part of both the interior and where applicable the Morrison Creek analysis. As the FPA C basins discharge at or below existing conditions, adverse impacts to Elder Creek are not anticipated. Impacts to Elder Creek, using up-to-date modeling of Elder Creek will have to be evaluated prior to development for each watershed.

6.6 Drainage Infrastructure Phasing

Phasing of drainage infrastructure is anticipated to progress in an orderly fashion. While phasing will largely be subject to specific proposals at time of subsequent entitlements, this study analyzes three independent phases for development. The three phases are consistent with the phases anticipated to be evaluated as part of the Master Plan's Finance Plan. While the portion of watershed WJP3 within Phase B and Phase C can be developed independently, any development within WJP3 requires construction of the detention basin and associated pump station. The master plan proposes that each phase encompass each of the three Flood Improvement Areas as previously discussed in this section. Refer to **Figure 6.29: Phasing Plan** that depicts the three phases of development. Flood control improvements for the Flood improvements Areas are shown on **Figure 6.24** through **Figure 6.28**. Development of each interior basin can occur independently, subject to any flood control improvements required to facilitate development.

WJHMP LAND USE

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 1,000 2,000

Feet

Legend

- WJHMP Project Boundary
- Future Planning Area

LAND USE CLASSIFICATION

- VERY LOW DENSITY SF RESIDENTIAL
- LOW DENSITY SF RESIDENTIAL
- MEDIUM DENSITY SF RESIDENTIAL
- HIGH DENSITY MF RESIDENTIAL
- RESIDENTIAL MIXED USE
- COMMERCIAL
- EMPLOYMENT
- INDUSTRIAL
- INSTITUTIONAL
- SCHOOL
- PARK
- OPEN SPACE
- OPEN SPACE/URBAN FARM
- ROADWAY

Notes:
1) Land use based on Alternative 1A plan dated August 31, 2021

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2021 WJHMP\Figures-Report\Figure 6.1 WJHMP Land Use.mxd 12/2/2022 8:09:23 AM mberggren

FIGURE 6.1

ULTIMATE LAND USE - ZONES 3 & 4

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 2,500 5,000

Feet

Zone 3

Zone 4

Legend

- Folsom South Canal
- WJHMP Project Boundary
- Channels
- Sacramento County Urban Service Boundary
- Dump Site

Land Use

- Pavement
- Commercial, Offices
- Intensive Industrial
- High Density Residential
- Mobile Homes
- Medium Density Residential
- Extensive Industrial
- Low to Very Low Density Residential
- Agriculture
- Recreational
- Open Space

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2021 WJHMP\Figures-Report\Figure 6.2 Ultimate Land Use - Zones 3 & 4.mxd 12/2/2022 8:11:15 AM mberggren

FIGURE 6.2

WJP1 - PLANNED FACILITIES

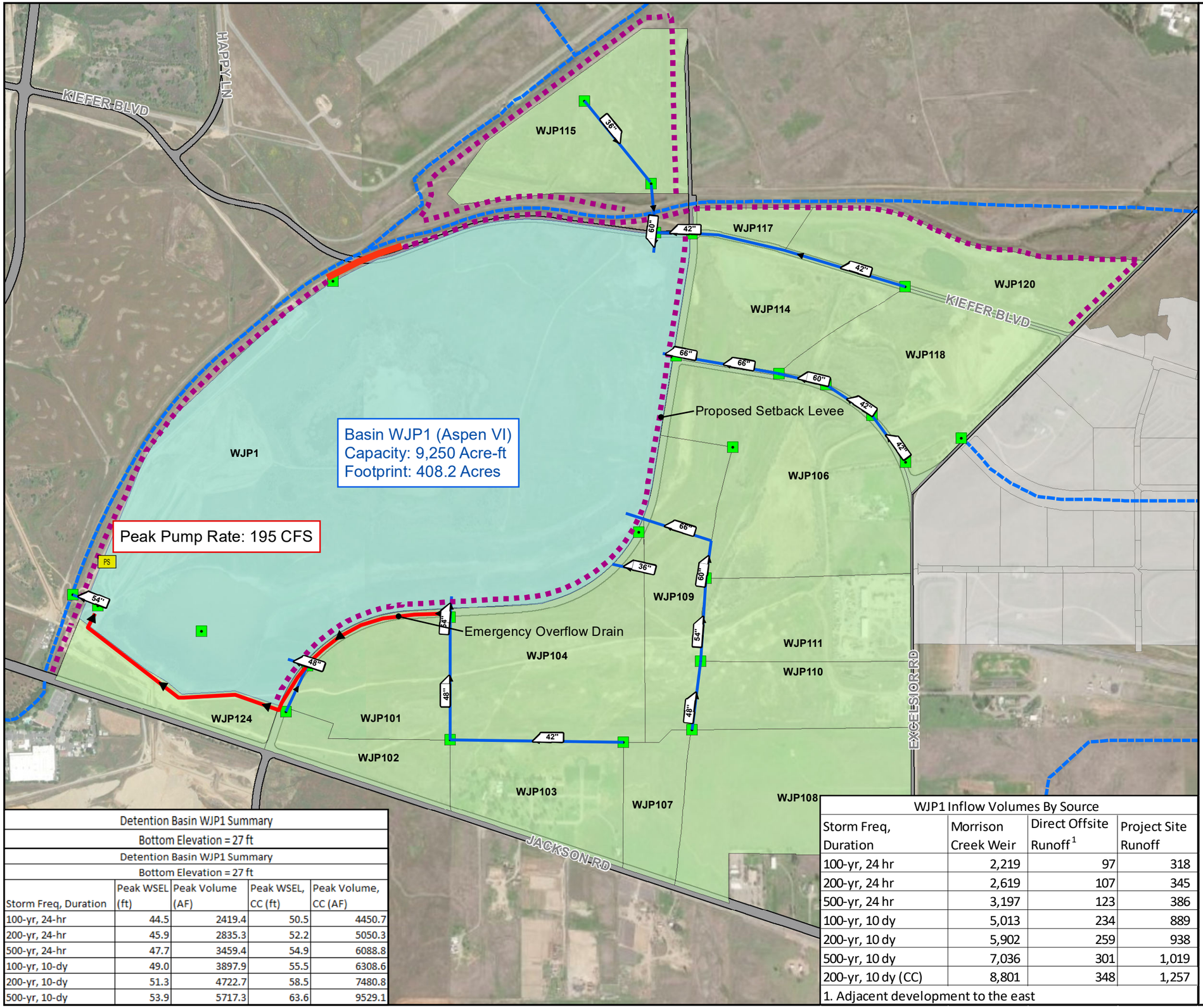
WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

0 1,000 2,000
Feet



Legend

- PS — pumps
- Proposed/Existing Levee
- Nodes
- Aspen 6 Weir
- Open Channel
- Pipe
- Culvert
- Creeks
- WJP1 Detention Basin
- Offsite Watershed
- Future Roadways
- Watershed

NOTES:
1) Includes flows from on-site, Jackson Township, weir overflow reflecting ultimate conditions
2) Peak volume and peak water surface elevation are based upon existing configuration of the weir
3) Basin footprint is appoxrimate and subject to change with final engineering design.
4) Basin contours are assumed grading and subject to change with final engineering design.
5) Outfalls in the Granite 1 / Aspen 6 basin will be fitted with flap gates.
6) The emergency Overflow Drain will collect overland flow when the basin is above and direct flow directly to the pump station.
7) WJP1 Detention Capacity is based on the capacity at water surface elevation 62.9 ft with 3 ft freeboard to the setback levee

Detention Basin WJP1 Summary

Bottom Elevation = 27 ft

Detention Basin WJP1 Summary

Bottom Elevation = 27 ft

Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	44.5	2419.4	50.5	4450.7
200-yr, 24-hr	45.9	2835.3	52.2	5050.3
500-yr, 24-hr	47.7	3459.4	54.9	6088.8
100-yr, 10-dy	49.0	3897.9	55.5	6308.6
200-yr, 10-dy	51.3	4722.7	58.5	7480.8
500-yr, 10-dy	53.9	5717.3	63.6	9529.1

WJP1 Inflow Volumes By Source

Storm Freq, Duration	Morrison Creek Weir	Direct Offsite Runoff[1]	Project Site Runoff
100-yr, 24 hr	2,219	97	318
200-yr, 24 hr	2,619	107	345
500-yr, 24 hr	3,197	123	386
100-yr, 10 dy	5,013	234	889
200-yr, 10 dy	5,902	259	938
500-yr, 10 dy	7,036	301	1,019
200-yr, 10 dy (CC)	8,801	348	1,257

1. Adjacent development to the east

WOOD RODGERS

FIGURE 6.3

WJP2 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

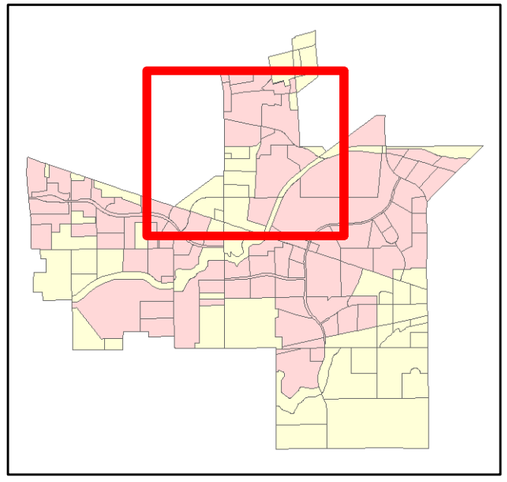
NORTH

0 500 1,000
Feet

Legend

- PS — Pump Station
- Proposed/Existing Levee
- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Basin Climate Expansion
- Future Roadways
- Watershed

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



Basin WJP2
Capacity: 74.5 Acre-ft
Footprint: 6 Acres

Peak Pump Rate: 8 CFS

Basin WJP2
Capacity: 106.78 Acre-ft
Footprint: 8.3 Acres

WJP210
WJP209
WJP205
WJP204
WJP203
WJP207
WJP206
WJP202
WJP201

24.0"
36.0"
36.0"
30.0"
42.0"
72.0"
60.0"
48.0"

MAYHEW RD
BRADSHAW RD
KIEFER BLVD
HAPPY LN

Detention Basin WJP2 Summary				
Bottom Elevation = 30 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	37.4	33.2	37.3	47.9
200-yr, 24-hr	38.1	36.6	38.0	52.8
500-yr, 24-hr	39.2	42.2	39.1	60.4
100-yr, 10-dy	39.0	40.9	39.0	59.7
200-yr, 10-dy	39.9	45.5	40.0	67.4
500-yr, 10-dy	39.1	41.6	40.3	69.5

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.4 WJP2 - Planned Facilities.mxd 12/2/2022 8:12:56 AM mberggren

FIGURE 6.4

WJP3 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

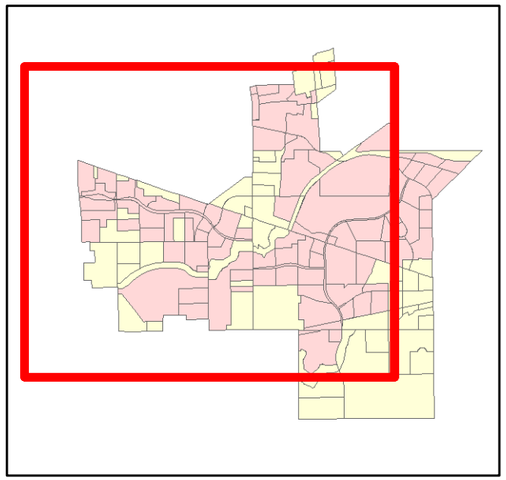
Vertical Datum:
NAVD 88

0 1,000 2,000
Feet

Legend

- PS — Pump Station
- Proposed/Existing Levee
- Open Channel
- Pipe
- Culvert
- Creeks
- Basin Climate Expansion
- Pumped Detention Basin
- Future Roadways
- Watershed
- Offsite Watershed

Notes:
1) Basin footprint is approximate and subject to change with final enginering design.



Peak Pump Rate: 45 CFS

Basin WJP3
Capacity: 740 Acre-ft
Footprint: 39.9 Acres

Basin WJP3
Capacity: 1030 Acre-ft
Footprint: 52.1 Acres

Detention Basin WJP3 Summary				
Bottom Elevation = 5 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	15.3	379.4	15.3	533.0
200-yr, 24-hr	16.1	409.4	16.6	600.7
500-yr, 24-hr	17.3	455.6	17.5	647.5
100-yr, 10-dy	19.4	530.8	20.9	823.6
200-yr, 10-dy	20.6	576.1	21.7	862.3
500-yr, 10-dy	21.2	597.8	21.7	864.1

WJP3 Inflow Volumes By Source		
Storm Freq, Duration	Direct Offsite Runoff[1]	Project Site Runoff
100-yr, 24 hr	69	300
200-yr, 24 hr	75	332
500-yr, 24 hr	86	385
100-yr, 10 dy	172	726
200-yr, 10 dy	188	804
500-yr, 10 dy	214	931
200-yr, 10 dy (CC)	252	1,078

1. Aspen 1 runoff

WOOD RODGERS

FIGURE 6.5

WJP4 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

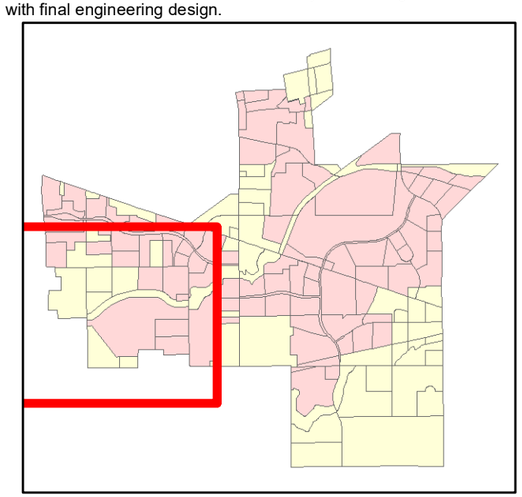
0 500 1,000

Feet

Legend

- Pump Station
- Proposed/Existing Levee
- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Basin Climate Expansion
- Pumped Detention Basin
- Future Roadways
- Watershed
- Offsite Shed

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



Peak Pump Rate: 14 CFS

Basin WJP4 (Vineyard I)
Capacity: 350.1 Acre-ft
Footprint: 16.5 Acres

Basin WJP4
Capacity: 460 Acre-ft
Footprint: 23.4 Acres

Existing Drainage Ditch

Detention Basin WJP4 Summary				
Bottom Elevation = 0 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	10.1	134.4	13.5	190.0
200-yr, 24-hr	10.9	147.9	14.7	210.1
500-yr, 24-hr	12.4	172.0	16.4	241.6
100-yr, 10-dy	18.1	273.1	21.3	458.1
200-yr, 10-dy	20.0	312.2	20.7	390.1
500-yr, 10-dy	20.6	371.5	21.5	476.3

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.6 WJP4 - Planned Facilities.mxd 12/2/2022 8:13:19 AM mberggren

FIGURE 6.6

WJP5 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

0 500 1,000
Feet

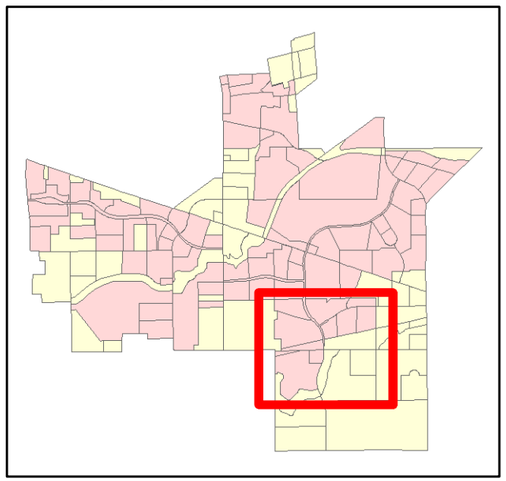
166 acre watershed shift from Morrison Creek to Elder Creek

WJP510
WJP508
WJP509
WJP505
WJP506
48.0"
36.0"
66.0"
72.0"
ELDER CREEK RD
WJP5
24.0"
PS
Peak Pump Rate: 10 CFS
Basin WJP5
Capacity: 370 Acre-ft
Footprint: 75 Acres
Village Nurseries

Legend

- Pump Station
- Open Channel
- Pipe
- Culvert
- Proposed Weir
- Proposed/Existing Levee
- Nodes
- Creeks
- Watershed Shift
- Pumped Detention Basin
- Future Roadways
- Watershed

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



Detention Basin WJP5 Summary				
Bottom Elevation = 10 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	16.9	146.8	16.6	120.8
200-yr, 24-hr	17.1	156.3	16.8	135.2
500-yr, 24-hr	18.1	231.9	17.1	156.6
100-yr, 10-dy	16.9	146.9	17.6	195.2
200-yr, 10-dy	17.4	182.3	18.3	241.0
500-yr, 10-dy	18.3	245.6	19.4	326.0

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.7 WJP5 - Planned Facilities.mxd 12/2/2022 8:13:30 AM mberggren

FIGURE 6.7

WJP6 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

0 250 500

Feet

GOETHE RD

BRADSHAW RD

WJP603

WJP605

WJP604

WJP602

WJP6

24.0"

42.0"

30.0"

30.0"

36.0"

Basin WJP6
Capacity: 62.4 Acre-ft
Footprint: 6.5 Acres

Peak Pump Rate: 8 CFS

PS

Basin WJP6
Capacity: 81.87 Acre-ft
Footprint: 8.6 Acres

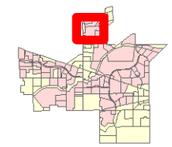
KIEFER BLVD

ROSEMONT

Legend

- Pump Station
- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Watershed
- Future Roadways

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



Detention Basin WJP6 Summary				
Bottom Elevation = 50 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	58.0	38.2	60.9	55.3
200-yr, 24-hr	58.7	42.3	61.8	61.2
500-yr, 24-hr	59.9	49.2	63.2	70.4
100-yr, 10-dy	59.2	44.8	60.3	51.5
200-yr, 10-dy	58.2	39.3	61.5	59.4
500-yr, 10-dy	59.5	46.8	63.6	73.0

WOOD RODGERS

FIGURE 6.8

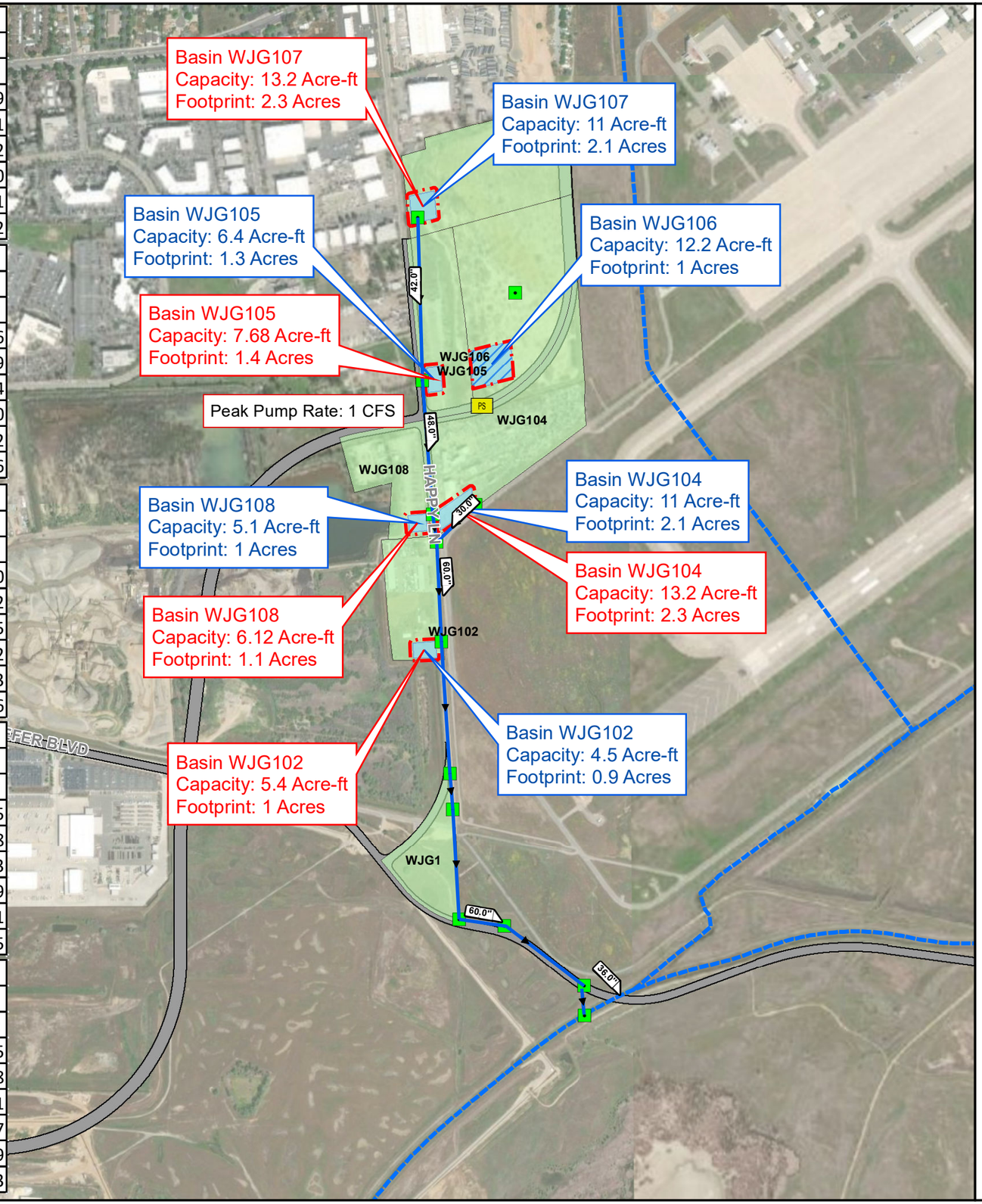
Detention Basin WJG102 Summary		
Bottom Elevation = 66.9 ft		
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)
100-yr, 24-hr	69.8	1.9
200-yr, 24-hr	70.0	2.1
500-yr, 24-hr	70.2	2.2
100-yr, 10-dy	69.9	2.0
200-yr, 10-dy	70.0	2.1
500-yr, 10-dy	70.1	2.2

Detention Basin WJG104 Summary		
Bottom Elevation = 67.48 ft		
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)
100-yr, 24-hr	70.7	5.6
200-yr, 24-hr	70.9	5.9
500-yr, 24-hr	71.2	6.4
100-yr, 10-dy	70.9	6.0
200-yr, 10-dy	71.1	6.2
500-yr, 10-dy	71.3	6.6

Detention Basin WJG105 Summary		
Bottom Elevation = 69.7 ft		
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)
100-yr, 24-hr	72.7	3.0
200-yr, 24-hr	72.9	3.2
500-yr, 24-hr	73.2	3.5
100-yr, 10-dy	72.9	3.2
200-yr, 10-dy	73.0	3.3
500-yr, 10-dy	73.3	3.6

Detention Basin WJG107 Summary		
Bottom Elevation = 71.3 ft		
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)
100-yr, 24-hr	74.5	5.5
200-yr, 24-hr	74.7	5.8
500-yr, 24-hr	74.9	6.3
100-yr, 10-dy	74.7	5.9
200-yr, 10-dy	74.8	6.1
500-yr, 10-dy	75.0	6.5

Detention Basin WJG108 Summary		
Bottom Elevation = 68.3 ft		
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)
100-yr, 24-hr	71.5	2.5
200-yr, 24-hr	71.8	2.8
500-yr, 24-hr	72.2	3.1
100-yr, 10-dy	71.7	2.7
200-yr, 10-dy	72.0	2.9
500-yr, 10-dy	72.4	3.3



WJG1 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

Vertical Datum: NAVD 88

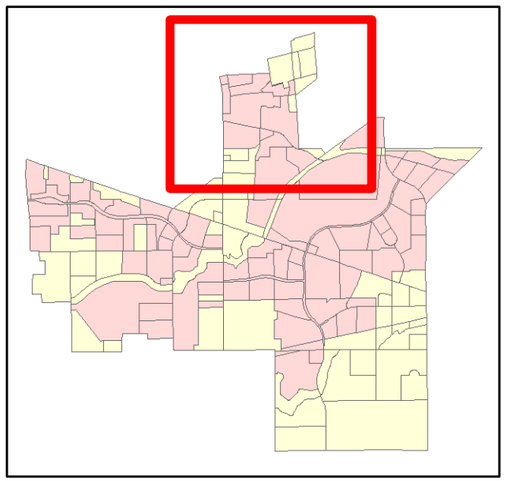
0 500 1,000

Feet

Legend

- Pump Station
- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Watershed
- Future Roadways

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



WOOD RODGERS

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FIGURE 6.9

WJG2 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

0 500 1,000
Feet

WJP6 Pump Rate: 8 CFS

Existing Pumped Basin
Capacity: 15 Acre-ft
Footprint: 1.0 Acres

Peak Pump Rate: 10 CFS

WJP2 Pump Rate: 8 CFS

Basin WJG205
Capacity: 13.21 Acre-ft
Footprint: 2.6 Acres

Basin WJG202
Capacity: 58.56 Acre-ft
Footprint: 9.2 Acres

Basin WJG205
Capacity: 9.1 Acre-ft
Footprint: 1.9 Acres

Basin WJG202
Capacity: 39.8 Acre-ft
Footprint: 6.4 Acres

Basin WJG201
Capacity: 36.7 Acre-ft
Footprint: 5.7 Acres

5.2 acre-ft of floodplain mitigation

Basin WJG201
Capacity: 25.1 Acre-ft
Footprint: 4.0 Acres

30" Outlet

WJG207
WJG206
WJG205
WJG204
WJG203
WJG202
WJG201

KIEFER BLVD
HAPPY LN
MAYHEW RD
FARM LN
BRADSHAW RD
JACKSON RD

36.0"
48.0"
48.0"
60.0"
30.0"
36.0"
24.0"
60.0"
60.0"

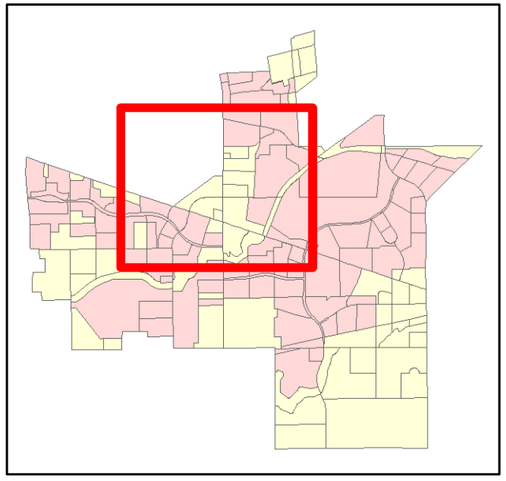
PS

Detention Basin WJG201 Summary				
Bottom Elevation = 59.5 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	62.6	10.4	62.6	15.7
200-yr, 24-hr	62.7	10.9	62.8	16.3
500-yr, 24-hr	62.9	11.7	62.9	17.3
100-yr, 10-dy	62.9	11.5	63.0	17.6
200-yr, 10-dy	63.0	11.8	63.1	18.2
500-yr, 10-dy	63.1	12.3	63.3	19.3

Legend

- Pump Station
- Proposed/Existing Levee
- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Floodplain Mitigation
- Basin Climate Expansion
- Future Roadways
- Watershed

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.10 WJG2 - Planned Facilities.mxd 12/2/2022 8:09:35 AM mberggren

FIGURE 6.10

WJG3 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 250 500
Feet

Vertical Datum:
NAVD 88

BRADSHAW RD

JACKSON RD

WJG301

54.0"

30.0"

Basin WJG3
Capacity: 23.8 Acre-ft
Footprint: 4.1 Acres

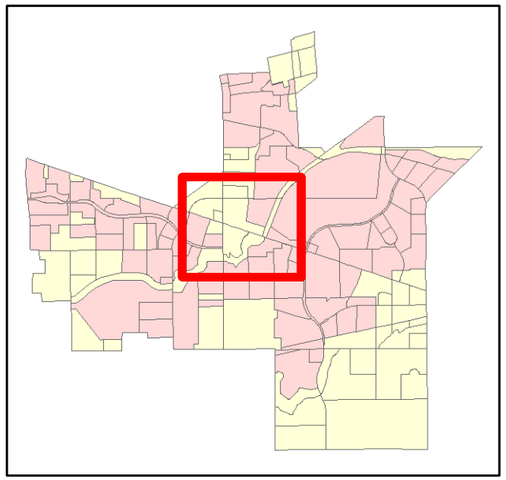
Basin WJG3
Capacity: 22.5 Acre-ft
Footprint: 3.8 Acres

Detention Basin WJG3 Summary				
Bottom Elevation = 58 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	62.6	15.5	63.2	18.6
200-yr, 24-hr	62.8	16.3	63.4	19.3
500-yr, 24-hr	63.2	17.7	63.7	20.8
100-yr, 10-dy	62.4	14.9	63.6	20.1
200-yr, 10-dy	62.6	15.5	63.7	20.8
500-yr, 10-dy	62.9	16.4	64.1	22.3

Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Watershed
- Future Roadways

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.11 WJG3 - Planned Facilities.mxd 12/2/2022 8:09:46 AM mberggren

FIGURE 6.11

WJG4 - PLANNED FACILITIES

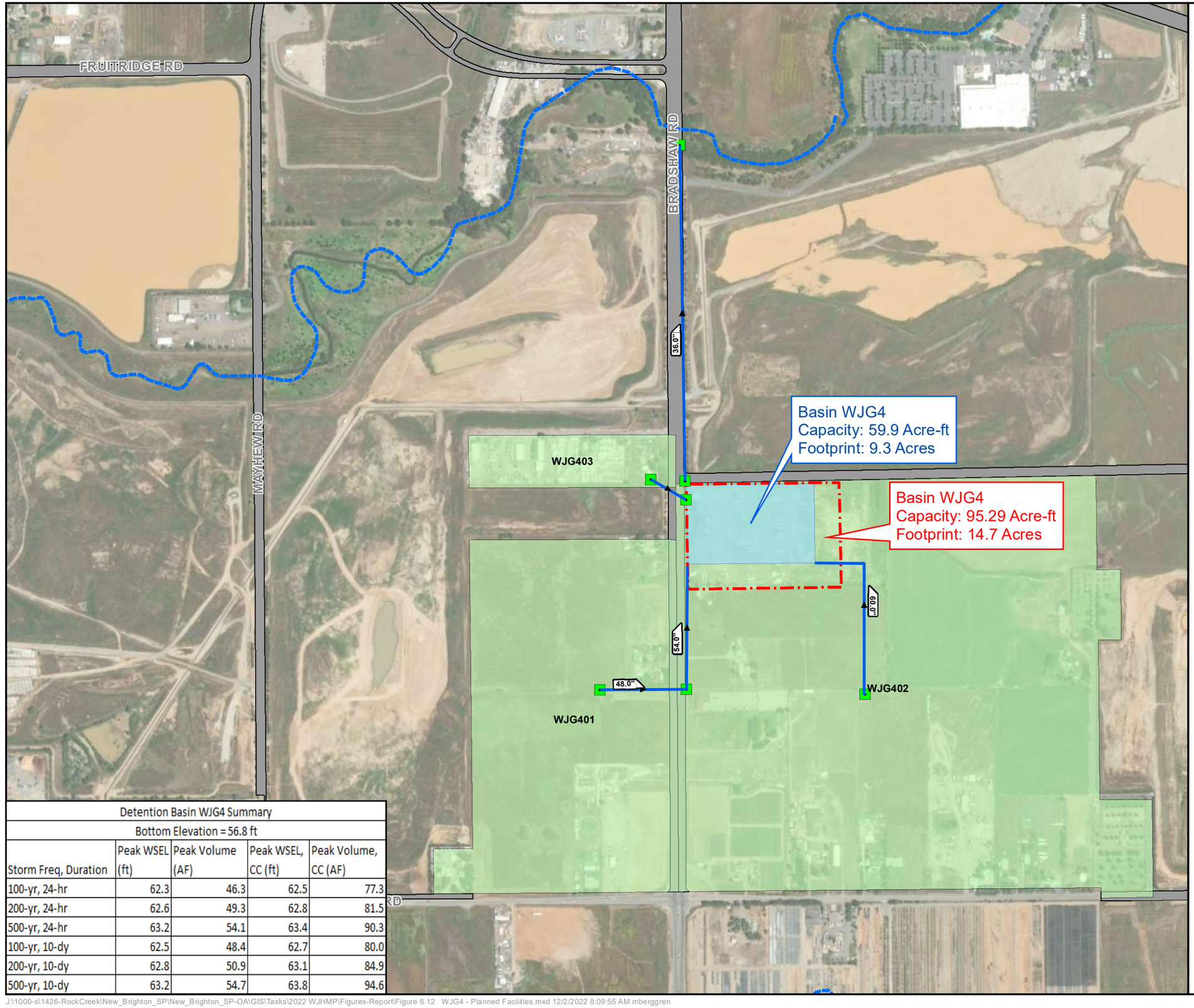
WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

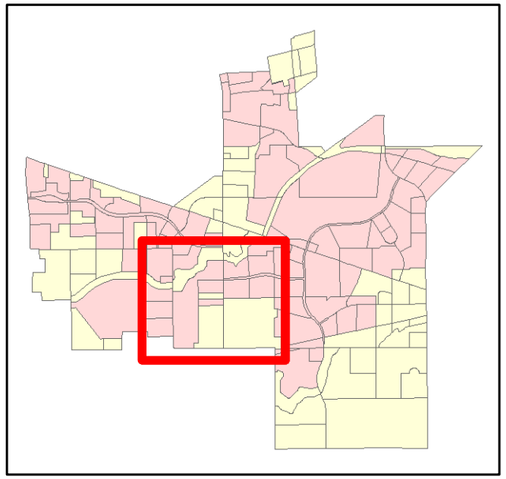
0 500 1,000
Feet



Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Watershed
- Future Roadways

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



Detention Basin WJG4 Summary				
Bottom Elevation = 56.8 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	62.3	46.3	62.5	77.3
200-yr, 24-hr	62.6	49.3	62.8	81.5
500-yr, 24-hr	63.2	54.1	63.4	90.3
100-yr, 10-dy	62.5	48.4	62.7	80.0
200-yr, 10-dy	62.8	50.9	63.1	84.9
500-yr, 10-dy	63.2	54.7	63.8	94.6

WOOD RODGERS

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FIGURE 6.12

WJG5 - PLANNED FACILITIES

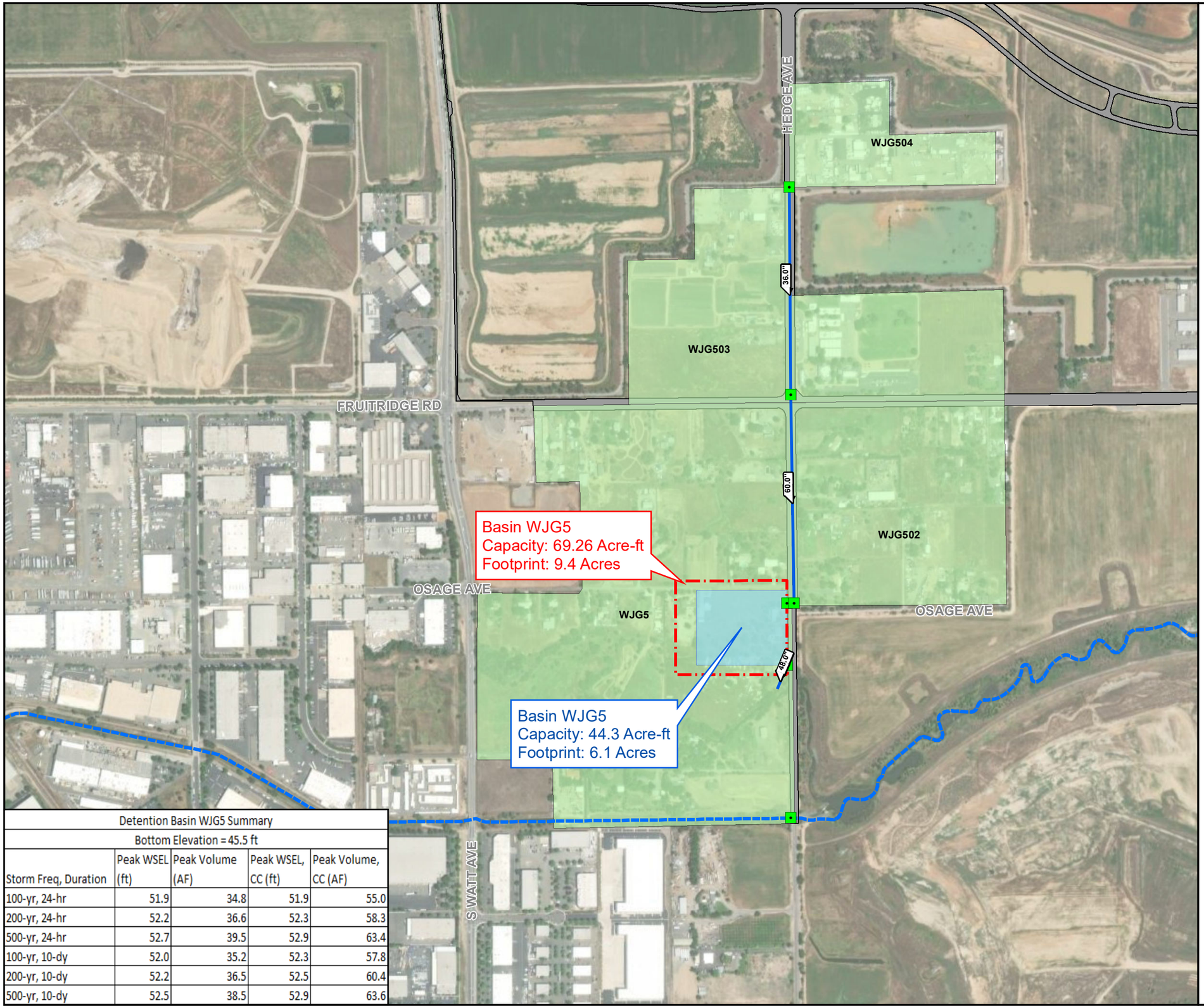
WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

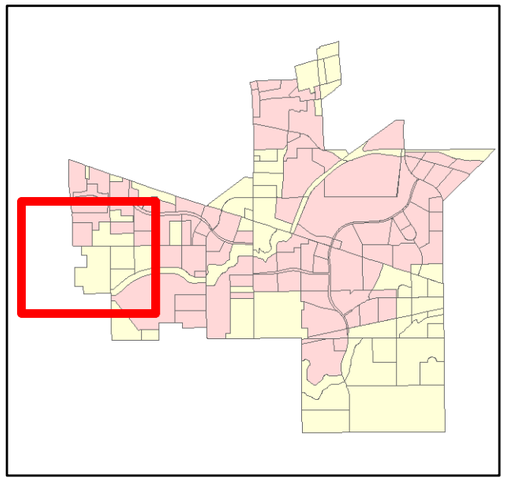
0 500 1,000
Feet



Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Future Roadways
- Watershed

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



Detention Basin WJG5 Summary				
Bottom Elevation = 45.5 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	51.9	34.8	51.9	55.0
200-yr, 24-hr	52.2	36.6	52.3	58.3
500-yr, 24-hr	52.7	39.5	52.9	63.4
100-yr, 10-dy	52.0	35.2	52.3	57.8
200-yr, 10-dy	52.2	36.5	52.5	60.4
500-yr, 10-dy	52.5	38.5	52.9	63.6

WOOD RODGERS

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FIGURE 6.13

WJG6 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

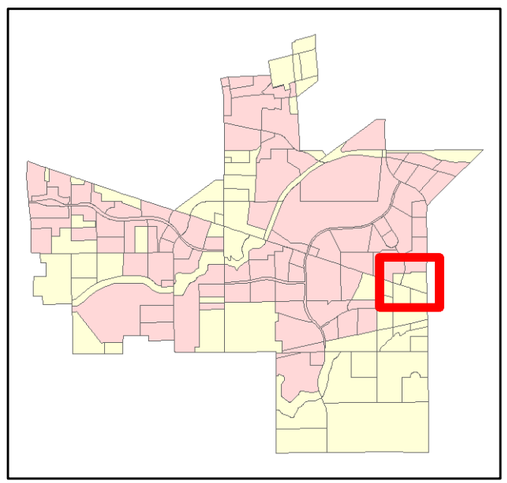
0 250 500

Feet

Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Future Roadways
- Watershed

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



WJG6

Basin WJG6
Capacity: 15.55 Acre-ft
Footprint: 3.2 Acres

Basin WJG6
Capacity: 10 Acre-ft
Footprint: 2.1 Acres

WJG6

CON_WJG6

OUT_WJG6

EXCELSIOR RD

JACKSON RD

Detention Basin WJG6 Summary				
Bottom Elevation = 90 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	93.6	6.1	93.6	9.8
200-yr, 24-hr	93.8	6.5	93.9	10.5
500-yr, 24-hr	94.1	7.1	94.2	11.4
100-yr, 10-dy	93.4	5.7	93.5	9.5
200-yr, 10-dy	93.5	6.0	93.7	10.0
500-yr, 10-dy	93.8	6.5	94.0	10.9

WOOD RODGERS

FIGURE 6.14

WJG7 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

Vertical Datum: NAVD 88

NORTH

0 250 500

Feet

JACKSON RD

WJG7

WJG702

48.0"

42.0"

42.0"

ELDER CREEK RD

EXCELSIOR RD

Basin WJG7
Capacity: 13.9 Acre-ft
Footprint: 2.2 Acres

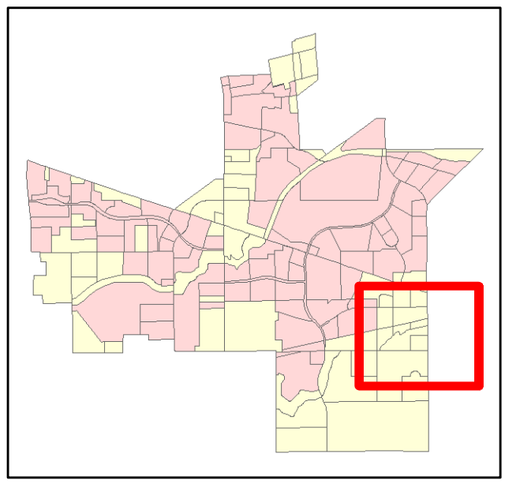
Basin WJG7
Capacity: 22.66 Acre-ft
Footprint: 3.7 Acres

Detention Basin WJG7 Summary				
Bottom Elevation = 83 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	89.5	12.9	89.4	20.7
200-yr, 24-hr	89.8	13.4	89.6	21.3
500-yr, 24-hr	90.3	14.5	89.9	22.4
100-yr, 10-dy	89.5	12.8	89.4	20.5
200-yr, 10-dy	89.6	13.2	89.5	21.0
500-yr, 10-dy	89.9	13.7	89.7	21.7

Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Watershed
- Future Roadways

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



WOOD RODGERS

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FIGURE 6.15

WJG8 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

Vertical Datum:
NAVD 88

NORTH

0 250 500
Feet

Basin WJG8
Capacity: 40.6 Acre-ft
Footprint: 7.1 Acres

Basin WJG8
Capacity: 71.93 Acre-ft
Footprint: 12.2 Acres

ELDER CREEK RD

EXCELSIOR RD

48.0"

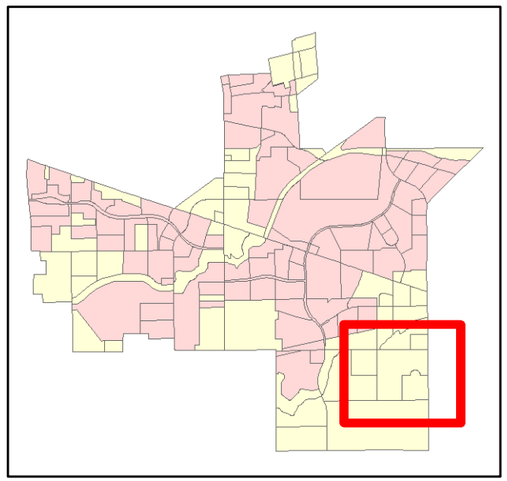
66.0"

42.0"

Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Watershed
- Future Roadways

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



Detention Basin WJG8 Summary				
Bottom Elevation = 82 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	87.2	32.3	87.3	58.5
200-yr, 24-hr	87.5	34.1	87.6	61.9
500-yr, 24-hr	87.9	36.6	88.1	66.8
100-yr, 10-dy	87.0	31.1	87.3	57.5
200-yr, 10-dy	87.3	32.4	87.5	60.4
500-yr, 10-dy	87.6	34.5	87.8	63.9

WOOD RODGERS

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FIGURE 6.16

WJG9 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

Vertical Datum:
NAVD 88

0 500 1,000

Feet

WJG904

Open Space
Maintain Natural Drainage

KNOX RD

WJG901

WJG902

WJG903

60.0"

72.0"

42.0"

Basin WJG9
Capacity: 76.6 Acre-ft
Footprint: 9 Acres

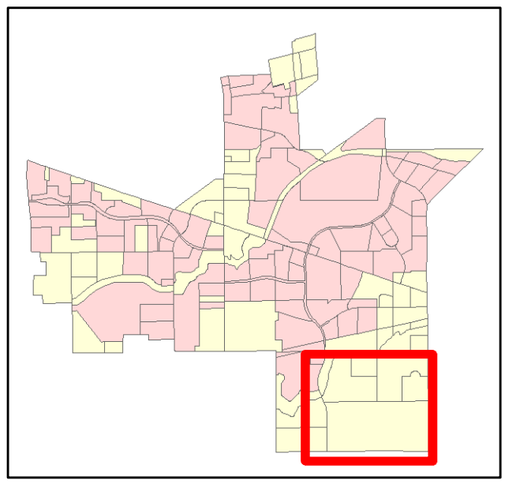
Basin WJG9
Capacity: 88.8 Acre-ft
Footprint: 13.9 Acres

Detention Basin WJG9 Summary				
Bottom Elevation = 73 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	77.5	47.7	78.4	67.0
200-yr, 24-hr	77.7	50.7	78.8	72.7
500-yr, 24-hr	78.2	56.0	79.4	81.0
100-yr, 10-dy	77.4	47.0	78.0	62.4
200-yr, 10-dy	77.6	49.3	78.3	66.4
500-yr, 10-dy	78.0	53.6	78.8	72.7

Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Basin Climate Expansion
- Pumped Detention Basin
- Gravity Detention Basin
- Watershed
- Future Roadways

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



WOOD RODGERS

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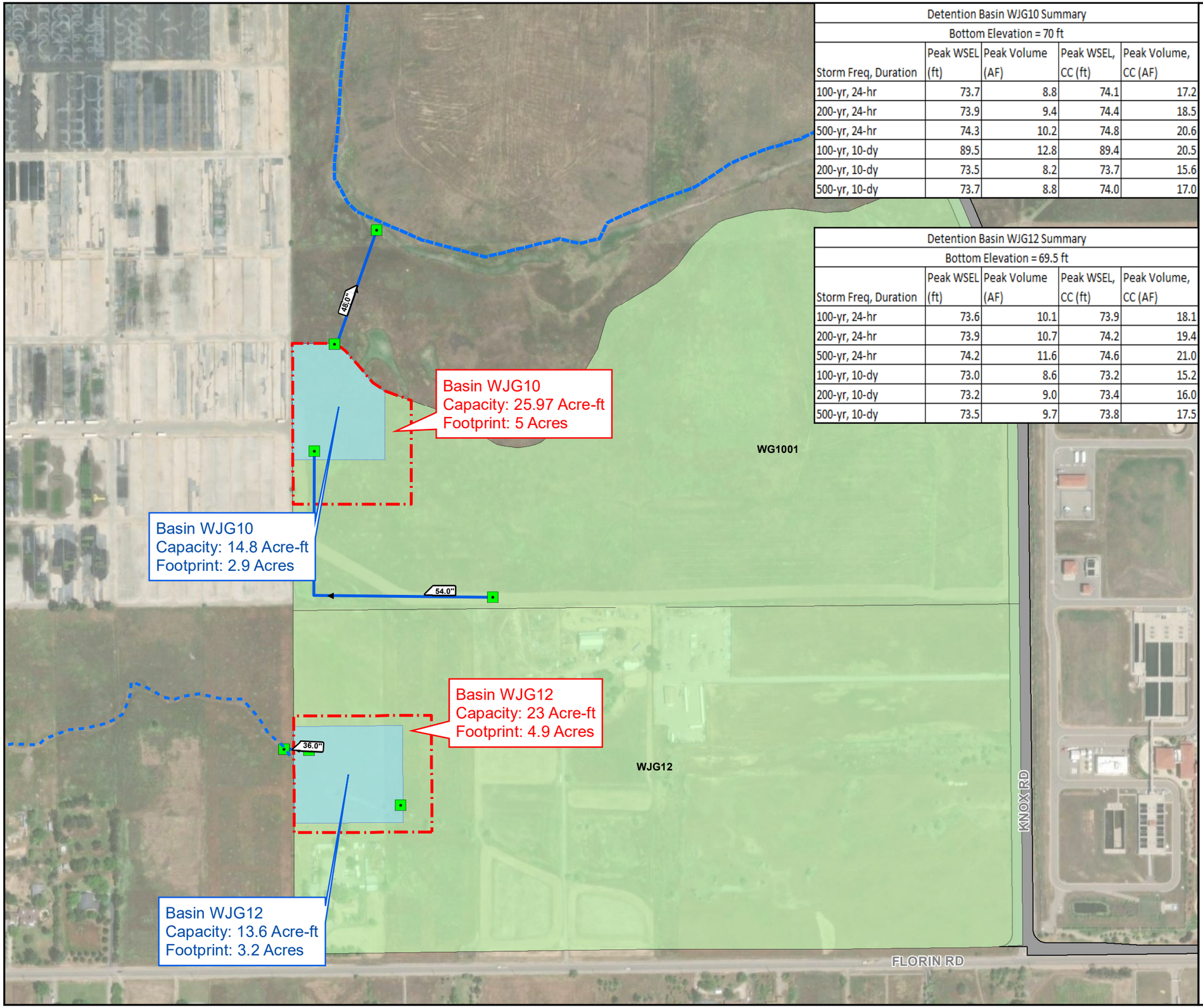
FIGURE 6.17

Detention Basin WJG10 Summary				
Bottom Elevation = 70 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	73.7	8.8	74.1	17.2
200-yr, 24-hr	73.9	9.4	74.4	18.5
500-yr, 24-hr	74.3	10.2	74.8	20.6
100-yr, 10-dy	89.5	12.8	89.4	20.5
200-yr, 10-dy	73.5	8.2	73.7	15.6
500-yr, 10-dy	73.7	8.8	74.0	17.0

Detention Basin WJG12 Summary				
Bottom Elevation = 69.5 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	73.6	10.1	73.9	18.1
200-yr, 24-hr	73.9	10.7	74.2	19.4
500-yr, 24-hr	74.2	11.6	74.6	21.0
100-yr, 10-dy	73.0	8.6	73.2	15.2
200-yr, 10-dy	73.2	9.0	73.4	16.0
500-yr, 10-dy	73.5	9.7	73.8	17.5



WJG10/WJG12 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

Vertical Datum: NAVD 88

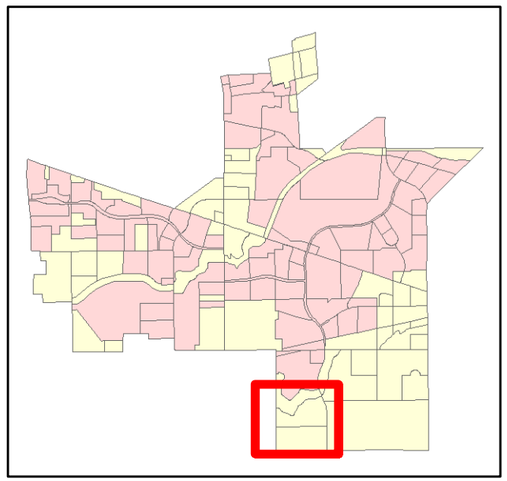
0 250 500

Feet

Legend

- Open Channel
- Pipe
- Culvert
- Nodes
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Future Roadways
- Watershed

Notes:
1) Basin footprint is approximate and subject to change with final engineering design.



WOOD RODGERS

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FIGURE 6.18

WJG11 - PLANNED FACILITIES

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

Vertical Datum: NAVD 88

0 250 500

Feet

JACKSON RD

WJG113

WJG112

WJG115

WJG116

WJG114

WJG111

54.0"

42.0"

42.0"

42.0"

30.0"

30.0"

48.0"

Basin WJG11
Capacity: 30.4 Acre-ft
Footprint: 5.9 Acres

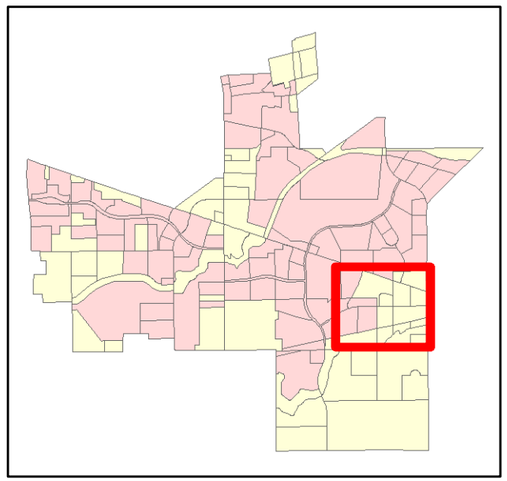
Basin WJG11
Capacity: 47.79 Acre-ft
Footprint: 9 Acres

EXCELSIOR RD

Legend

- Nodes
- Open Channel
- Pipe
- Culvert
- Creeks
- Pumped Detention Basin
- Gravity Detention Basin
- Basin Climate Expansion
- Watershed
- Future Roadways

Notes:
1) Basin footprint is appoximate and subject to change with final enginering design.



Detention Basin WJG11 Summary				
Bottom Elevation = 84.5 ft				
Storm Freq, Duration	Peak WSEL (ft)	Peak Volume (AF)	Peak WSEL, CC (ft)	Peak Volume, CC (AF)
100-yr, 24-hr	88.9	21.8	89.4	39.1
200-yr, 24-hr	89.1	23.2	89.8	42.2
500-yr, 24-hr	89.6	25.5	90.3	46.4
100-yr, 10-dy	88.5	20.0	89.1	36.0
200-yr, 10-dy	88.7	21.0	89.3	38.0
500-yr, 10-dy	89.0	22.5	89.7	41.5

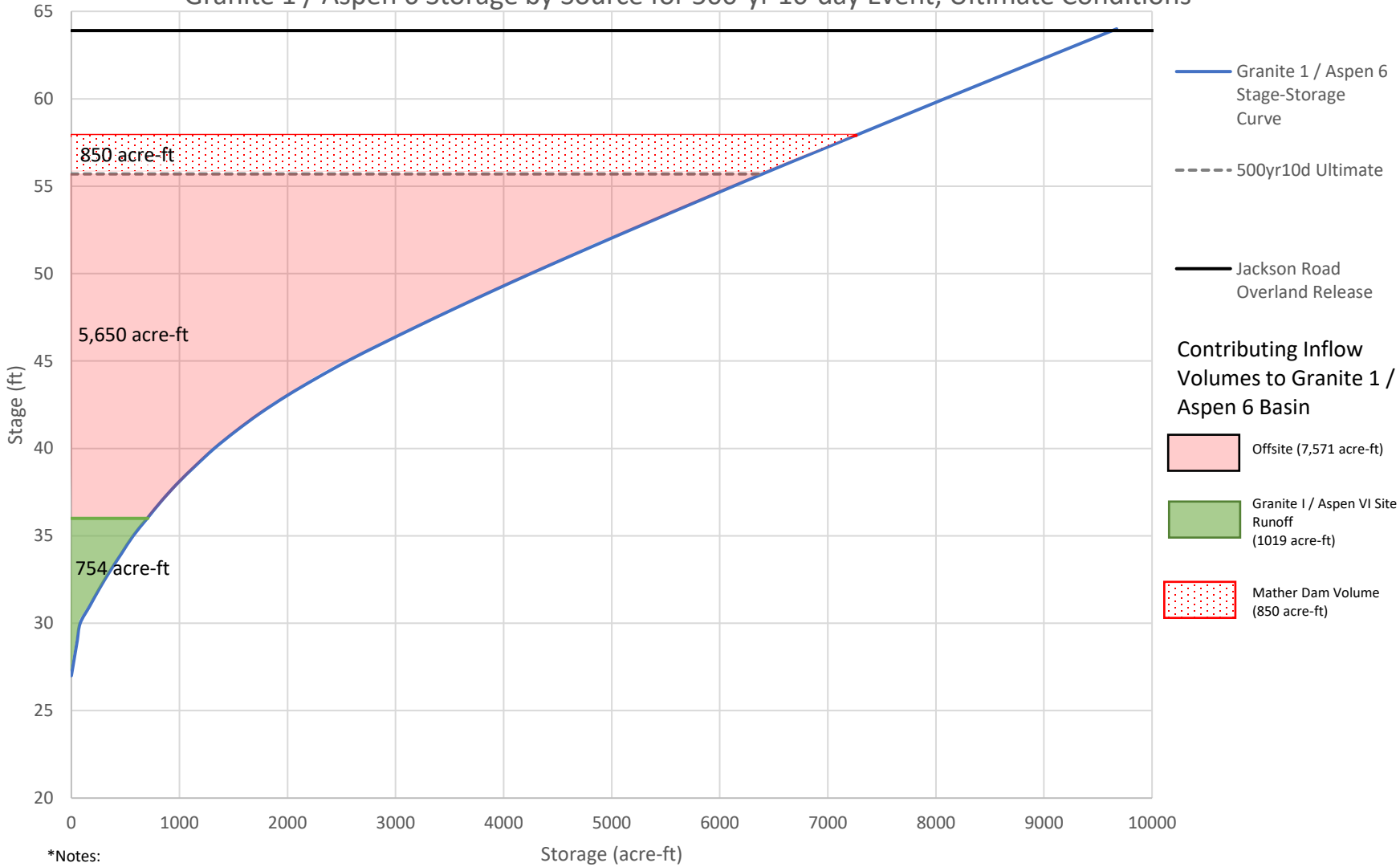
WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.19 WJG11 - Planned Facilities.mxd 12/2/2022 8:11:05 AM mberggren

FIGURE 6.19

Figure 6.20

Granite 1 / Aspen 6 Storage by Source for 500-yr 10-day Event, Ultimate Conditions



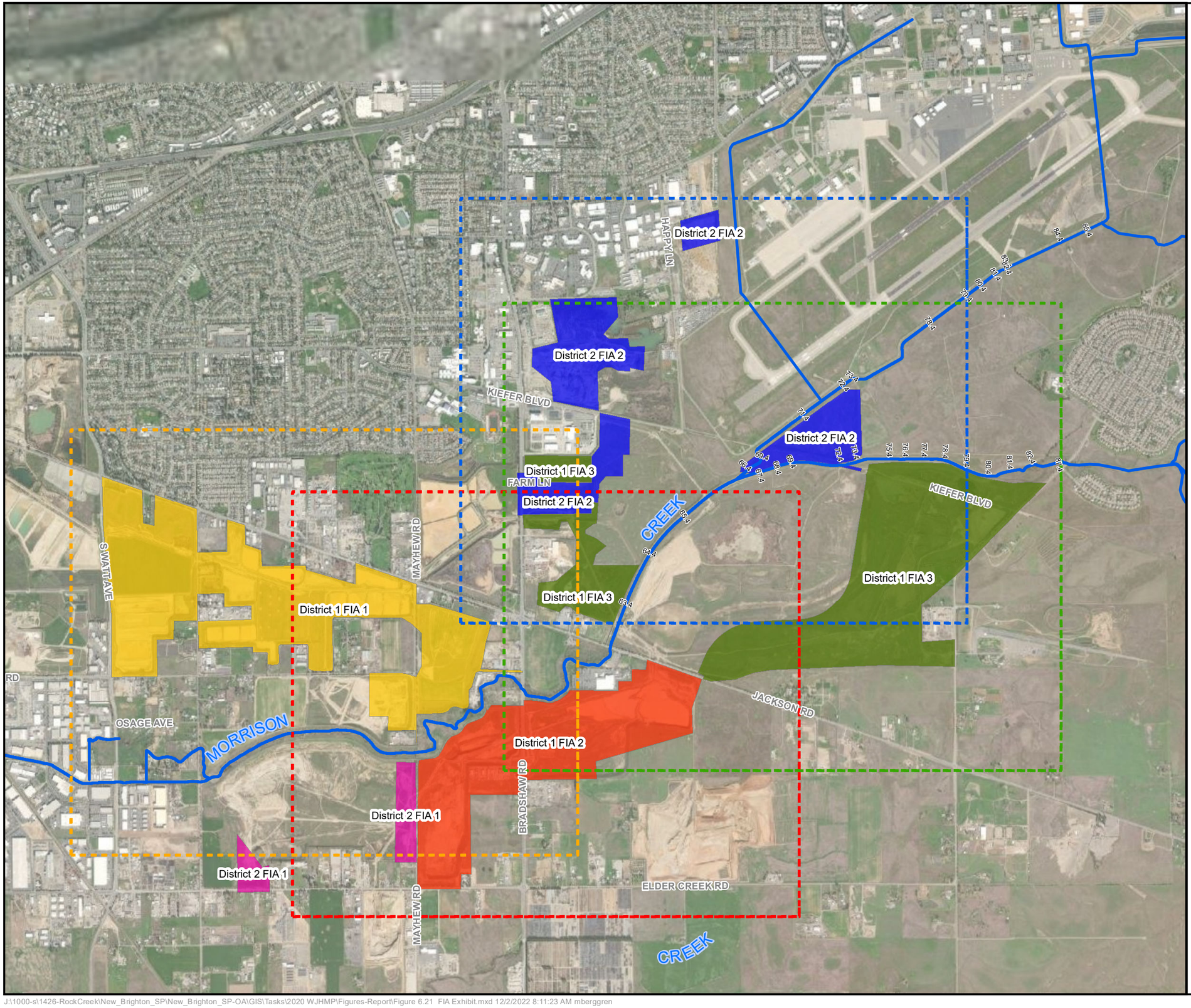
*Notes:

1. The stage storage curve assumes an expanded environmental corridor which deepens the basin to elevation 27 ft and adds approximately 1,450 acre-ft of storage.
2. Peak storages assume an overall pumping capacity of 195 cfs. Without pumping, peak volume will be higher.
3. Graph value (storage volume) indicates a reduction to 74.6% of volume flowing into basin due to continuous pumping.
4. Mather South storage / inflow is approximate
5. Mather dam volume is the total volume of 850 acre-ft stored in Mather Lake up to the dam crest. It represents a catastrophic failure event.

FIA FIGURES EXTENT MAP

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022



NORTH

0 1,100 2,200
Feet

- Creek/Drainage Swale or Culvert

Individual FIA Figure Extent

- District 1 FIA 1 Exhibit Extent
- District 1 FIA 2 Exhibit Extent
- District 1 FIA 3 Exhibit Extent
- District 2 FIA 1 Exhibit Extent
- District 2 FIA 2 Exhibit Extent

FIA Boundaries

- District 1 FIA 1
- District 1 FIA 2
- District 1 FIA 3
- District 2 FIA 1
- District 2 FIA 2

Notes:
1) Levee Improvements and locations are preliminary and are subject to change with final engineering

WOOD RODGERS

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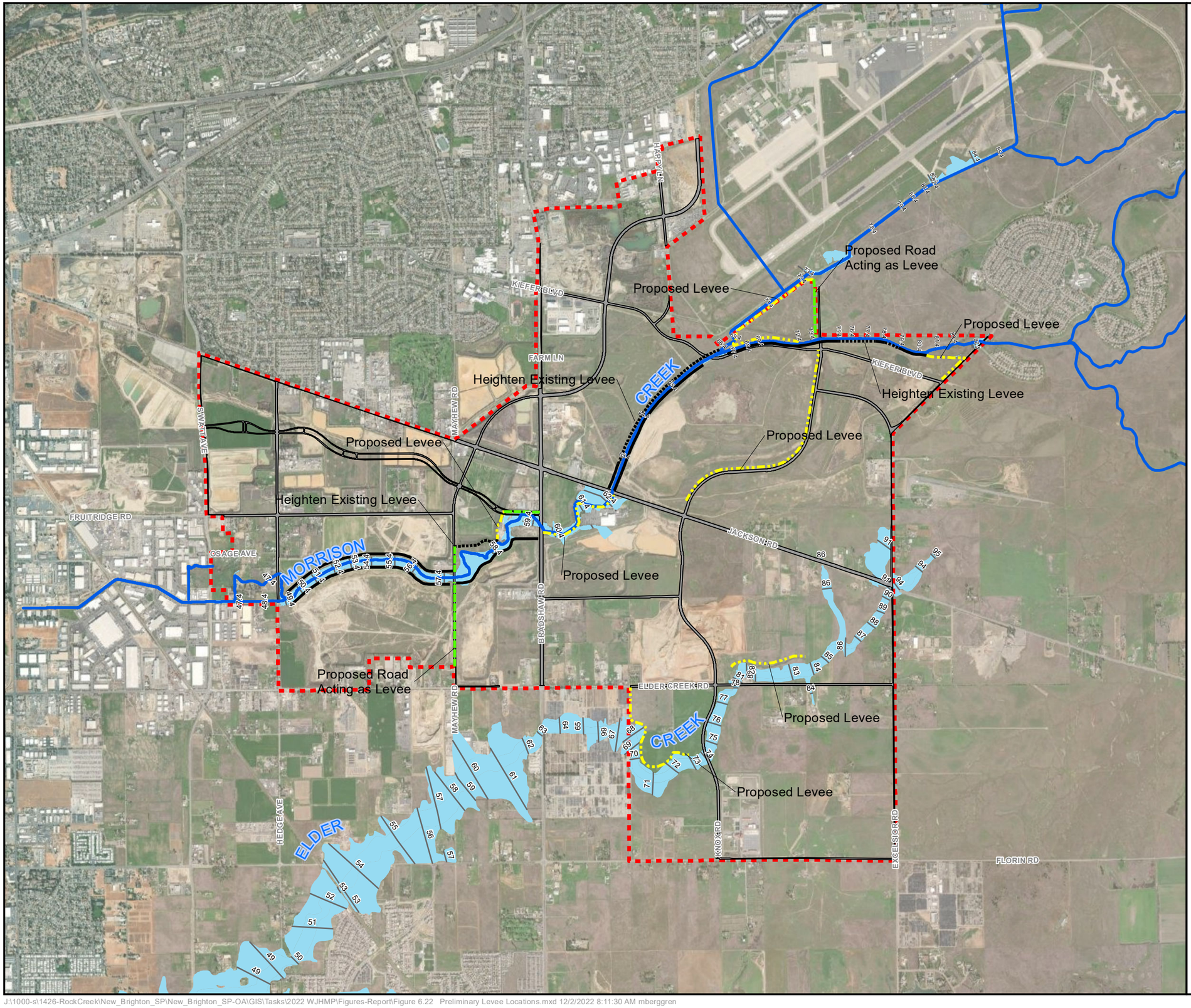
FIGURE 6.21

PRELIMINARY LEVEE LOCATIONS

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022



NORTH

0 1,100 2,200

Feet

- Existing Levee to be Heightened
- Existing Levee to Remain
- Proposed Levee
- Proposed Road Acting As Levee
- Channels
- Future Roadways
- Project Boundary
- Floodplain (100-year 24-hour storm event)
- Flood Elevation (100-year 24-hour storm event)

Notes:
1) Levee Improvements and locations are preliminary and are subject to change with final engineering

WOOD RODGERS

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FIGURE 6.22

POST PROJECT RESIDUAL FLOODING

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

0 2,500 5,000

Feet

Legend

- Detention
- Residual 100-year floodplain
- Future Roadways
- WJHMP Project Boundary

Notes:
1) This exhibit has been prepared to illustrate floodplain within Morrison and Elder Creek as well as within detention basins after proposed drainage and flood control improvements are implemented.
2) Detention basin footprints shown are subject to change with subsequent engineering and design efforts.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

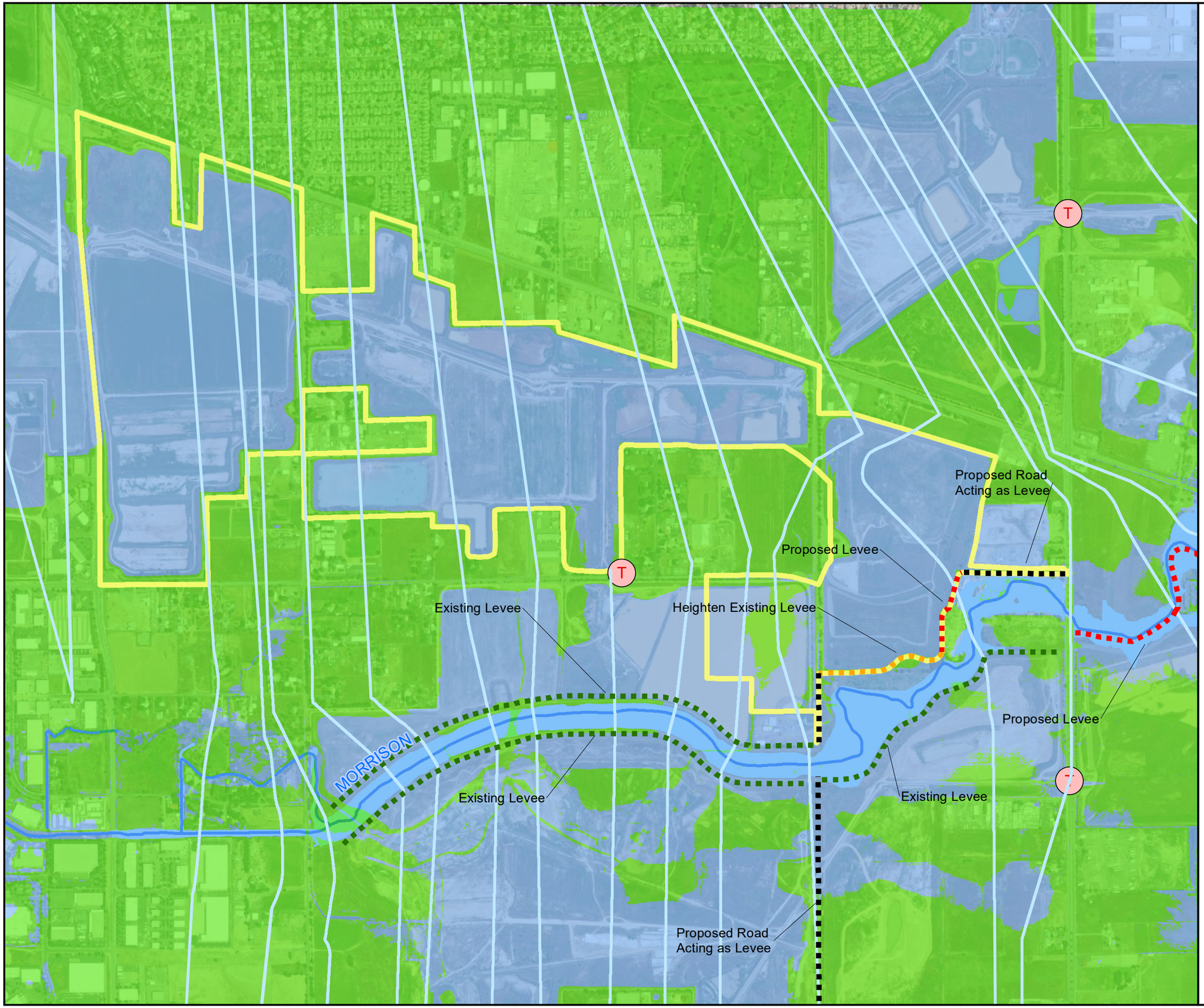
J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.23 Post Project Residual Flooding.mxd 12/2/2022 8:11:38 AM mberggren

FIGURE 6.23

DISTRICT 1 - FLOOD IMPROVEMENT AREA #1

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022



NORTH

0 1,100 2,200
Feet

CENTERLINES
- Existing Levee to be Heightened
- Existing Levee to Remain
- Proposed Levee
- Proposed Road Acting As Levee
- 200-YR WSE Contour
- T Tunnel Closure
- District 1 FIA 1

Existing Ground
- Below 200-YR WSE
- Above 200-YR WSE
- Morrison Creek
- Floodplain (100-year 24-hour storm event)

Notes:
1) Levee Improvements and locations are preliminary and are subject to change with final engineering.
2) The sequence of flood improvements is subject to further refinement during the improvement stage.
3) Elevations reference the NAVD88 Datum.
4) This flood improvement area must include detention basin WJP3 if developed prior to district 1 flood improvement area 2

WOOD RODGERS

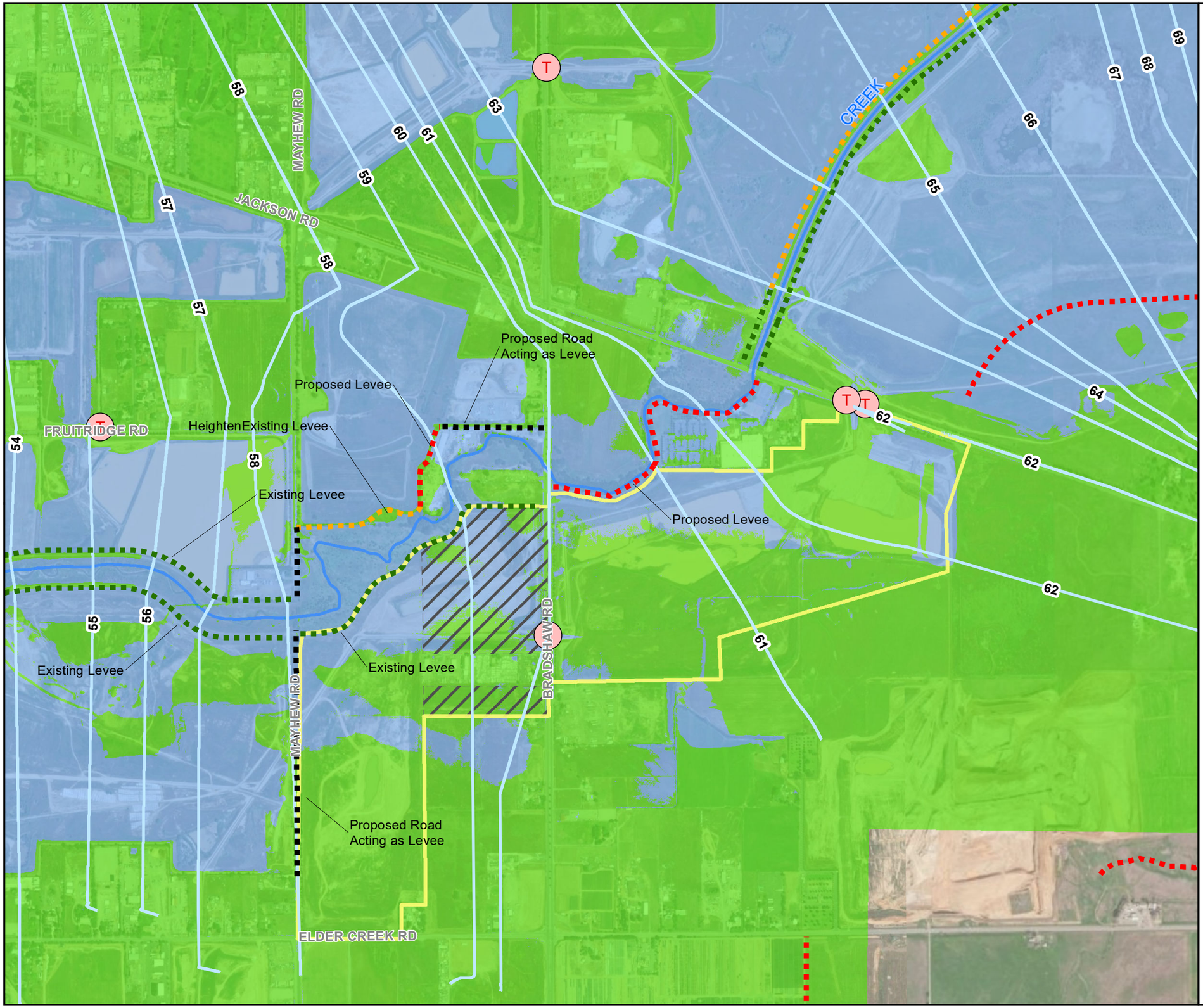
J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.24 D1_FIA1_EG_Elevations_Map.mxd 12/2/2022 8:11:49 AM mberggren

FIGURE 6.24

DISTRICT 1 - FLOOD IMPROVEMENT AREA #2

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022



NORTH

0 1,100 2,200
Feet

- Existing Levee to be Heightened
- Existing Levee to Remain
- Proposed Levee
- Proposed Road Acting As Levee
- 200-YR WSE Contour
- Tunnel Closure
- District 1 FIA 2
- Area to be Raised

Existing Ground

- Below 200-YR WSE
- Above 200-YR WSE
- Morrison Creek

Notes:
1) Levee Improvements and locations are preliminary and are subject to change with final engineering.
2) The sequence of flood improvements is subject to further refinement during the improvement stage.
3) Elevations reference the NAVD88 Datum.

WOOD RODGERS

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FIGURE 6.25

DISTRICT 1 - FLOOD IMPROVEMENT AREA #3

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022

NORTH

0 1,100 2,200
Feet

CENTERLINES
- Existing Levee to be Heightened
- Existing Levee to Remain
- Proposed Levee
- Proposed Road Acting As Levee
- 200-YR WSE Contour

T Tunnel Closure

- District 1 FIA 3
- Area to be Raised

Existing Ground
- Below 200-YR WSE
- Above 200-YR WSE
- Morrison Creek

Notes:
1) Levee Improvements and locations are preliminary and are subject to change with final engineering.
2) The sequence of flood improvements is subject to further refinement during the improvement stage.
3) Elevations reference the NAVD88 Datum.

WOOD RODGERS

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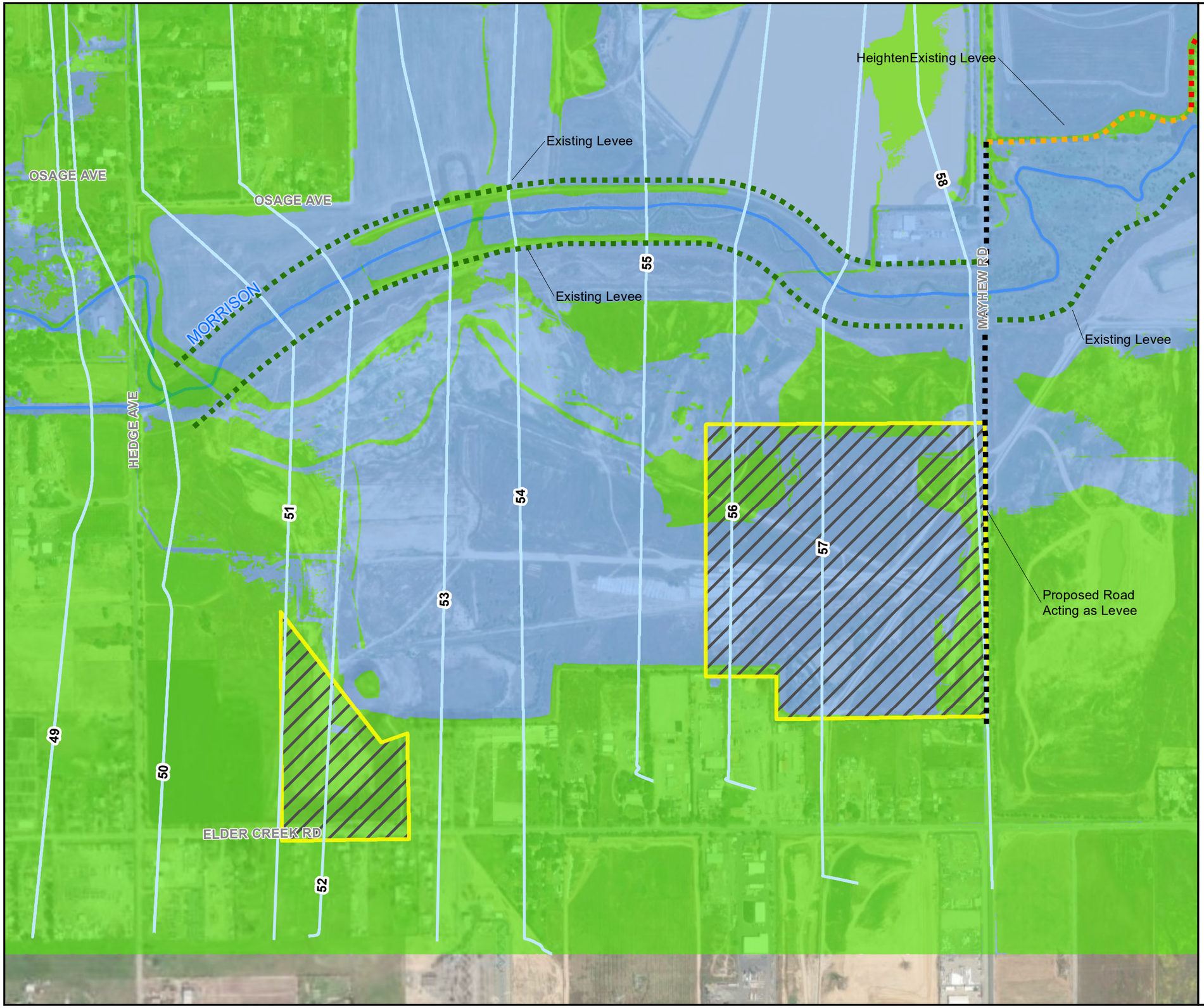
FIGURE 6.26

DISTRICT 2 - FLOOD IMPROVEMENT AREA #1

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022



NORTH

0 500 1,000
Feet

- Existing Levee to be Heightened
- Existing Levee to Remain
- Proposed Levee
- Proposed Road Acting As Levee
- 200-YR WSE Contour
- T Tunnel Closure
- District 2 FIA 1
- Area to be Raised

Existing Ground

- Below 200-YR WSE
- Above 200-YR WSE
- Morrison Creek

Notes:
1) Levee Improvements and locations are preliminary and are subject to change with final engineering.
2) The sequence of flood improvements is subject to further refinement during the improvement stage.
3) Elevations reference the NAVD88 Datum.

WOOD RODGERS

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FIGURE 6.27

DISTRICT 2 - FLOOD IMPROVEMENT AREA #2

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA
DECEMBER 2022



NORTH

0 500 1,000
Feet

- Existing Levee to be Heightened
- Existing Levee to Remain
- Proposed Levee
- Proposed Road Acting As Levee
- 200-YR WSE Contour
- T Tunnel Closure
- District 2 FIA 2
- Area to be Raised

Existing Ground

- Below 200-YR WSE
- Above 200-YR WSE
- Morrison Creek

Notes:
1) Levee Improvements and locations are preliminary and are subject to change with final engineering.
2) The sequence of flood improvements is subject to further refinement during the improvement stage.
3) Elevations reference the NAVD88 Datum.

WOOD RODGERS

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FIGURE 6.28

DRAINAGE PHASING PLAN

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

FEBRUARY 2023

NORTH

0 2,500 5,000

Feet

Legend

- Creeks
- Existing Levee to be Heightened
- Existing Levee
- Proposed Levee
- Proposed Road Acting As Levee

Phasing Area

- A
- B
- C

Detention

- Pumped Detention Basin
- Gravity Detention Basin
- Basin Watershed
- Gravity Watershed

Pumped Watersheds

- WJP1
- WJP2
- WJP3
- WJP4
- WJP5
- WJP6
- Open Channel
- Pipe
- Culvert
- PS Drainage Pump Station

NOTES:
1) Phasing Area B must include detention basin WJP3 if developed prior to Phasing Area C

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 6.29_Phasing_Plan.mxd 2/10/2023 2:05:27 PM mberggren

FIGURE 6.29

7.0 Consistency with Allowed Discharge and Design Standards

Consistency with the allowed discharge and design standards is essential to allow the project to move forward. This section articulates the results of the modeling as it relates to the allowed discharge and design standards as defined in **Section 5.0**

Figure 7.1: Interior Drainage Summary illustrates the planned drainage facilities necessary for each shed to mitigate for the effects of planned development of the Plan Area. **Appendix F** contains a summary table of these same facilities.

7.1 Interior Design Standard (pumped detention basins)

2-year 24-hour volume discharged to creek in less than 48 hours

This standard is achieved by sizing of basins and pumps to evacuate the 2-year 24-hour design storm in 48-hours or less.

100-year 10-day flood containment with three feet of freeboard

This standard is achieved by maintaining a maximum water surface elevation in the planned detention basins that provide a minimum of three feet of freeboard. The minimum pad elevations were determined for each of the planned basins, relative to the determined peak water surface elevations. The planned pad elevations are defined by the preliminary grading study shown in **Appendix G**. Detailed design as required for subsequent entitlements (tentative mapping and/or design review) and improvement plans will validate adequate freeboard to meet this requirement.

500-year 10-day flood containment with no freeboard

This standard is achieved by maintaining a 500-year 10-day maximum water surface elevation in the planned detention basins such that adjacent pads do not flood. Detailed design as required for subsequent entitlements (tentative mapping) and improvement plans will validate this requirement.

Pump Station design and pump redundancy and backup power

This standard will be achieved with future design efforts at improvement plan stage. These efforts will provide for pump redundancy and backup power. Detailed design as required for subsequent entitlements (tentative mapping and / or design review) and improvement plans will validate pumping criteria as outlined

in **Table 5.1: Pump Station Design Criteria**[21]. Required pump redundancy will be provided over and above reliable design capacities that are modeled herein. Modifications, to the satisfaction of SCDWR, to redundancy may be requested that consider the number of pumps being provided versus percent capacity. An adequate creek monitoring station design and operation will also be required for subsequent entitlements. This may include provisions for emergency pumping of detention storage while the peak stage in the creek is still above the 100-year design event thresholds as well additional storage capacity in the detention basins to provide a factor of safety.

7.2 Interior Design Standards (gravity detention basins)

Mitigation of 2-year, 10-year, and 100-year outflows to creek

For this level of analysis each planned gravity detention basin sub-watershed was analyzed for discharge of the 2-year, 10-year, and 100-year storm events. Providing design for these storm events, at this level of analysis, is assumed to accommodate for hydromodification. Increases to basin sizes due to hydromodification for subsequent analysis is not anticipated. In order to confirm this approach, a hydromodification analysis ushing SAHM was performed on two of the proposed gravity detention basins. For the analysis, one basin, WJG3, represented more commercial land use within the watershed and another basin, WJG5, represented predominantly low-density residential land use within the watershed. The analysis indicated that the detention basins would be large enough to meet hydromodification objectives with the addition of required LID measures in the watershed. Bioretention was used as the anticipated LID measure and the mitigated basins passed flow duration tests by a considerable margin. The results of the SAHM analysis are shown in Appendix H.

For a direct comparison, the existing storm event assumes a shed boundary that is consistent with the planned shed boundary. Existing elevated watershed areas that currently gravity discharge to mined areas were excluded for the purposes of determining the target flow rates and reduction factors, as described

[21] SCDWR has agreed that this Master Plan does not need to evaluate all underlying pump scenarios. The 100-year 24-hour, 100-year 10-day, 500-year 24-hour, and 500-year 10-day events with full pumping capacity were analyzed in this study. However, all pump scenarios shown in **Table 5.1** will need to be evaluated and approved as part of final design.

under **Section 6.2**. This standard is achieved as shown in **Table 7.1: Existing and Planned Flow at Gravity Basin Discharge**.

Each gravity detention basin discharges at a rate to the adjacent creek less than the pre-development condition and compensates for additional drainage area flowing to the creek. In some cases, the water quality footprint (area) and the backwater from the creek influence the final mitigation effectiveness, producing peak flows significantly lower than target (allowed) values.

Table 7.1: Existing and Planned Flow at Gravity Basin Discharge

Basin	2-Year Storm Event		10-year Storm Event		100-year Storm Event	
	Existing (cfs)	Planned (cfs)	Existing (cfs)	Planned (cfs)	Existing (cfs)	Planned (cfs)
WJG1	16.0	9.2	36.0	15.0	62.0	33.4
WJG205	3.9	1.0	8.6	1.4	15.0	1.9
WJG201	6.5	1.5	14.0	3.2	25.0	8.6
WJG202	8.5	2.5	19.0	3.5	34.0	8.8
WJG3	4.8	1.3	11.0	3.4	19.0	9.6
WJG4	30.0	15.6	65.0	31.6	112.0	65.3
WJG5	41.0	11.2	88.0	25.1	150.0	72.3
WJG6	7.6	3.5	17.0	6.5	30.0	10.0
WJG7	72.0	65.0	163.0	97.6	285.0	117.1
WJG8	99.0	94.8	210.0	127.3	363.0	161.4
WJG9	36.0	13.9	77.0	39.7	133.0	68.0
WJG10	14.0	10.7	32.0	20.7	56.0	32.4
WJG11	27.0	15.1	60.0	30.0	103.0	53.1
WJG12	15.0	13.7	35.0	24.8	60.0	35.2

100-year flood containment with 1.2-feet of freeboard:

This standard is achieved by designing the detention basins to allow 1.2-feet of freeboard. Future efforts at subsequent entitlement and improvement plan stages will provide for detailed design. This future design will ensure that freeboard standards are achieved.

Overflow release to creek for larger storms

This standard will be achieved with future efforts. Subsequent entitlement and improvement plan stages will provide for detailed design to ensure that freeboard standards are achieved.

7.3 Levee Design Standards

Meet all California Urban Levee Design Criteria (ULDC) and Urban Level of Protection (ULOP)

This standard is achieved with limited / controlled flows entering the creek, and top-of-levee (design) elevations set to a minimum of 3 feet above the maximum 200-year storm with climate change. For the Morrison Creek watershed, sub-watersheds that discharge by gravity do so at or below existing runoff levels. For areas that pump to Morrison Creek, the combined planned pumping rate is equivalent to 271 cfs for all pumped sheds using the County's current standards. The system was also evaluated under estimated climate change conditions, to determine pumping increases and detention offsets, compared to creek conditions under existing development with climate change. Climate change is evaluated in detail in **Section 8.0** . Morrison Creek's maximum 200-year water surface profile and the existing levee elevations are provided in **Figure 7.2** and **Figure 7.3**. The figures show that levee improvements will be required within the plan area in order to achieve 3-feet of freeboard above the maximum 200-year water surface elevation. The project does not adversely impact the Morrison Creek channel outside of the plan area. Morrison Creek water surface elevations are unchanged or lower than the existing condition water surface elevations throughout the channel after the project is implemented. These levees were previously identified in **Figure 6.21: FIA Exhibit** and will be constructed according to 44 CFR 65.10.

Existing bridges crossing Morrison Creek do not require full compliance with ULDC with respect to freeboard, as the State only requires freeboard compliance for new bridge design. While existing Morrison Creek bridges can be relied upon to convey floodwaters, according to SCDWR the ULDC debris and blockage requirements for bridges are still a design consideration. The ULDC allows for the option of quantifying debris loading, presumably to reduce blockage considerations within streams with low debris. In the same manner, if debris can be managed upstream of existing bridges, then blockage considerations can justifiably be adjusted. This master plan recommends the development of a debris management plan during design to capture and/or redirect debris from the upstream Morrison Creek watershed in the vicinity of the Granite1 / Aspen 6 weir and prevent the introduction of new debris throughout the Plan Area. Therefore, the blockage of existing bridges during flood events is assumed to be prevented upstream of the bridges, and therefore full flow capacity has been modeled. Proposed road crossings along Morrison

Creek at Rock Creek Parkway, Kiefer Boulevard, Mayhew Road, Vineyard Road, and Hedge Avenue will be designed to applicable standards and with adequate freeboard to design water surface elevations in the creek in order to avoid hydraulic interaction and prevent debris blockage. Morrison Creek modeling contained within this study will need to be revised if any proposed bridge crossings are deemed to influence the hydraulics of the creek.

An analysis to determine the potential impacts of blockage at Jackson Road at 50% if debris management becomes infeasible was performed in accordance with ULDC requirements. The results show that water surfaces increase a maximum of 0.36 feet during the 200-year design event under ultimate developed conditions. This is due to low velocities and minimal head losses. The blockage analysis is provided in the HEC-RAS model as part of this submittal as part of **Appendix E**. The impact to the ultimate conditions 200-year design event water surface elevation in Morrison Creek is shown on Figures 7.2 and 7.3.

Elder Creek crossings do not trigger ULDC requirements because a ULOP finding is not required for the Elder Creek Corridor. This is because the Elder Creek watershed upstream of the Plan Area is less than 10-square miles. However, SCDWR has requested that a blockage analysis also be performed on Elder Creek to comply with ULDC requirements. Both ultimate developed conditions throughout the watershed and post-mining conditions were analyzed for determining levee heights. The maximum water surface elevation of either buildout condition with debris loading were used to set preliminary levee heights. Within the plan area, the crossing at Elder Creek Road and a driveway crossing approximately 325 feet upstream of Elder Creek Road were analyzed for 50% blockage. Additionally, 50% blockage was applied to the culvert crossing at Bradshaw Road downstream of the project. In order to stabilize the post-mining conditions Elder Creek model with climate change factors, the model was truncated to a driveway bridge approximately 7,000 feet downstream of Bradshaw Road. The rating curve at the bridge from the 200-year event was extrapolated to climate change flows and used as the downstream boundary of the model. The impact to the 200-year design event water surface elevation in Elder Creek is shown on **Figure 7.4: Elder Creek Debris Loading Blockage Analysis.**

Other ULDC and ULOP criteria will be achieved with future design efforts.

Meet the requirements of 44 CFR 65.10, for mapping of areas protected by levee systems

This standard will be achieved as levees and flood control facilities as shown in **Figure 6.22: Preliminary Levee Locations** are to be designed and constructed to meet the requirements of 44 CFR 65.10. This will occur with subsequent design efforts.

7.4 Allowed discharges

Maintain all design flow capacities and freeboard requirements for the 200-year flood event through all downstream County / City flood containment (levee) facilities

This standard is achieved as shown in **Table 7.2: Morrison Creek Flow for 200-year Event**. The table identifies the comparison of flow and stage for existing, project, and ultimate conditions for the higher of the 200-year 24-hour and 200-year 10-day storm events. The results show decreases in peak flows within Morrison Creek during planned project conditions.

Table 7.2: Morrison Creek Flow for 200-year Event

Location	River Station	Existing		Project		Ultimate	
		Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)
At Florin Perkins Road (Okinawa St)	14.50822	38.2	1,358	37.7	1,247	38.8	1,528
At Commercial Drive	10.209	35.8	2,245	35.4	2,086	35.4	2,078
At Power Inn Rd	9.975	35.0	2,310	34.6	2,141	34.7	2,153
At Logan St	9.621	33.8	2,334	33.5	2,158	33.5	2,187
At 65th St	8.932	31.6	2,887	31.4	2,710	31.4	2,746
At Elder Creek Rd	8.567	30.4	2,739	30.2	2,641	30.2	2,660
At Stockton Blvd	8.245	29.0	2,875	28.8	2,779	28.9	2,786
At Riza Dr Ped Brdg	7.946	27.6	2,863	27.5	2,769	27.6	2,782
At Steiner Dr	7.53	26.4	3,028	26.3	2,969	26.4	2,980
At Sky Pkwy Ped Br	7.01	24.9	2,700	24.8	2,630	24.9	2,716
At US Highway 99	6.909	24.4	3,229	24.4	3,096	24.5	3,212
At Florin Blvd	6.587	22.8	3,261	22.7	3,232	22.8	3,256
At Center Pkwy	6.362	21.6	3,040	21.5	3,029	21.7	2,977
At Franklin Blvd	6.152	19.7	3,221	19.7	3,242	20.0	3,202
At Shining Star Dr	5.842	18.8	3,353	18.7	3,372	19.0	3,392
At Brookfield Dr	5.45	18.1	3,294	18.1	3,272	18.4	3,385

No increase to 100-year and 200-year peak flow for downstream areas unless flow is contained within the existing conveyance facilities

This standard is achieved as increases in flow downstream of the Plan Area can be conveyed within the existing channel capacity. **Table 7.3: Morrison Creek Flow for 100-year Event** and **Table 7.2: Morrison Creek Flow for 200-year Event** showing stage and flow for both the 100-year and 200-year storm events.

Table 7.3: Morrison Creek Flow for 100-year Event

Location	River Station	Existing		Project		Ultimate	
		Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)
At Florin Perkins Road (Okinawa St)	14.50822	37.7	1,227	37.3	1,137	38.3	1,386
At Commercial Drive	10.209	34.5	1,780	33.8	1,552	34.6	1,840
At Power Inn Rd	9.975	33.8	1,838	33.1	1,609	33.8	1,879
At Logan St	9.621	32.7	1,852	32.0	1,619	32.7	1,871
At 65th St	8.932	30.7	2,376	30.2	2,154	30.7	2,357
At Elder Creek Rd	8.567	29.6	2,404	29.0	2,189	29.6	2,386
At Stockton Blvd	8.245	28.3	2,527	27.7	2,310	28.3	2,523
At Riza Dr Ped Brdg	7.946	27.1	2,517	26.8	2,304	27.1	2,513
At Steiner Dr	7.53	26.0	2,746	25.7	2,571	26.0	2,756
At Sky Pkwy Ped Br	7.01	24.6	2,541	24.4	2,435	24.5	2,517
At US Highway 99	6.909	24.2	2,881	24.1	2,678	24.2	2,827
At Florin Blvd	6.587	22.6	3,156	22.5	3,097	22.6	3,151
At Center Pkwy	6.362	21.4	3,021	21.3	2,996	21.4	3,019
At Franklin Blvd	6.152	19.5	3,199	19.4	3,153	19.5	3,196
At Shining Star Dr	5.842	18.5	3,391	18.5	3,344	18.5	3,388
At Brookfield Dr	5.45	17.8	3,385	17.8	3,339	17.8	3,382

7.5 Hydromodification and Storm Water Quality

As part of addressing hydromodification, the Plan Area proposes detention basins, as previously identified. Each gravity basin has been modeled with a stepped outlet to mitigate the peak flows for the 2-year, 10-year, and 100-year storm events. The pumped detention basins utilize a single duty pump to evacuate the 2-year design storm in 48 hours. As a result, the basins have been designed for a wide range of flow conditions. For this level of analysis hydromodification is anticipated to be achieved using this approach. This approach has been deemed appropriate by evaluating a conceptual hydromodification model for two example detention basins.

Water quality treatment can be achieved through a combination of low impact development design elements, such as rain gardens, onsite water reuse, interceptor trees, and bioretention basins. As a

preliminary approach, basins were sized to treat water quality in dry extended basins[22] and assume that no low impact development treatment measures would be implemented. The basins have a bottom area sufficient to store the water quality volume of the tributary watershed with one-foot of depth. Water quality volume was calculated based on SCDWR Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations for Residential and Commercial Sites. Calculations of water quality volume for each basin are shown in **Appendix H.** Subsequent entitlement design efforts are intended to refine the detention basin hydraulics and water quality approach. This will achieve the standards as required by the Sacramento Region's Stormwater Quality Design Manual.

A conceptual analysis in the Sacramento Area Hydromodification Model (SAHM) was used to demonstrate that the preliminary basin sizing approach to water quality would also be sufficient for addressing hydromodification. Detention basins WJG3 and WJG5 were chosen to reflect watersheds that varied from primarily commercial to primarily residential. For each detention basin, a portion of the basin was represented as bioretention to reflect LID measures that assist with hydromodification. As SCDWR does not currently allow LID features within county-maintained detention basins, several alternative LID measures could be implemented outside of the detention basin that produce similar results. The analysis shows that the basins are sized sufficiently to achieve hydromodification objectives. The SAHM model and results are shown in **Appendix H.**

[22] A dry extended water quality detention basin is designed to hold storm water runoff from small storms and the initial runoff ("first flush") from larger storms for a regulated downstream release. These basins are intended to be fully drained (dry) during non-storm periods and operate to remove pollutants through settlement capture and flow-through vegetation, with additional features providing approved filtration for summertime (low/nuisance) flows.

INTERIOR DRAINAGE SUMMARY

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022

NORTH

0 2,500 5,000

Feet

Legend

- WJHMP Project Boundary
- Creeks
- Existing Levee to be Heightened
- Existing Levee
- Proposed Levee
- Proposed Road Acting As Levee

Detention

- Pumped Detention Basin
- Gravity Detention Basin
- Basin Watershed
- Gravity Watershed

Pumped Watersheds

- WJP1
- WJP2
- WJP3
- WJP4
- WJP5
- WJP6
- Open Channel
- Pipe
- Culvert
- PS Pump Station

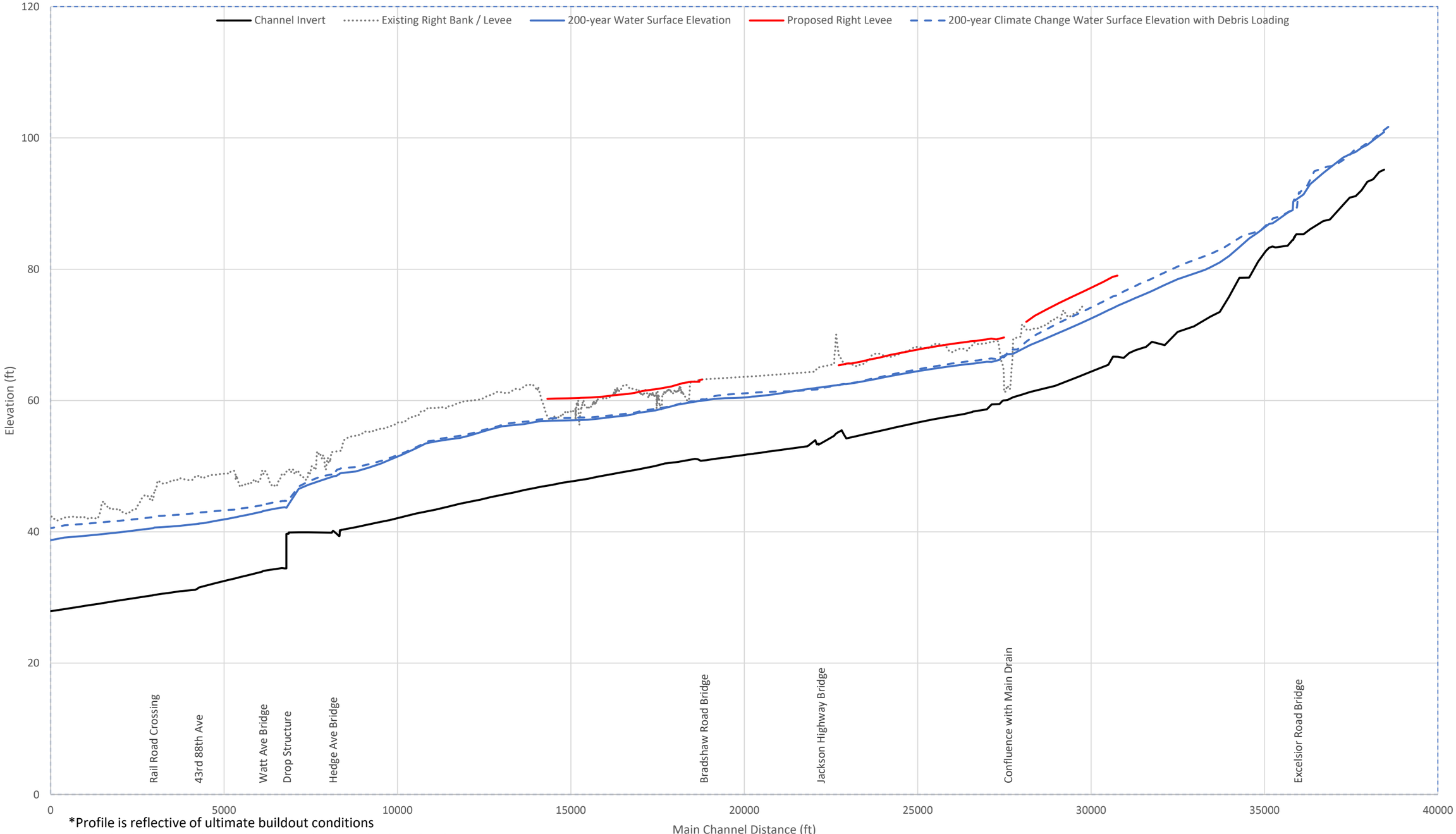
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2022 WJHMP\Figures-Report\Figure 7.1 Interior Drainage Summary.mxd 12/2/2022 8:13:59 AM mberggren

FIGURE 7.1

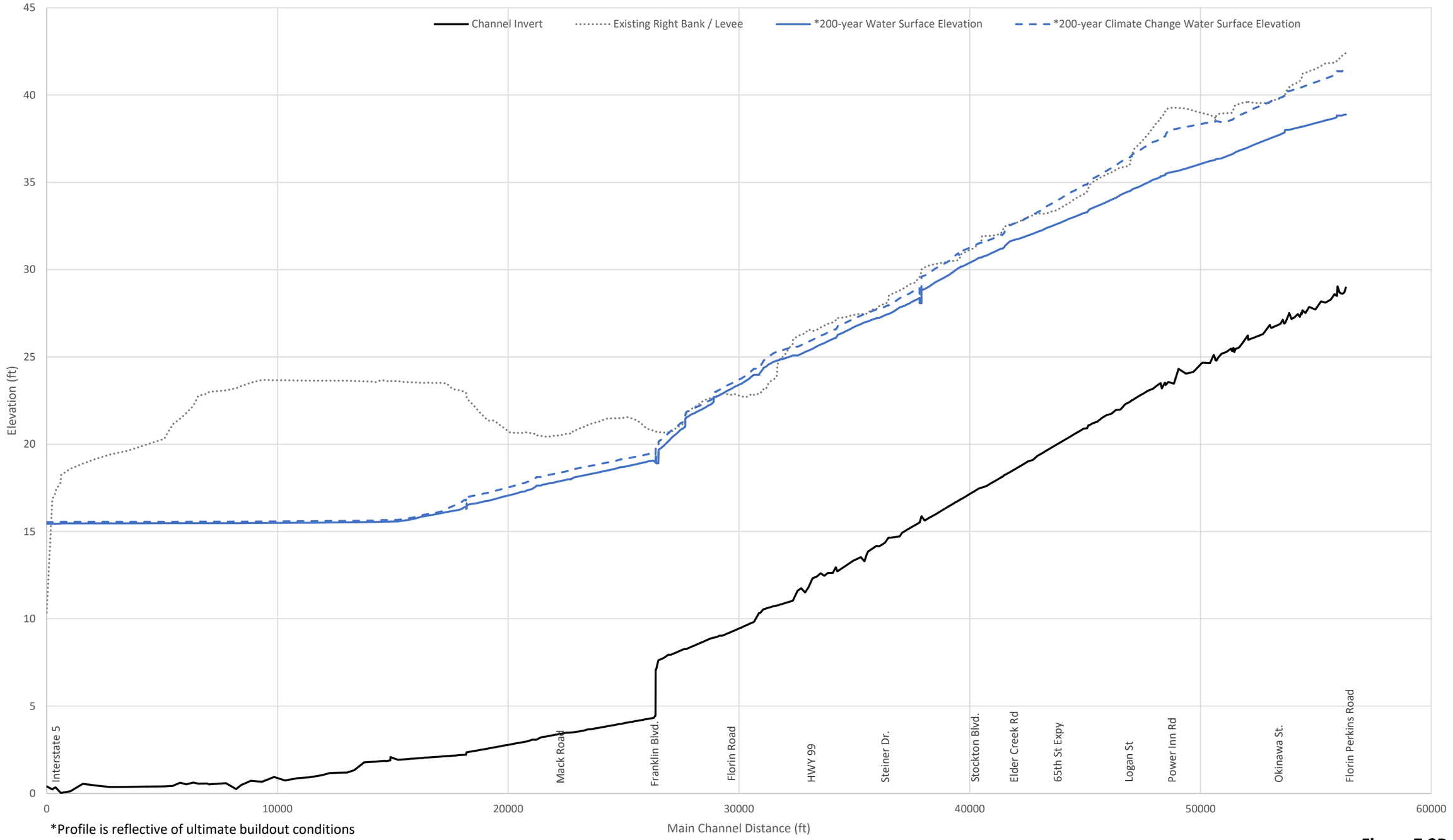
Morrison Creek Zone 2 Right Bank Modeling Conditions and 200-year 24-hr Storm Water Surface (Hedge Ave to Excelsior Rd)



*Profile is reflective of ultimate buildout conditions
Right Bank refers to the north/west bank along Morrison Creek

Figure 7.2A

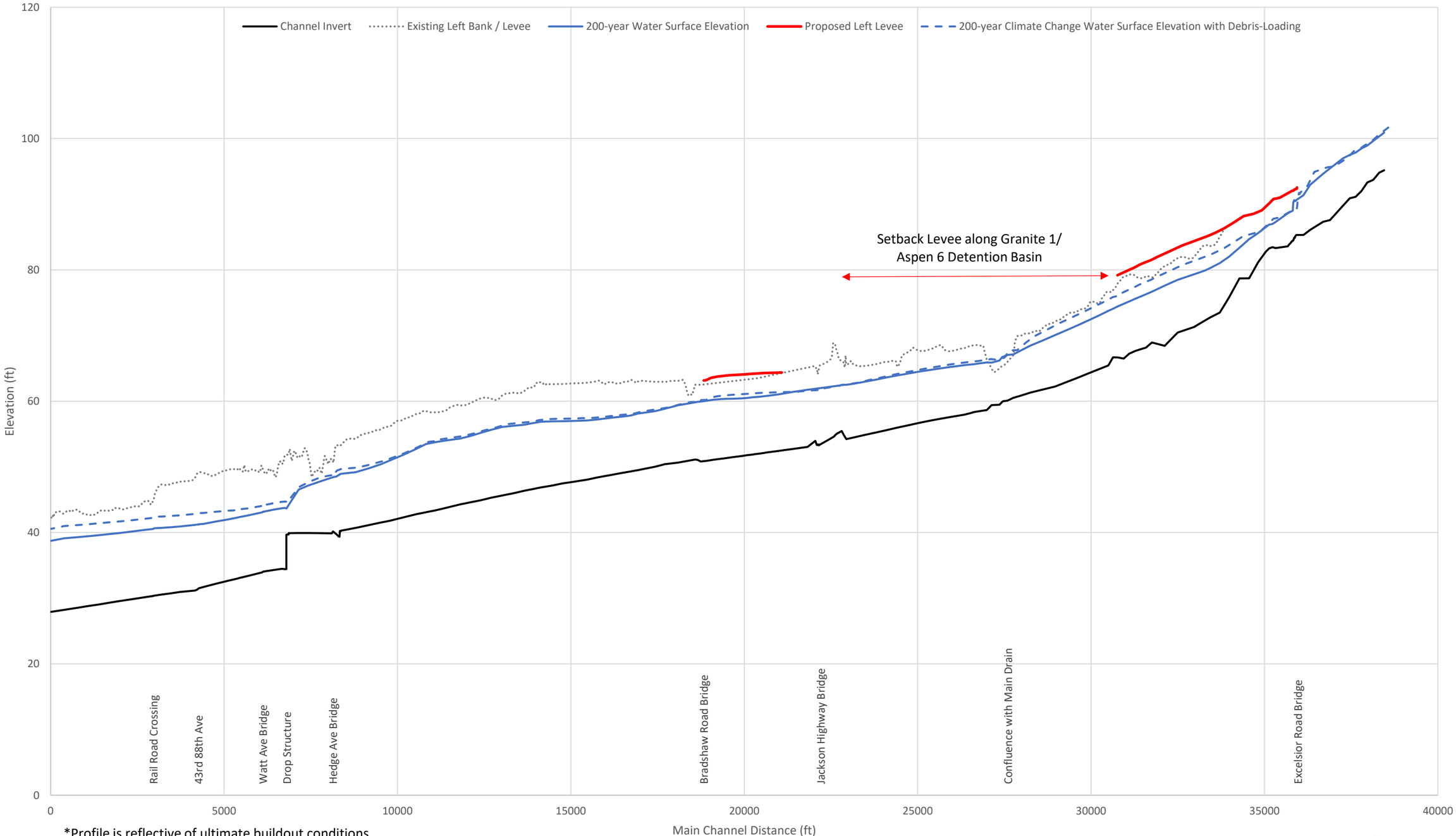
Morrison Creek Zone 1 Right Bank Modeling Conditions and 200-year 24-hr Storm Water Surface (Florin Perkins to I-5)



*Profile is reflective of ultimate buildout conditions
Right Bank refers to the north/west bank along Morrison Creek

Figure 7.2B

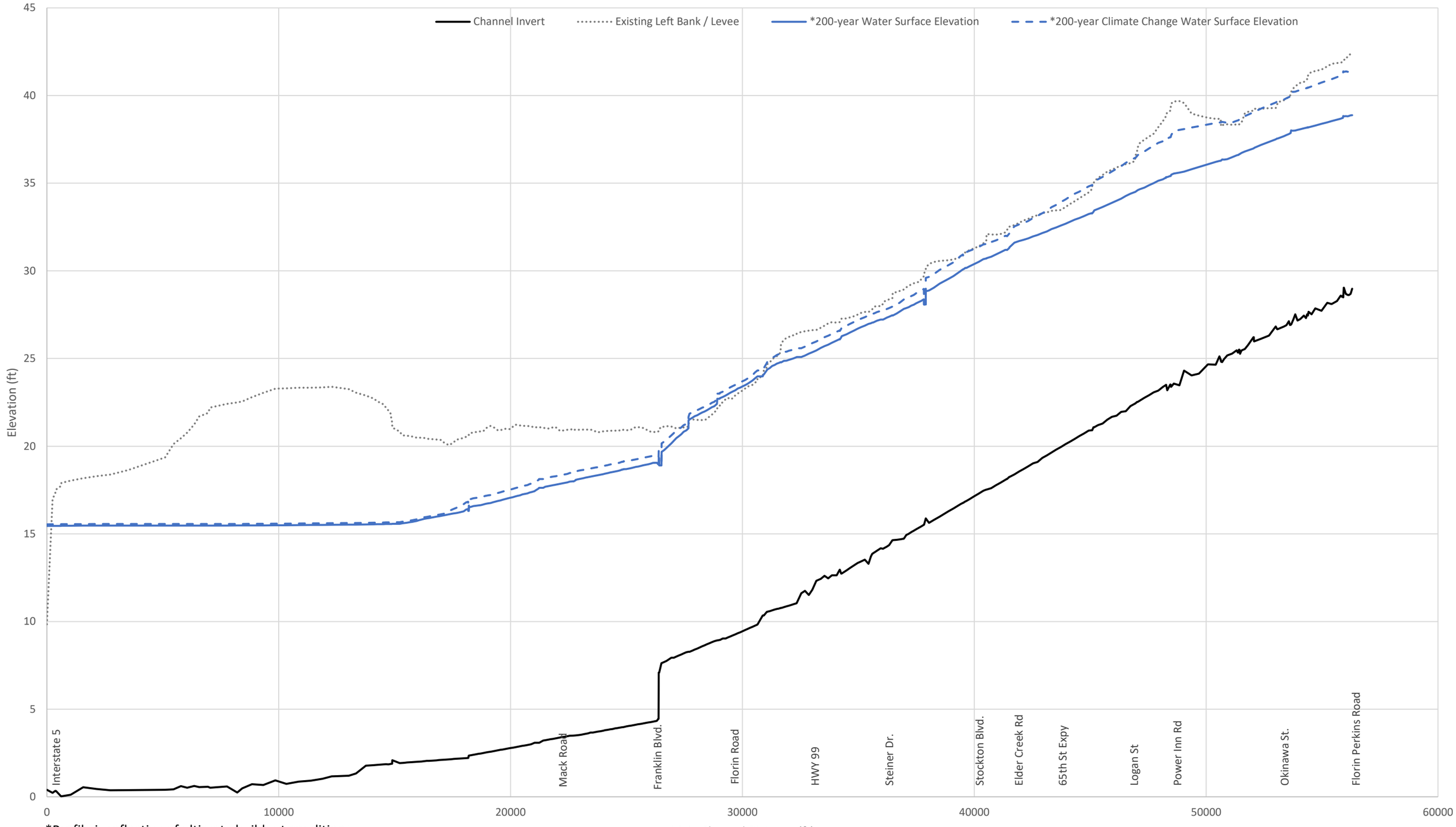
Morrison Creek Zone 2 Left Bank Modeling Conditions and 200-year 24-hr Storm Water Surface (Hedge Ave to Excelsior Rd)



*Profile is reflective of ultimate buildout conditions
Left Bank refers to the north/west bank along Morrison Creek

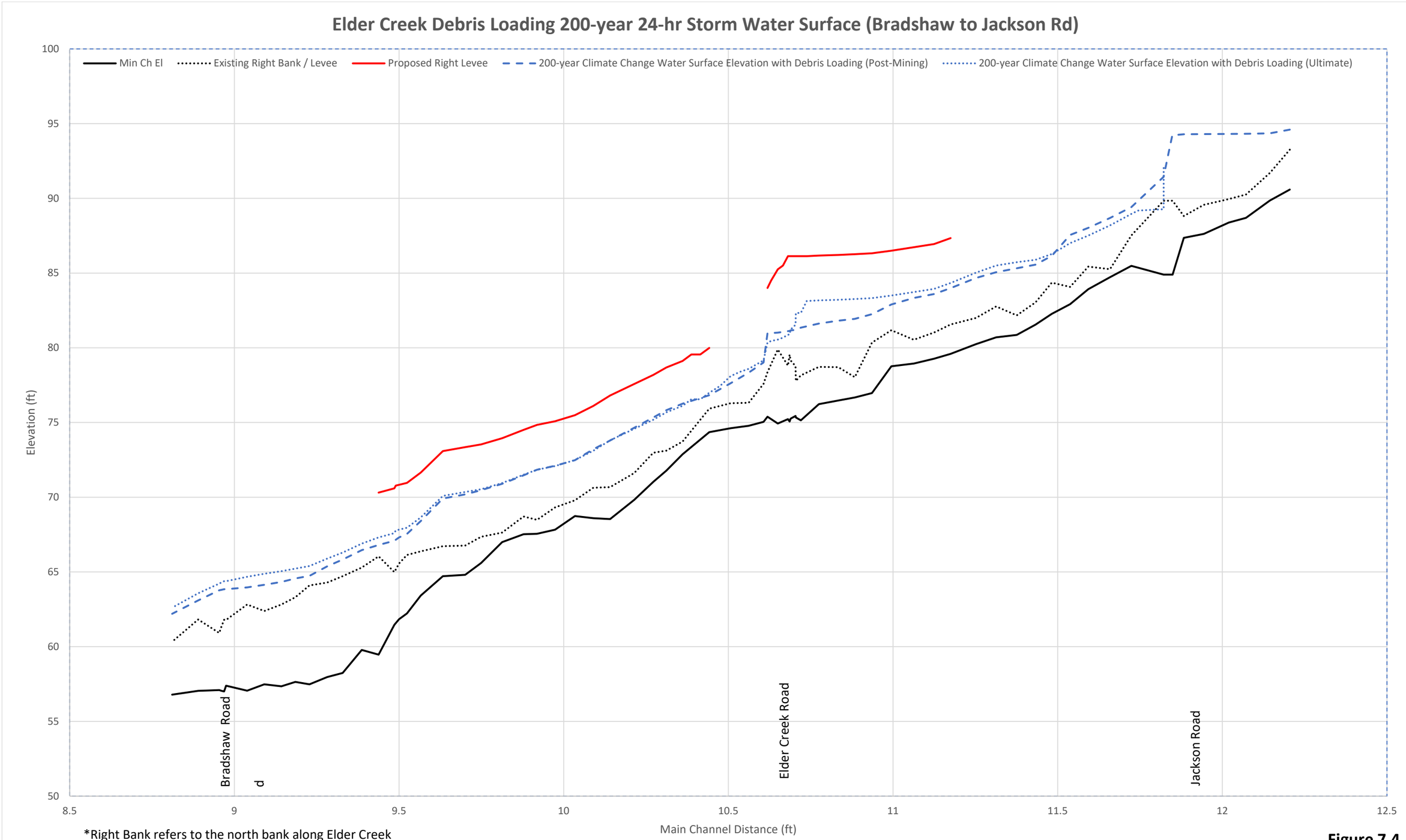
Figure 7.3A

Morrison Creek Zone 1 Left Bank Modeling Conditions and 200-year 24-hr Storm Water Surface (Florin Perkins to I-5)



*Profile is reflective of ultimate buildout conditions
Right Bank refers to the north/west bank along Morrison Creek

Figure 7.3B



*Right Bank refers to the north bank along Elder Creek

Figure 7.4

8.0 Climate Change

The State of California and SCDWR began the implementation of climate science considerations relating to flood control. The State of California Senate Bill 5 and subsequent adoption of ULDC requires that climate change be addressed as stated in section 6.3 of ULDC. The section in part states, "Urban and urbanizing area levees and floodwall designs should consider the potential for sea level rise and climate change to increase runoff and peak stages over those calculated using previous hydrology and hydraulics studies, considering the physical limitations of the regional system." SCDWR is carrying this effort forward and planning to update its hydrology standards in the near future to address climate change considerations. It is uncertain at this time how climate change will be addressed, but SCDWR has stated that climate change must be evaluated to provide sufficient information for land use decisions moving forward.

All projections into the future are inherently speculative and carry a degree of uncertainty, beyond the uncertainty associated with purely historical frequency analysis. Nonetheless, the project proponents hired David Ford Consulting Inc. to evaluate the current climate scientific positions and documentation available that might correlate with the Morrison Creek and Elder Creek watersheds affecting the Plan Area. This effort identified four watersheds that could relate to the Morrison Creek watershed from a hydrologic perspective. The analysis identified applicable flow-based scaling factors that when applied to calculated flow, in the traditional sense, translate to climate change flow. Scaling factors are provided for four watersheds, each with several storm events. In general, the recommendations from David Ford Consulting align with the State of California analysis under the State Plan of Flood Control. The complete findings from David Ford Consulting are provided in **Appendix I**. It is anticipated that SCDWR's hydrology standards update will include design considerations for climate change. Once those standards are adopted by the Board of Supervisors, subsequent entitlements will utilize those design standards to the extent those standards differ from the methodology described in this section.

8.1 Watershed Comparison

Watershed comparison findings from David Ford's analysis provide a range of possible scaling factors to be applied to watersheds nearby, but not directly over the Morrison Creek watershed. For purposes of

assessing the potential impacts of climate change, this report evaluates increased runoff within the watershed according to scaling factors derived from the report by David Ford Consulting.

The following four watersheds that were evaluated under the State's efforts were selected by David Ford Consulting as being potentially similar to the Morrison Creek watershed: Arcade Creek, Pleasant Grove Creek Canal, Ulatis Creek, and Putah Creek. All the watersheds selected were identified as similar under similar precipitation influences draining into the central portion of the Central Valley, with elevations low enough that snow or snow melt are not a major influence. For a more detailed comparison, this report evaluates the standard hydrologic and physical parameters for each watershed, based on the USGS Stream Stats online application and orographic conditions.

A hydrologic parameter comparison for the Stream Stats data is provided in **Table 8.1: Watershed Summary / Comparison**.

Table 8.1: Watershed Summary / Comparison
Source: USGS Storm Stats

Hydrologic Parameters	Morrison Creek[1]	Most Similar ↔ Least Similar			
		Arcade Creek	Pleasant Grove Creek Canal	Ulatis Creek	Putah Creek
Drainage Area (mi^2)	28.6	39.5	337.5	32.2	652.3
Mean Elevation (ft)	140	137	344	419	1249
Maximum Elevation (ft)	340	283	2,155	2815	4717
Percentage Developed	23.2	100	6.4	33.2	7.2
Mean Annual Precipitation (in)	21.2	23.4	24.9	25.6	33.7
[1] Upstream of Watt Avenue					

Arcade Creek

Of the four watersheds evaluated, the Arcade Creek watershed appears to be the most similar in hydrologic terms to Morrison Creek. It is the most horizontally proximate watershed, but it also shares similar elevation conditions, drainage area, urban development levels (in Morrison Creek watershed's planned state) and orographic conditions.

Pleasant Grove Creek

The Pleasant Grove Creek Canal watershed is also located on the western slopes of the Sierras. The watershed is centered approximately 20 miles north, is approximately ten times larger in area, and has different locations and densities of urbanization relative to the outflow point of the watershed.

Ulatis Creek

The Ulatis Creek watershed shares some similarities in watershed size, slope and urbanization; however, it is located on the eastern slope of the Coastal Range and is subject to different orographic and precipitation conditions as storms generally move from west to east.

Putah Creek

The Putah Creek watershed is least similar to Morrison Creek as it is almost 20 times larger in area, has very little urbanization, and is located on the eastern slopes of the Coastal Range. Most of the watershed is upstream of Lake Berryessa and Monticello Dam, with elevations reaching over 4,000 feet. While rainfall and volume may change, the peak flow effects downstream of the dam are significantly reduced by storage and attenuation.

8.2 Scaling Factors

Scaling factors for each watershed are summarized in Table 8.2: 200-year Climate Change Flow Based Scaling Factors as shown below. The scaling factors represent a change in the runoff expected with climate change. For the purposes of this analysis, runoff based on the current County standards would represent a factor of 1.0. Based on consultation with SCDWR, scaling factors for Arcade Creek and Pleasant Grove Creek Canal were evaluated as part of the sensitively analysis for assessing potential climate change impacts and resiliency of project design.

Table 8.2: 200-year Climate Change Flow Based Scaling Factors
Source: California Department of Water Resources via David Ford Consulting

Watershed	Storm Duration					
	1-day	3-day	7-day	10-day[23]	15-day	30-day
Arcade Creek	0.99	1.06	1.13	1.18	1.26	1.32
Pleasant Grove Creek Canal	1.60	1.53	1.38	1.34	1.28	1.25
Ulatis Creek	1.21	1.27	1.28	---	1.23	1.23
Putah Creek	1.62	1.6	1.46	---	1.41	1.39

8.3 Climate Change Results

Morrison Creek

Climate change factors applied to ultimate build out conditions are compared with climate change factors applied to existing conditions. For the 200-year 24-hour storm event only the Pleasant Grove Creek Canal Factor was analyzed, as the climate change factor for Arcade Creek is less than 1.0. These results are shown in **Table 8.3**. For the 10-day event only the Pleasant Grove Creek Canal scaling factors were evaluated since those factors are more conservative than Arcade Creek. These results are presented in **Table 8.4**. The results show that climate change increases the stage and flow within Morrison Creek. However, the analysis shows minimal change in stage and flow between existing and ultimate climate change conditions downstream of the Granite 1 / Aspen 6 weir.

Table 8.3: 200-year 24-hour Storm Event Based on Pleasant Grove Creek Canal Factor

Location	River Station	Existing without Climate Change		Existing with Factor of 1.6		Ultimate with Factor of 1.6	
		Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)
At Excelsior	35940	88.5	1,089	89.3	2,154	89.5	2,685
Downstream of Weir	26947.69	65.5	640	65.8	687	66.6	896
At Highway 16	22227.15	61.2	648	61.4	704	62.3	892
At Bradshaw Rd	18880.76	59.4	562	59.6	596	60.3	1,028
At Mayhew Ave	14058.34	56.9	893	57.4	1,144	57.1	1,007
At Hedge Ave	8162.703	48.8	821	49.7	1,093	49.2	916
At Watt Ave	6142.059	43.8	991	45.1	1,296	44.3	1,106
At Florin Perkins Road	14.50822	38.2	1,358	40.2	2,121	40.5	2,253
US Elder Creek Road	8.567	30.4	2,739	31.1	2,864	31.1	2,857
US Highway 99	6.909	24.4	3,229	24.7	3,509	24.8	3,557
US Brookfield	5.45	18.1	3,294	18.6	3,382	18.6	3,385

[23] 10-day storm event was not provided by David Ford Consulting, these scaling factors have been interpolated between the 7-day and 15-day scaling factors.

Table 8.4: 200-year 10-day Storm Event Based on Pleasant Grove Creek Canal Factor

Location	River Station	Existing without Climate Change		Existing with Factor of 1.34		Ultimate with Factor of 1.34	
		Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)	Stage (feet)	Flow (cfs)
At Excelsior	35940	88.6	1,202	89.1	1,645	89.4	2,126
Downstream of Weir	26947.69	65.6	643	65.7	675	66.4	843
At Highway 16	22227.15	61.3	652	61.3	689	62.3	974
At Bradshaw Rd	18880.76	59.7	663	59.5	593	60.4	1,085
At Mayhew Ave	14058.34	57.0	952	57.2	1,014	57.2	1,061
At Hedge Ave	8162.703	49.0	875	49.3	954	49.3	956
At Watt Ave	6142.059	44.0	1,031	44.6	1,145	44.2	1,040
At Florin Perkins Road	14.50822	38.3	1,401	39.2	1,670	39.3	1,723
US Elder Creek Road	8.567	30.4	2,739	31.1	2,864	31.1	2,857
US Highway 99	6.909	24.4	3,229	24.7	3,509	24.8	3,557
US Brookfield	5.45	18.1	3,294	18.6	3,382	18.6	3,385

Interior Basins

Planned interior detention basins were also analyzed using climate change scaling factors. Detention basins that drain by gravity were designed such that freeboard requirements for the 100-year storm event are met when applying the Pleasant Grove Creek Canal scaling factor. Additionally, the 200-year storm event will be contained below adjacent pad elevations. Pumped detention basins that do not meet freeboard requirements with the pumping capacities outlined previously in **Table 6.2** will have to design and construct additional storage capacity to accommodate increased flows from climate change. Detention basins WJP2, WJP3, WJP5, and WJP6 will require additional storage capacity to accommodate climate change flows.

WJP1 Basin Considerations

WJP1 is designed with a setback levee along Rock Creek Parkway with a levee crown elevation of approximately 65.9-feet. The 200-year, 10-day climate change water surface elevation for the WJP1 basin is approximately 58.1-feet which is below the maximum storage capacity of the basin. This amount of storage is shown graphically on **Figure 8.1: Granite 1 / Aspen 6 Stage Storage Curve**. During potential climate storm events more severe than the 100-year 10-day event, runoff from the Aspen 6 development area east of the setback levee and offsite (Jackson Township) will not discharge to the Granite 1 / Aspen 6 basin. This scenario can be mitigated one of three ways:

- Increase WJP1 Pumping: Provide two additional 50 cfs pumps and discharge any excess climate change volume within the Granite 1 / Aspen 6 basin back to Morrison Creek.

- Provide Pumping for Onsite Development: Provide development pump station (or interconnected with WJP1 pump station) to evacuate flows from the subdivision and discharge into the Granite 1 / Aspen 6 basin. Pumping is anticipated to occur when the water surface elevation exceeds 56-feet. Flows would be directed overland in Rock Creek Parkway to a drainage pipe on the western side of the WJP1 basin that drains to the pump station as shown on Figure 6.1. The pump station will be required to have a separate bay with automated trash racks. A schematic of the bay is shown on **Figure 8.2**.

- Provide in-tract Street Ponding: Provide sufficient volume within the Aspen 6 street sections to store onsite and offsite flows when the Granite 1 / Aspen 6 basin water surface elevation exceeds the water surface elevation for the 500-year, 10-day duration storm event.

WJP4 and WJP5 Basin Considerations

The WJP4 and WJP5 watersheds are also unique in that all climate change increases can easily be accommodated by storage, with no change in outlet capacity. The areas adjacent to these detention basins after mining is complete will be reclaimed to open space at an elevation lower than the development within the watershed. This open space area can be flooded to provide climate change resilience. The assumptions for post-mining open space elevations are included in the stage-storage rating curve in the modeling. These areas will require a floodplain easement. The landscaping and any amenities provided in the floodplain easement will require approval from SCDWR.

Levee Considerations

Preliminary levee design presented in this report takes climate change into consideration. ULDC requirements for Levee design were discussed previously in 7.3. Preliminary levee design elevations were determined using a 50 percent debris loading blockage for the 200-year 24-hour storm event with climate change factors applied.

Overall Considerations

For purposes of assessing the impacts of climate change to storm drainage design, the increases associated with climate change were evaluated relative to current land uses as well as ultimate land uses within the watershed. It is important to note that as future entitlements efforts progress it is anticipated that County climate change standards will be in place and will be utilized in the design and construction of facilities.

Detention storage for both gravity and pumped basins were adjusted. Pumping rates and gravity outlet configurations were not adjusted from what was previously defined in this report. It may be determined in the future that increasing outlet capacity and pumping rates are more practical than expanding the basin footprints. Storage was increased by expanding the footprints of basins previously defined earlier in this report. A summary of the results to pumped basins is provided in **Table 8.5**. A summary of the results for gravity basins is provided in **Table 8.6**.

Table 8.5: Climate Change Detention Basin Containment Verification for Pumped Detention Basins

Basin	Basin Top Elevation	Ultimate Conditions		Ultimate Conditions with Climate Change		Increase in capacity
		100yr WSE + 3' Freeboard	500yr WSE	100yr WSE + 3' Freeboard	500yr WSE	
	(ft)	(ft)	(ft)	(ft)	(ft)	(acre-ft)
WJP1[24]	65.9	52.0	53.9	58.5	63.6	-
WJP2	45.0	40.2	38.9	40.3	39.1	19.7
WJP3	25.0	22.4	21.2	23.9	21.7	295.0
WJP4[25]	50.0	11.9	11.3	11.6	11.2	-
WJP5	20.0	18.4	18.3	20.0	19.4	-
WJP6	65.0	60.7	59.6	63.9	63.2	-

[24] WJP1 development to be protected by proposed setback levee with an overland release at elevation 63.9 ft along Jackson Road.

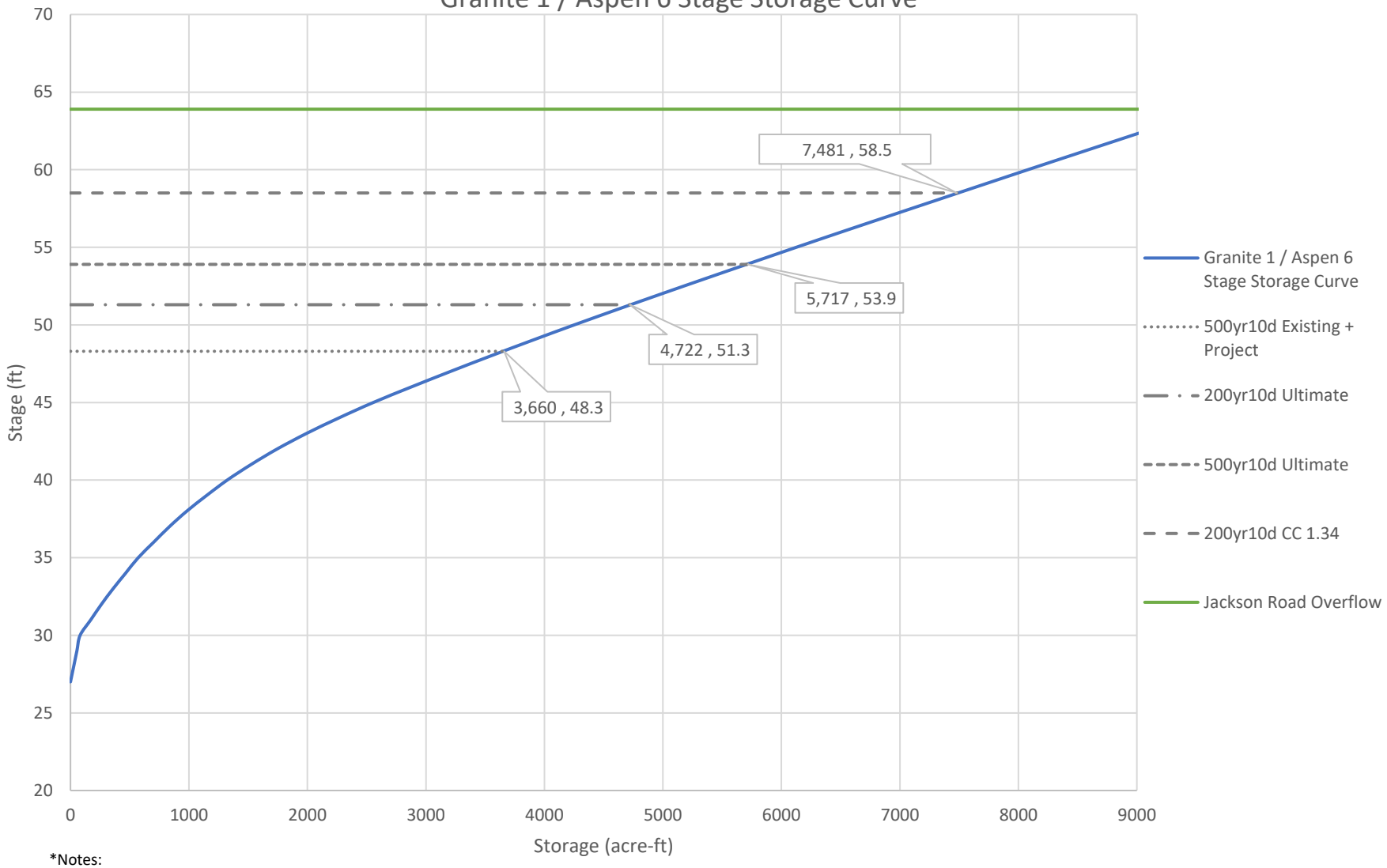
[25] WJP4 to flood adjacent open space to accommodate future climate change flows.

Table 8.6: Climate Change Basin Containment Verification for Gravity

Basin	Basin Top Elevation	Ultimate Conditions		Ultimate Conditions with Climate Change		Increase in Capacity
		100yr WSE + 1' Freeboard	500yr WSE	100yr WSE + 1' Freeboard	500yr WSE	
	(ft)	(ft)	(ft)	(ft)	(ft)	(acre-feet)
WJG102	72.9	70.8	70.2	71.4	70.7	0.8
WJG104	73.5	71.7	71.2	71.7	71.0	0.7
WJG105	75.7	73.7	73.2	74.5	74.0	1.3
WJG107	77.3	75.5	74.9	76.0	75.5	1.8
WJG108	73.3	72.5	72.2	72.5	72.2	0.1
WJG201	66.5	63.6	62.9	63.6	62.9	11.6
WJG202	64.5	62.8	62.6	63.0	62.6	18.8
WJG205	65.1	64.4	63.8	64.5	63.9	4.1
WJG3	64.5	63.6	63.2	64.2	63.7	1.3
WJG4	63.8	63.3	63.2	63.5	63.4	35.5
WJG5	53.5	52.9	52.7	52.9	52.9	25.1
WJG6	95.5	94.6	94.1	94.6	94.2	5.5
WJG7	90.5	90.5	90.3	90.4	89.9	8.8
WJG8	88.5	88.2	87.9	88.3	88.1	31.3
WJG9	80	78.5	78.2	79.4	79.4	12.2
WJG10	75.1	74.7	74.3	75.1	74.8	11.2
WJG11	90.5	89.9	89.6	90.4	90.3	17.5
WJG12	75	74.6	74.2	74.9	74.6	9.4

Under final design the additional storm volume required can be stored by adjustments to the horizontal footprint, the horizontal containment and/or the depth of each basin. Model results of the climate change analysis are provided in **Appendix J**.

Figure 8.1
Granite 1 / Aspen 6 Stage Storage Curve



*Notes:
1. The stage storage curve assumes an environmental corridor which deepens the basin to elevation 27 ft and other excavation that adds approximately 1,450 acre-ft of storage.
2. Peak storages assume an overall pumping capacity of 195 cfs. Without pumping, peak volumes will be higher.
3. Pumps will be used to drain the interior watershed when basin stage is above approximately 56 ft.

Overflow Pump Station Bay Schematic

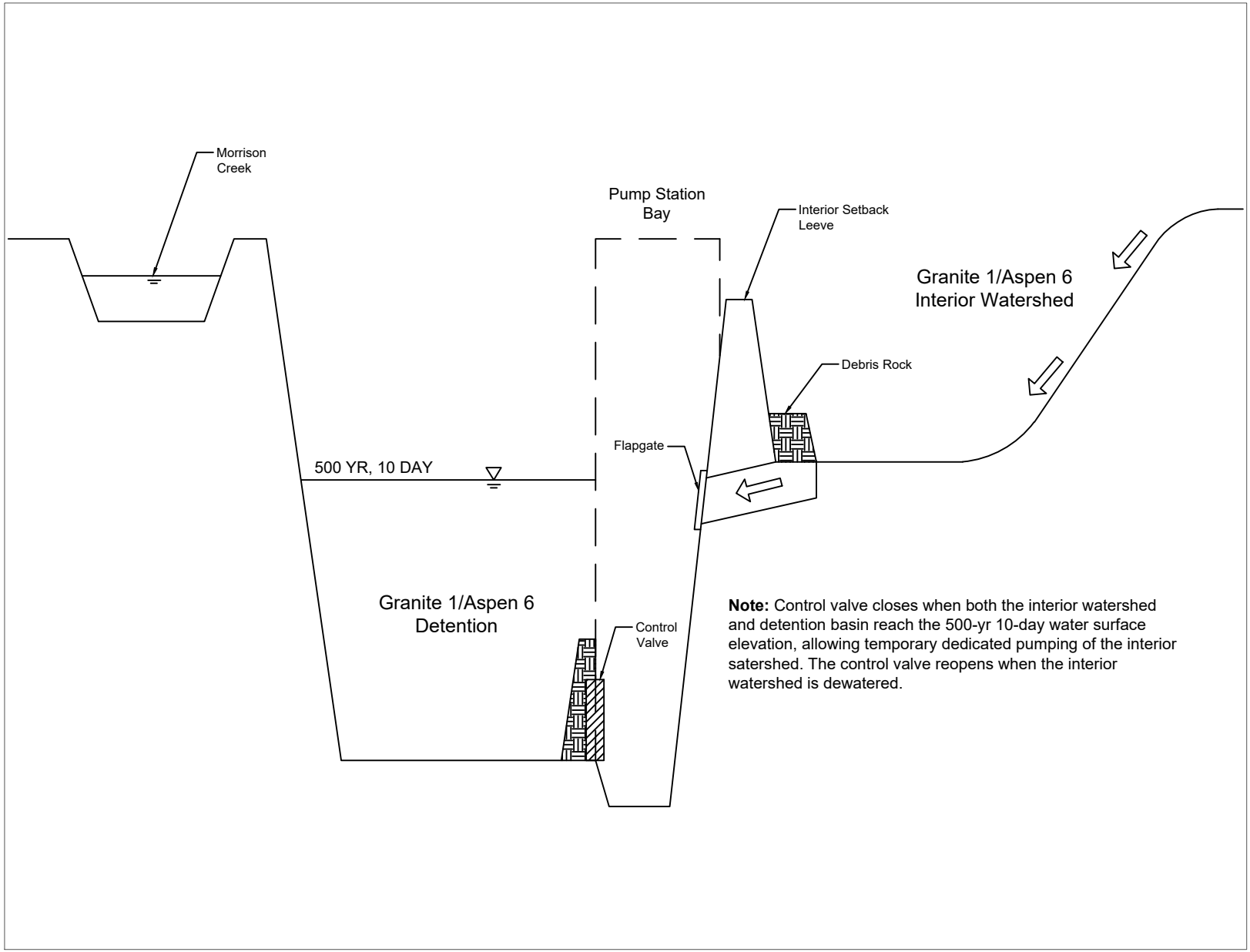


Figure 8.2

9.0 Future Considerations

9.1 Procedural Memorandum

As previously discussed in Section 2.6, the project's procedural memorandum will provide guidance as it relates to complying with FEMA 100-year flood protection, ULOP 200-year flood protection, and the County Floodplain Management Ordinance regulations. Compliance with FEMA, ULOP, and County Floodplain Management Ordinance, where applicable, will necessitate project conditions that require satisfaction prior to building within areas that are subject to these regulations. It is anticipated that the Procedural Memoranda will be approved prior to or concurrent with the Master Plan. A technical memorandum for preliminary levee design demonstrating compliance with ULOP is required prior to entitlements for the Master Plan.

9.2 Operation & Maintenance of Facilities

It is anticipated that ownership and maintenance of Plan Area drainage facilities will be the primary responsibility of Sacramento County once these facilities are designed and constructed by development. Funding for maintenance will be accomplished through the use of various funding mechanisms available to the County including, but not limited to traditional fee districts. The precise method of funding will be established by the financing and urban service plans adopted in conjunction with the Master Plan. Project land owners in conjunction with forming a funding mechanism, will secure or form a levee district to maintain the project's proposed FEMA accredited and CVFPB levees.

9.3 FEMA Compliance

Before development (Building Permit issuance) can take place within current FEMA floodplains, it is anticipated that an existing conditions Letter of Map Revision (LOMR) or a Physical Map Revisions (PMR) will be provided to map the existing conditions of the Morrison Creek watershed through the Plan Area. It is not intended to be a requirement of the applicant to submit an existing conditions LOMR prior to submittal of a CLOMR or LOMR-F, however the purpose of mapping existing conditions is to more easily facilitate future development. Proposed development, where in the existing floodplain, will need to submit a future conditions analysis to FEMA for review under a Conditional Letter of Map Revision (CLOMR) application(s).

SCDWR staff will have the opportunity to review all applications to FEMA and provide adjustments to modeling as necessary to satisfy their responsibilities as a National Flood Insurance Program (NFIP) community. Future CLOMR submittals are anticipated to require Endangered Species Act (ESA) compliance before approval from FEMA. After grading and/or drainage improvements are constructed consistent with a CLOMR, a LOMR will be submitted to reflect the revised floodplain mapping.

9.4 American River Flood Control Plan

The Sacramento Area Flood Control Agency (SAFCA) and the Bureau of Reclamation have worked together in securing the reoperation of the Folsom Dam and Reservoir to enhance flood protection along the American River. The most recent work involved levee gap closure efforts, and additional spillway gates at Folsom Dam. The intent of their efforts is to reduce the design peak flow in the American River to 115,000 cfs, but for potentially longer periods of time, and discharge that flow to the Sacramento River through a certified and accredited levee system. The certification of the levee system along the south side of the American River, coupled with the reduction in peak flow, allows the lands south of the American River to be considered protected from the 100-year and 200-year flooding conditions.

Revised mapping of the American River Channel to reflect modification of American River flood hazard is now complete. The levee failure floodplain has been recently modified. This revised mapping shows the flood hazard, described as areas protected by levees, is downstream of the Plan Area, as shown on **Figure 9.1: FEMA Floodplain Map**.

9.5 Subsequent Land Use Entitlements

Future design level analysis is anticipated at the tentative map stage to size onsite storm drain systems to convey runoff to downstream detention and pumping facilities. Approximate estimates of trunk storm drain facilities (trunk facilities are defined as draining 30 or more acres) were developed as part of this master plan effort, but are subject to change once parcel and street layouts are defined at subsequent Tentative Map stages.

If future development planning upstream of the Plan Area or within the Plan Area is modified by others, it is assumed that SCDWR staff will be responsible to ensure the integrity of the Plan Area is maintained and

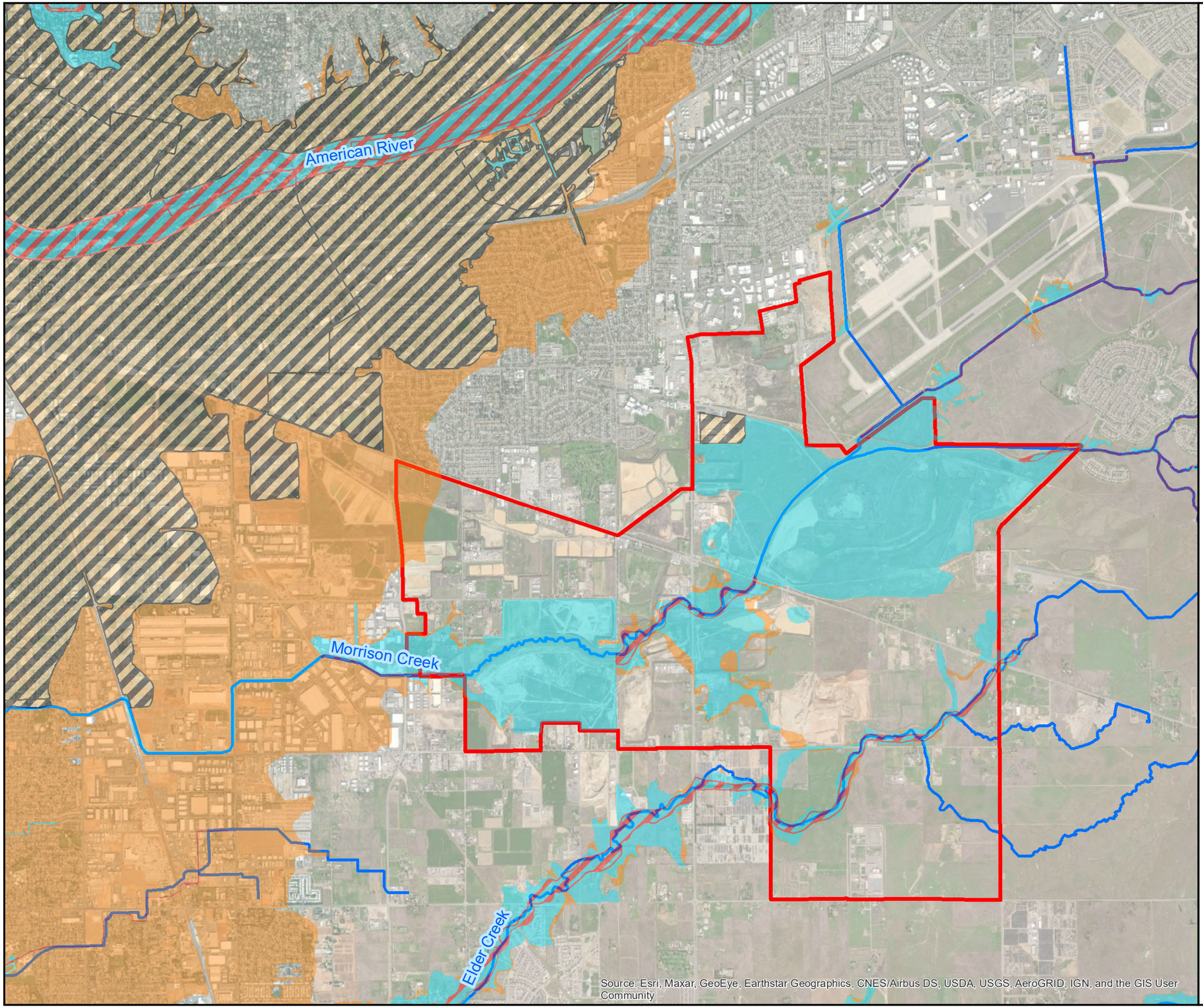
additional impacts are not created by revised hydrologic and hydraulic analysis developed by the proponents of future changes.

FEMA FLOODPLAIN MAP

WEST JACKSON HIGHWAY MASTER PLAN

SACRAMENTO CO, CA

DECEMBER 2022



NORTH

0 2,000 4,000

Feet

Legend

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee
- Creeks
- WJHMP Project Boundary

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WOOD RODGERS

J:\1000-s\1426-RockCreek\New_Brighton_SP\New_Brighton_SP-OA\GIS\Tasks\2018 WJHMP\Figures-Report\Figure 9.1 FEMA Floodplain Map.mxd 12/2/2022 8:15:42 AM mberggren

FIGURE 9.1

10.0 Summary and Conclusions

The Plan Area can be safely developed using the drainage design concepts presented within this drainage study. Interior storm drainage improvements, including trunk drainage facilities and detention basins, demonstrate that the resultant maximum water surfaces for the evaluated 100-year, 200-year and 500-year storms provide sufficient freeboard to protect the planned development while mitigating the project's peak flows.

Planned flood control improvements to the Morrison Creek and Elder Creek systems, which include the certification of levees to 44 CFR 65.10 standards and state ULDC requirements (200-year), are demonstrated to contain the 100-year and 200-year flood events and meet all State and Federal flood protection requirements for the Plan Area. The flood protection improvements planned are anticipated to improve the level of flood safety for the Plan Area and downstream properties by providing a reliable levee and weir system to reduce peak flows in Morrison and Elder Creeks. Additionally, the project is designed for resiliency in its ability to accommodate climate change.

In conclusion, this study demonstrates that the Plan Area can safely develop with urban land uses without adversely impacting predevelopment conditions in the Morrison Creek and Elder Creek systems and the project will meet all flood safety requirements.

APPENDIX I

NOISE AND VIBRATION ANALYSIS

Noise and Vibration Analysis

West Jackson Highway Master Plan Area

Sacramento County, California

BAC Job # 2022-151

Prepared For:

Stonebridge Properties, LLC

Granite Construction Company

Prepared By:

Bollard Acoustical Consultants, Inc.

Paul Bollard, President

June 13, 2024

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Introduction

The West Jackson Highway Master Plan was initiated by the Sacramento County Board of Supervisors on April 17, 2012. In accordance with the requirements of General Plan Land Use Element Policy LU-119, Stonebridge Properties, LLC (Stonebridge Properties), a subsidiary of Teichert Land Co., and Granite Construction Company (Granite), a California corporation (Participating Properties) have initiated the Master Plan process for all land encompassed within the proposed Master Plan Area (referred to herein as the "Plan Area"). Stonebridge Properties and Granite have retained Bollard Acoustical Consultants, Inc. (BAC) to prepare this noise study report identifying existing noise sources within or affecting the Plan Area, quantifying baseline ambient noise and vibration conditions within the Plan Area, and identifying noise impacts and mitigation measures associated with development within the Plan Area. It is intended that information contained in this report will be utilized in the development of the Noise Section of the Environmental Impact Report (EIR) to be prepared for the Master Plan.

Of the entire 5,913± acres of the Plan Area, the Participating Properties collectively own 4,079± acres – Teichert owns 3,016± acres and Granite owns 1,063± acres (See Figure 1). Thus, Participating Properties represent 69% of the total Plan Area acreage. These properties primarily include aggregate mining sites used for sand and gravel extraction, many of which have already been mined and reclaimed. Although most of the mining is complete, some of the Participating Properties continue to support various mining related activities.

In addition to mining areas, the Plan Area is comprised of a mixture of rural residential, institutional, agricultural and industrial properties located along State Route 16 (Jackson Highway) in the geographic center of Sacramento County. The Plan Area boundaries are generally Jackson Highway, Kiefer Boulevard and Goethe Road to the north, portions of Elder Creek Road and Florin Road to the south, the City of Sacramento to the west and Excelsior Road to the east. As a result of the mining activities across the landscape since the 1930's, the Plan Area has largely been bypassed by development. Just over 80% of the Plan Area boundary abuts the existing Sacramento County Urban Policy Area and the Sacramento City Limits.

The Master Plan has been designed to provide a mixture of residential, commercial, recreational, farming, and employment nodes intended to reduce vehicle miles traveled (VMT) within the Plan Area and support the provision and use of transit alternatives. Some of the proposed land uses designations have components which could be noise-generating (industrial, active recreation areas parks and school playgrounds, commercial uses, etc.), whereas other uses have noise-sensitive components (residences, school classrooms and office interiors, etc.).

The project environmental document will consider the effects of noise generated by the project as well as noise impacting the project from sources unrelated to the Master Plan development. The Master Plan establishes a framework and strategy for all future land use within the Plan Area, including general land use and development standards, policies, land use allocations, infrastructure, and public service planning. Within the Master Plan, two District Area Plans (labeled as District 1 and District 2), are established, in addition to three Future Planning Areas (FPA's) (labeled as FPA A, B and C) (See Figure 2). District Area Plans primarily consist of

Participating Properties, while Future Planning Areas are comprised of non-participating property owners. Teichert's acreage is fully within District 1. Granite's acreage is fully within District 2.

The District Plans establish specific land uses, policies, design guidelines and development standards for the properties within the District Areas. Although future land uses for the FPAs will be established in gross by the Master Plan, specific land uses, policies, design guidelines and development standards for these areas are not provided by the Master Plan. It is anticipated that the landowners within the FPAs will initiate District Plans or Specific Plans in the future. Should the landowners in those areas contemplate changing existing land uses within the FPA, such future use must be consistent with the provisions of the Master Plan and undergo further analysis, including environmental review, when an entitlement application is submitted to the County.

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Figure 1

West Jackson Highway Master Plan - Sacramento County, California
Master Plan Area

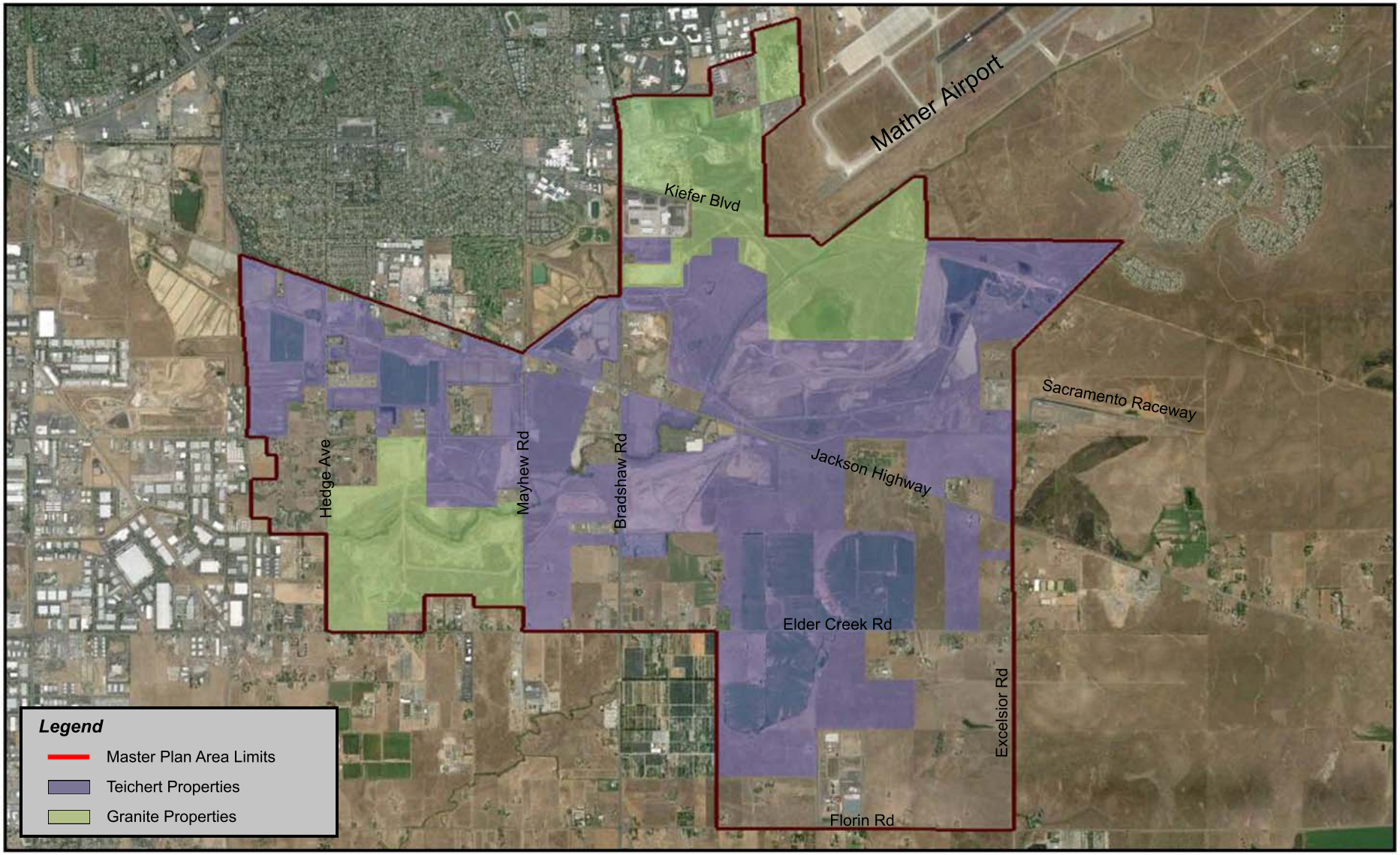

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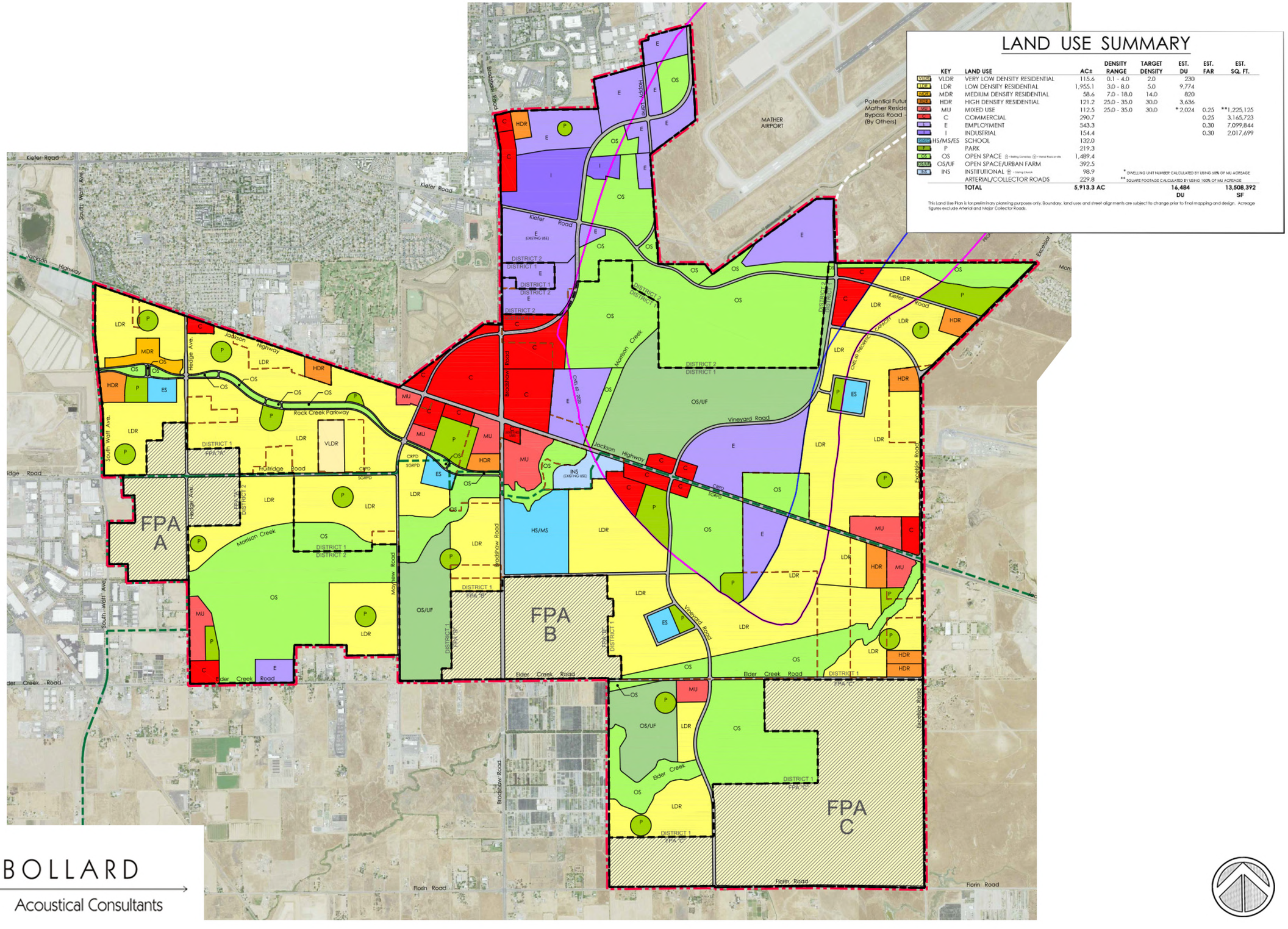
Figure 2

West Jackson Highway Master Plan - Sacramento County, California

Revised Project Land Use Map



LAND USE SUMMARY

KEY	LAND USE	AC±	DENSITY RANGE	TARGET DENSITY	EST. DU	EST. FAR	EST. SQ. FT.
VLDR	VERY LOW DENSITY RESIDENTIAL	115.6	0.1 - 4.0	2.0	230		
LDR	LOW DENSITY RESIDENTIAL	1,955.1	3.0 - 8.0	5.0	9,774		
MDR	MEDIUM DENSITY RESIDENTIAL	58.6	7.0 - 18.0	14.0	820		
HDR	HIGH DENSITY RESIDENTIAL	121.2	25.0 - 35.0	30.0	3,636		
MU	MIXED USE	112.5	25.0 - 35.0	30.0	*2,024	0.25	**1,225,125
C	COMMERCIAL	290.7				0.25	3,165,723
E	EMPLOYMENT	543.3				0.30	7,099,844
I	INDUSTRIAL	154.4				0.30	2,017,699
HS/MS/ES	SCHOOL	132.0					
P	PARK	219.3					
OS	OPEN SPACE	1,489.4					
OS/UF	OPEN SPACE/URBAN FARM	392.5					
INS	INSTITUTIONAL	98.9					
	ARTERIAL/COLLECTOR ROADS	229.8					
	TOTAL	5,913.3 AC			16,484 DU		13,508,392 SF

* DWELLING UNIT NUMBER CALCULATED BY USING 60% OF MU ACREAGE
** SQUARE FOOTAGE CALCULATED BY USING 100% OF MU ACREAGE

This Land Use Plan is for preliminary planning purposes only. Boundary, land uses and street alignments are subject to change prior to final mapping and design. Acreage figures exclude Arterial and Major Collector Roads.

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Fundamentals and Terminology

Noise

Noise is simply described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Discussing sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised. The decibel scale uses the hearing threshold (20 Micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are compared to the reference pressure and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. There is a strong correlation between the way humans perceive sound and A-weighted sound levels. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment for community exposures. All sound levels expressed in this section are A-weighted sound levels, unless noted otherwise. Definitions of acoustical terminology are provided in Appendix A.

Community noise is commonly described in terms of the “ambient” noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), over a given time period (usually one hour). The L_{eq} is the foundation of the day-night average noise descriptor, and shows very good correlation with community response to noise for the average person.

The L_{dn} is based upon the average noise level over a 24-hour day, with a +10 dB weighting applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Where short-term noise sources are an issue, noise impacts may be assessed in terms of maximum noise levels, hourly averages, or other statistical descriptors.

The perceived loudness of sounds and corresponding reactions to noise are dependent upon many factors, including sound pressure level, duration of intrusive sound, frequency of occurrence, time of occurrence, and frequency content. As mentioned above; however, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. Table 1 shows examples of noise levels for several common noise sources and environments.

Table 1
Typical A-Weighted Sound Levels of Common Noise Sources

Loudness Ratio*	dBA	Description
128	130	Threshold of pain
64	120	Jet aircraft take-off at 100 feet
32	110	Riveting machine at operators' position
16	100	Shotgun at 200 feet
8	90	Bulldozer at 50 feet
4	80	Diesel locomotive at 300 feet
2	70	Commercial jet aircraft interior during flight
1	60	Normal conversation speech at 5-10 feet
1/2	50	Open office background level
1/4	40	Background level within a residence
1/8	30	Soft whisper at 2 feet
1/16	20	Interior of recording studio

* Each 10 dBA increase in sound pressure level equates to a doubling of loudness. For example, 70 dBA is twice as loud as 60 dB and 80 dBA is four times as loud as 60 dBA, etc.

Perception of Changes in Noise Levels

Table 2 is based upon recommendations made in August 1992 by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these criteria have been applied to other sources of noise similarly described in terms of cumulative noise exposure metrics such as the L_{dn}.

Table 2
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project, Ldn	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON)

According to Table 2, an increase in noise from similar sources of 5 dB or more would be noticeable where the ambient level is less than 60 dB. Where the ambient level is between 60 and 65 dB, an increase in noise of 3 dB or more would be noticeable, and an increase of 1.5 dB or more would be noticeable where the ambient noise level exceeds 65 dB L_{dn}. The rationale for the Table 2 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

Single-Event Noise & Sleep Disturbance

A single event is an individual distinct loud activity, such as an aircraft overflight, a train or truck passage, or any other brief and discrete noise-generating activity. Because most noise policies applicable to transportation noise sources are typically specified in terms of 24-hour-averaged descriptors, such as Ldn or Community Noise Equivalent Level (CNEL), the potential for annoyance or sleep disturbance associated with individual loud events can be masked by representing the data as an average. A discussion of Single-Event noise effects relative to Sacramento County Noise Policy is included in the Criteria section of the report.

Berkeley Keep Jets Over the Bay

The analysis of single event noise effects under CEQA can be traced to a 2001 court case (*Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners of the City of Oakland* (2001) 91 Cal.App.4th 1344), which concerned a challenge to the proposed expansion of the Oakland Airport. The court required, in that context (i.e. an airport expansion), that the EIR address single-event noise and sleep disturbance effects on existing residents in the City of Berkeley. However, the court did not recommend an appropriate single event noise level standard to be employed.

Extensive studies have been conducted regarding the effects of single-event noise on sleep disturbance, with the Sound Exposure Level (SEL) metric being a common metric used for such assessments. SEL represents the entire sound energy of a given single event normalized into a one-second period regardless of event duration. As a result, the single-number SEL metric contains information pertaining to both event duration and intensity. Another descriptor utilized to assess single-event noise is the maximum, or Lmax, noise level associated with the event. A problem with utilizing Lmax to assess single events is that the duration of the event is not considered.

There are currently on-going discussions regarding the appropriateness of using the SEL metric as a supplement or replacement for cumulative noise level metrics such as Ldn and CNEL, 24-hour noise descriptors. Nonetheless, because SEL describes a receiver's total noise exposure from a single impulsive event, SEL is often used to characterize noise from individual brief loud events.

Industry Guidance on Single Event Noise and Sleep Disturbance

The Federal Interagency Committee on Aviation Noise (FICAN) has provided estimates of the percentage of people expected to be awakened when exposed to specific SELs inside a home (FICAN 1997). However, FICAN did not recommend a threshold of significance based on the percent of people awakened. According to the FICAN study, 10% of the population is estimated to be awakened when the SEL interior noise level reaches 81 dBA. An estimated 5 to 10 percent of the population is affected when the SEL interior noise level is between 65 and 81 dBA, and few sleep awakenings (less than 5 percent) are predicted if the interior SEL is less than 65 dBA. The FICAN results focused on individual single-event sound levels but did not take into consideration how exposure to multiple single events affected sleep disturbance.

ANSI and the Acoustical Society of America (ASA) released a voluntary methodology to predict sleep disturbance in terms of the probability of awakening. ANSI's *Quantities and Procedures for Description and Measurement of Environmental Sound -Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes*, July 2008, provides a method to predict sleep disturbance associated with noise levels in terms of indoor A-weighted sound exposure level (ASEL). The methodology was developed from about 10,000 subject-nights of observations primarily in homes near areas of routine jet aircraft takeoff and landings, railroads, roads, and highways. The methodology assumes that the individuals have no sleep disorders, normal hearing, and only applies to individuals over 18 years of age. The methodology also defines "disturbance" as being restricted to a behaviorally confirmed awakening.

While the FICAN has a recommended means of predicting awakenings from a single aircraft event, the new ANSI methodology further refines this approach by taking into account the time since the person fell asleep and the ability to identify the probability of being awakened from multiple aircraft events over the course of the entire night. However, research performed by BAC questions the accuracy of the ANSI methodology.

Although the FICAN and ANSI methodologies provide a means by which the potential for awakenings due to single events can be predicted, neither methodology provides a recommended target level for acceptable single-event noise or percentage of awakening. Further, there is no industry consensus establishing recommended target levels for acceptable single-event noise or percentage of awakening.

Sound Propagation

It is commonly understood that sound decreases with distance. But the propagation of sound is dependent on considerably more variables than distance alone. Those variables include the type of noise source (point, moving point, or line sources), the directionality of the noise source, the frequency content of the source (low frequency sound is absorbed in the atmosphere at a slower

rate than high-frequency sound and therefore "carries" farther), atmospheric conditions (wind, temperature, humidity, gradients), ground type (dirt, grass fields, concrete, etc.), shielding (structures, noise barriers, topography), and vegetation.

In the generally urban setting of the Plan Area, noise-sensitive receptors are located within fairly close proximity to noise sources. At short distances between the source and receptor, the effects of the atmosphere on sound propagation are diminished, as those effects become more pronounced at distances in excess of 300 feet.

For the purposes of assessing noise sources within the project area, traffic on public roadways are considered "moving point" sources. The sound level decay rate for this type of source is 4.5 dB per doubling of distance from the source. Stationary noise sources, such as the Granite Bradshaw aggregate plant, are treated as "point" sources. The sound level decay rate for point sources is 6 dB per each doubling of distance from the source.

Several of the Teichert and Granite parcels located within the Plan Area are former aggregate excavation sites, and are therefore depressed relative to surrounding ground elevation in many cases. This is important in that the nearby noise sources, such as adjacent roadways, are typically not visible from the depressed positions within these parcels. Because the former excavation embankments provide topographic shielding of adjacent traffic noise sources from the depressed positions, ambient noise levels within the depressed areas are considerably lower than locations at or near even grade with adjacent roadways.

Noise Mitigation Fundamentals

Any noise problem may be considered as being composed of three basic elements: the noise source, a transmission path, and a receiver. The appropriate acoustical treatment for a given project should consider the nature of the noise source and the sensitivity of the receiver. The problem should be defined in terms of appropriate criteria (Ldn, L_{50}, or Lmax), the location of the sensitive receiver (inside or outside), and when the problem occurs (daytime, nighttime, or 24-hour average). Noise control techniques should then be selected to provide an acceptable noise environment for the receiving property while remaining consistent with local aesthetic standards and practical structural and economic limits. Fundamental noise control techniques include the following:

Use of Setbacks

Noise exposure may be reduced by increasing the distance between the noise source and receiving use. The available noise attenuation from this technique is limited by the characteristics of the noise source, but is generally about 4 to 6 dB per doubling of distance from the source.

Use of Barriers

Shielding by barriers can be obtained by placing walls, berms or other structures, such as buildings, between the noise source and the receiver. The effectiveness of a barrier depends upon blocking line-of-sight between the source and receiver, and is improved with increasing the distance the sound must travel to pass over the barrier as compared

to a straight line from source to receiver. The difference between the distance over a barrier and a straight line between source and receiver is called the "path length difference," and is the basis for calculating barrier noise reduction.

Barrier effectiveness depends upon the relative heights of the source, barrier and receiver. In general, barriers are most effective when placed close to either the receiver or the source. An intermediate barrier location yields a smaller path-length-difference for a given increase in barrier height than does a location closer to either source or receiver.

For maximum effectiveness, barriers must be continuous and relatively airtight along their length and height. To ensure that sound transmission through the barrier is insignificant, barrier mass should be about 3-4 lbs. /square foot, although a lesser mass may be acceptable if the barrier material provides sufficient transmission loss. Satisfaction of the above criteria requires substantial and well-fitted barrier materials, placed to intercept line of sight to all significant noise sources.

Earth, in the form of berms, or the face of a depressed area, is also an effective barrier material. This project design makes extensive use of topography and site grading to serve as both visual and acoustic barriers to nearby traffic and some on-site noise sources associated with the Teichert Perkins facility.

There are practical limits to the noise reduction provided by barriers. For traffic noise, a 5 to 10 dB noise reduction may often be reasonably attained. A 15 dB noise reduction is usually difficult but sometimes possible to attain, but a 20 dB noise reduction is extremely difficult to achieve. Barriers usually are provided in the form of walls, berms, or berm/wall combinations. The use of an earth berm in lieu of a solid wall may provide additional attenuation over that attained by a solid wall alone due to the absorption provided by the earth. Berm/wall combinations offer slightly better acoustical performance than solid walls, and are often preferred for aesthetic reasons over solid barrier walls alone.

Site Design

Buildings can be placed on a project site to shield other structures or areas, to remove them from noise-impacted areas, and to prevent an increase in noise level caused by reflections. The use of one building to shield another can significantly reduce overall project noise control costs, particularly if the shielding structure is insensitive to noise. As an example, carports or garages can be used to form or complement a barrier shielding adjacent dwellings or an outdoor activity area. Similarly, one residential unit can be placed to shield another so that noise reduction measures are needed for only the building closest to the noise source. Placement of outdoor activity areas within the shielded portion of a building complex, such as a central courtyard, can be an effective method of providing a quiet retreat in an otherwise noisy environment. Patios or balconies should be placed on the side of a building opposite the noise source, and "wing walls" can be added to buildings or patios to help shield sensitive uses.

Another useful option in site design is the placement of relatively insensitive land uses, such as commercial uses, between the noise source and a more sensitive portion of the

project. Examples include development of a commercial strip along a busy arterial to block noise affecting a residential area. If existing topography or development adjacent to the project site provides some shielding, as in the case of an existing berm, knoll or building, sensitive structures or activity areas may be placed behind those features to reduce noise control requirements.

Building Design

When structures have been located to provide maximum noise reduction by site design or shielding, noise reduction measures may still be required to achieve an acceptable interior noise environment. The cost of such measures may be reduced by placement of interior dwelling unit features. For example, bedrooms, living rooms, family rooms and other noise-sensitive portions of a dwelling can be located on the side of the unit farthest from the noise source.

Bathrooms, closets, stairwells and food preparation areas are relatively insensitive to exterior noise sources, and can be placed on the noisy side of a unit. When such techniques are employed, noise reduction requirements for the building facade can be significantly reduced, although the architect must take care to isolate the noise impacted areas by the use of partitions or doors.

Noise Reduction by Building Facades

When interior noise levels are of concern in a noisy environment, noise reduction may be obtained through acoustical design of building facades. Standard residential construction practices provide 10 to 15 dB noise reduction for building facades with open windows, and approximately 25-30 dB noise reduction when windows are closed. Thus a 25 dB exterior-to-interior noise reduction can be obtained by the requirement that building design include adequate ventilation systems, allowing windows on a noise-impacted facade to remain closed under any weather condition.

Where greater noise reduction is required, acoustical treatment of the building facade is necessary. The greatest improvement in building façade noise reduction can typically be realized through specification of upgraded windows with higher Sound Transmission Class (STC) ratings.

Noise transmitted through walls can be reduced by increasing wall mass (using stucco or brick in lieu of wood siding), isolating wall members by the use of double- or staggered-stud walls, or mounting interior walls on resilient channels. Noise control for exterior doorways is provided by reducing door area, using solid-core doors, and by acoustically sealing door perimeters with suitable gaskets. Roof treatments may include the use of plywood sheathing under roofing materials.

Whichever noise control techniques are employed, it is essential that attention be given to installation of weather-stripping and caulking of joints. Openings for attic or subfloor ventilation may also require acoustical treatment; tight-fitting fireplace dampers and glass doors may be needed in aircraft noise-impacted areas.

Use of Vegetation

Trees and other vegetation are often thought to provide significant noise attenuation. However, approximately 100 feet of dense foliage (so that no visual path extends through the foliage) is required to achieve a 5 dB attenuation of traffic noise. Thus, the use of vegetation as a noise barrier should not be considered a practical method of noise control unless large tracts of dense foliage are part of the existing landscape.

Vegetation can be used to acoustically "soften" intervening ground between a noise source and receiver, increasing ground absorption of sound and thus increasing the attenuation of sound with distance. Planting of trees and shrubs is also of aesthetic and psychological value, and may reduce adverse public reaction to a noise source by removing the source from view, even though noise levels will be largely unaffected.

In summary, the effects of vegetation upon noise transmission are minor, and are primarily limited to increased absorption of high frequency sounds and to reducing adverse public reaction to the noise by providing aesthetic benefits.

Noise-Reducing Paving Materials (Rubberized Asphalt)

Studies conducted for the Sacramento County Planning and Environmental Review Department and Transportation Department to determine the noise reduction provided by rubberized asphalt have been completed in recent years. Those studies indicate that the use of rubberized asphalt on two County roadways appears to have resulted in an average traffic noise level reduction of approximately 4 dB over that provided by conventional asphalt.

Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities (inches/second). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. The maximum rate, or velocity of particle movement, is the commonly accepted descriptor of the vibration "strength".

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, June 2004), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage (e.g., crack plaster). Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, including heavy trucks traveling on a highway, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Criteria for Acceptable Noise and Vibration Levels

Sacramento County

Sacramento County General Plan

The Noise Element of the Sacramento County General Plan contains policies pertaining to acceptable noise generation and exposure levels within the County. The policies contained within the County Noise Element which are pertinent to the evaluation of noise impacts due to and upon development within the Plan Area are reproduced below.

Traffic and Railroad Noise Sources

NO-1 The noise level standards for noise-sensitive areas of new uses affected by traffic or railroad noise sources in Sacramento County are shown in Table 3. Where the noise level standards of Table 3 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 3 standards.

Aircraft Noise Sources

NO-2 Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to the Land Use Compatibility for Aircraft Noise table contained in the County General Plan Noise Element. Development proposals which may be affected by aircraft noise from Mather Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Mather Airport dated February 2021, adopted herein by reference, as well as applicable footnotes in Table 4 of the General Plan Noise Element.

NO-3 New residential development within the 60 CNEL noise contours adopted by the County for planning purposes at any airport or Helipad within Sacramento County shall be prohibited unless exceptions set forth in General Plan Noise Element

Table 4 are found to be applicable. This policy is not applicable to Executive Airport.

Footnotes 2, 6 and 7 of General Plan Noise Element Table 4 state the following with respect to development of noise-sensitive uses within the Mather Airport noise contours:

2. Single family detached residential units within the 60-65 dB CNEL noise contours of the Mather Airport Policy Area may be considered a compatible use if: (a) approved by the Board of Supervisors upon completion of Sacramento County's master plan process, including demonstration of compliance with LU-119 and LU-120; (b) an evaluation of potential noise and safety impacts pursuant to CEQA has occurred and appropriate noise mitigation measures to reduce interior noise levels to 45 dB have been included in the environmental document and adopted as conditions of approval; and (c) all of the requirements in Footnote 8 below are met. Second residential units are a compatible use within all CNEL ranges, subject to the condition that the proposed second unit be consistent with the provisions of Section 65852.1 and 65852.2 of the California Government Code.

6. Compatible at Sacramento International Airport and Franklin Field only if the residential use is directly related to agricultural uses, such as dwelling units for the landowner, the owner's immediate family, or for employees. May be compatible at Mather Airport if approved by the Board of Supervisors as a component of a master plan and all criteria set forth in Footnote 2 above are satisfied. All residential units shall be designed to limit intruding noise such that interior noise levels do not exceed 45 CNEL, with windows closed, in any habitable room.

7. New residential uses within 60 CNEL are not compatible, with the exception of accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural or single-family dwellings as set forth in Footnote 2 above. Except as provided in Footnotes 2 and 6 above, new residential development within the Mather Airport Policy Area boundaries but outside the 60 CNEL shall be subject to the following conditions:

    A. Provide minimum noise insulation to provide 45dB within new residential dwellings, including detached single-family dwellings, with windows closed, in any habitable room.

    B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within the Mather Airport Policy Area.

    C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento and recorded with the Sacramento County Recorder and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within the Mather Airport Policy

Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of Mather Airport.

New residential development within the Mather Airport Policy Area outside the 65 dB CNEL but inside the 60 dB CNEL shall be subject to Conditions A through C above and a County-approved noise analysis and mitigation to reduce interior noise impacts to 45 dB with windows closed, in any habitable room.

NO-4 New residential development within adopted Airport Policy Area boundaries*, but outside the 60 CNEL**, shall be subject to the following conditions:

A. Provide minimum noise insulation to 45 dB CNEL within new residential dwellings, including detached single-family dwellings, with windows closed in any habitable room.

B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within an Airport Policy Area.

C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento, recorded with the Sacramento County Recorder, and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within an Airport Planning Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of the subject Airport.

Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural and between the 60 and 65 CNEL contours, shall be permitted within adopted Airport Policy Area boundaries, but would be subject to the conditions listed above.

** The relationship of the Mather Airport Policy Area to the West Jackson Highway Master Plan Area is illustrated on Figure 3. That figure indicates that the majority of the master plan area is located within the Mather Airport Policy Area. As a result, all new residential development within the WJHMP area east of Hedge Avenue would be subject to this General Plan Policy.*

*** The 60 CNEL contour adopted by the County for planning purposes are the "theoretical capacity" contours shown on Figure 4A. Figure 4B shows the portion of the WJMP area which is located within the 60 CNEL contours.*

Sacramento County Guidance on Single Event Noise Methodology

The Sacramento County General Plan Noise Element policies do not provide a noise standard specific to single-events. However, the County has determined that single-event aircraft noise exposure and associated sleep disturbance impacts are to be assessed in accordance with the Sacramento County General Plan Noise Element Policies NO-2 through NO-4 on aircraft noise. Those policies restrict new residential development to areas outside the 60 dB CNEL airport noise contours,

require noise insulation to ensure interior noise levels do not exceed 45 dB CNEL within residences, require notification that prospective buyers are located within an Airport Policy Area, and require that an avigation easement be recorded acknowledging the property is located within an Airport Planning Policy Area.

Non-Transportation Noise Sources

NO-5 The interior and exterior noise level standards for noise-sensitive areas of new uses affected by existing non-transportation noise sources in Sacramento County are shown by Table 4. Where the noise level standards of Table 4 are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 4 standards within sensitive areas.

NO-6 Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not to exceed the interior and exterior noise level standards of Table 4 at existing noise-sensitive areas in the project vicinity.

NO-7 The "last use there" shall be responsible for noise mitigation. However, if a noise-generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 4 standards at the property line of the generating use in anticipation of the future neighboring development.

Construction Noise

NO-8 Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

Transportation Projects

NO-9 For capacity enhancing roadway or rail projects, or the construction of new Roadways or railways, a noise analysis shall be prepared in accordance with the Table 3 requirements. If projected post-project traffic noise levels at existing uses exceed the noise standards of Table 3, then feasible methods of reducing noise to levels consistent with the Table 3 standards shall be analyzed as part of the noise analysis. In the case of existing residential uses, sensitive outdoor areas shall be mitigated to 60 dB, when possible, through the application of feasible methods to reduce noise. If 60 dB cannot be achieved after the application of all feasible methods of reducing noise, then noise levels up to 65 dB are allowed.

If pre-project traffic noise levels for existing uses already exceed the noise standards of Table 3 and the increase is significant as defined below, feasible methods of reducing noise to levels consistent with the Table 3 standards should

be applied. In no case shall the long-term noise exposure for non-industrial users be greater than 75 dB; long-term noise exposure above this level has the potential to result in hearing loss. A significant increase is defined as follows:

Pre-Project Noise Environment (Ldn)	Significant Increase
Less than 60 dB	5+ dB
60 - 65 dB	3+ dB
Greater than 65 dB	1.5+ dB

NO-10 For interim capacity enhancing roadway or rail projects, or the construction of new interim roadways or railways, it may not be practical or feasible to provide mitigation if the ultimate roadway or railway design would render the interim improvements ineffective or obsolete. An example would be a noise barrier constructed for an interim project which would need to be removed to accommodate the ultimate project. The following factors should be considered in determining whether or not noise mitigation will be implemented for interim projects, but in general, noise mitigation for interim projects would not be provided:

a. The severity of the impact

b. The cost and effectiveness of the mitigation.

c. The number of properties which would benefit from the mitigation.

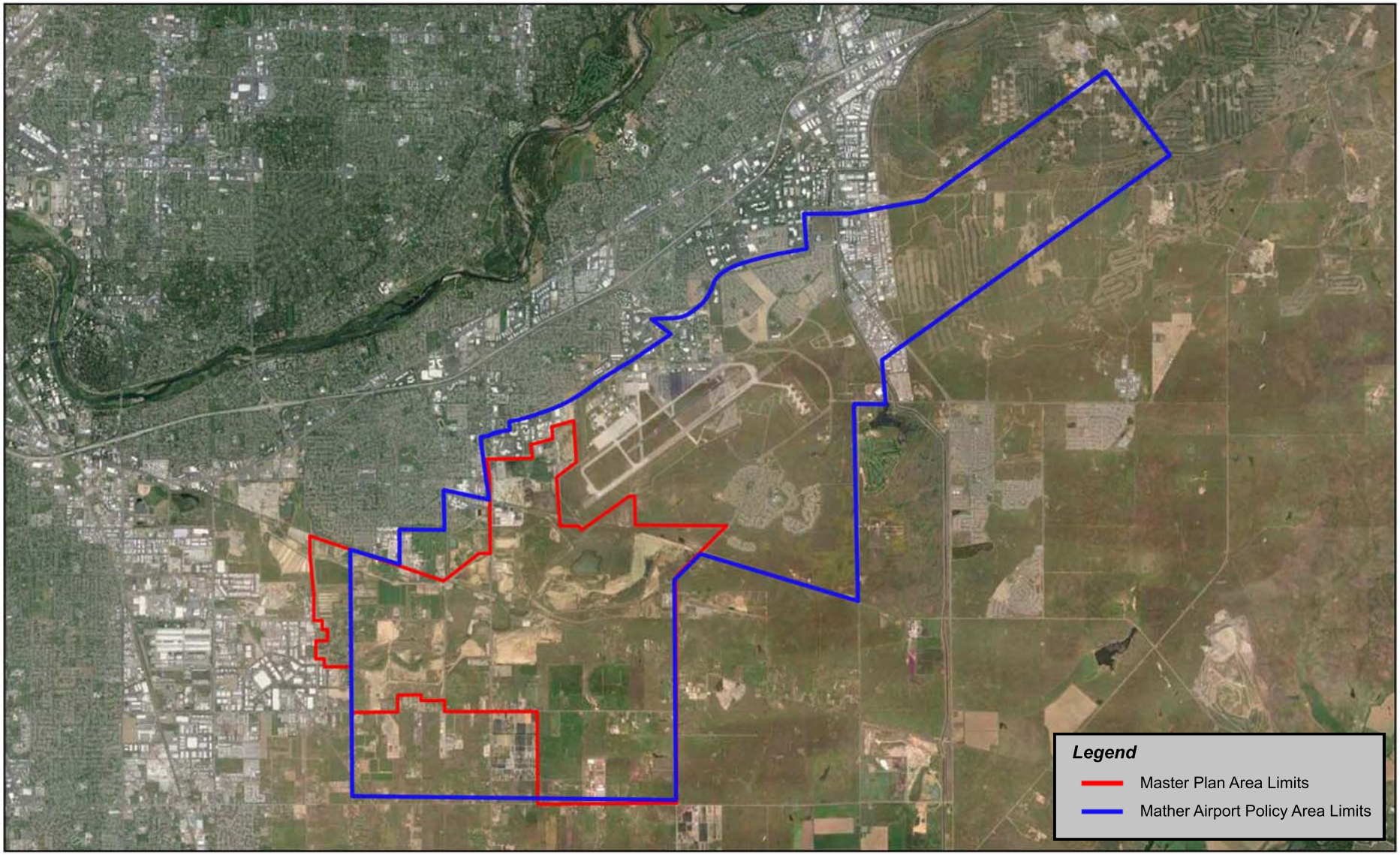
d. The foreseeable duration between interim and ultimate improvements.

e. Aesthetic, safety and engineering considerations.

NO-11 If noise-reducing pavement is to be utilized in conjunction with a roadway improvement project, or if such paving existing adjacent to a proposed new noise-sensitive land use, the acoustical benefits of such pavement shall be included in the noise analysis prepared for the project.

Figure 3

West Jackson Highway Master Plan - Sacramento County, California
Mather Airport Policy Area and Master Plan Area



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NO-12 All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with Table 3.

NO-13 Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.

NO-14 Noise analyses prepared for multi-family residential projects, town homes, mixed-use, condominiums, or other residential projects where floor ceiling assemblies or party-walls shall be common to different owners/occupants shall be consistent with the State of California Noise Insulation standards.

NO-15 The County shall have the flexibility to consider the application of 5 dB less restrictive exterior noise standards than those prescribed in Tables 3 and 4 in cases where it is impractical or infeasible to reduce exterior noise levels within infill projects to a state of compliance with the Table 3 or 4 standards. In such cases, the rational for such consideration shall be clearly presented and disclosure statements and noise easements should be included as conditions of project approval. The interior noise level standards of Tables 3 and 4 would still apply. The maximum allowable long-term noise exposure permissible for non-industrial uses is 75 dB.

Exemptions

NO-16 The following sources of noise shall be exempt from the provisions of this Noise Element:

a. Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during daytime hours.

b. Activities associated with events for which a permit has been obtained from the County.

Table 3
Noise Standards for New Uses Affected by Traffic and Railroad Noise
Sacramento County Noise Element

Land Use	Sensitive Outdoor Areas[a] dBA, L_{dn}/CNEL	Sensitive Interior Areas[b] dBA, L_{dn}/CNEL
Residential	65[e]	45
Transient lodging	65[c,e]	45
Hospitals, nursing homes	65[c,d,e]	45
Theaters, auditoriums, music halls	--	35[c]
Churches, meeting halls	65[c]	40
Office buildings	65[c]	45
School, libraries, museums	65[c]	40
Commercial Buildings	--	50[c]
Playgrounds, neighborhood parks	70	--
Industry	65[c]	50

Source: Sacramento County General Plan (2011)

Notes:

[a] Sensitive areas are defined in acoustic terminology section of the Noise Element.

[b] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

[c] Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.

[d] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

[e] If this use is affected by railroad noise, a maximum (Lmax) noise level standard of 70 dB shall be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

Table 4
Non-Transportation Noise Standards
Median (L50) / Maximum (Lmax)[a]
Sacramento County Noise Element

	Outdoor Area[b]		Interior[c]
Land Use	**Daytime**	**Nighttime**	**Day & Night**
All Residential	55 / 75	50 / 70	35 / 55
Transient lodging[d]	55 / 75	--	35 / 55
Hospitals, nursing homes[e,f]	55 / 75	--	35 / 55
Theaters, auditoriums, music halls[f]	--	--	30 / 50
Churches, meeting halls[f]	55 / 75	--	35 / 60
Office buildings[f]	60 / 75	--	45 / 65
Commercial Buildings[f]	--	--	45 / 65
Playgrounds, neighborhood parks[f]	65 / 75	--	--
Industry[f]	60 / 80	--	50 / 70

Source: Sacramento County General Plan (2011)

Notes:

[a] The Table 4 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table 4, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

[b] Sensitive areas are defined in the acoustic terminology section of the Noise Element.

[c] Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

[d] Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

[e] Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.

[f] The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.

[g] Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.

Sacramento County Code

Chapter 6.68 of the Sacramento County Code pertains to Noise Control and is referred to in this study as the Noise Ordinance. The purpose of the Noise Ordinance is to assess complaints of noises alleged to exceed the ambient noise levels. Further, it is declared to be the policy of the County of Sacramento to contain sound levels at their present levels with the ultimate goal of reducing such levels, when and where feasible and without causing undue burdens, to meet the noise standards set forth below. The following section provides the pertinent sections of the County Noise Ordinance.

6.68.070 Exterior Noise Standards

a. The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all properties within a designated noise area.

Noise Area	County Zoning Districts	Time Period	Exterior Noise Standard
1	RE-1, RD-1, RE-2, RD-2, RE-3, RD-3, RD-4, R-1-A, RD-5, R-2, RD-10, R-2A, RD-20, R-3, R-D-30, RD-40, RM-1, RM-2, A-1-B, AR-1, A-2, AR-2, A-5, AR-5	7 a.m.--10 p.m. 10 p.m.--7 a.m.	55 dBA 50 dBA

b. It is unlawful for any person at any location within the County of Sacramento to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

Cumulative Duration of the Intrusive Sound	Allowance Decibels
1. Cumulative period of 30 minutes per hour	0
2. Cumulative period of 15 minutes per hour	+ 5
3. Cumulative period of 5 minutes per hour	+10
4. Cumulative period of 1 minute per hour	+15
5. Level not to be exceeded for any time per hour	+20

c. Each of the noise limits specified in subdivision (b) of this section shall be reduced by five dBA for impulsive* or simple tone** noises, or for noises consisting of speech or music.

* “Impulsive noise” means a noise characterized by brief excursions of sound pressures whose peak levels are very much greater than the ambient noise level, such as might be produced by the impact of a pile driver, punch press or a drop hammer, typically with one second or less duration.

** “Simple tone noise” or “pure tone noise” means a noise characterized by the presence of a predominant frequency or frequencies such as might be produced by whistle or hum.

d. If the ambient noise level exceeds that permitted by any of the first four noise-limit categories specified in subdivision (b), the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

6.68.080 Interior Noise Standards

a. In any apartment, condominium, townhouse, duplex or multiple dwelling unit it is unlawful for any person to create any noise from inside his unit that causes the noise level when measured in a neighboring unit during the periods ten p.m. to seven a.m. to exceed:

1. Forty-five dBA for a cumulative period of more than 5 minutes in any hour;
2. Fifty dBA for a cumulative period of more than 1 minute in any hour;
3. Fifty-five dBA for any period of time.

b. If the ambient noise level exceeds that permitted by any of the noise level categories specified in subdivision (a) of this section, the allowable noise limit shall be increased in five-dBA increments in each category to encompass the ambient noise level.

6.68.090 Exemptions

The following activities shall be exempted from the provisions of this chapter:

a. School bands, school athletic and school entertainment events;

b. Outdoor gatherings, public dances, shows and sporting and entertainment events, provided said events are conducted pursuant to a license or permit by the County;

c. Activities conducted on parks, public playgrounds and school grounds, provided such parks, playgrounds and school grounds are owned and operated by a public entity or private school;

d. Any mechanical device, apparatus or equipment related to or connected with emergency activities or emergency work;

e. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight

p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;

f. Noise sources associated with agricultural operations, provided such operations do not take place between the hours of eight p.m. and six a.m.;

g. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of adverse weather conditions or when the use of mobile noise sources is necessary for pest control;

h. Noise sources associated with maintenance of residential area property, provided said activities take place between the hours of six a.m. and eight p.m. on any day except Saturday or Sunday, or between the hours of seven a.m. and eight p.m. on Saturday or Sunday;

i. Any activity, to the extent provisions of Chapter 65 of Title 42 of the United States Code, and Articles 3 and 3.5 of Chapter 4 of Division 9 of the Public Utilities Code of the State of California preempt local control of noise regulations and land use regulations related to noise control of airports and their surrounding geographical areas, any noise source associated with the construction, development, manufacture, maintenance, testing or operation of any aircraft engine, or of any weapons system or subsystems which are owned, operated or under the jurisdiction of the United States, or any other activity to the extent regulation thereof has been preempted by state or federal law or regulation;

j. Any noise sources associated with the maintenance and operation of aircraft or airports which are owned or operated by the United States.

6.68.100 Pre-Existing Industrial or Commercial Facilities – Transition Period

a. Any industrial or commercial facility in existence prior to July 1, 1976, shall be allowed a one-year period commencing on said date within which to comply with this chapter.

b. During said one-year period, all such facilities shall make reasonable efforts to be in compliance and to reduce noise which exceeds the standards specified in this chapter. Commencing at the end of one year after July 1, 1976, any such facility shall be subject to all applicable requirements of this chapter.

c. If any facility which is not in compliance by the end of said one-year period applies for a variance pursuant to Section 6.68.200, in deciding whether to grant a variance the hearing board shall take into account the extent to which the applicant has endeavored to reduce noise during said one-year period to meet the standards specified in this chapter.

d. This section applies only to a commercial or industrial facility already in existence or for which the work of improvement has commenced prior to July 1, 1976.

e. As used in this section “industrial facility” means any building, structure, factory, plant, premises or portion thereof used for manufacturing or industrial purposes, and “commercial facility” means any building, structure, premise or portion thereof used for wholesale or retail commercial purposes.

6.68.110 Schools, Hospitals and Churches

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church, while the same is in use, to exceed the noise standards specified in Section 6.68.070 or to create any noise which unreasonably interferes with the use of such institution or unreasonably disturbs or annoys patients in the hospital. In any disputed case, interfering noise which is ten dBA or more, greater than the ambient noise level at the building, shall be deemed excessive and unlawful.

6.68.120 Machinery, Equipment, Fans and Air Conditioning

a. It is unlawful for any person to operate any mechanical equipment, pump, fan, air conditioning apparatus, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical devices, or any combination thereof installed after July 1, 1976, in any manner so as to create any noise which would cause the maximum noise level to exceed:

   1. Sixty dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level;

   2. Fifty-five dBA in the center of a neighboring patio three to five feet above ground level;

   3. Fifty-five dBA outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

b. Equipment installed five years after July 1, 1976 must comply with a maximum limit of fifty-five dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

c. Equipment installed before December 17, 1970, must comply with a limit of sixty-five dBA maximum in sound level at any point at least one foot inside the affected property line and three to five feet above ground level by January 1, 1977. Equipment installed between December 16, 1970, and July 1, 1976, must comply with a limit of sixty-five dBA maximum sound level at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

6.68.130 Off-Road Vehicles

It is unlawful for any person to operate any motorcycle or recreational off-road vehicle within the County in such a manner that the noise level exceeds the exterior noise standards specified in Section 6.68.070.

6.68.140 Waste Disposal Vehicles

It is unlawful for any person authorized to engage in waste disposal service or garbage collection to operate any truck-mounted waste or garbage loading and/or composting equipment or similar mechanical device in any manner so as to create any noise exceeding the following level, when measured at a distance of fifty feet from the equipment in an open area.

a. New equipment purchased or leased on or after a date six months from July 1, 1976, shall not exceed a noise level of eighty dBA.
b. New equipment purchased or leased on or after forty-two months from July 1, 1976, shall not exceed a noise level of seventy-five dBA.
c. Present equipment shall not exceed a noise level of eighty dBA on or after five years from July 1, 1976.

The provisions of this section shall not abridge or conflict with the powers of the state over motor vehicle control.

A6.68.150 General Noise Regulations

Notwithstanding any other provisions of this chapter and in addition thereto, it is unlawful for any person to willfully make or continue or cause to be made or continued any loud, unnecessary or unusual noise which disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standards which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not be limited to, the following:

a. The sound level of the objectionable noise;
b. The sound level of the ambient noise;
c. The proximity of the noise to residential sleeping facilities;
d. The nature and zoning of the area within which the noise emanates;
e. The density of the inhabitation of the area within which the noise emanates;
f. The time of day or night the noise occurs;
g. The duration of the noise and its tonal informational or musical content;
h. Whether the noise is continuous, recurrent or intermittent;
i. Whether the noise is produced by a commercial or noncommercial activity.

Noise Standards of Neighboring Jurisdictions

The West Jackson Highway Master Plan area is located entirely within Sacramento County. As a result, noise impacts upon development within the Plan Area are evaluated relative to the Sacramento County noise standards cited above. However, development within the Plan Area would result in increases in off-site traffic noise along roadways located in the Cities of Rancho Cordova, Folsom, Sacramento and Elk Grove. As a result, the transportation noise standards of those jurisdictions are included in this section for use in evaluating off-site traffic noise impacts associated with the project.

It should be noted that the standards of the neighboring jurisdictions are very similar, both in terms of absolute noise standards for residential land uses (60 dB Ldn) and criteria for assessing impacts relative to traffic noise increases. Each neighboring jurisdiction, with the exception of the City of Rancho Cordova utilizes the FICON criteria for assessing significance of project-related noise level increases. The pertinent noise standards of the neighboring jurisdictions are provided below.

City of Rancho Cordova General Plan

Policy N.1.5 - Mitigate noise created by the construction of new transportation noise sources (such as new roadways or new light rail service) to the maximum extent feasible to comply with the City's standards. The City's standards are found in Table N-2 of the Noise Element and are reproduced below as Table 5.

Policy N.2.2 Ensure that operational noise levels of new roadway projects will not result in significant noise impacts.

Action N.2.2.1 Assess the significance of the noise increase of all roadway improvement projects in existing areas according to the following criteria:

A. Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

B. Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

C. Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +1.5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant.

Table 5
Maximum Transportation Noise Exposure
City of Rancho Cordova Noise Element of the General Plan

	Outdoor Activity Areas[1]	Interior Spaces	
Land Use	**L_{dn}/CNEL, dB**	**L_{dn}/CNEL, dB**	**L_{eq}, dB[2]**
Residential	60[3]	45	_
Residential subject to noise from railroad tracks, aircraft overflights, or similar noise sources which produce clearly identifiable, discrete noise events (e.g., the passing of a single train)	60[3]	40[5]	_
Transient Lodging	60[4]	45	_
Hospitals, Nursing Homes	60[3]	45	_
Theaters, Auditoriums, Music Halls	_	_	35
Churches, Meeting Halls	60[3]	_	40
Office Buildings	_	_	45
Schools, Libraries, Museums	_	_	45
Playgrounds, Neighborhood Parks	70	_	_

1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
4. In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.
5. The intent of this noise standard is to provide increased protection against sleep disturbance for residences located near railroad tracks.

City of Folsom General Plan

The City of Folsom General Plan Noise Element establishes an exterior noise level standard of 60 dB L_{dn} at outdoor activity areas of residential land uses exposed to transportation noise sources (i.e., traffic). The intent of this standard is to provide an acceptable exterior noise environment for outdoor activities. The City of Folsom also utilizes an interior noise level standard of 45 dB L_{dn} or less within the interior spaces of habitable residential spaces. The intent of this interior noise limit is to provide a suitable environment for indoor communication and sleep.

City of Sacramento General Plan

The City of Sacramento General Plan Noise Standards are provided in Table 6 (Table EC 1 of the General Plan).

EC 3.1.1 Exterior Noise Standards

The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table 6 (Table EC 1 of the General Plan), to the extent feasible.

Table 6

Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type	Highest Level of Noise Exposure that is Regarded as "Normally Acceptable"[a] (L_{dn}[b] or CNEL[c])
Residential–Low Density Single Family, Duplex, Mobile Homes	60 dBA[d,e]
Residential–Multi-family	65 dBA
Urban Residential Infill[f] and Mixed-Use Projects[g]	70 dBA
Transient Lodging–Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site–specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site–specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings–Business, Commercial, and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

Source: Governor's Office of Planning and Research, State of California General Plan Guidelines 2003, October 2003

a. As defined in the Guidelines, "Normally Acceptable" means that the "specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements."

b. L_{dn} or Day Night Average Level is an average 24-hour noise measurement that factors in day and night noise levels.

c. CNEL or Community Noise Equivalent Level measurements are a weighted average of sound levels gathered throughout a 24-hour period.

d. dBA or A-weighted decibel scale is a measurement of noise levels.

e. The exterior noise standard for the residential area west of McClellan Airport known as McClellan Heights/Parker Homes is 65 dBA

f. With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).

g. All mixed-use projects located anywhere in the City of Sacramento.

EC 3.1.2 Exterior Incremental Noise Standards. The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table 7 (Table EC 2), to the extent feasible.

Table 7
Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dBA)
(Table EC 2 of City of Sacramento General Plan)

Residences and buildings where people normally sleep [a]		Institutional land uses with primarily daytime and evening uses [b]	
Existing L_{dn}	Allowable Noise Increment	Existing Peak Hour L_{eq}	Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

SOURCE: Federal Transit Administration, *Transit Noise Impact and Vibration Assessment*, May 2006

a. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

b. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

EC 3.1.3 Interior Noise Standards

The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dBA L_{dn} for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dBA L_{eq} (peak hour) for office buildings and similar uses.

City of Elk Grove General Plan

The City of Elk Grove General Plan (adopted October 2022) establishes maximum allowable noise exposure for residential uses affected by transportation noise sources of 60 dB Ldn exterior and 45 dB Ldn interior. For non-transportation noise sources, the City's General Plan establishes hourly average performance standards of 55 dBA during daytime hours and 45 dBA during nighttime hours for typical noise sources not containing tonal, impulsive, repetitive, speech or music components. The City's standards for sources containing those components are 5 dB lower.

In addition, the City's General Plan Policy N-2-2 establishes the following CEQA thresholds for evaluating the significance of project-related noise level increases:

- Where existing ambient noise levels are less than 60 dB Ldn at the outdoor activity areas of noise sensitive uses, a +5 dB Ldn increase in noise levels shall be considered significant; and

- Where existing ambient noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels shall be considered significant; and

- Where existing ambient noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +1.5 dB Ldn increase in noise levels shall be considered significant.

  Public roadway improvements to alleviate traffic congestion and safety hazards shall utilize FHWA noise standards to allow a reasonable dollar threshold per dwelling to be used in the evaluation and abatement of impacts.

Vibration Criteria

Sacramento County has no adopted vibration standards. As a result, Caltrans-recommended criteria are applied for this project, as described below. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. The Caltrans publication, *Transportation-and Construction-Induced Vibration Guidance Manual*, written for Caltrans by Jones & Stokes in June 2004, provides guidelines for acceptable vibration limits for transportation and construction projects in terms of the induced peak particle velocity (PPV). Those standards are reproduced below in Table 8.

Table 8
Vibration Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources[1]	Continuous or Frequent Intermittent Sources[2]
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old building	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial building	2.00	0.50

Notes:
1. Transient sources create a single isolated vibration event.
2. Continuous/frequent intermittent sources include repetitive single events.

Current Caltrans research illustrates that there are different thresholds of perception for different types of vibration sources. Section XI(b) of Appendix G of the CEQA guidelines requires that a project results in exposure of persons to, or generation of, *excessive* groundborne vibration levels or groundborne noise levels, for the finding of a significant impact. The CEQA guidelines specifically mention “excessive” vibration, rather than just perceptible vibration. The general

range at which vibration from continuous or frequent intermittent sources exceeds acceptable levels for older structures is noted in Table 8 as being 0.3 – 0.5 in/sec ppv.

Existing (Baseline) Noise Environment

Master Plan Area

Overview of Existing Noise and Vibration Environment within the Master Plan Area

The existing noise environment within the overall Plan Area varies by location and is defined by a combination of noise sources. The most pervasive noise source affecting the Plan Area is surface traffic on Jackson Highway and major arterial roadways. The Plan Area is also affected by aircraft operations associated with Mather Airport and, to a lesser extent, activities at the Sacramento Raceway on Excelsior Road and construction materials facilities on Bradshaw Road. Aggregate excavation and reclamation activities on the Teichert and Granite properties also contribute to the ambient noise environment within the Plan Area, but in a considerably more localized fashion.

The existing vibration environment in the Plan Area is generally below the threshold of perception with the exception of locations very close (within 100 feet) to existing aggregate excavation and processing equipment and activities.

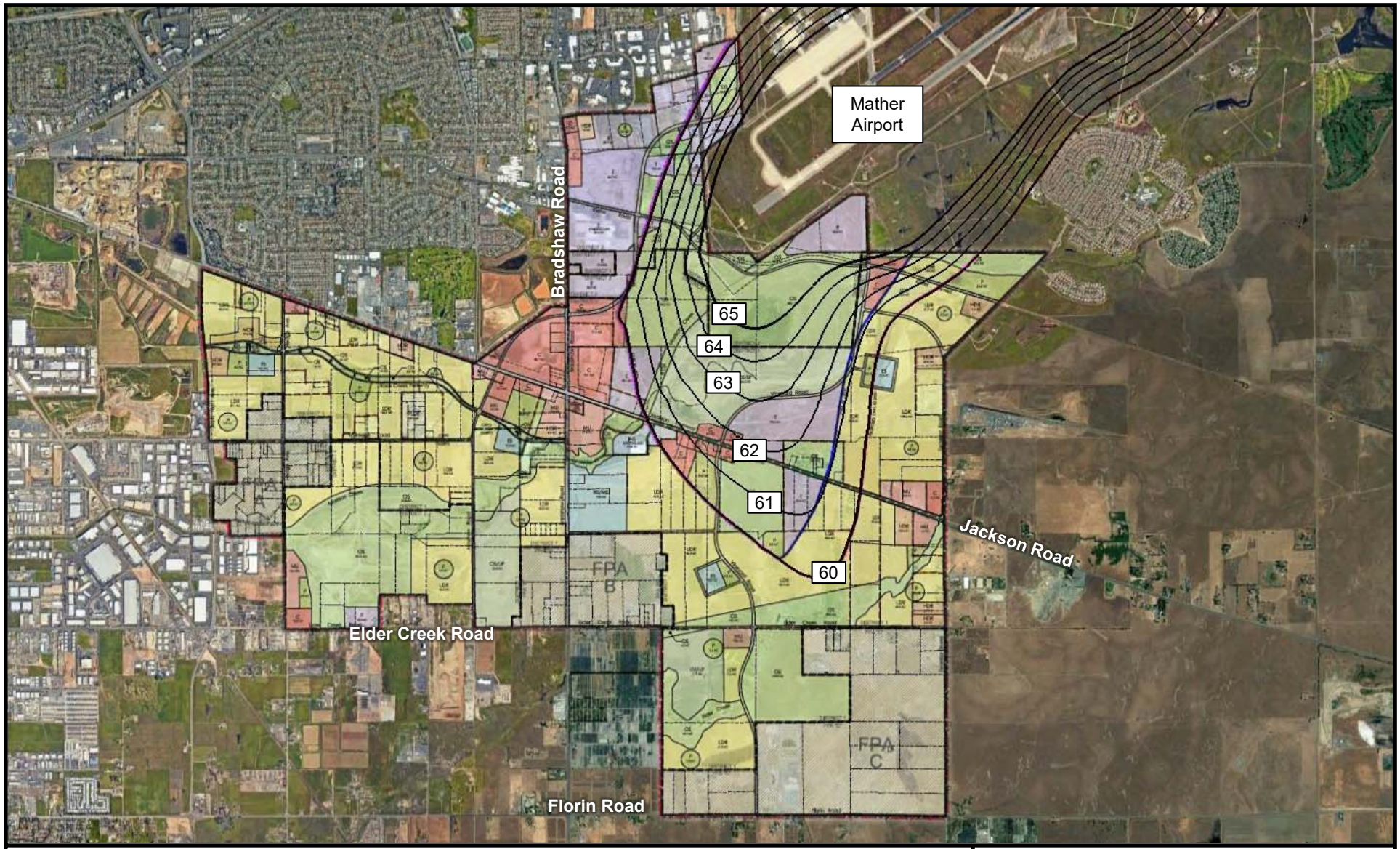
Methodology for Assessing Baseline Noise Environment within the Master Plan Area

At the Master Plan Level, aircraft noise exposure was quantified using published noise contour maps and traffic noise was modeled using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108).

Because noise generated by the Sacramento Raceway, Granite Bradshaw aggregates facility, and both Teichert and Granite excavation and reclamation activities primarily affects the District Area Plans within the larger Plan Area, those sources are evaluated later in this report at a more detailed District Plan Level.

Aircraft Noise Environment within the Master Plan Area

Mather Airport is located immediately adjacent to the northeastern boundary of the Plan Area, as indicated in Figure 1. To quantify the noise generation of the airport in terms of CNEL, the noise contours contained within the Airport Master Plan (Approved August 2022) were utilized, as well as the theoretical capacity noise contours developed for the Airport. The Mather Airport theoretical capacity noise contours are reproduced below in Figure 4A. Figure 4B shows the portion of the West Jackson Highway Master Plan area which is proposed for noise-sensitive (residential) development within the 60 CNEL Mather Airport contours.



Legend

Theoretical Capacity Noise Contour, dBA CNEL

N

Scale (Mile)

0 0.5 1.0

West Jackson Highway Master Plan
Sacramento County, California

Mather Airport Noise Contours

Figure 4A

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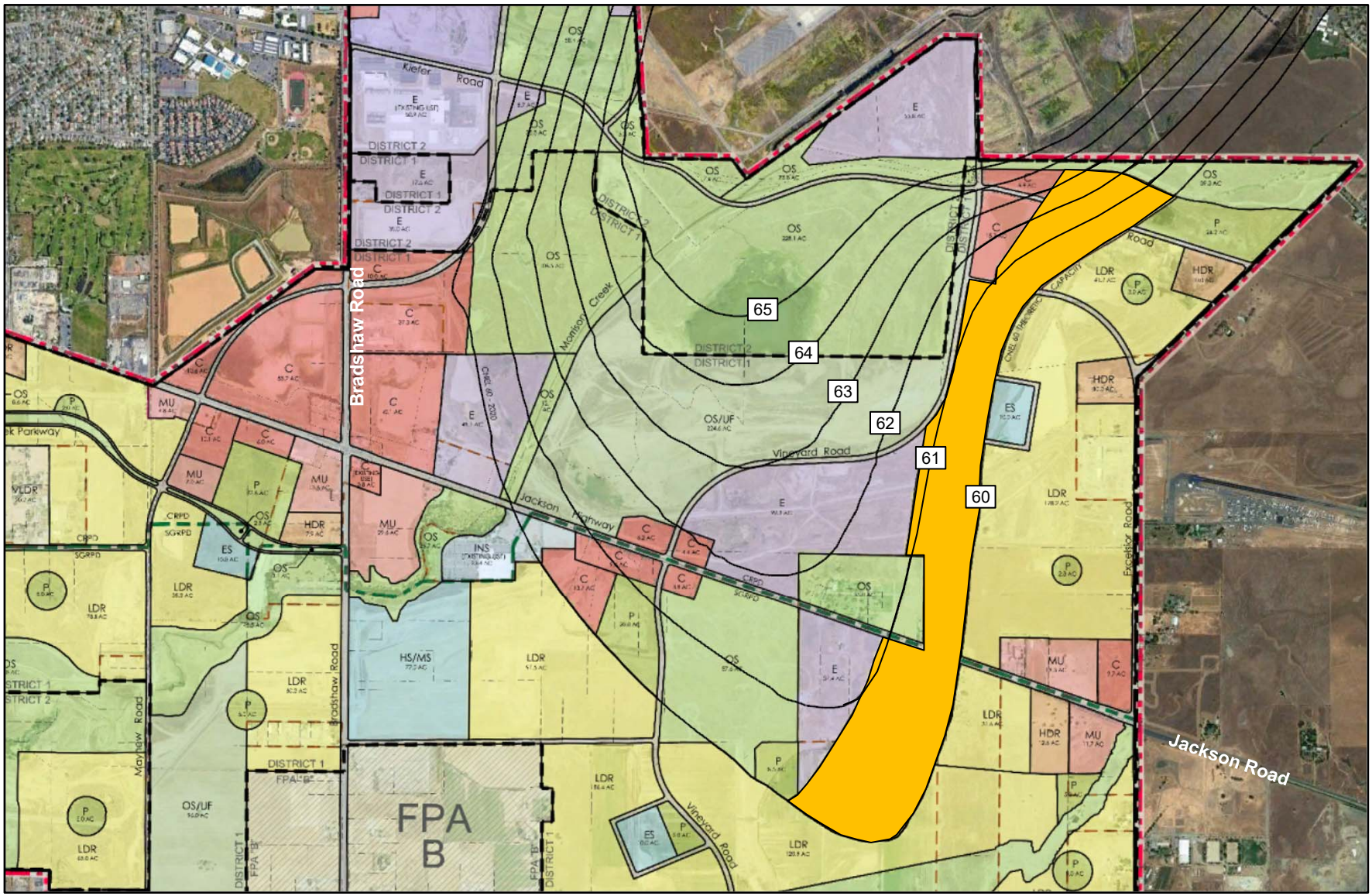
Figure 4B
West Jackson Master Plan Project Residential Uses Located within Proposed Theoretical Capacity 60 dB CNEL Contour



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: Proposed Theoretical Capacity Noise Contour, CNEL

: Proposed Residential Uses within 60 dBA CNEL Contour

Single Event Environment within the Master Plan Area

Although the County has determined that single event noise exposure and associated sleep disturbance effects are appropriately addressed through application of General Plan Noise Element policies NO-2 through NO-4 regarding aircraft noise, the following information pertaining to aircraft single event noise is provided for disclosure purposes. Aircraft single events associated with individual aircraft arrivals or departures at Mather Airport currently occur over the Master Plan Area. The noise generation of such events is a function of several variables, including aircraft type, aircraft weight, and flight track. Consideration of aircraft single event noise is most relevant to the assessment of sleep disturbance impacts at residential areas proposed within the Master Plan Area.

In recognition of the fact that aircraft single events do occur in the area, a Mather Airport Nighttime Awakening Analysis was prepared by ESA in December 2013 (revised April 2014) as part of the Mather Airport Master Plan Update. This analysis utilized the ANSI methodology for prediction of sleep disturbance using the Integrated Noise Model (INM) files used to develop CNEL contours for the Mather Airport Master Plan. The awakenings analysis utilized an assumed 26 nighttime aircraft operations for the year 2035 proposed master plan project condition. Figures 5 and 6 show the predicted percent of population potentially awakened by nighttime single-event aircraft operations.

Figure 5

West Jackson Highway Master Plan - Sacramento County, California
Mather Noise Issues

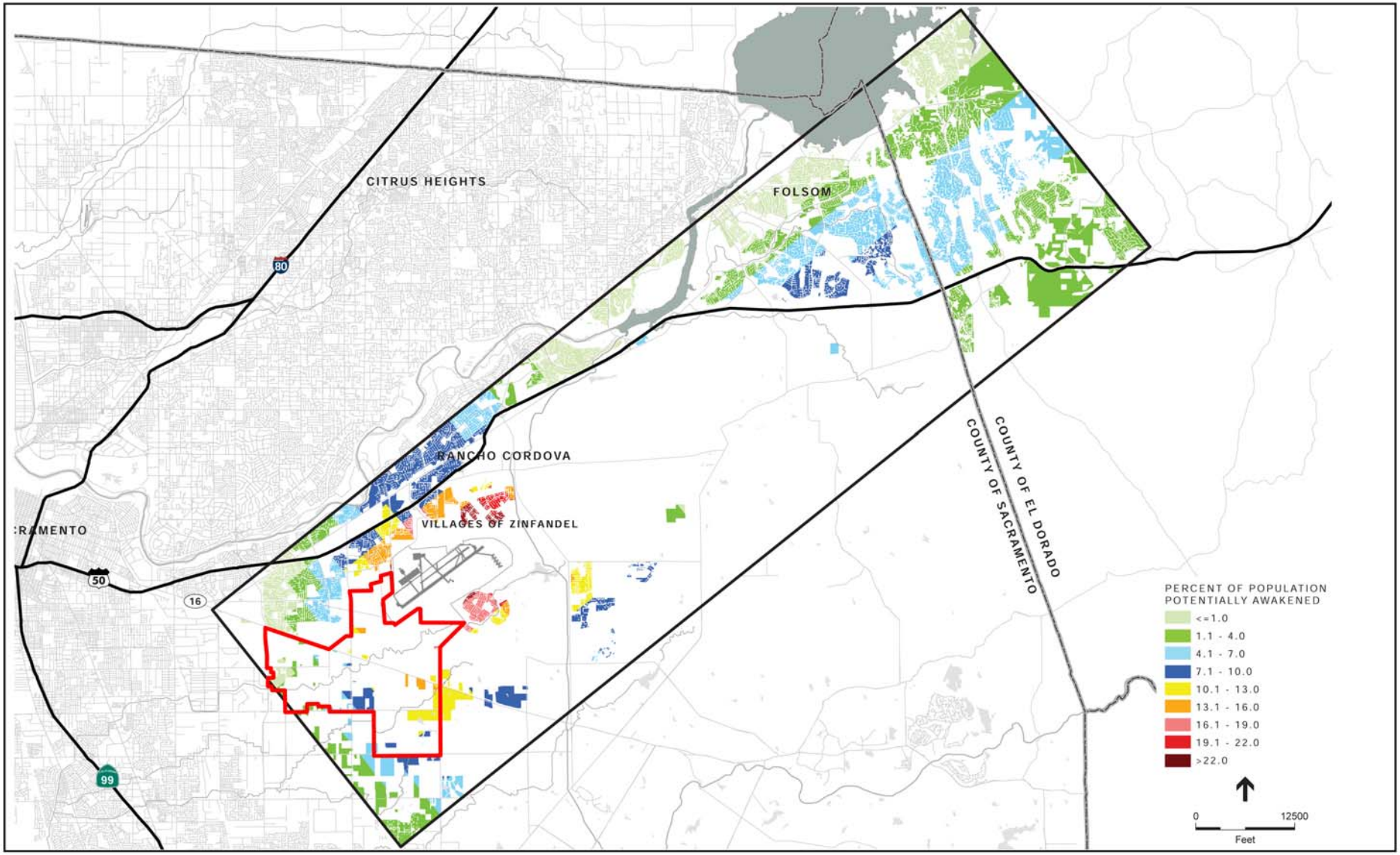

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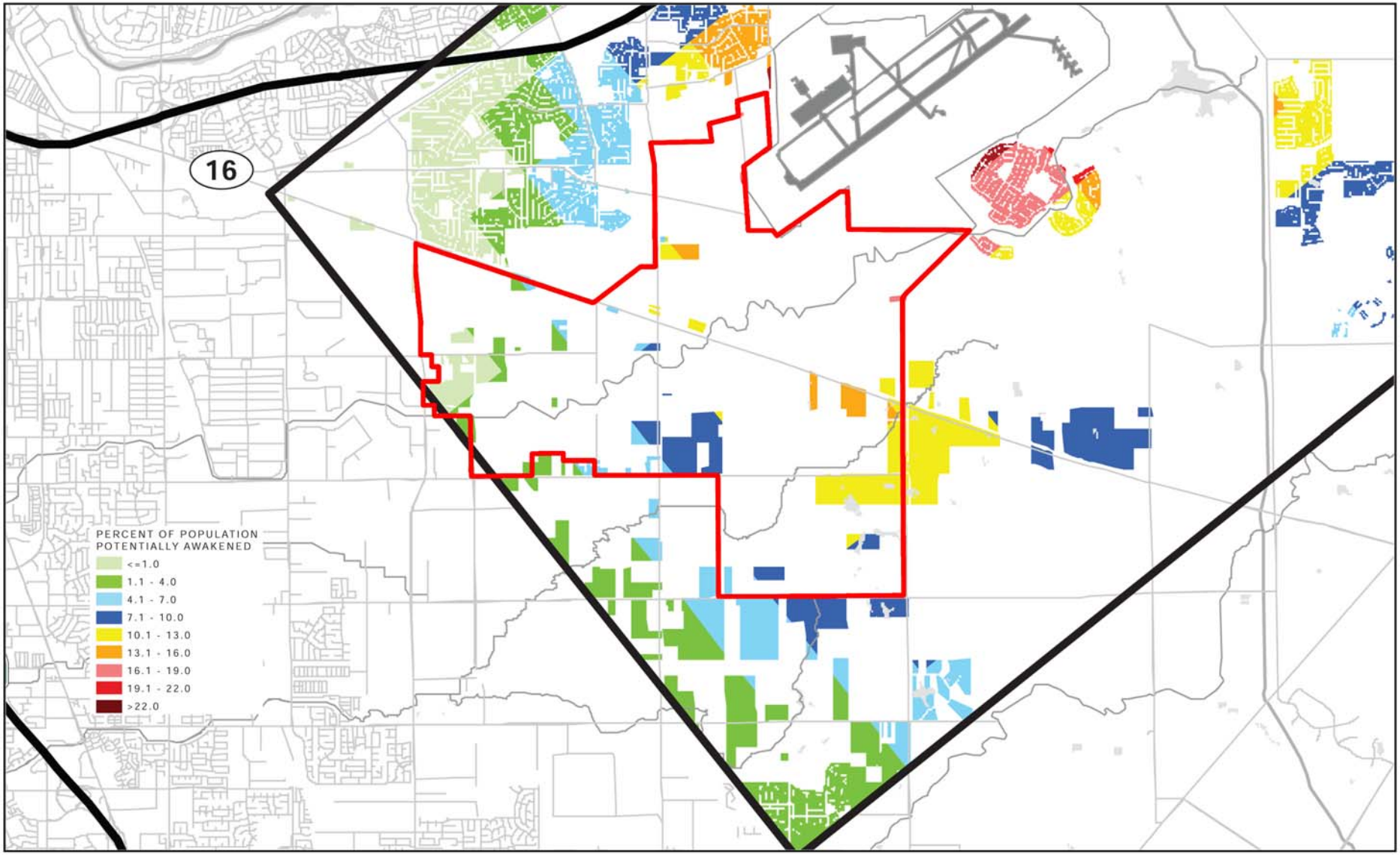
Figure 6

West Jackson Highway Master Plan - Sacramento County, California

Mather Noise Issues



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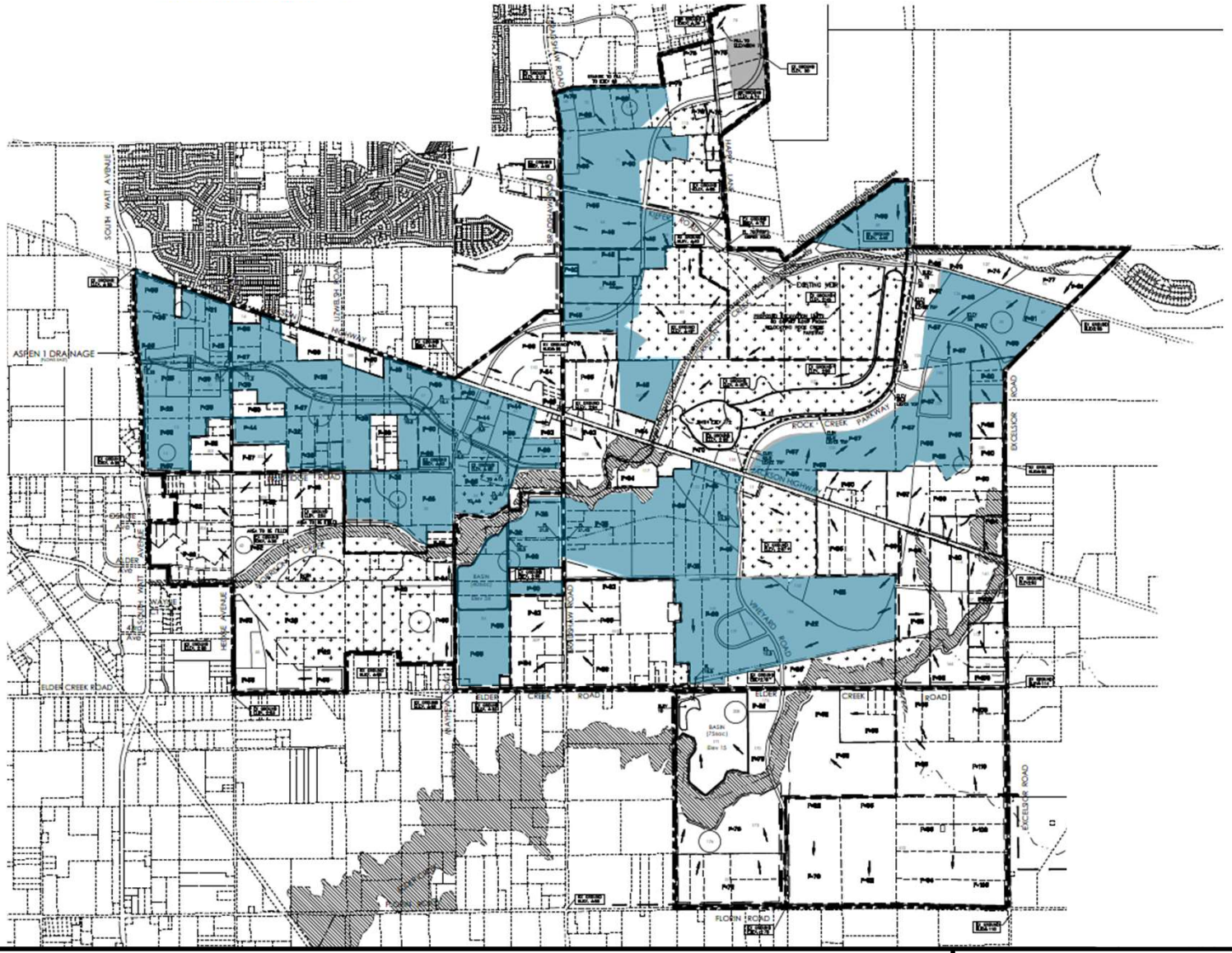
Existing General Traffic Noise Environment within the Master Plan Area

To describe noise levels because of traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The FHWA model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

Baseline FHWA Model inputs and results were provided by Sacramento County. Table 9 shows the predicted existing traffic noise levels at a reference distance of 100 feet from the roadway centerlines, as well as the distances to the unshielded L_{dn} contours. It should be noted that the Table 9 data are provided at the Master Plan level without adjustment for shielding by intervening topography or structures. As such, the Table 9 data should be considered conservative. The FHWA Model Inputs for baseline conditions are provided in Appendix D.

It should be noted that many portions of the Plan Area are former aggregate mining sites. As a result, these sites are substantially depressed relative to the local roadway network. That depression results in screening of roadway traffic at the future development sites, resulting in a substantial decrease in traffic noise exposure at the depressed locations. Figure 7 shows the depressed areas of the Plan Area based on preliminary site grading plans. Figure 7 is based on an overall site grading plan prepared by Wood Rodgers in January 2014 indicating mined areas which are below grade. It should be noted that Figure 7 is intended to generally identify locations within the Plan Area which were identified as being “below grade”, but that there may be considerable differences in the degree of depression of these areas relative to local roadways and Figure 7 does not account for future grading of specific project site within the Master Plan Area. In general, noise-sensitive land uses developed within substantially depressed areas can expect traffic noise levels on the order of 10-15 dB lower than the levels shown in Table 9.



Legend

Depressed Areas

N

Scale (Feet)

0 500 1,000

West Jackson Highway Master Plan
Sacramento County, California

Grading: Depressed Areas

Figure 7

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Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
1	Bradshaw	Folsom	US 50	68	69	149	321
2	Bradshaw	US 50	Lincoln Village	71	111	239	515
3	Bradshaw	Lincoln Village	Old Placerville	70	97	208	449
4	Bradshaw	Old Placerville	Goethe	69	91	196	422
5.1	Bradshaw	Goethe	Collector WJ-8	68	74	160	344
5.2	Bradshaw	Collector WJ-8	Kiefer	68	74	160	344
6.1	Bradshaw	Kiefer	Collector WJ-9	68	78	167	360
6.2	Bradshaw	Collector WJ-9	Mayhew	68	78	167	360
6.3	Bradshaw	Mayhew	Jackson	68	78	167	360
7.1	Bradshaw	Jackson	Rock Creek	68	75	162	349
7.2	Bradshaw	Rock Creek	Collector WJ-10	68	75	162	349
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	68	75	162	349
7.4	Bradshaw	Collector WJ-11	Elder Creek	68	75	162	349
8	Bradshaw	Elder Creek	Florin	68	74	159	343
9	Bradshaw	Florin	Gerber	68	75	162	349
10	Bradshaw	Gerber	Calvine	68	70	151	326
11	Calvine	Waterman	Bradshaw	67	59	126	272
12	Calvine	Bradshaw	Vineyard	66	57	123	264
13	Calvine	Vineyard	Excelsior	63	35	76	163
14	Chrysanthy	Sunrise	Rancho Cordova	59	18	39	83
15	Douglas	Mather	Zinfandel	62	28	60	130
16	Douglas	Zinfandel	Sunrise	63	33	70	152
17	Douglas	Sunrise	Rancho Cordova	63	32	70	150
18.1	Douglas	Rancho Cordova	Americanos	63	32	70	150
18.2	Douglas	Americanos	Grant Line	63	32	70	150
19.1	Eagles Nest	Kiefer	N Bridgewater	55	10	21	46
19.2	Eagles Nest	N Bridgewater	S Bridgewater	55	10	21	46
19.3	Eagles Nest	S Bridgewater	Jackson	55	10	21	46
20	Eagles Nest	Jackson	Florin	54	9	19	41
21	Eagles Nest	Florin	Grant Line	50	4	10	21
22	Elder Creek	65th St	Power Inn	66	54	117	252
23	Elder Creek	Power Inn	Florin-Perkins	65	50	107	231
24	Elder Creek	Florin Perkins	South Watt	64	39	85	183
25	Elder Creek	South Watt	Hedge	62	29	63	136
26	Elder Creek	Hedge	Mayhew	62	30	65	140

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
27	Elder Creek	Mayhew	Bradshaw	62	29	61	132
28.1	Elder Creek	Bradshaw	Vineyard	58	16	34	72
28.2	Elder Creek	Vineyard	Excelsior	58	16	34	72
29	Elk Grove-Florin	Florin	Gerber	67	64	138	298
30.1	Excelsior	Kiefer	Douglas	58	15	33	70
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	59	19	41	88
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59	19	41	88
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59	19	41	88
31.1	Excelsior	Jackson	Collector WJ-6	61	23	50	109
31.2	Excelsior	Collector WJ-6	Elder Creek	61	23	50	109
32	Excelsior	Elder Creek	Florin	60	21	45	96
33	Excelsior	Florin	Gerber	61	24	53	114
34	Excelsior	Gerber	Jackson	60	21	45	96
37	Florin	Power Inn	Florin-Perkins	67	61	132	285
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	66	54	116	250
39	Florin	South Watt	Hedge	64	41	89	193
40	Florin	Hedge	Mayhew	63	36	78	168
41	Florin	Mayhew	Bradshaw	63	36	78	169
42.1	Florin	Bradshaw	Vineyard	62	29	62	133
42.2	Florin	Vineyard	Excelsior	62	29	62	133
43	Florin	Excelsior	Sunrise	64	37	80	173
44	Folsom	Howe	Jackson	69	89	191	411
45	Fruitridge	65th St	Power Inn	66	52	111	240
46	Fruitridge	Power Inn	Florin Perkins	66	57	123	266
47	Fruitridge	Florin Perkins	South Watt	65	44	95	205
48	Fruitridge	South Watt	Hedge	57	14	29	63
49.1	Fruitridge	Hedge	Collector WJ-12	55	10	21	46
49.2	Fruitridge	Collector WJ-12	Mayhew	55	10	21	46
50	Grant Line	White Rock	Douglas	64	42	90	194
51.1	Grant Line	Douglas	Chrysanthy	66	53	113	244
51.2	Grant Line	Chrysanthy	Kiefer	66	53	113	244
52.1	Grant Line	Kiefer	Rancho Cordova	65	46	100	215
52.2	Grant Line	Rancho Cordova	Jackson	65	46	100	215
53	Grant Line	Jackson	Sunrise	69	87	187	403
54	Grant Line	Sunrise	Calvine	70	95	204	439

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
55.1	Grant Line	Calvine	Elk Grove City Limit	67	61	132	284
55.2	Grant Line	Elk Grove City Limit	Sheldon	67	61	132	284
56	Grant Line	Sheldon	Wilton	68	74	159	343
57	Grant Line	Wilton	Bond	68	70	150	324
58.1	Happy Lane	Old Placerville	Routier Ext	57	15	31	67
58.2	Happy Lane	Routier Ext	Kiefer	57	15	31	67
59.1	Hedge	Jackson	Rock Creek	57	14	30	65
59.2	Hedge	Rock Creek	Fruitridge	57	14	30	65
60	Hedge	Fruitridge	Elder Creek	58	16	35	75
61	Hedge	Elder Creek	Florin	57	13	28	60
62	Howe	US 50	Folsom	71	113	243	524
63	International	Mather Field	Zinfandel	66	53	115	248
64	International	Zinfandel	Sunrise	63	34	73	157
65	Jackson	Folsom	Florin Perkins	67	59	126	272
66.1	Jackson	Florin Perkins	14th	66	52	113	243
66.2	Jackson	14th	Rock Creek	65	46	99	212
66.3	Jackson	Rock Creek	Aspen 1 Dwy	65	46	99	212
66.4	Jackson	Aspen 1 Dwy	South Watt	65	46	99	212
67	Jackson	South Watt	Hedge	68	73	157	337
68.1	Jackson	Hedge	Collector WJ-3	67	59	128	276
68.2	Jackson	Collector WJ-3	Mayhew	67	59	128	276
69	Jackson	Mayhew	Bradshaw	67	67	144	310
70.1	Jackson	Bradshaw	Collector WJ-4	68	69	148	320
70.2	Jackson	Collector WJ-4	Happy Ln	68	69	148	320
70.3	Jackson	Happy Ln	Rock Creek	68	69	148	320
70.4	Jackson	Rock Creek	Collector WJ-5	68	69	148	320
70.5	Jackson	Collector WJ-5	Collector WJ-6	68	69	148	320
70.6	Jackson	Collector WJ-6	Excelsior	68	69	148	320
71.1	Jackson	Excelsior	Collector JT-3	67	60	128	276
71.2	Jackson	Collector JT-3	Tree View Ln	67	60	128	276
71.3	Jackson	Tree View Ln	Collector JT-4	67	60	128	276
71.4	Jackson	Collector JT-4	Eagles Nest	67	60	128	276
72.1	Jackson	Eagles Nest	Rockbridge	66	58	124	268
72.2	Jackson	Rockbridge	Sunrise	66	58	124	268
73	Jackson	Sunrise	Grant Line	69	88	190	409
74	Kiefer	Florin Perkins	South Watt	60	22	47	101

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	Roadway Name	From	To	Ldn	70	65	60
75	Kiefer	South Watt	Mayhew	66	56	120	259
76	Kiefer	Mayhew	Bradshaw	63	35	75	163
77.1	Kiefer	Bradshaw Road	Collector WJ-14	61	26	56	120
77.2	Kiefer	Collector WJ-14	Routier Ext	61	26	56	120
77.3	Kiefer	Routier Ext	Happy Lane	61	26	56	120
78.1	Kiefer	Eagles Nest	W Collector MS-1	55	10	22	48
78.2	Kiefer	W Collector MS-1	Northbridge	55	10	22	48
78.3	Kiefer	Northbridge	E Collector MS-1	55	10	22	48
78.4	Kiefer	E Collector MS-1	Sunrise	55	10	22	48
79	Kiefer	Sunrise	Rancho Cordova	57	13	28	61
80	Mather / Norden	Von Karman St	Bleckely St	59	18	38	83
81	Mather	Bleckely St	Femoyer St	59	18	38	83
82	Mather	Femoyer St	Douglas	59	18	38	83
83	Mather-Excelsior	Douglas	Kiefer	60	23	48	104
84	Mather Field	US 50	Rockingham	71	120	258	555
85	Mather Field	Rockingham	International	71	119	257	553
86	Mather Field	International	Peter A McCuen	66	56	120	258
87	Mayhew	Folsom	Goethe	62	29	62	135
88	Mayhew	Goethe	Kiefer	62	28	60	130
89.1	Mayhew	Jackson	Rock Creek	56	11	24	51
89.2	Mayhew	Rock Creek	Fruitridge	56	11	24	51
90	Old Placerville	Bradshaw	Granby	63	33	71	153
91	Old Placerville	Granby	Happy Ln	62	30	64	138
92	Old Placerville	Happy Ln	Routier	62	31	66	142
93	Old Placerville	Routier	Rockingham	63	32	70	151
94	Power Inn	Folsom	14th	69	87	186	402
95	Rockingham	Old Placerville	Mather Field	66	58	125	269
96	South Watt	Folsom	Kiefer	71	109	236	508
97	South Watt	Kiefer	Jackson	70	94	202	435
98.1	South Watt	Jackson	Rock Creek	69	80	173	374
98.2	South Watt	Rock Creek	Fruitridge	69	80	173	374
99	South Watt	Fruitridge	Elder Creek	68	71	154	331
100	South Watt	Elder Creek	Florin	68	76	163	352
101	Sunrise	US 50	Folsom	71	114	245	528
102	Sunrise	Folsom	Trade Center	70	107	230	495
103	Sunrise	Trade Center	White Rock	69	84	181	390

Table 9
Existing (Baseline) Traffic Noise Levels @ 100 feet and Distances to Traffic Noise Contours
West Jackson Highway Master Plan Area Roadways

		Segment Description			Distance to Contours (ft)		
Segment	**Roadway Name**	**From**	**To**	**Ldn**	**70**	**65**	**60**
104.1	Sunrise	White Rock	International	68	69	149	321
104.2	Sunrise	International	Rio Del Oro	68	74	159	342
104.3	Sunrise	Rio Del Oro	Douglas	70	93	200	431
105	Sunrise	Douglas	Kiefer	68	72	155	334
106	Sunrise	Kiefer	Jackson	69	80	172	372
107	Sunrise	Jackson	Florin	67	61	131	282
108	Sunrise	Florin	Grant Line	65	48	103	221
109	Vineyard	Gerber	Calvine	59	20	42	91
110	Watt	US 50	Folsom	74	172	371	799
111	White Rock	International	Quality	58	17	36	78
112	White Rock	Quality	Zinfandel	63	33	72	155
113	White Rock	Zinfandel	Kilgore	64	40	87	186
114	White Rock	Kilgore	Sunrise	64	40	87	186
115	White Rock	Sunrise	Fitzgerald	66	57	123	265
116.1	White Rock	Fitzgerald	Rancho Cordova	59	20	42	91
116.2	White Rock	Rancho Cordova	Americanos	59	20	42	91
116.3	White Rock	Americanos	Grant Line	58	17	36	79
117	White Rock	Grant Line	Prairie City	66	54	116	249
118	Zinfandel	US 50	White Rock	69	85	183	393
119	Zinfandel	White Rock	International	65	46	99	212
120	Zinfandel	International	Baroque	62	31	66	142
121	Zinfandel	Baroque	City Limit	62	31	66	142
122	Zinfandel	City Limit	Douglas	62	31	66	142
123.1	Zinfandel	Douglas	Collector MS-2	58	16	34	74
123.2	Zinfandel	Collector MS-2	Collector MS-3	58	16	34	74
123.3	Zinfandel	Collector MS-3	Collector MS-4	58	16	34	74
123.4	Zinfandel	Collector MS-4	Kiefer	58	16	34	74

Source: FHWA-RD-77-108 with inputs from Sacramento County

District Area Plans

Overview of Existing Noise and Vibration Environment within the District Area Plans

Like the overall Master Plan Area, the existing noise environment within the two District Area Plans (District 1: mostly Teichert and District 2: mostly Granite) also varies by location and is defined by a combination of noise sources. In addition to the traffic and aircraft noise environment previously described in the Master Plan section of this report, the District Area Plans are also affected by a variety of localized noise sources. Such sources include the Sacramento Raceway, the Granite Bradshaw Aggregates facility, aggregate excavation and reclamation equipment, and small commercial/industrial activities on adjacent non-participating properties within the Plan Area.

As with the Plan Area, the existing vibration environment in the District Area Plans is also generally below the threshold of perception with the exception of locations very close (within 100 feet) to existing aggregate excavation and processing equipment and activities.

Methodology for Assessing Baseline Noise and Vibration Environments within the District Plan Areas

At the District Plan Levels, aircraft noise exposure was quantified using published noise contour maps and traffic noise was modeled using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108).

Noise generated by the Sacramento Raceway, Granite Bradshaw Aggregates facility, and both Teichert and Granite excavation and reclamation activities was quantified through a combination of noise level measurements and application of accepted noise prediction models. In addition, an extensive ambient noise survey, consisting of both long-term and short-term noise level measurements, was conducted within the District Area Plans to more specifically characterize the existing baseline noise environment in those areas.

In addition to the extensive ambient noise measurement surveys, baseline vibration measurements were also conducted at several locations within the District Area Plans to quantify baseline vibration environments.

Existing General Ambient Noise Environment within the District Area Plans

To quantify the existing ambient noise environment with the District Area Plans, long-term (continuous) ambient noise level measurements were conducted at 31 locations within the District Area Plan Boundaries in 2013. Supplemental ambient noise monitoring was conducted at 6 of the long-term noise monitoring locations in 2017 and again in 2022 to verify that the 2013 data is still reasonably representative of current baseline ambient noise conditions within the District Areas.

The locations of the continuous noise monitoring sites are shown on Figure 8. In addition to the long-term noise monitoring program, short-term ambient noise level measurements were also conducted at several locations within the District Area Plan. The short-term monitoring sites were

selected to either supplement the long-term sites or because long-term monitoring was not possible at some locations. The short-term noise monitoring sites are identified on Figure 9.

Larson Davis Laboratories (LDL) Model 820, LXT and 831 precision integrating sound level meters were used for the long and short-term ambient noise level measurement surveys. The meters were calibrated before use with LDL Model CAL200 acoustical calibrators prior to use to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute.

The results of the long-term ambient noise measurement surveys are summarized in Table 10, with the short-term monitoring results provided in Table 11. Appendix B provides a graphical representation of the measured average and maximum noise levels measured at each long-term site for the 2013 surveys, Appendix C shows the ambient noise survey results for the 2017 surveys, and Appendix D shows the ambient noise survey results for the 2022 surveys.

The Table 10 and 11 data indicate that existing noise levels within the Plan Area vary, depending on location of the noise monitoring site relative to the major project area noise sources, and whether or not the monitoring sites are depressed in former aggregate mining areas. Inspection of the data for the depressed and non-depressed locations indicates that topographic shielding provided by the existing elevation differences results in traffic noise level reductions generally ranging from 10-15 dBA. This level of shielding is significant because it will greatly reduce the degree of traffic noise attenuation required at future noise-sensitive land uses proposed within the District Area Plan, or eliminate the need for additional noise mitigation measures altogether.

Figure 8

West Jackson Highway Master Plan - Sacramento County, California
Long-Term Ambient Noise Level Measurement Locations

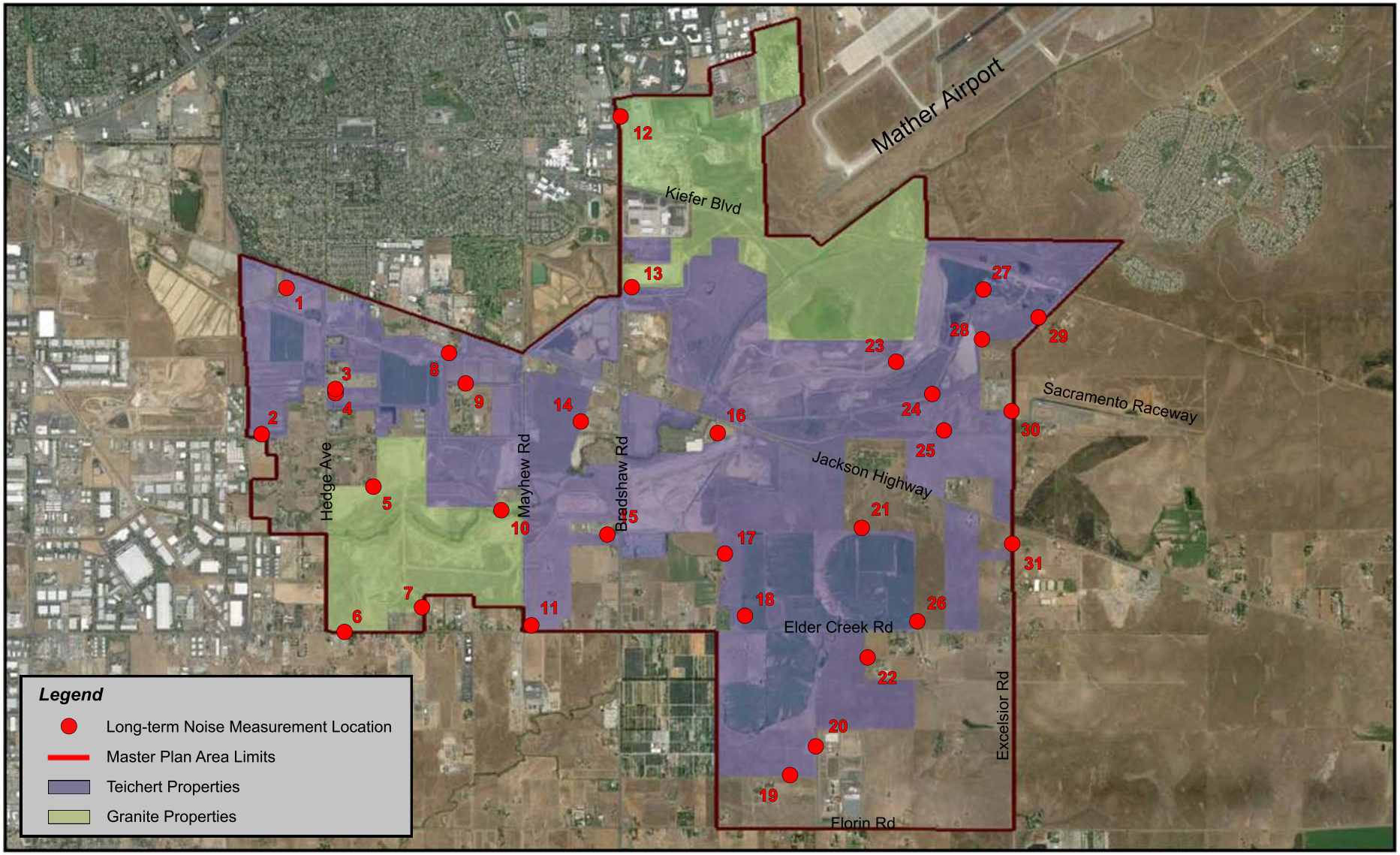

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Figure 9

West Jackson Highway Master Plan - Sacramento County, California
Short-Term Ambient Noise Level Measurement Locations within Specific Plan Areas

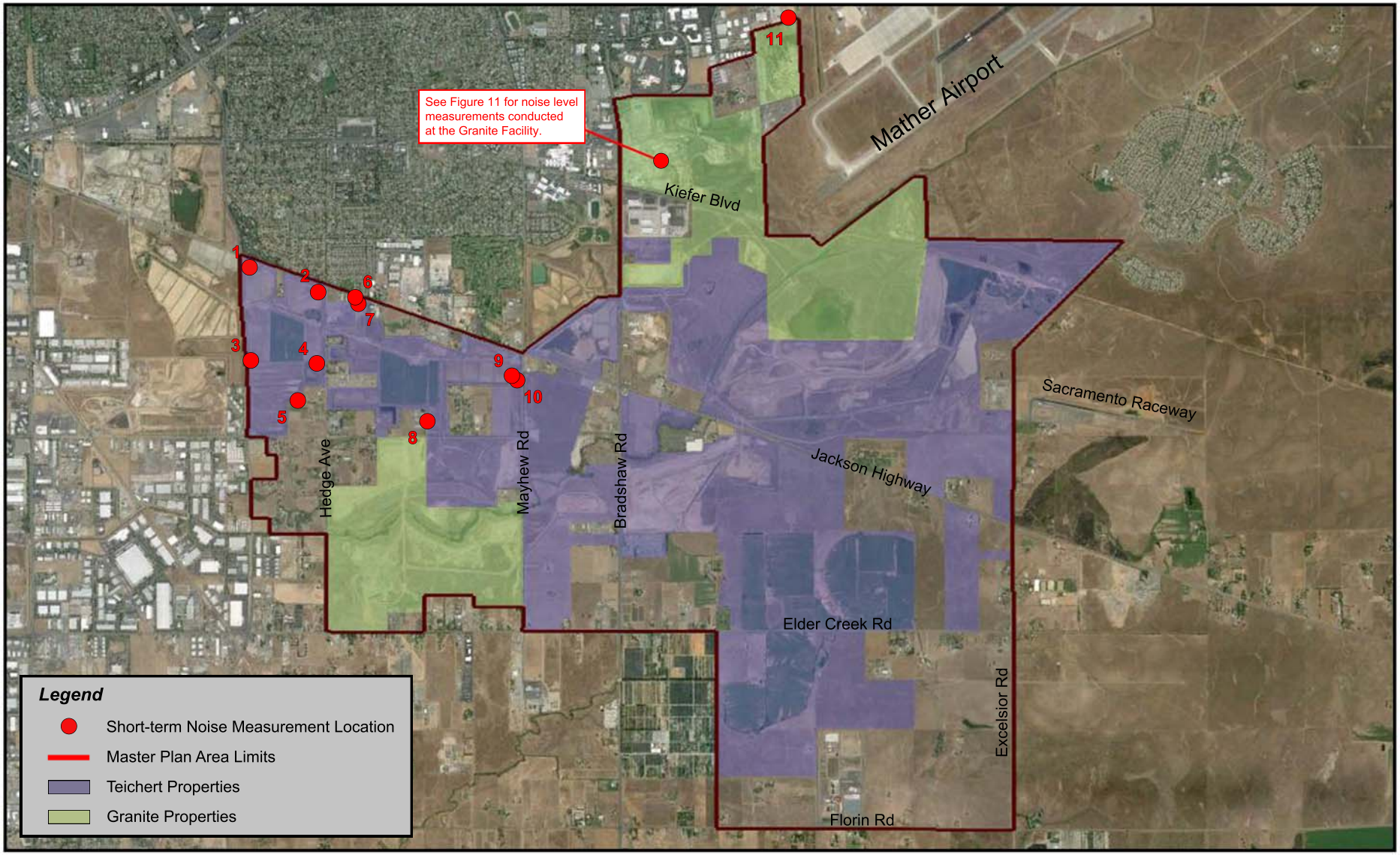

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Table 10
Measured Baseline Noise Levels (Ldn) at Long-Term Monitoring Sites
West Jackson Highway District Area Plans – Sacramento County

Site[1]	Ldn	Monitoring Site Depressed?	Notes/Source
1	56-59	Yes	Jackson Highway is dominant noise source
2	49-53	Yes	South Watt & Fruitridge
3	63-65	No	Hedge Avenue & adjacent industry
4	46-50	Yes	Near Site 3
5	47-52	No	Quiet location at end of Osage Avenue
6	61-67	No	50 feet from Elder Creek C/L
7	51-58	No	700 feet from Elder Creek C/L
8	48-51	Yes	Depressed area behind Jcksn. Hwy commercial/industrial uses.
9	53-56	No	Background Jackson Highway source.
10	48-54	No	Low Mayhew Road noise
11	60-64	No	Corner of Mayhew & Elder Creek – appx 150 feet from C/L's
12	60-68	No	Granite Parking Lot – Bradshaw Road dominant source
13	58-66	No	Mather aircraft & Bradshaw Road
14	50-59	Yes	Adjacent Bradshaw Road industrial operations.
15	55-61	No	350 ft from Bradshaw, adjacent Cmrcl/industrial ops.
16	65	No	Jackson Highway – 2009 monitoring for Aspen 5 South
17	56-58	No	Next to cemetery – distant Elder Creek & Bradshaw noise
18	59	No	2007 Site monitored for Aspen 8 & 9 – Elder Creek Noise
19	54	No	2007 Site monitored for Aspen 8 & 9 – Florin Road Noise
20	48-59	No	Near Sac County Water Agency Facility – Low ambient!
21	60	No	2007 site - distant Jackson Highway Noise (1,500 feet to C/L)
22	57	No	2007 Site - Distant Elder Creek noise (700 feet to C/L)
23	58	No	Aircraft Noise & distant Jackson Hwy Noise
24	57	Yes	Aircraft Noise & distant Jackson Hwy Noise
25	70	Yes	Aircraft, Traffic & Local Activity
26	53-59	No	Elder Creek Road
27	55-53	Yes	Remote location – some aircraft noise.
28	55-59	No	Excelsior Road & some
29	63	No	Next to Excelsior & some aircraft noise
30	64-68	No	Jackson Highway and Excelsior noise
31	59-63	No	Excelsior Road & Jackson Highway

Source: Bollard Acoustical Consultants, Inc. (BAC)

Table 11
Measured Baseline Noise Levels (Ldn) at Short-Term Monitoring Sites
West Jackson Highway District Area Plans – Sacramento County

Short-Term Site[1]	Time of Day	L_{50}	L_{max}	Monitoring Site Depressed?	Notes/Source
1	2:39 PM	46	61	Yes	Jackson Highway dominant source
2	3:06 PM	47	56	Yes	Jackson Highway dominant source
3	1:43 PM	61	68	No	South Watt Ave dominant source
4	1:23 PM	48	57	Yes	Hedge Ave dominant source
5	2:05 PM	47	65	Yes	Distant Traffic/Aircraft Overflight
6	12:17 PM	63	74	No	Jackson Highway dominant source
7	12:17 PM	45	61	Yes	Jackson Highway dominant source
8	2:22 PM	39	67	Yes	Fruitridge Rd dominant source
9	3:01 PM	43	79	Yes	Conveyor Belt & Aircraft Overflight
10	3:01 PM	51	80	Yes	Mayhew Road & Aircraft Overflight
11	10:49 AM	42	57	No	Distant Traffic

Source: Bollard Acoustical Consultants, Inc. (BAC)

Aircraft Noise Environment within the District Area Plans

Mather Airport is located immediately adjacent to the northeastern boundary of the Plan Area, as indicated in Figure 4. To quantify the noise generation of the airport in terms of CNEL, the noise contours contained within the previous and recently adopted Airport Master Plans were utilized, as well as the theoretical capacity noise contours developed for the Airport. The Mather Airport noise contours are shown in Figures 4A and 4B.

The Mather Airport noise contours shown in Figures 4A and 4B indicate that the 60 dB CNEL contours extend well into both the Teichert and Granite District Area Plans.

Single Event Environment within the District Plan Areas

Although the County has determined that single event noise exposure and associated sleep disturbance effects are appropriately addressed through application of General Plan Noise Element policies NO-2 through NO-4 regarding aircraft noise, the following information pertaining to aircraft single event noise is provided for disclosure purposes. In addition to the 24-hour average aircraft noise contours shown on Figures 4A and 4B, which are presented in terms of Community Noise Equivalent Level (CNEL), noise from individual aircraft arrivals and departures will be audible within the District Plan Areas. Figure 6 illustrates the potential for awakenings based on a study prepared by ESA using the ANSI methodology.

Existing Traffic Noise Environment within the District Area Plans

To describe noise levels caused by traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The FHWA model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

Baseline FHWA Model inputs and results were provided by Sacramento County. Table 9 shows the predicted existing traffic noise levels at a reference distance of 100 feet from the roadway centerlines, as well as the distances to the unshielded L_{dn} contours. It should be noted that the Table 9 data are provided at the Plan Area level without adjustment for shielding by intervening topography or structures. As such, the Table 9 data should be considered worst-case.

As noted previously in this analysis, many locations within the District Area Plans are former aggregate excavation areas and are, therefore, depressed relative to the surrounding roadways. Those areas subject to substantial depressions result in topographic shielding which was found to reduce traffic noise levels by approximately 10-15 dB.

Existing Sacramento Raceway Noise Environment within the District Area Plans

Sacramento Raceway is located on Excelsior Road, immediately east of the Plan Area as indicated in Figure 1. The Raceway facilities include a quarter mile drag strip, and a midget car and motocross dirt oval track. Racing typically takes place on Wednesday and Friday nights with occasional large events on weekends. It should be noted that the raceway is a non-conforming use which may not continue to operate through the buildout horizon of the Plan Area. In fact, raceway representatives have indicated that the raceway will likely be permanently closing in 2023.

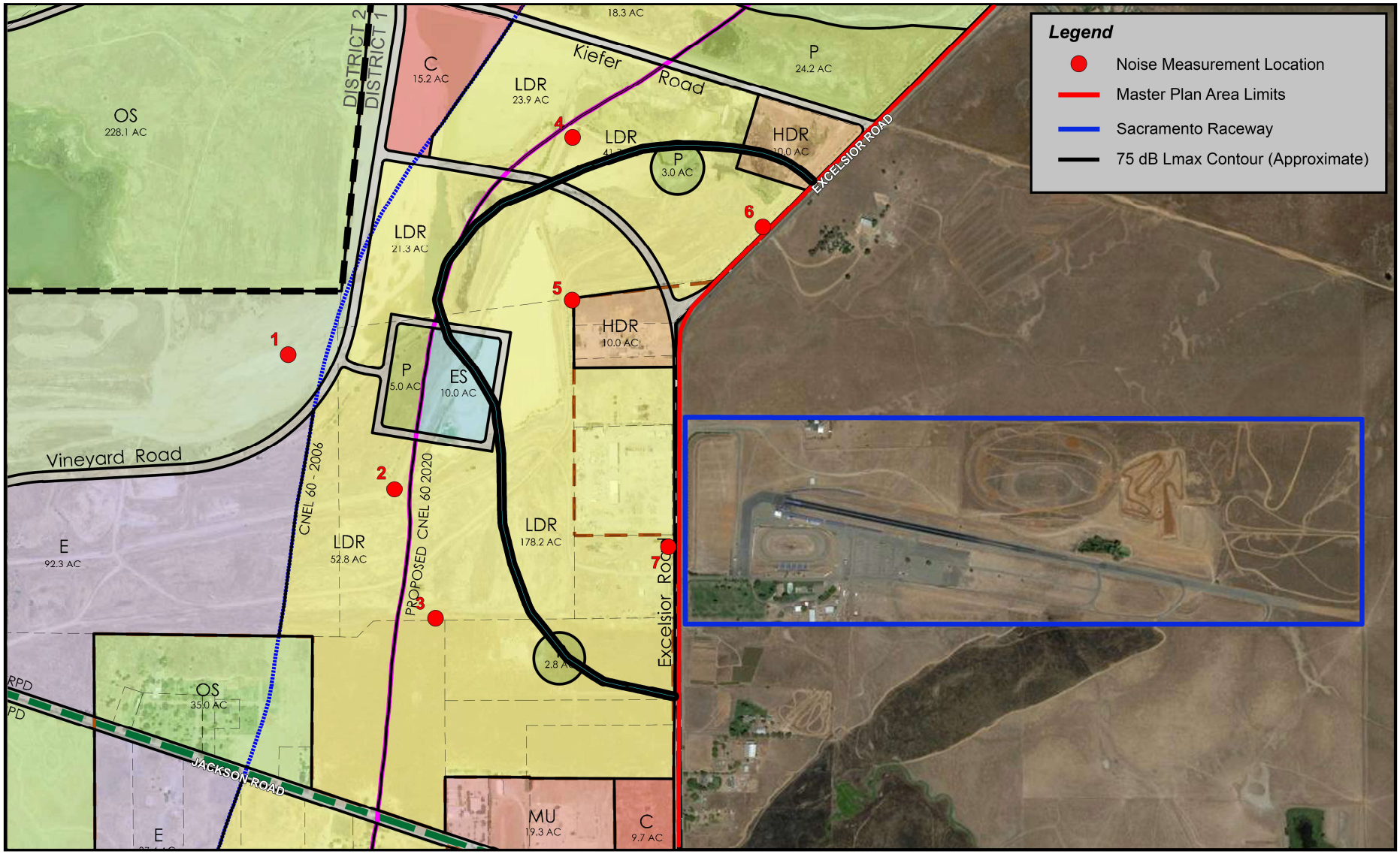
During Governor's Cup races, maximum noise levels of 130 dBA were measured at a distance of 100 feet from the drag strip during Top Fuel Funny Car races. Maximum noise levels measured during Pro- Gas, Door-Slammer and Alcohol Dragster races registered between 100 and 120 dBA at the same location.

To quantify race-related noise levels during a typical race event, noise level measurements were conducted during the night of April 25, 2009 at the seven (7) locations shown on Figure 10. Measured noise levels varied depending on the class of vehicles being raced and by location. The results of the raceway noise monitoring were used to identify the approximate location of the 75 dB Lmax noise contour for the louder classes of vehicles raced that evening. That noise contour is provided on Figure 10.

The Figure 10 noise contour indicates that, if racing activities are to continue to occur in the future, a portion of the Teichert District Area Plan would be adversely affected by maximum raceway noise levels and development of noise mitigation measures would be required.

Figure 10

West Jackson Highway Master Plan - Sacramento County, California
Sacramento Raceway Noise Measurement Locations & Noise Contour



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Scale (feet)
0 600 1,200

Existing Granite Bradshaw Aggregates Facility Noise Environment within the District Area Plans

Granite operates an aggregate processing facility at the northeast quadrant of the intersection of Bradshaw Road and Kiefer Boulevard. The permitted facility consists of an aggregate processing plant (crushing, screening, washing, etc.), a smaller recycle plant, and an asphalt plant. A ready-mix plant previously operated at this location but has since been decommissioned. It may, however, be replaced in the future with another ready-mix plant.

To quantify the noise emissions of the Granite facilities, short-term noise level measurements were conducted at 13 locations on the Granite site on the morning of August 15, 2013. The noise measurement locations are identified on Figure 11A.

The noise measurement results were used to quantify reference noise levels in relatively close proximity to the various components of the facility for use in the subsequent evaluation of overall facility noise contour locations. Because the facility is substantially shielded in all directions by intervening topography (primarily tall aggregate stockpiles) and landscaping, the critical noise contour for the facility (50 dB median noise contour) is generally contained within the facility boundaries, as indicated on Figure 11B. The 50 dB median noise contour is considered the critical contour as it relates to the most restrictive nighttime noise level standard contained within the Sacramento County Noise Ordinance (6.68.070 Exterior Noise Standards).

The effects of the Granite facility on future development within the District Area Plan will be discussed in the impacts and mitigation measures section of this report.

Noise Generated by Ongoing Operation of Aggregate Conveyor Belt Operations within the District Area Plans

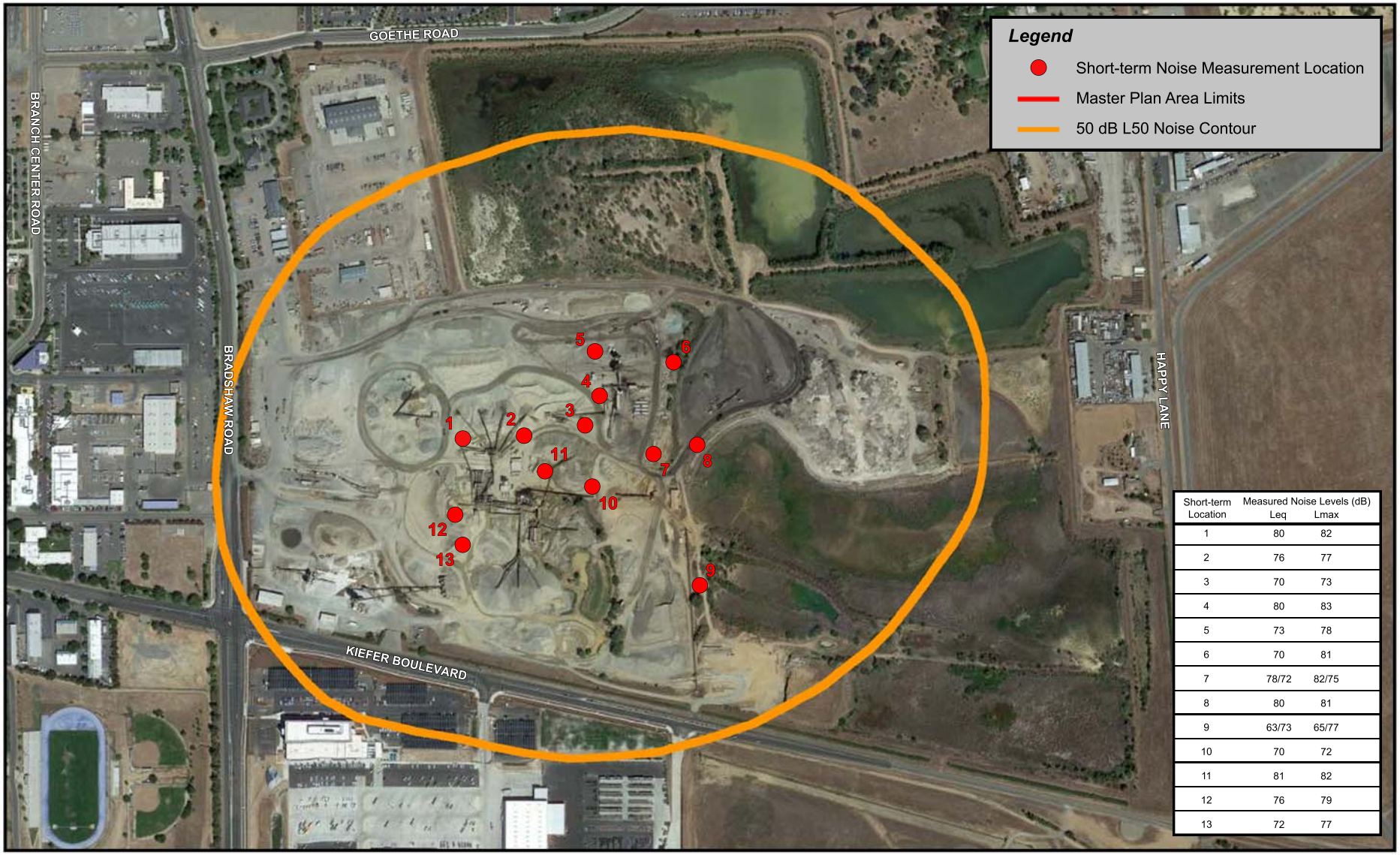
Ongoing aggregate excavation and conveyance of materials to the Teichert and Granite processing plants may continue to occur during development within the District Area Plans. The conveyors typically operate at the same times as the Teichert and Granite plants.

To quantify the noise emissions of the conveyor belt, BAC conducted noise level measurements at locations near the operating Teichert conveyor on April 29, 2009. The conveyor measurement results were used to identify the approximate locations of the 50 and 55 dB L50 noise contours for that equipment. The 55 and 50 dB L50 values represent the County of Sacramento Noise Ordinance daytime and nighttime noise level standards applicable to noise-sensitive receptors, respectively. Because the same conveyors are in operation as those tested in 2009, the above-described data remains applicable to the evaluation of conveyor noise levels for this project.

The noise measurements indicate that the 55 dB L50 noise contour is located approximately 350 feet from the operating conveyor, with slightly higher noise levels near conveyor transfer locations. The 50 dB L50 conveyor noise contour was calculated to be approximately 700 feet from the belt. Given these distances to the critical noise contours, consideration of noise mitigation measures for these sources will be necessary at such a time as project development encroaches within the 55 and 50 dB L50 noise contours. A discussion of noise mitigation recommendations will be provided in the Impacts and Mitigation measures section of this report.

Figure 11A

West Jackson Highway Master Plan - Sacramento County, California
Granite Facility Short-Term Ambient Noise Level Measurement Locations



Short-term Location	Measured Noise Levels (dB) Leq	Lmax
1	80	82
2	76	77
3	70	73
4	80	83
5	73	78
6	70	81
7	78/72	82/75
8	80	81
9	63/73	65/77
10	70	72
11	81	82
12	76	79
13	72	77

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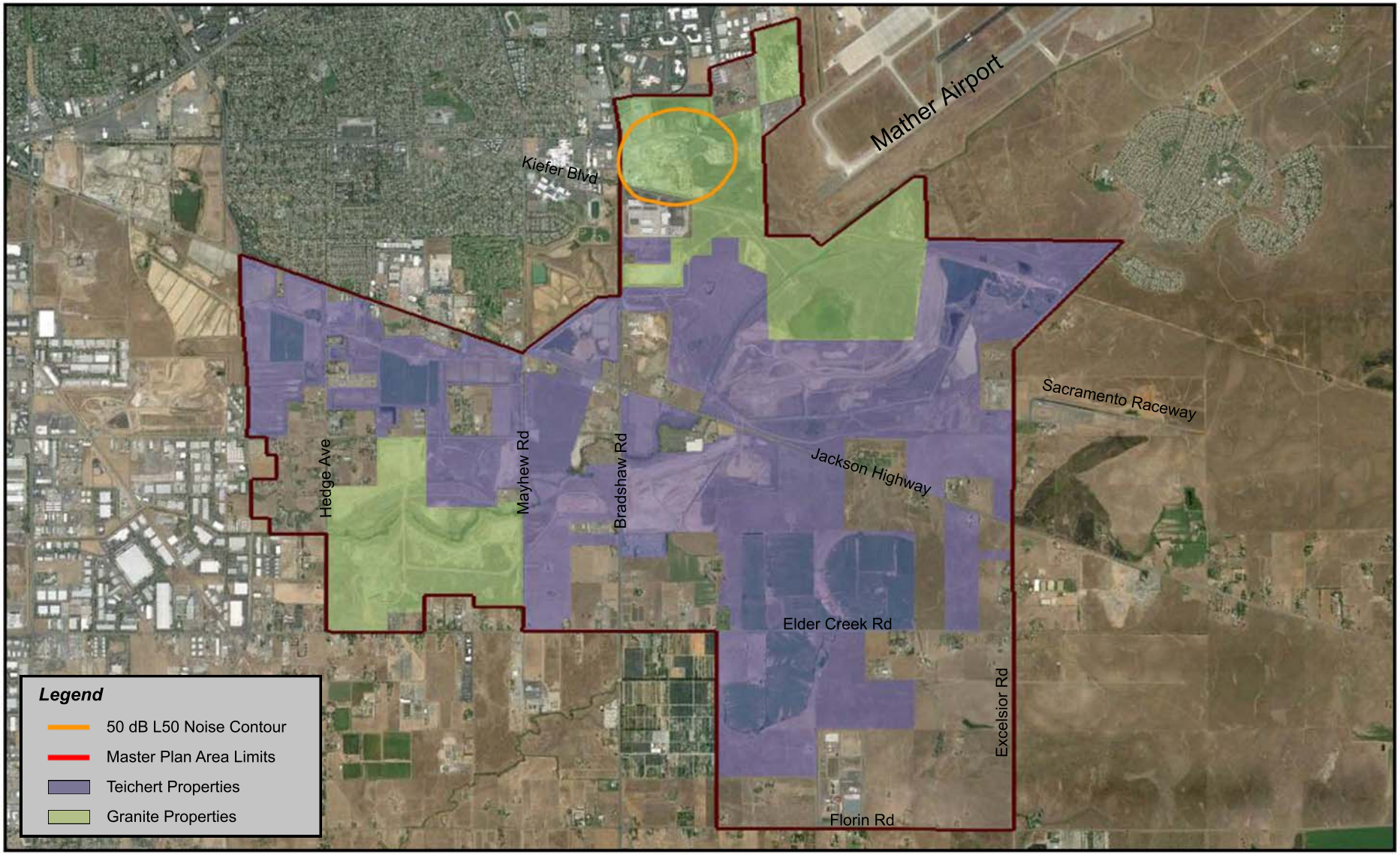
Scale (feet)
0 300 600

Figure 11B

West Jackson Highway Master Plan - Sacramento County, California
Granite Facility 50 dB L50 Contour



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Existing (Baseline) Vibration Environment

No appreciable sources of vibration were identified during BAC field surveys of the Plan Area and existing ambient vibration levels were subjectively evaluated as being below the threshold of perception. Nonetheless, to quantify baseline vibration levels in the Plan Area, a series of baseline vibration measurements were conducted at various locations within the Plan Area in 2013 as shown on Figure 12. Supplemental vibration surveys were conducted in 2017 to verify that the 2013 vibration data remain representative of current baseline vibration conditions within the Plan Area. The vibration measurement sites were selected to be generally representative of a variety of locations within the Plan Area. Due to the very low measured vibration levels at the 15 monitoring locations, it was determined that baseline vibration monitoring at additional sites was not warranted.

The vibration measurements were conducted using a Larson-Davis Laboratories Model HVM-100 Vibration Analyzer with a PCB Electronics Model 353B51 ICP Vibration Transducer. The test system is a Type I instrument designed for use in assessing vibration as perceived by humans, and meets the full requirements of ISO 8041:1990(E). Atmospheric conditions present during the tests were within the operating parameters of the instrument. A summary of the baseline vibration measurement results is provided in Table 12. Table 12 data indicates that all measured existing vibration levels within the District Area Plans were well below the threshold of perception.

Table 12
Measured Baseline Vibration Levels (Peak Particle Velocity – Inches/Second)
West Jackson Highway Master Plan Area – Sacramento County

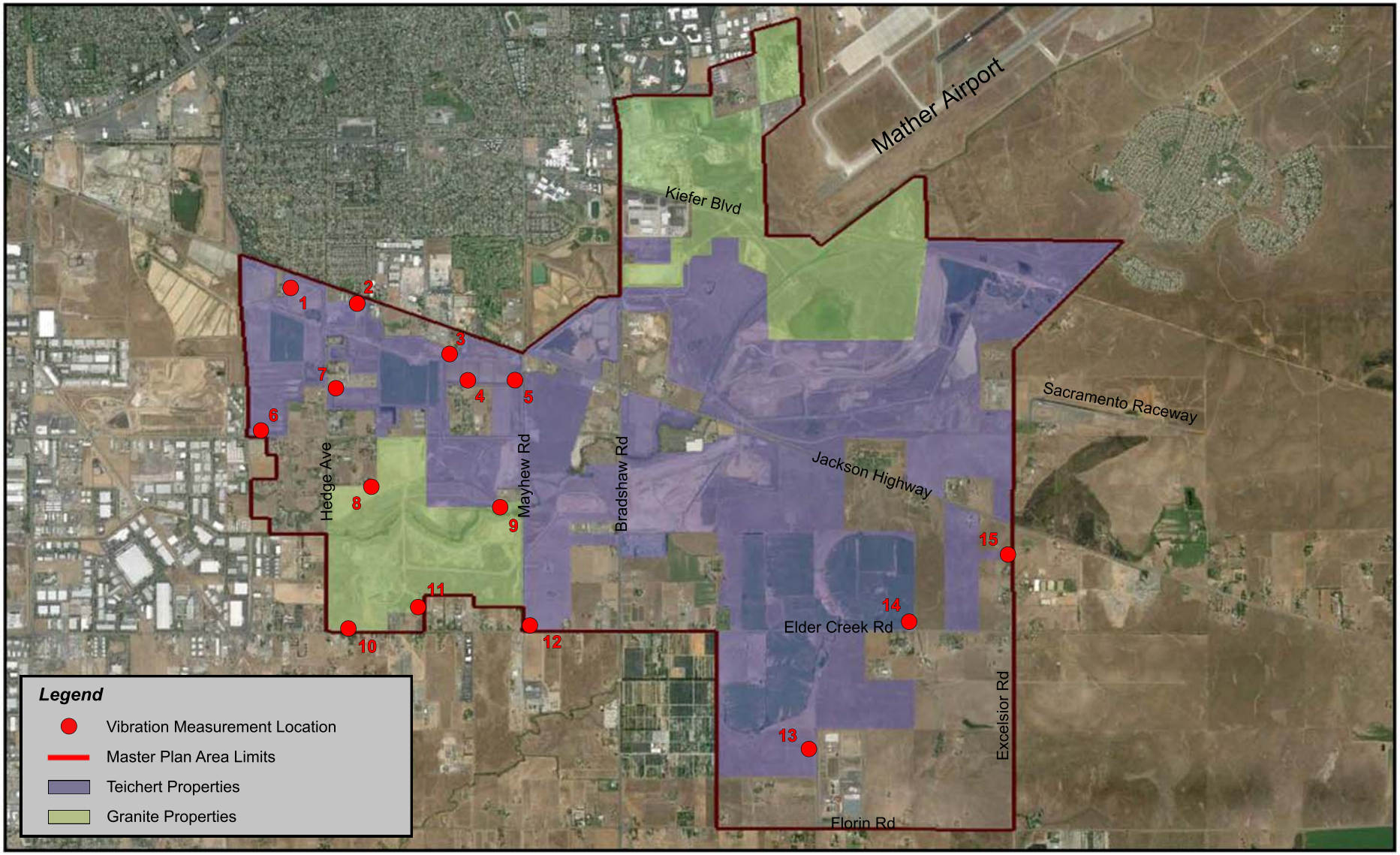
Short-Term Site[1]	Date	Time	Vibration Level
1	08/13/13	11:05 AM	0.00331
2	08/13/13	12:17 PM	0.00404
3	08/13/13	11:53 AM	0.00257
4	08/13/13	2:32 PM	0.00220
5	08/13/13	3:01 PM	0.00551
6	08/13/13	11:34 AM	0.00183
7	08/13/13	1:44 PM	0.00441
8	08/15/13	11:23 AM	0.00147
9	08/13/13	3:50 PM	0.00294
10	08/15/13	11:06 AM	0.00918
11	08/15/13	10:42 AM	0.01280
12	08/29/13	10:50 AM	0.00367
13	08/29/13	11:35 AM	0.00624
14	08/29/13	11:59 AM	0.00367
15	08/29/13	12:19 PM	0.00257

Source: Bollard Acoustical Consultants, Inc. (BAC)

[1] The general range at which vibration becomes distinct to strongly perceptible is approximately 0.1 in/sec ppv.

Figure 12

West Jackson Highway Master Plan - Sacramento County, California
Ambient Vibration Measurement Locations



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Standards of Significance Applied to this Project

The following standards of significance, which are based on the California Environmental Quality Act Guidelines (State CEQA Guidelines) in conjunction with adopted local noise policy and appropriate noise standards as described above, are applied to this project:

a) Exposure of persons to generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

For transportation noise affecting existing or proposed noise-sensitive land uses within the Plan Area, the noise standards of Table 3 are applied. For aircraft noise affecting proposed noise-sensitive development within the Plan Area the General Plan policies NO-2, NO-3 and NO-4, with recently amended footnotes to General Plan Noise Element Table 4 (provided above in criteria section of this report).

For non-transportation noise sources affecting existing or proposed noise-sensitive land uses within the Plan Area, the noise standards of Table 4 are applied.

For the evaluation of speech interference and sleep disturbance impacts at future schools and residences proposed within the Plan Area, respectively, compliance with Sacramento County General Plan aircraft noise policies NO-2 through NO-4 is required.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

For this assessment, a vibration level of 1 in/sec ppv is considered a criterion that would protect against significant architectural or structural damage. The general range at which vibration becomes distinct to strongly perceptible is approximately 0.1 in/sec ppv.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

Criteria for assessing the significance of project-related noise level increases in Sacramento County and neighboring jurisdictions (with the exception of the City of Sacramento) are as follows:

1. Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

2. Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

3. Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +1.5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant.

Criteria for assessing the significance of project-related noise level increases in the City of Sacramento are shown in Table 6.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above level existing without the project.

A substantial temporary increase in noise levels is defined using the criteria shown above in threshold C. Because temporary increases in noise are commonly limited to construction activities, and because all Master Plan development activities would occur within Sacramento County, the different thresholds used in the City of Sacramento would not be germane to this threshold.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project to excessive noise levels.

The standards of the Sacramento County General Plan which are applicable to Mather Airport are used as the criteria for assessing aircraft noise impacts for this project. In addition, an interior SEL value of 65 dB is applied to the noise-sensitive interior areas of schools and residences proposed within the plan area.

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

No private airstrips were identified in the project vicinity so an evaluation of aircraft noise impacts associated with such facilities is not warranted for this project.

Impacts and Mitigation Measures: Existing Plus Project and Future (Cumulative) Noise Environments

Aircraft

Master Plan Area & District Area Plans

Existing Plus Project and Cumulative Aircraft Noise Levels

The locations of the Mather Airport noise contours would not be affected by development within the Master Plan Area as a whole, or specific development within the District Area Plans. As a result, the aircraft noise contours shown on Figure 4 reflect the theoretical capacity aircraft noise within the project area.

Impact 1: 24-hour Average Aircraft Noise Exposure at Proposed Residential Uses within the WJHMP Area.

Most residential development proposed within the WJHMP area is located outside of the Mather Airport 60 dB Ldn theoretical capacity (worst case) exterior noise contour. However, some residential development is proposed within the Mather Airport 60-65 CNEL noise contours. As a result, **this impact is considered significant**.

Mitigation for Impact 1:

A. All residential development proposed within the Mather Airport 60 CNEL noise contours shall include sufficient noise mitigation to satisfy the requirements of Sacramento County General Plan Policies NO-2, NO-3, and NO-4, including the footnotes to General Plan Noise Element Table 4.

B. Appendix J contains the Acoustical Testing Plan for Mather Airport for residences proposed within the 60-65 dB CNEL Mather Airport noise contours. This testing plan shall be followed to ensure satisfaction with the County General Plan policies pertaining to Mather Airport noise exposure within new residential developments.

Significance after mitigation: *Less than significant*.

Impact 2: 24-hour Average Aircraft Noise Exposure at Proposed School within the WJHMP Area.

According to the County General Plan Noise Element school uses are considered acceptable in aircraft noise environments up to 65 dB CNEL. Because no school uses are proposed within Mather Airport noise environments exceeding 65 dB CNEL, **this impact is considered less than significant**.

Mitigation for Impact 2: None Required.

Impact 3: Single-Event Aircraft Noise Exposure and Sleep Disturbance at Proposed Residences within the WJHMP Area.

As discussed earlier, the County has determined that single-event aircraft noise exposure and associated sleep disturbance impacts are to be assessed in accordance with the Sacramento County General Plan Noise Element Policies NO-2 through NO-4 on aircraft noise. Those policies, which are provided above in the criteria section, restrict new residential development to areas outside the 60 dB CNEL airport noise contours (unless specific policy conditions are met), require noise insulation to ensure interior noise levels do not exceed 45 dB CNEL within residences, require notification that prospective buyers are located within an Airport Policy Area, and require that an avigation easement be recorded acknowledging the property is located within an Airport Planning Policy Area.

Because prospective owners of residences constructed within the Airport Policy Area would be choosing to live in an environment where aircraft overflights occur, and because they would be properly notified of the presence of Mather Airport and, therefore, able to make an informed decision regarding purchasing a residence near an airport, and because interior noise levels must not exceed 45 dB CNEL within residences, Sacramento County has concluded that the satisfaction of the County's General Plan policies related to aircraft noise would ensure that no significant impacts occur with respect to aircraft single-event noise exposure and associated sleep disturbance. Therefore, **this impact is considered less than significant**.

Mitigation for Impact 3: None Required.

Traffic Noise

Master Plan Area & District Area Plans

Existing Plus Project Traffic Noise Levels

With development within the Master Plan Area as a whole, and specific development within the District Area Plans, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels. The FHWA Model was used with traffic input data provided by Sacramento County to predict existing and existing plus project traffic noise levels, and the project-related noise level increases. Table 13 shows existing versus existing plus project traffic noise levels on the regional roadway network. Appendix E contains the FHWA Model inputs for this scenario. The traffic noise levels shown in Table 13 were predicted at a normalized reference distance of 100 feet from the centerlines of the various project-area roadways. It is recognized that the actual distances from project area

roadways to existing and proposed future noise-sensitive land uses varies but the normalization of the traffic noise levels to a standard distance allows a more uniform comparison of traffic noise levels between existing and existing plus project conditions.

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
1	Bradshaw	Folsom	US 50	67.6	67.3	-0.3	No
2	Bradshaw	US 50	Lincoln Village	70.7	71.9	1.2	No
3	Bradshaw	Lincoln Village	Old Placerville	69.8	71.4	1.6	Yes
4	Bradshaw	Old Placerville	Goethe	69.4	70.4	1.0	No
5.1	Bradshaw	Goethe	Collector WJ-8	68.0	70.2	2.2	Yes
5.2	Bradshaw	Collector WJ-8	Kiefer	68.0	69.7	1.7	Yes
6.1	Bradshaw	Kiefer	Collector WJ-9	68.3	69.9	1.6	Yes
6.2	Bradshaw	Collector WJ-9	Mayhew	68.3	69.9	1.6	Yes
6.3	Bradshaw	Mayhew	Jackson	68.3	70.1	1.8	Yes
7.1	Bradshaw	Jackson	Rock Creek	68.1	68.0	-0.1	No
7.2	Bradshaw	Rock Creek	Collector WJ-10	68.1	68.2	0.1	No
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	68.1	68.3	0.2	No
7.4	Bradshaw	Collector WJ-11	Elder Creek	68.1	67.4	-0.7	No
8	Bradshaw	Elder Creek	Florin	68.0	69.4	1.4	No
9	Bradshaw	Florin	Gerber	68.1	69.6	1.5	No
10	Bradshaw	Gerber	Calvine	67.7	69.2	1.5	Yes
11	Calvine	Waterman	Bradshaw	66.5	67.5	1.0	No
12	Calvine	Bradshaw	Vineyard	66.3	66.3	0.0	No
13	Calvine	Vineyard	Excelsior	63.2	63.3	0.1	No
14	Chrysanthy	Sunrise	Rancho Cordova	58.8	59.0	0.2	No
15	Douglas	Mather	Zinfandel	61.7	61.1	-0.6	No
16	Douglas	Zinfandel	Sunrise	62.7	62.9	0.2	No
17	Douglas	Sunrise	Rancho Cordova	62.6	63.2	0.6	No
18.1	Douglas	Rancho Cordova	Americanos	62.6	63.2	0.6	No
18.2	Douglas	Americanos	Grant Line	62.6	63.2	0.6	No
19.1	Eagles Nest	Kiefer	N Bridgewater	54.9	57.6	2.7	No
19.2	Eagles Nest	N Bridgewater	S Bridgewater	54.9	57.6	2.7	No
19.3	Eagles Nest	S Bridgewater	Jackson	54.9	57.6	2.7	No
20	Eagles Nest	Jackson	Florin	54.1	54.2	0.1	No
21	Eagles Nest	Florin	Grant Line	49.8	51.0	1.2	No
22	Elder Creek	65th St	Power Inn	66.0	67.0	1.0	No
23	Elder Creek	Power Inn	Florin-Perkins	65.5	66.8	1.3	No
24	Elder Creek	Florin Perkins	South Watt	63.9	65.7	1.8	No
25	Elder Creek	South Watt	Hedge	62.0	67.8	5.8	Yes
26	Elder Creek	Hedge	Mayhew	62.2	67.7	5.5	Yes
27	Elder Creek	Mayhew	Bradshaw	61.8	64.8	3.0	Yes
28.1	Elder Creek	Bradshaw	Vineyard	57.9	66.1	8.2	Yes
28.2	Elder Creek	Vineyard	Excelsior	57.9	64.5	6.6	Yes
29	Elk Grove-Florin	Florin	Gerber	67.1	67.4	0.3	No
30.1	Excelsior	Kiefer	Douglas	57.7	54.2	-3.5	No
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	59.2	64.9	5.7	Yes
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59.2	64.4	5.2	Yes
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59.2	64.2	5.0	Yes

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
31.1	Excelsior	Jackson	Collector WJ-6	60.5	65.6	5.1	Yes
31.2	Excelsior	Collector WJ-6	Elder Creek	60.5	65.6	5.1	Yes
32	Excelsior	Elder Creek	Florin	59.7	63.5	3.8	No
33	Excelsior	Florin	Gerber	60.8	63.7	2.9	No
34	Excelsior	Gerber	Calvine	59.8	62.9	3.1	No
35	Excelsior	Calvine	Sheldon	61.9	63.9	2.0	No
36	Florin	Stockton	Power Inn	67.9	68.3	0.4	No
37	Florin	Power Inn	Florin-Perkins	66.8	68.1	1.3	No
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	66.0	67.8	1.8	Yes
39	Florin	South Watt	Hedge	64.3	66.9	2.6	No
40	Florin	Hedge	Mayhew	63.4	65.8	2.4	No
41	Florin	Mayhew	Bradshaw	63.4	65.9	2.5	No
42.1	Florin	Bradshaw	Vineyard	61.8	66.8	5.0	Yes
42.2	Florin	Vineyard	Excelsior	61.8	65.9	4.1	Yes
43	Florin	Excelsior	Sunrise	63.6	64.7	1.1	No
44	Folsom	Howe	Jackson	69.2	70.7	1.5	No
45	Fruitridge	65th St	Power Inn	65.7	66.9	1.2	No
46	Fruitridge	Power Inn	Florin Perkins	66.4	68.6	2.2	Yes
47	Fruitridge	Florin Perkins	South Watt	64.7	67.7	3.0	Yes
48	Fruitridge	South Watt	Hedge	57.0	63.5	6.5	Yes
49.1	Fruitridge	Hedge	Collector WJ-12	54.9	64.4	9.5	Yes
49.2	Fruitridge	Collector WJ-12	Mayhew	54.9	63.9	9.0	Yes
50	Grant Line	White Rock	Douglas	64.3	64.5	0.2	No
51.1	Grant Line	Douglas	Chrysanthy	65.8	66.3	0.5	No
51.2	Grant Line	Chrysanthy	Kiefer	65.8	66.3	0.5	No
52.1	Grant Line	Kiefer	Rancho Cordova	65.0	65.4	0.4	No
52.2	Grant Line	Rancho Cordova	Jackson	65.0	65.4	0.4	No
53	Grant Line	Jackson	Sunrise	69.1	69.0	-0.1	No
54	Grant Line	Sunrise	Calvine	69.6	69.8	0.2	No
55.1	Grant Line	Calvine	Elk Grove City Limit	66.8	67.7	0.9	No
55.2	Grant Line	Elk Grove City Limit	Sheldon	66.8	66.9	0.1	No
56	Grant Line	Sheldon	Wilton	68.0	68.5	0.5	No
57	Grant Line	Wilton	Bond	67.7	68.0	0.3	No
58.1	Happy Lane	Old Placerville	Routier Ext	57.4	59.2	1.8	No
58.2	Happy Lane	Routier Ext	Kiefer	57.4	62.0	4.6	No
59.1	Hedge	Jackson	Rock Creek	57.2	61.3	4.1	No
59.2	Hedge	Rock Creek	Fruitridge	57.2	57.2	0.0	No
60	Hedge	Fruitridge	Elder Creek	58.1	58.4	0.3	No
61	Hedge	Elder Creek	Florin	56.7	58.2	1.5	No
62	Howe	US 50	Folsom	70.8	71.3	0.5	No
63	International	Mather Field	Zinfandel	65.9	66.8	0.9	No
64	International	Zinfandel	Sunrise	62.9	63.8	0.9	No
65	Jackson	Folsom	Florin Perkins	66.5	69.8	3.3	Yes
66.1	Jackson	Florin Perkins	14th	65.8	70.2	4.4	Yes

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
66.2	Jackson	14th	Rock Creek	64.9	69.2	4.3	Yes
66.3	Jackson	Rock Creek	Aspen 1 Dwy	64.9	69.2	4.3	Yes
66.4	Jackson	Aspen 1 Dwy	South Watt	64.9	69.2	4.3	Yes
67	Jackson	South Watt	Hedge	67.9	72.1	4.2	Yes
68.1	Jackson	Hedge	Collector WJ-3	66.6	71.3	4.7	Yes
68.2	Jackson	Collector WJ-3	Mayhew	66.6	71.5	4.9	Yes
69	Jackson	Mayhew	Bradshaw	67.4	70.1	2.7	Yes
70.1	Jackson	Bradshaw	Collector WJ-4	67.6	70.3	2.7	Yes
70.2	Jackson	Collector WJ-4	Happy Ln	67.6	70.2	2.6	Yes
70.3	Jackson	Happy Ln	Rock Creek	67.6	67.2	-0.4	No
70.4	Jackson	Rock Creek	Collector WJ-5	67.6	67.2	-0.4	No
70.5	Jackson	Collector WJ-5	Collector WJ-6	67.6	68.2	0.6	No
70.6	Jackson	Collector WJ-6	Excelsior	67.6	67.9	0.3	No
71.1	Jackson	Excelsior	Collector JT-3	66.6	67.6	1.0	No
71.2	Jackson	Collector JT-3	Tree View Ln	66.6	67.6	1.0	No
71.3	Jackson	Tree View Ln	Collector JT-4	66.6	67.6	1.0	No
71.4	Jackson	Collector JT-4	Eagles Nest	66.6	67.6	1.0	No
72.1	Jackson	Eagles Nest	Rockbridge	66.4	67.2	0.8	No
72.2	Jackson	Rockbridge	Sunrise	66.4	67.2	0.8	No
73	Jackson	Sunrise	Grant Line	69.2	69.7	0.5	No
74	Kiefer	Florin Perkins	South Watt	60.1	60.3	0.2	No
75	Kiefer	South Watt	Mayhew	66.2	67.0	0.8	No
76	Kiefer	Mayhew	Bradshaw	63.2	68.3	5.1	Yes
77.1	Kiefer	Bradshaw Road	Collector WJ-14	61.2	68.1	6.9	Yes
77.2	Kiefer	Collector WJ-14	Routier Ext	61.2	67.2	6.0	Yes
77.3	Kiefer	Routier Ext	Happy Lane	61.2	66.5	5.3	Yes
78.1	Kiefer	Eagles Nest	W Collector MS-1	55.2	58.2	3.0	No
78.2	Kiefer	W Collector MS-1	Northbridge	55.2	58.2	3.0	No
78.3	Kiefer	Northbridge	E Collector MS-1	55.2	58.2	3.0	No
78.4	Kiefer	E Collector MS-1	Sunrise	55.2	58.2	3.0	No
79	Kiefer	Sunrise	Rancho Cordova	56.8	56.9	0.1	No
80	Mather / Norden	Von Karman St	Bleckely St	58.8	58.8	0.0	No
81	Mather	Bleckely St	Femoyer St	58.8	58.8	0.0	No
82	Mather	Femoyer St	Douglas	58.8	58.7	-0.1	No
83	Mather-Excelsior	Douglas	Kiefer	60.3	59.1	-1.2	No
84	Mather Field	US 50	Rockingham	71.2	71.2	0.0	No
85	Mather Field	Rockingham	International	71.1	71.7	0.6	No
86	Mather Field	International	Peter A McCuen	66.2	66.3	0.1	No
87	Mayhew	Folsom	Goethe	61.9	64.1	2.2	No
88	Mayhew	Goethe	Kiefer	61.7	63.1	1.4	No
89.1	Mayhew	Jackson	Rock Creek	55.6	68.7	13.1	Yes
89.2	Mayhew	Rock Creek	Fruitridge	55.6	68.2	12.6	Yes
90	Old Placerville	Bradshaw	Granby	62.8	62.0	-0.8	No
91	Old Placerville	Granby	Happy Ln	62.1	60.5	-1.6	No
92	Old Placerville	Happy Ln	Routier	62.3	60.3	-2.0	No

Table 13
Existing Plus Project Traffic Noise Levels
West Jackson Highway Master Plan

Seg.	Road	From	To	E	E+P	Change	Substantial Increase?
93	Old Placerville	Routier	Rockingham	62.7	66.6	3.9	Yes
94	Power Inn	Folsom	14th	69.1	68.9	-0.2	No
95	Rockingham	Old Placerville	Mather Field	66.5	68.4	1.9	Yes
96	South Watt	Folsom	Kiefer	70.6	72.3	1.7	Yes
97	South Watt	Kiefer	Jackson	69.6	71.3	1.7	Yes
98.1	South Watt	Jackson	Rock Creek	68.6	69.4	0.8	No
98.2	South Watt	Rock Creek	Fruitridge	68.6	69.3	0.7	No
99	South Watt	Fruitridge	Elder Creek	67.8	68.1	0.3	No
100	South Watt	Elder Creek	Florin	68.2	69.2	1.0	No
101	Sunrise	US 50	Folsom	70.8	70.8	0.0	No
102	Sunrise	Folsom	Trade Center	70.4	70.4	0.0	No
103	Sunrise	Trade Center	White Rock	68.9	68.9	0.0	No
104.1	Sunrise	White Rock	International	67.6	67.8	0.2	No
104.2	Sunrise	International	Rio Del Oro	68.0	68.1	0.1	No
104.3	Sunrise	Rio Del Oro	Douglas	69.5	69.6	0.1	No
105	Sunrise	Douglas	Kiefer	67.9	68.0	0.1	No
106	Sunrise	Kiefer	Jackson	68.5	68.8	0.3	No
107	Sunrise	Jackson	Florin	66.8	67.3	0.5	No
108	Sunrise	Florin	Grant Line	65.2	65.6	0.4	No
109	Vineyard	Gerber	Calvine	59.4	59.0	-0.4	No
110	Watt	US 50	Folsom	73.5	74.2	0.7	No
111	White Rock	International	Quality	58.3	58.2	-0.1	No
112	White Rock	Quality	Zinfandel	62.9	62.5	-0.4	No
113	White Rock	Zinfandel	Kilgore	64.1	64.1	0.0	No
114	White Rock	Kilgore	Sunrise	64.1	64.1	0.0	No
115	White Rock	Sunrise	Fitzgerald	66.3	66.5	0.2	No
116.1	White Rock	Fitzgerald	Rancho Cordova	59.4	59.3	-0.1	No
116.2	White Rock	Rancho Cordova	Americanos	59.4	59.3	-0.1	No
116.3	White Rock	Americanos	Grant Line	58.4	58.4	0.0	No
117	White Rock	Grant Line	Prairie City	66.0	66.0	0.0	No
118	Zinfandel	US 50	White Rock	68.9	68.6	-0.3	No
119	Zinfandel	White Rock	International	64.9	64.7	-0.2	No
120	Zinfandel	International	Baroque	62.3	61.5	-0.8	No
121	Zinfandel	Baroque	City Limit	62.3	61.5	-0.8	No
122	Zinfandel	City Limit	Douglas	62.3	61.5	-0.8	No
123.1	Zinfandel	Douglas	Collector MS-2	58.0	57.1	-0.9	No
123.2	Zinfandel	Collector MS-2	Collector MS-3	58.0	57.1	-0.9	No
123.3	Zinfandel	Collector MS-3	Collector MS-4	58.0	57.1	-0.9	No
123.4	Zinfandel	Collector MS-4	Kiefer	58.0	57.1	-0.9	No

Source: FHWA Model with inputs from Sacramento County
Note: All traffic noise levels are presented in terms of Ldn at a reference distance of 100 feet from the roadway centerlines

Impact 4: Project-Generated Traffic Noise Increases on Existing Receptors: Existing Plus Project

Impact 4 specifically relates to traffic noise impacts of development of the Project on existing sensitive receptors. See Impact 7 for specific discussion related to traffic noise impacts at sensitive receptors proposed as part of the WJHMP.

Development within the District Area Plans would cause increases in existing traffic noise levels on the local roadway network. A total of 171 existing roadway segments were evaluated (See Table 13), and it was determined that the project-related traffic noise level increase relative to existing traffic noise levels without the Project would range from -3.5 dB to +13.1 dB, with an average noise level increase of 1.6 dB Ldn. Of the 171 segments evaluated, the increase was considered to be substantial on 45 roadway segments. The criteria for determination of a substantial project-related increase in traffic noise levels is as follows:

- 5 dB increase where baseline levels are below 60 dB Ldn.
- 3 dB increase where baseline levels are between 60 – 65 dB Ldn.
- 1.5 dB increase where baseline levels exceed 65 dB Ldn.

A finding of a substantial traffic noise increase may or may not trigger a finding of significant noise impact. For example, if a roadway segment where a substantial increase has been identified has no existing noise-sensitive land uses developed adjacent to that roadway, then no impact would be identified. Similarly, if sensitive development is substantially shielded by either topography, structures, or soundwalls, it may reduce the baseline noise conditions at that receptor such that the threshold for a finding of significance increases from 1.5 dB to 3 dB or 5 dB. For example, where an increase of 1.5 dB would be considered significant for an unshielded residence with a baseline exposure exceeding 65 dB Ldn, the same 1.5 dB increase would not be considered significant if the baseline exposure at that same residence was reduced to less than 65 dB Ldn through shielding.

After identification of the roadway segment for which a substantial increase in traffic noise levels was determined to result from the project, additional analysis of those roadway segments was conducted to identify those segments containing residential or other noise-sensitive development, as well as segments containing existing sound walls. Table 14 contains the results of that additional analysis.

While it is recognized that the noise attenuation provided by existing noise barriers within the Plan Area will vary depending on many factors, for purposes of this assessment it was assumed that the barriers would

intercept line of sight between the traffic noise source and the sensitive receptor. The resulting noise attenuation provided by such a barrier is 5 dB or more. Although the attenuation by barriers would not affect the increase in traffic noise experienced at existing residences resulting from the project, it would lower the baseline noise condition of the receptor. In some cases, the application of a 5 dB decrease to the baseline noise exposure results in a decrease in the threshold for a finding of significant noise impacts.

As noted in Table 14, not all of the roadway segments identified as having a substantial project-related traffic noise increase contain impacted noise-sensitive receptors. In addition, not all segments with sensitive receptors are shielded by existing barriers. Table 14 indicates that development within the Master Plan Area would result in significant noise impacts along 21 roadway segments, and potentially significant noise impacts along an additional 5 segments. The reason some impacts are identified as "potentially significant" is because it is not clear if the sensitive receptors would benefit sufficiently from the presence of existing noise barriers to reduce the impact to a less than significant level. As a result, ***this impact is considered significant***.

Table 14
Traffic Noise Impact Assessment: Existing Plus Project Conditions
West Jackson Highway Master Plan

Seg.	Road	From	To	Existing	Existing + Project	Change	Substantial Increase?	Sensitive Uses?	Noise Barriers	Significant Impact?
3	Bradshaw	Lincoln Village	Old Placerville	69.8	71.4	1.6	Yes	Yes	Yes	LTS
5.1	Bradshaw	Goethe	Collector WJ-8	68.0	70.2	2.2	Yes	No	N/A	LTS
5.2	Bradshaw	Collector WJ-8	Kiefer	68.0	69.7	1.7	Yes	No	N/A	LTS
6.1	Bradshaw	Kiefer	Collector WJ-9	68.3	69.9	1.6	Yes	No	N/A	LTS
6.2	Bradshaw	Collector WJ-9	Mayhew	68.3	69.9	1.6	Yes	Yes	No	S
6.3	Bradshaw	Mayhew	Jackson	68.3	70.1	1.8	Yes	Yes	No	S
10	Bradshaw	Gerber	Calvine	67.7	69.2	1.5	Yes	Yes	Some	PS
25	Elder Creek	South Watt	Hedge	62.0	67.8	5.8	Yes	Yes	No	S
26	Elder Creek	Hedge	Mayhew	62.2	67.7	5.5	Yes	Yes	No	S
27	Elder Creek	Mayhew	Bradshaw	61.8	64.8	3.0	Yes	Yes	No	S
28.1	Elder Creek	Bradshaw	Vineyard	57.9	66.1	8.2	Yes	Yes	No	S
28.2	Elder Creek	Vineyard	Excelsior	57.9	64.5	6.6	Yes	Yes	No	S
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	59.2	64.9	5.7	Yes	Yes	Yes	S
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	59.2	64.4	5.2	Yes	Yes	Yes	S
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	59.2	64.2	5.0	Yes	Yes	No	S
31.1	Excelsior	Jackson	Collector WJ-6	60.5	65.6	5.1	Yes	No	N/A	LTS
31.2	Excelsior	Collector WJ-6	Elder Creek	60.5	65.6	5.1	Yes	No	N/A	LTS
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	66.0	67.8	1.8	Yes	Yes	No	S
42.1	Florin	Bradshaw	Vineyard	61.8	66.8	5.0	Yes	Yes	No	S
42.2	Florin	Vineyard	Excelsior	61.8	65.9	4.1	Yes	Yes	No	S
46	Fruitridge	Power Inn	Florin Perkins	66.4	68.6	2.2	Yes	No	N/A	LTS
47	Fruitridge	Florin Perkins	South Watt	64.7	67.7	3.0	Yes	No	N/A	LTS
48	Fruitridge	South Watt	Hedge	57.0	63.5	6.5	Yes	No	N/A	LTS
49.1	Fruitridge	Hedge	Collector WJ-12	54.9	64.4	9.5	Yes	Yes	No	S
49.2	Fruitridge	Collector WJ-12	Mayhew	54.9	63.9	9.0	Yes	Yes	No	S
65	Jackson	Folsom	Florin Perkins	66.5	69.8	3.3	Yes	Yes	No	S
66.1	Jackson	Florin Perkins	14th	65.8	70.2	4.4	Yes	No	N/A	LTS
66.2	Jackson	14th	Rock Creek	64.9	69.2	4.3	Yes	No	N/A	LTS
66.3	Jackson	Rock Creek	Aspen 1 Dwy	64.9	69.2	4.3	Yes	No	N/A	LTS
66.4	Jackson	Aspen 1 Dwy	South Watt	64.9	69.2	4.3	Yes	No	N/A	LTS

Table 14
Traffic Noise Impact Assessment: Existing Plus Project Conditions
West Jackson Highway Master Plan

Seg.	Road	From	To	Existing	Existing + Project	Change	Substantial Increase?	Sensitive Uses?	Noise Barriers	Significant Impact?
67	Jackson	South Watt	Hedge	67.9	72.1	4.2	Yes	Yes	Some	PS
68.1	Jackson	Hedge	Collector WJ-3	66.6	71.3	4.7	Yes	Yes	Some	PS
68.2	Jackson	Collector WJ-3	Mayhew	66.6	71.5	4.9	Yes	Yes	Some	PS
69	Jackson	Mayhew	Bradshaw	67.4	70.1	2.7	Yes	No	N/A	LTS
70.1	Jackson	Bradshaw	Collector WJ-4	67.6	70.3	2.7	Yes	Yes	No	S
70.2	Jackson	Collector WJ-4	Happy Ln	67.6	70.2	2.6	Yes	Yes	No	S
76	Kiefer	Mayhew	Bradshaw	63.2	68.3	5.1	Yes	No	N/A	LTS
77.1	Kiefer	Bradshaw Road	Collector WJ-14	61.2	68.1	6.9	Yes	Yes	No	S
77.2	Kiefer	Collector WJ-14	Routier Ext	61.2	67.2	6.0	Yes	Yes	No	S
77.3	Kiefer	Routier Ext	Happy Lane	61.2	66.5	5.3	Yes	Yes	No	S
89.1	Mayhew	Jackson	Rock Creek	55.6	68.7	13.1	Yes	No	N/A	LTS
89.2	Mayhew	Rock Creek	Fruitridge	55.6	68.2	12.6	Yes	No	N/A	LTS
93	Old Placerville	Routier	Rockingham	62.7	66.6	3.9	Yes	Yes	Yes	LTS
95	Rockingham	Old Placerville	Mather Field	66.5	68.4	1.9	Yes	Yes	No	S
96	South Watt	Folsom	Kiefer	70.6	72.3	1.7	Yes	Yes	Yes	LTS
97	South Watt	Kiefer	Jackson	69.6	71.3	1.7	Yes	Yes	Yes	LTS

LTS: Less-than-significant Impact
PS: Potentially Significant Impact
Note: All traffic noise levels are presented in terms of Ldn at a reference distance of 100 feet from the roadway centerlines
Source: FHWA-RD-77-108 with inputs from Sacramento County & BAC analysis.

Mitigation for Impact 4

The mitigation of impacts at existing sensitive receptors resulting from significant project-related traffic noise increases is frequently challenging because of a combination of limited mitigation options, constraints upon implementation of certain options, cost of implementation, and limited effectiveness of some options. Nonetheless, the following specific options for mitigation of off-site traffic noise impacts at existing noise sensitive receptors should be considered to the extent reasonable and feasible:

A. **Reduction in Traffic Volumes:** Because one of the most important factors in traffic noise generation is daily vehicle volume, a reduction in traffic noise levels can be achieved by reducing the overall volume of traffic which would be generated by the project. It should be noted, however, that a 3 dB reduction in traffic noise levels would require a 50% reduction in projected traffic volumes. So, this measure would require a substantial decrease in traffic volume to achieve an appreciable decrease in traffic noise levels. As a result, it is unlikely that this measure would be a feasible means of fully mitigating this noise impact.

B. **Reduction in Vehicle Speeds:** Another factor in the generation of traffic noise is vehicle speed. Higher speeds translate to higher traffic noise levels. However, vehicle speed limits are set based on speed surveys, safety considerations, and other factors, and cannot be arbitrarily reduced to achieve lower traffic noise levels. As a result, this measure would not likely be a feasible means of mitigating this noise impact.

C. **Construction of Noise Barriers:** As noted in the discussion of noise mitigation fundamentals in the beginning of this report, appreciable reductions in traffic noise levels can be achieved through the construction of traffic noise barriers. However, at locations where openings or gaps in the barriers would be required for driveway openings or to maintain safe sight distances, the effectiveness of noise barriers is severely compromised. In addition, this measure would typically require construction of noise barriers on the property of the impacted receptor, rather than within a public right-of-way, so there is no guarantee the impacted receptor would agree to the construction of such barriers or that adequate space is available to construct a barrier. Furthermore, the construction of off-site traffic noise barriers could be extremely costly per benefitted receptor, potentially rendering this measure infeasible.

D. **Use of Setbacks:** A 4.5 dB decrease in traffic noise levels can be achieved for each doubling of distance between the roadway centerline

and affected residences. However, because the locations of existing residences which would be impacted by project-generated increases in traffic noise are fixed, as are the roadways of concern, this measure is not viable for existing residences.

E. **Noise-Reducing Pavement:** Noise-reducing pavement types, such as rubberized asphalt, have been shown to provide an appreciable noise level reduction relative to other pavement types (approximately 3-4 dB over conventional asphalt overlays). However, because the project-related increase in existing traffic noise levels exceeds 4 dB along many of the roadway segments analyzed in Table 13, the benefits of noise-reducing paving materials, even if feasible, would be insufficient to fully mitigate this impact. Nonetheless, at roadway segments where a 3-4 dB decrease in traffic noise levels would be sufficient to reduce this impact to a less than significant level, this mitigation alternative would be effective.

F. **Building Insulation:** As noted in the fundamentals section of this report, when interior noise levels are of concern, noise reduction may be obtained through acoustical improvement of building facades. The greatest improvement in building façade noise reduction can typically be realized through specification of upgraded windows with higher Sound Transmission Class (STC) ratings. Additional noise control for exterior doorways can be provided by replacing hollow doors with solid core doors and by acoustically sealing door perimeters with suitable gaskets.

Some of the aforementioned noise mitigation measures may be utilized to provide appreciable traffic noise level decreases. However, because such measures may be infeasible from a cost, engineering or safety standpoint, may not fully mitigate noise impacts, or could require the consent of the impacted receptor, the successful implementation of these measures cannot be guaranteed. As a result, this impact is considered significant and unavoidable.

Significance after Mitigation: ***Significant and Unavoidable.***

Cumulative Traffic Noise Levels

With cumulative development of the region, including this proposed project and the three other Master Plan developments being considered concurrently with the West Jackson Highway Master Plan, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in cumulative traffic noise levels. The FHWA Model was used with traffic input data provided by Sacramento County to predict future (cumulative) vs. Cumulative-No-Project traffic noise levels, and the project-related noise level increases. Table 15 shows the results of that analysis on the existing and future regional roadway network. Appendices G, H & I contain the FHWA Model inputs for the cumulative scenarios.

The traffic noise levels shown in Table 15 were predicted at a normalized reference distance of 100 feet from the centerlines of the various project-area roadways. It is recognized that the actual distances from project area roadways to existing and proposed future noise-sensitive land uses varies but the normalization of the traffic noise levels to a standard distance allows a more uniform comparison of traffic noise levels between cumulative and cumulative plus project conditions.

It should be noted that several of the roadways evaluated in Table 15 would not exist without the construction of the project. As a result, the predicted noise levels for cumulative plus project conditions are provided for those segments but there are no cumulative no project noise levels for those same roadways. In such cases the change and substantial increase indicators are identified as not applicable (N/A).

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
1	Bradshaw	Folsom	US 50	68.6	68.3	-0.3	No
2	Bradshaw	US 50	Lincoln Village	71.7	72.7	1.0	No
3	Bradshaw	Lincoln Village	Old Placerville	70.8	72.3	1.5	Yes
4	Bradshaw	Old Placerville	Goethe	71.7	72.1	0.4	No
5.1	Bradshaw	Goethe	Collector WJ-8	70.5	71.4	0.9	No
5.2	Bradshaw	Collector WJ-8	Kiefer	70.4	71.2	0.8	No
6.1	Bradshaw	Kiefer	Collector WJ-9	71.1	70.8	-0.3	No
6.2	Bradshaw	Collector WJ-9	Mayhew	71.1	70.8	-0.3	No
6.3	Bradshaw	Mayhew	Jackson	71.1	71.1	0.0	No
7.1	Bradshaw	Jackson	Rock Creek	69.8	69.3	-0.5	No
7.2	Bradshaw	Rock Creek	Collector WJ-10	69.8	69.5	-0.3	No
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	70.9	70.2	-0.7	No
7.4	Bradshaw	Collector WJ-11	Elder Creek	70.9	69.8	-1.1	No
8	Bradshaw	Elder Creek	Florin	70.5	71.7	1.2	No
9	Bradshaw	Florin	Gerber	70.3	71.7	1.4	No
10	Bradshaw	Gerber	Calvine	69.7	71.1	1.4	No
11	Calvine	Waterman	Bradshaw	65.8	66.1	0.3	No
12	Calvine	Bradshaw	Vineyard	65.4	65.1	-0.3	No
13	Calvine	Vineyard	Excelsior	65.4	65.2	-0.2	No
14	Chrysanthy	Sunrise	Rancho Cordova	63.5	63.3	-0.2	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
15	Douglas	Mather	Zinfandel	67.6	68.7	1.1	No
16	Douglas	Zinfandel	Sunrise	69.5	70.5	1.0	No
17	Douglas	Sunrise	Rancho Cordova	72.4	72.6	0.2	No
18.1	Douglas	Rancho Cordova	Americanos	72.6	72.5	-0.1	No
18.2	Douglas	Americanos	Grant Line	71.4	71.3	-0.1	No
19.1	Eagles Nest	Kiefer	N Bridgewater	66.7	66.7	0.0	No
19.2	Eagles Nest	N Bridgewater	S Bridgewater	67.0	66.9	-0.1	No
19.3	Eagles Nest	S Bridgewater	Jackson	67.8	67.4	-0.4	No
20	Eagles Nest	Jackson	Florin	67.1	66.6	-0.5	No
21	Eagles Nest	Florin	Grant Line	64.0	63.6	-0.4	No
22	Elder Creek	65th St	Power Inn	67.6	68.0	0.4	No
23	Elder Creek	Power Inn	Florin-Perkins	67.8	68.0	0.2	No
24	Elder Creek	Florin Perkins	South Watt	68.1	68.4	0.3	No
25	Elder Creek	South Watt	Hedge	70.8	71.8	1.0	No
26	Elder Creek	Hedge	Mayhew	69.4	69.8	0.4	No
27	Elder Creek	Mayhew	Bradshaw	71.2	70.6	-0.6	No
28.1	Elder Creek	Bradshaw	Vineyard	67.8	69.4	1.6	Yes
28.2	Elder Creek	Vineyard	Excelsior	67.9	68.6	0.7	No
29	Elk Grove-Florin	Florin	Gerber	70.5	70.2	-0.3	No
30.1	Excelsior	Kiefer	Douglas	57.7	59.5	1.8	No
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	64.5	67.8	3.3	Yes
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	66.4	67.6	1.2	No
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	66.5	67.5	1.0	No
31.1	Excelsior	Jackson	Collector WJ-6	68.2	69.2	1.0	No
31.2	Excelsior	Collector WJ-6	Elder Creek	68.2	69.1	0.9	No
32	Excelsior	Elder Creek	Florin	62.9	64.5	1.6	No
33	Excelsior	Florin	Gerber	63.5	64.7	1.2	No
34	Excelsior	Gerber	Calvine	59.8	62.7	2.9	No
35	Excelsior	Calvine	Sheldon	61.7	64.1	2.4	No
36	Florin	Stockton	Power Inn	70.0	70.2	0.2	No
37	Florin	Power Inn	Florin-Perkins	69.4	69.9	0.5	No
38	Florin	Florin-Perkins	So Watt/ Elk Grove Florin	68.5	69.1	0.6	No
39	Florin	South Watt	Hedge	64.8	64.3	-0.5	No
40	Florin	Hedge	Mayhew	65.3	64.7	-0.6	No
41	Florin	Mayhew	Bradshaw	67.2	69.5	2.3	Yes
42.1	Florin	Bradshaw	Vineyard	69.3	69.8	0.5	No
42.2	Florin	Vineyard	Excelsior	67.9	68.6	0.7	No
43	Florin	Excelsior	Sunrise	70.3	70.1	-0.2	No
44	Folsom	Howe	Jackson	70.6	71.0	0.4	No
45	Fruitridge	65th St	Power Inn	67.3	67.9	0.6	No
46	Fruitridge	Power Inn	Florin Perkins	67.9	69.5	1.6	Yes
47	Fruitridge	Florin Perkins	South Watt	65.9	67.9	2.0	Yes

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
48	Fruitridge	South Watt	Hedge	57.8	66.2	8.4	Yes
49.1	Fruitridge	Hedge	Collector WJ-12	57.9	66.2	8.3	Yes
49.2	Fruitridge	Collector WJ-12	Mayhew	57.9	65.8	7.9	Yes
50	Grant Line	White Rock	Douglas	73.6	73.5	-0.1	No
51.1	Grant Line	Douglas	Chrysanthy	75.8	75.6	-0.2	No
51.2	Grant Line	Chrysanthy	Kiefer	74.9	74.7	-0.2	No
52.1	Grant Line	Kiefer	Rancho Cordova	72.8	73.1	0.3	No
52.2	Grant Line	Rancho Cordova	Jackson	73.5	73.6	0.1	No
53	Grant Line	Jackson	Sunrise	72.4	72.2	-0.2	No
54	Grant Line	Sunrise	Calvine	73.7	73.6	-0.1	No
55.1	Grant Line	Calvine	Elk Grove City Limit	72.2	72.1	-0.1	No
55.2	Grant Line	Elk Grove City Limit	Sheldon	72.2	72.1	-0.1	No
56	Grant Line	Sheldon	Wilton	72.0	72.2	0.2	No
57	Grant Line	Wilton	Bond	71.5	71.7	0.2	No
58.1	Happy Lane	Old Placerville	Routier Ext	60.4	64.9	4.5	Yes
58.2	Happy Lane	Routier Ext	Kiefer	61.2	66.6	5.4	Yes
59.1	Hedge	Jackson	Rock Creek	58.0	63.1	5.1	Yes
59.2	Hedge	Rock Creek	Fruitridge	58.1	61.2	3.1	No
60	Hedge	Fruitridge	Elder Creek	61.4	62.4	1.0	No
61	Hedge	Elder Creek	Florin	65.8	65.9	0.1	No
62	Howe	US 50	Folsom	71.8	72.0	0.2	No
63	International	Mather Field	Zinfandel	70.9	70.2	-0.7	No
64	International	Zinfandel	Sunrise	70.2	69.5	-0.7	No
65	Jackson	Folsom	Florin Perkins	69.0	69.5	0.5	No
66.1	Jackson	Florin Perkins	14th	69.2	70.4	1.2	No
66.2	Jackson	14th	Rock Creek	70.2	71.9	1.7	Yes
66.3	Jackson	Rock Creek	Aspen 1 Dwy	69.7	71.5	1.8	Yes
66.4	Jackson	Aspen 1 Dwy	South Watt	69.4	71.4	2.0	Yes
67	Jackson	South Watt	Hedge	71.2	73.1	1.9	Yes
68.1	Jackson	Hedge	Collector WJ-3	70.1	72.4	2.3	Yes
68.2	Jackson	Collector WJ-3	Mayhew	70.5	72.5	2.0	Yes
69	Jackson	Mayhew	Bradshaw	69.6	71.4	1.8	Yes
70.1	Jackson	Bradshaw	Collector WJ-4	68.8	71.7	2.9	Yes
70.2	Jackson	Collector WJ-4	Happy Ln	68.8	71.7	2.9	Yes
70.3	Jackson	Happy Ln	Rock Creek	68.7	70.1	1.4	No
70.4	Jackson	Rock Creek	Collector WJ-5	68.7	70.1	1.4	No
70.5	Jackson	Collector WJ-5	Collector WJ-6	70.6	71.7	1.1	No
70.6	Jackson	Collector WJ-6	Excelsior	70.6	71.7	1.1	No
71.1	Jackson	Excelsior	Collector JT-3	72.8	73.7	0.9	No
71.2	Jackson	Collector JT-3	Tree View Ln	71.5	72.4	0.9	No
71.3	Jackson	Tree View Ln	Collector JT-4	70.8	71.9	1.1	No
71.4	Jackson	Collector JT-4	Eagles Nest	70.5	71.5	1.0	No
72.1	Jackson	Eagles Nest	Rockbridge	70.5	71.5	1.0	No
72.2	Jackson	Rockbridge	Sunrise	70.7	71.6	0.9	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
73	Jackson	Sunrise	Grant Line	74.0	74.5	0.5	No
74	Kiefer	Florin Perkins	South Watt	58.3	60.3	2.0	No
75	Kiefer	South Watt	Mayhew	67.2	68.6	1.4	No
76	Kiefer	Mayhew	Bradshaw	65.5	69.8	4.3	Yes
77.1	Kiefer	Bradshaw Road	Collector WJ-14	62.2	70.6	8.4	Yes
77.2	Kiefer	Collector WJ-14	Routier Ext	62.3	70.2	7.9	Yes
77.3	Kiefer	Routier Ext	Happy Lane	62.3	70.5	8.2	Yes
78.1	Kiefer	Eagles Nest	W Collector MS-1	68.6	71.3	2.7	Yes
78.2	Kiefer	W Collector MS-1	Northbridge	68.6	71.0	2.4	Yes
78.3	Kiefer	Northbridge	E Collector MS-1	69.1	71.2	2.1	Yes
78.4	Kiefer	E Collector MS-1	Sunrise	71.1	72.2	1.1	No
79	Kiefer	Sunrise	Rancho Cordova	66.4	67.6	1.2	No
80	Mather / Norden	Von Karman St	Bleckely St	65.0	64.1	-0.9	No
81	Mather	Bleckely St	Femoyer St	65.0	64.1	-0.9	No
82	Mather	Femoyer St	Douglas	65.0	64.1	-0.9	No
83	Mather-Excelsior	Douglas	Kiefer	57.4	55.9	-1.5	No
84	Mather Field	US 50	Rockingham	73.7	73.4	-0.3	No
85	Mather Field	Rockingham	International	74.2	74.0	-0.2	No
86	Mather Field	International	Peter A McCuen	65.8	66.7	0.9	No
87	Mayhew	Folsom	Goethe	62.7	65.1	2.4	No
88	Mayhew	Goethe	Kiefer	64.1	64.9	0.8	No
89.1	Mayhew	Jackson	Rock Creek	58.9	70.3	11.4	Yes
89.2	Mayhew	Rock Creek	Fruitridge	58.9	70.2	11.3	Yes
90	Old Placerville	Bradshaw	Granby	69.5	67.1	-2.4	No
91	Old Placerville	Granby	Happy Ln	69.2	66.7	-2.5	No
92	Old Placerville	Happy Ln	Routier	69.0	66.1	-2.9	No
93	Old Placerville	Routier	Rockingham	66.9	68.0	1.1	No
94	Power Inn	Folsom	14th	69.9	70.2	0.3	No
95	Rockingham	Old Placerville	Mather Field	69.0	69.5	0.5	No
96	South Watt	Folsom	Kiefer	72.9	73.6	0.7	No
97	South Watt	Kiefer	Jackson	72.9	73.0	0.1	No
98.1	South Watt	Jackson	Rock Creek	72.3	72.2	-0.1	No
98.2	South Watt	Rock Creek	Fruitridge	72.5	72.3	-0.2	No
99	South Watt	Fruitridge	Elder Creek	72.4	72.2	-0.2	No
100	South Watt	Elder Creek	Florin	73.0	73.2	0.2	No
101	Sunrise	US 50	Folsom	71.6	71.5	-0.1	No
102	Sunrise	Folsom	Trade Center	71.4	71.3	-0.1	No
103	Sunrise	Trade Center	White Rock	69.5	69.2	-0.3	No
104.1	Sunrise	White Rock	International	70.5	72.4	1.9	Yes
104.2	Sunrise	International	Rio Del Oro	71.3	72.7	1.4	No
104.3	Sunrise	Rio Del Oro	Douglas	73.7	73.4	-0.3	No
105	Sunrise	Douglas	Kiefer	71.2	70.9	-0.3	No
106	Sunrise	Kiefer	Jackson	70.8	70.7	-0.1	No
107	Sunrise	Jackson	Florin	71.1	71.1	0.0	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
108	Sunrise	Florin	Grant Line	67.9	68.0	0.1	No
109	Vineyard	Gerber	Calvine	62.7	63.8	1.1	No
110	Watt	US 50	Folsom	75.3	75.7	0.4	No
111	White Rock	International	Quality	60.0	59.8	-0.2	No
112	White Rock	Quality	Zinfandel	65.1	64.9	-0.2	No
113	White Rock	Zinfandel	Kilgore	67.6	67.3	-0.3	No
114	White Rock	Kilgore	Sunrise	68.6	68.3	-0.3	No
115	White Rock	Sunrise	Fitzgerald	69.9	70.0	0.1	No
116.1	White Rock	Fitzgerald	Rancho Cordova	72.1	71.9	-0.2	No
116.2	White Rock	Rancho Cordova	Americanos	68.2	67.7	-0.5	No
116.3	White Rock	Americanos	Grant Line	68.6	68.5	-0.1	No
117	White Rock	Grant Line	Prairie City	75.9	75.9	0.0	No
118	Zinfandel	US 50	White Rock	71.8	71.5	-0.3	No
119	Zinfandel	White Rock	International	69.0	68.7	-0.3	No
120	Zinfandel	International	Baroque	69.1	68.7	-0.4	No
121	Zinfandel	Baroque	City Limit	69.1	68.7	-0.4	No
122	Zinfandel	City Limit	Douglas	69.1	68.7	-0.4	No
123.1	Zinfandel	Douglas	Collector MS-2	67.9	67.0	-0.9	No
123.2	Zinfandel	Collector MS-2	Collector MS-3	65.5	65.8	0.3	No
123.3	Zinfandel	Collector MS-3	Collector MS-4	65.1	65.8	0.7	No
123.4	Zinfandel	Collector MS-4	Kiefer	64.5	65.8	1.3	No
124	14th	Power Inn	Florin Perkins	66.2	68.4	2.2	Yes
125	14th	Florin Perkins	Jackson	63.5	66.5	3.0	No
126	Chrysanthy	Rancho Cordova	Americanos	66.9	66.8	-0.1	No
127	Chrysanthy	Americanos	Grant Line	65.8	65.5	-0.3	No
128	Douglas Ext.	Mather	Kiefer	64.5	67.8	3.3	Yes
129	International	Sunrise	Rancho Cordova	69.2	68.5	-0.7	No
130	International	Rancho Cordova	Americanos	66.3	66.2	-0.1	No
131	Kiefer	Rancho Cordova	Americanos	61.3	62.3	1.0	No
132	Kiefer	Americanos	Grant Line	65.6	66.3	0.7	No
133	Rancho Cordova	US 50	Easton Valley	72.0	71.9	-0.1	No
134	Rancho Cordova	Easton Valley	White Rock	72.2	72.1	-0.1	No
135	Rancho Cordova	White Rock	International	70.6	70.5	-0.1	No
136	Rancho Cordova	International	Rio Del Oro	71.7	71.2	-0.5	No
137	Rancho Cordova	Rio Del Oro	Villagio	69.8	69.3	-0.5	No
138	Rancho Cordova	Villagio	Douglas	69.2	68.5	-0.7	No
139	Rancho Cordova	Douglas	Chrysanthy	69.2	68.7	-0.5	No
140	Rancho Cordova	Chrysanthy	Kiefer	67.2	66.3	-0.9	No
141	Rancho Cordova	Kiefer	Grant Line	64.9	65.0	0.1	No
142	Americanos	White Rock	Douglas	59.1	58.7	-0.4	No
143	Americanos	Douglas	Chrysanthy	62.3	61.9	-0.4	No
144	Americanos	Chrysanthy	Kiefer	62.1	61.5	-0.6	No
145	Vineyard	Florin	Gerber	55.9	63.5	7.6	Yes
146	Rio Del Oro	Sunrise	Rancho Cordova	68.4	67.4	-1.0	No

Table 15
Cumulative Plus Project Traffic Noise Levels (L_{dn} @100 ft)
West Jackson Highway Master Plan

Seg.	Road	From	To	C	C+P	Change	Substantial Increase?
147	Rio Del Oro	Rancho Cordova	White Rock	62.9	61.7	-1.2	No
200	Kiefer	Tree View Ln	Eagles Nest	66.9	70.2	3.3	Yes
400	Collector JT-1	Excelsior	Collector JT-3	58.4	57.4	-1.0	No
401	Collector JT-1	Collector JT-3	Tree View Ln	53.8	52.7	-1.1	No
402	Collector JT-3	Kiefer	Collector JT-1	53.0	53.4	0.4	No
403	Collector JT-3	Collector JT-1	Collector JT-6	51.8	51.9	0.1	No
404	Collector JT-3	Collector JT-6	Collector JT-5	53.5	55.0	1.5	No
405	Collector JT-3	Collector JT-5	Jackson	63.3	63.8	0.5	No
406	Collector JT-4	Jackson	Bridgewater	54.6	57.3	2.7	No
407	Collector JT-5	Collector JT-3	Tree View Ln	60.5	60.8	0.3	No
408	Collector JT-6	Excelsior	Collector JT-3	56.5	57.2	0.7	No
409	Collector JT-6	Collector JT-3	Tree View Ln	51.2	50.1	-1.1	No
410	Kiefer	Excelsior	Tree View Ln	58.6	68.5	9.9	Yes
411	Tree View Ln	Kiefer	Collector JT-1	63.7	63.8	0.1	No
412	Tree View Ln	Collector JT-1	Collector JT-6	64.3	63.6	-0.7	No
413	Tree View Ln	Collector JT-6	Collector JT-5	64.3	63.6	-0.7	No
414	Tree View Ln	Collector JT-5	Jackson	63.3	62.2	-1.1	No
415	Collector JT-7	Collector JT-3	Tree View Ln	53.5	52.8	-0.7	No
416	Collector JT-8	Collector JT-3	Tree View Ln	53.8	53.2	-0.6	No
417	Collector JT-9	Jackson	Collector JT-8	56.1	56.3	0.2	No
418	Collector JT-10	Jackson	Collector JT-8	54.2	52.7	-1.5	No
419	Collector JT-6	Tree View Ln	Jackson	54.3	53.3	-1.0	No
500	S Bridgewater	Collector JT-4	Eagles Nest	57.8	58.0	0.2	No
501	S Bridgewater	Eagles Nest	Northbridge	57.0	57.4	0.4	No
502	N Bridgewater	Northbridge	Eagles Nest	51.6	51.7	0.1	No
503	Northbridge	Kiefer	Bridgewater	56.8	57.1	0.3	No
504	Street A	S Bridgewater	Street B	53.6	53.3	-0.3	No
505	Street B	S Bridgewater	Street A	52.2	52.4	0.2	No
506	Rockbridge	Street B	Stonebridge	54.0	53.5	-0.5	No
507	Rockbridge	Stonebridge	Jackson	59.7	59.6	-0.1	No
508	Stonebridge	S Bridgewater	Rockbridge	54.7	54.7	0.0	No
509	Stonebridge	Rockbridge	Jackson	57.3	57.3	0.0	No
600	Collector MS-1	Kiefer	Collector MS-5	62.8	63.0	0.2	No
601	Collector MS-1	Collector MS-5	Collector MS-4	59.9	59.6	-0.3	No
602	Collector MS-1	Collector MS-4	Collector MS-3	58.3	58.8	0.5	No
603	Collector MS-1	Collector MS-3	Collector MS-2	55.4	55.7	0.3	No
604	Collector MS-2	Eagles Nest	Collector MS-5	60.4	60.3	-0.1	No
605	Collector MS-3	Eagles Nest	Collector MS-5	59.3	59.1	-0.2	No
606	Collector MS-4	Eagles Nest	Collector MS-5	58.9	59.3	0.4	No
607	Collector MS-5	Kiefer	Collector MS-1	59.2	60.2	1.0	No

Source: FHWA-RD-77-108 with inputs from Sacramento County

Impact 5: Project-Generated Traffic Noise Increase on Existing Receptors - Cumulative Plus Project

Development within the District Area Plans would cause increases in future (cumulative) traffic noise levels on the local roadway network. A total of 234 future roadway segments were evaluated (See Table 15), and it was determined that the project-related traffic noise level increase relative to future (cumulative) traffic noise levels without the project would range from -2.9 dB to +11.4 dB, with an average noise level increase of 0.8 dB Ldn. Of the 234 segments evaluated, the increase was considered to be substantial on 35 roadway segments.

As noted in Impact 1, a finding of a substantial traffic noise increase may or may not trigger a finding of significant noise impact. However, while not all of the 35 roadway segments identified in Table 15 as having a substantial project-related traffic noise increase contain impacted noise-sensitive receptors, several segments do contain unshielded residences. As a result, ***this impact is considered significant***.

Mitigation for Impact 5

The mitigation of cumulative traffic noise impacts at sensitive receptors resulting from significant project-related traffic noise increases is frequently challenging because of a combination of limited mitigation options, constraints upon implementation of certain options, cost of implementation, and limited effectiveness of some options. Nonetheless, the specific options identified in Mitigation Measure 4 should be considered to the extent reasonable and feasible. However, because such measures may be infeasible from a cost, engineering or safety standpoint, may not fully mitigate noise impacts, or could require the consent of the impacted receptor, the successful implementation of these measures cannot be guaranteed. As a result, this impact is considered significant and unavoidable.

Significance after Mitigation: *Significant and Unavoidable.*

Cumulative Plus-Project Traffic Noise Levels at Proposed Noise-Sensitive Uses

Land uses proposed within the District Area Plans have varying degrees of noise sensitivity. The most sensitive of the proposed land uses include residential (of all densities), and school uses (interior spaces only). To predict future traffic noise exposure at the proposed sensitive land uses within the District Area Plans, the information contained in Table 15 was utilized. Specifically, the roadways within the West Jackson Highway Master Plan Area were extracted from the Table 15 data in order to identify exposure at the land uses proposed adjacent to those roadways. Table 16 shows the future traffic noise levels and distances to the critical 65 dB Ldn traffic noise contours for the roadways adjacent to which noise-sensitive development is proposed.

Table 16
Cumulative Project Traffic Noise Levels at Proposed Receptors
Interior Roadways - West Jackson Highway Master Plan

Seg.	Road	From	To	Ldn at 100 ft	Distances to 65 dB contour (ft)
5.2	Bradshaw	Collector WJ-8	Kiefer	71.2	257
6.1	Bradshaw	Kiefer	Collector WJ-9	70.8	243
6.2	Bradshaw	Collector WJ-9	Mayhew	70.8	244
6.3	Bradshaw	Mayhew	Jackson	71.1	254
7.1	Bradshaw	Jackson	Rock Creek	69.3	193
7.2	Bradshaw	Rock Creek	Collector WJ-10	69.5	199
7.3	Bradshaw	Collector WJ-10	Collector WJ-11	70.2	223
7.4	Bradshaw	Collector WJ-11	Elder Creek	69.8	210
27	Elder Creek	Mayhew	Bradshaw	70.6	237
28.1	Elder Creek	Bradshaw	Vineyard	69.4	197
28.2	Elder Creek	Vineyard	Excelsior	68.6	173
29	Elk Grove-Florin	Florin	Gerber	70.2	223
30.1	Excelsior	Kiefer	Douglas	59.5	43
30.2	Excelsior	Douglas	Collector WJ-1/ Collector JT-1	67.8	154
30.3	Excelsior	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	67.6	150
30.4	Excelsior	Collector WJ-2/ Collector JT-2	Jackson	67.5	148
31.1	Excelsior	Jackson	Collector WJ-6	69.2	190
31.2	Excelsior	Collector WJ-6	Elder Creek	69.1	187
32	Excelsior	Elder Creek	Florin	64.5	92
42.1	Florin	Bradshaw	Vineyard	69.8	208
42.2	Florin	Vineyard	Excelsior	68.6	174
48	Fruitridge	South Watt	Hedge	66.2	120
49.1	Fruitridge	Hedge	Collector WJ-12	66.2	121
49.2	Fruitridge	Collector WJ-12	Mayhew	65.8	112
59.1	Hedge	Jackson	Rock Creek	63.1	74
59.2	Hedge	Rock Creek	Fruitridge	61.2	56
60	Hedge	Fruitridge	Elder Creek	62.4	67
67	Jackson	South Watt	Hedge	73.1	347
68.1	Jackson	Hedge	Collector WJ-3	72.4	311
68.2	Jackson	Collector WJ-3	Mayhew	72.5	316
69	Jackson	Mayhew	Bradshaw	71.4	268
70.1	Jackson	Bradshaw	Collector WJ-4	71.7	278
70.2	Jackson	Collector WJ-4	Happy Ln	71.7	279
70.3	Jackson	Happy Ln	Rock Creek	70.1	219

Table 16
Cumulative Project Traffic Noise Levels at Proposed Receptors
Interior Roadways - West Jackson Highway Master Plan

Seg.	Road	From	To	Ldn at 100 ft	Distances to 65 dB contour (ft)
70.4	Jackson	Rock Creek	Collector WJ-5	70.1	218
70.5	Jackson	Collector WJ-5	Collector WJ-6	71.7	278
70.6	Jackson	Collector WJ-6	Excelsior	71.7	280
83	Mather-Excelsior	Douglas	Kiefer	55.9	25
89.2	Mayhew	Rock Creek	Fruitridge	70.2	222
98.1	South Watt	Jackson	Rock Creek	72.2	304
98.2	South Watt	Rock Creek	Fruitridge	72.3	304
300	Douglas	Excelsior	Rock Creek	67.8	155
301	Douglas	Rock Creek	Kiefer	69.2	190
305	Mayhew	Bradshaw	Jackson	69.6	203
306	Mayhew	Fruitridge	Collector WJ-13	68.3	165
307	Mayhew	Collector WJ-13	Elder Creek	68.6	174
309	Rock Creek	Hedge	Mayhew	62.8	71
310	Rock Creek	Mayhew	Bradshaw	59.1	41
311	Rock Creek East	Excelsior Road	Collector WJ-16	63.7	82
312	Rock Creek East	Collector WJ-16	Jackson Road	65.2	103
313	Vineyard	Jackson Road	New Collector	68.4	169
314	Vineyard	New Collector	Collector WJ-18	67.7	151
318	Routier Ext	Happy Lane	Kiefer	68.9	182
319	Routier Ext	Kiefer	Mayhew Road	69.4	197
320	Collector WJ-16	Rock Creek	Collector WJ-6	50.6	11
321	Collector WJ-17	Rock Creek	Collector WJ-6	50.1	10
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	55.1	22
323	Collector WJ-6	Jackson Road	Collector WJ-18	56.4	27
324	Collector WJ-2	Excelsior Road	Collector WJ-6	55.3	23
325	Collector WJ-18	Vineyard	Collector WJ-6	56.0	25
326	Collector WJ-18	Collector WJ-6	Excelsior Road	55.9	25
327	Collector WJ-19	Bradshaw Road	Vineyard Road	61.3	57
400	Collector JT-1	Excelsior	Collector JT-3	57.4	31
401	Collector JT-1	Collector JT-3	Tree View Ln	52.7	15
402	Collector JT-3	Kiefer	Collector JT-1	53.4	17
403	Collector JT-3	Collector JT-1	Collector JT-6	51.9	13
404	Collector JT-3	Collector JT-6	Collector JT-5	55.0	21
405	Collector JT-3	Collector JT-5	Jackson	63.8	83
406	Collector JT-4	Jackson	Bridgewater	57.3	30
407	Collector JT-5	Collector JT-3	Tree View Ln	60.8	53
408	Collector JT-6	Excelsior	Collector JT-3	57.2	30
409	Collector JT-6	Collector JT-3	Tree View Ln	50.1	10
410	Kiefer	Excelsior	Tree View Ln	68.5	171
411	Tree View Ln	Kiefer	Collector JT-1	63.8	83
412	Tree View Ln	Collector JT-1	Collector JT-6	63.6	81
413	Tree View Ln	Collector JT-6	Collector JT-5	63.6	81
414	Tree View Ln	Collector JT-5	Jackson	62.2	65
415	Collector JT-7	Collector JT-3	Tree View Ln	52.8	15

Table 16
Cumulative Project Traffic Noise Levels at Proposed Receptors
Interior Roadways - West Jackson Highway Master Plan

Seg.	Road	From	To	Ldn at 100 ft	Distances to 65 dB contour (ft)
416	Collector JT-8	Collector JT-3	Tree View Ln	53.2	16
417	Collector JT-9	Jackson	Collector JT-8	56.3	26
418	Collector JT-10	Jackson	Collector JT-8	52.7	15
419	Collector JT-6	Tree View Ln	Jackson	53.3	16
503	Northbridge	Kiefer	Bridgewater	57.1	30
504	Street A	S Bridgewater	Street B	53.3	17
505	Street B	S Bridgewater	Street A	52.4	14
506	Rockbridge	Street B	Stonebridge	53.5	17
507	Rockbridge	Stonebridge	Jackson	59.6	44
508	Stonebridge	S Bridgewater	Rockbridge	54.7	21
509	Stonebridge	Rockbridge	Jackson	57.3	30
600	Collector MS-1	Kiefer	Collector MS-5	63.0	74
601	Collector MS-1	Collector MS-5	Collector MS-4	59.6	44
602	Collector MS-1	Collector MS-4	Collector MS-3	58.8	39

Source: FHWA-RD-77-108 with inputs from Sacramento County
Note: Ldn values presented in red indicate roadway segments where the County's 65 dB Ldn exterior noise standard would be exceeded at a distance of 100 feet from the roadway centerline. If, however, the property adjacent to the roadway is depressed relative to the roadway, the shielding provided by the depression would reduce traffic noise levels by approximately 10-15 dB Ldn relative to those shown in this table. The precise degree of shielding will depend on the ultimate elevation of the ground containing noise-sensitive land uses relative to the roadway elevation.

Impact 6: Traffic Noise Levels at Sensitive Receptors Proposed Within the District Area Plans – Cumulative-Plus-Project

Development within the District Area Plans will have varying degrees of noise sensitivity. The most sensitive of the proposed land uses include residential (of all densities), and school uses. Where future traffic noise levels at proposed sensitive land uses within the District Areas Plans would exceed the Sacramento County General Plan noise standards applicable to sensitive land uses (Table 3), a finding of significant noise impact is made, and mitigation measures must be considered.

The Table 16 data, which represent predicted future (cumulative plus project) traffic noise levels within the WJHMP Area, indicate that traffic noise levels are predicted to exceed the County's 65 dB Ldn exterior noise standard at a distance of 100 feet along 46 of the 92 roadway segments analyzed within the Plan Area. It should be noted, however, that several of the areas proposed for development within the District Area Plans are former aggregate excavation sites which are substantially depressed relative to the Master Plan areas roadways. This depression provides substantial shielding of traffic noise levels. Noise surveys conducted at such depressed locations within the District Plan Areas indicate that this shielding results in a traffic noise level reduction of approximately 10-15 dB

Ldn, depending on the relative elevations of the roadway and adjacent property.

Because none of the predicted future traffic noise levels shown in Table 16 exceed 75 dB Ldn at a reference distance of 100 feet from the roadway centerlines, it can be concluded that development occurring within the areas which are depressed relative to existing roadways would be shielded to levels below the County's 65 dB Ldn exterior noise level standard.

At proposed sensitive developments adjacent to new roadways or adjacent to roadways which are at the same relative elevation as the development site, such shielding would not necessarily be present. Because final site design and grading has not been completed, it is not possible to determine at this time whether noise impacts would actually occur along each of the roadway segments identified in Table 16 as exceeding 65 dB Ldn. However, because it is possible that noise-sensitive development could occur within the 65 dB Ldn noise contours adjacent to portions of these roadways, ***this impact is considered significant***.

Mitigation for Impact 6

When tentative maps and grading plans are available for specific residential and other noise-sensitive developments proposed within the District Area Plans, a project specific acoustical review should be conducted to ensure that appropriate noise mitigation measures are incorporated into the project design to achieve satisfaction with Sacramento County noise standards. The following general noise mitigation measures should be considered as potential noise mitigation options:

A. Building façade (window & glass door) improvements to ensure compliance with County Interior noise level standard within schools and residences.

B. Mechanical ventilation for all schools and residences to allow occupants of those structures to close doors and windows as desired for additional acoustical isolation.

C. Site design for school and residential uses to maximize the setback between roadways and proposed outdoor activity areas.

D. Shielding of outdoor activity areas of proposed multi-family residential uses from view of impacted roadway segments by intervening structures or topography.

E. Where possible, locate noise-sensitive land uses in areas which would be depressed relative to the impacted roadway segments.

F. Provide statements to prospective residences located adjacent to impacted roadway segments disclosing that the roadways are substantial noise sources and that variation in traffic conditions or atmospheric conditions can result in variations in perceived noise levels.

G. Consider construction of noise barriers to achieve compliance with County exterior noise standards only after all other feasible options have been considered.

Significance after Mitigation: ***Less than Significant.***

Non-Transportation Noise Sources

Master Plan Area & District Area Plans

Granite Aggregates Processing Facility

The existing Granite Aggregates processing facility located northeast of the intersection of Bradshaw Road and Kiefer Boulevard is located within Granite's District 2 Area Plan. The proposed use of the site currently containing the aggregate processing facility is identified in Figure 2 as being industrial uses. Until such time as the Granite facility ceases operations the noise generation of that facility is expected to generally remain at the current levels identified in Figure 11.

Impact 7: Impacts to Proposed Land Uses due to Ongoing Granite Aggregate Plant Operations

As noted previously, Granite operates an aggregates processing facility at the northeast corner of Kiefer Boulevard and Bradshaw Road. Granite's operations are expected to continue for the foreseeable future. Figure 11B shows the processing equipment locations and approximate location of the 50 dB L50 noise contour. The 50 dB contour is important in that it represents the most restrictive nighttime noise level standard contained within the Sacramento County Noise Ordinance. Existing Employment and open space uses to the south, and light-industrial (county corporation yard) and professional uses to the west of the Granite facility are not currently impacted by Granite operations. Changes in land use resulting from development of the Granite District Plan Area would consist of converting a portion of the frontage along Bradshaw Road into commercial uses, with additional employment uses generated to the immediate east, and 7 acres of high-density residential uses to the north. The 50 dB L50 noise contour shown on Figure 11B extends into the future commercial and high-density residential use areas to the north of the existing facility. As a result, if the Granite aggregate processing facility were to remain in operation after construction of those high-density residential uses, those residences could be adversely affected by noise if Granite's operations occur at night. As a result, **this impact is considered significant.**

Mitigation for Impact 7

Operations at the Granite aggregate processing facility may cease prior to the development of noise-sensitive land uses to the immediate north of that facility. However, if Granite operations continue when construction of high-density residential land uses to the north is complete and occupancy begins, then a detailed analysis of noise mitigation options would be required at the time specific development site and grading plans have been developed. That analysis would determine the most appropriate and feasible noise mitigation measures required to achieve compliance with the

County's noise standards at the proposed residential uses. Specific options for mitigation of the aggregate facility are as follows:

A. Agreement by Granite that no building permit may be pulled for residential units within 2,000 feet of the aggregate processing facility until plant operations have ceased, or otherwise reduced to levels in compliance with local noise standards.

B. Use of localized noise barriers, partial enclosures, or suspended acoustic curtain/barriers (to be funded and constructed by the developer of the future noise sensitive land use) to reduce noise at residential units to a state of compliance with County noise standards.

C. Lining of metal hoppers with urethane sheets (if consented to by the plant operator; to be funded and constructed by the developer of the future noise sensitive use).

D. Other actions at the aggregate processing facility, to be consented to by the operator and funded by the developer of the future noise sensitive use, that will reduce noise generated by the aggregate processing facility, as measured at residential sites within 2,000 feet of the facility, to levels in compliance with local noise standards.

E. Upgraded construction of the proposed residential structures. Typically, windows are the greatest source of sound transmission into a residence and a substantial improvement in acoustical isolation can be achieved from upgrading window assemblies alone.

Significance after Mitigation: ***Less than Significant.***

Sacramento Raceway

As noted previously, the Sacramento Raceway, which is located immediately east of the eastern WJHMP boundary, is an existing non-conforming use. It is also located within a separate Master Plan area where additional residential development is envisioned. Because of these factors, it is possible that the Raceway will not be in existence throughout the buildout of the WJHMP area. For the duration of time the raceway remains in operation at its current location, it is reasonable to conclude that the noise generation of that facility will continue at, or near, current levels.

Impact 8: Impacts on Proposed Land Uses due to Ongoing Sacramento Raceway Operations.

As noted previously, the Sacramento Raceway, located east of the WJHMP Area on Excelsior Road, is an existing non-conforming use. As such, and given the proposed development of the area upon which the raceway is

located in a parallel Master Plan Study currently being prepared, the future of the raceway is unclear. Nonetheless, should the raceway continue to be in operation at the time noise sensitive land uses are developed in the Teichert District Plan Area 1, racetrack operations would exceed the Sacramento County noise standards shown in Table 4. No impacts due to ongoing Sacramento Raceway operations are anticipated in Granite District Plan Area 2. Specifically, residences constructed within the 75 dB Lmax noise contour shown on Figure 10 would be exposed to maximum noise levels during certain raceway events which exceed the County's noise standard. As a result, **this impact is considered Significant**.

Mitigation for Impact 8

Given the non-conforming status of the raceway, it is unclear if the raceway would be required to implement mitigation to reduce raceway noise exposure at new residential uses proposed in the WJHMP Area. If it is determined that the Raceway must mitigate potential noise impacts upon the WJHMP development, a study would need to be commissioned by the Raceway to identify feasible options for such mitigation. If, on the other hand, the Raceway is to remain in operation and mitigation must be implemented by the WJHMP developers, additional analysis of site and grading plans would be required to develop such mitigation. The following general noise mitigation measures could be implemented to reduce Raceway noise levels at future residences within the WJHMP Area to a state of compliance with the Sacramento County daytime and nighttime Noise Ordinance standards of 55 and 50 dB, respectively:

A. Building façade (windows & glass doors) improvements to ensure compliance with County Interior noise level standards within residences.

B. Mechanical ventilation included in residential construction to allow residents to close doors and windows as desired for additional acoustical isolation.

C. Use of setbacks to maximize the distance between the raceway and proposed residential land uses.

D. Shielding of outdoor activity areas of proposed residential uses from view of the raceway by intervening structures or topography.

E. Design site grading so as to maximize the degree of natural shielding of raceway noise generation by intervening topography.

F. Provide statements to all prospective residences located in the Raceway vicinity disclosing that the raceway is a substantial noise source and that raceway events will result in substantial short-term variations in ambient noise levels.

G. Consider construction of noise barriers to achieve compliance with County exterior noise standards only after all other feasible options have been considered.

Significance after Mitigation: ***Less than Significant.***

Aggregate Excavation and Reclamation Activities

Many of the District Area Plan properties have already been excavated, others are engaged in excavation currently, while still others may be excavated in the future prior to buildout of the District Areas. Because excavated materials are transported to the Teichert and Granite aggregate plants via conveyor, the noise generation of these operations is highly localized to the areas near the excavation activities and locations adjacent to the conveyors. Until such time as aggregate excavation and reclamation is completed within the District Area Plans, the noise generation of those activities will likely remain at current levels, although the location of the noise generation will change as excavation and reclamation activities progress. Due to the lack of specificity regarding details of future noise-sensitive development near aggregate-related equipment and operations, this impact must be evaluated in greater detail at the tentative map stage.

Impact 9: Impacts on Proposed Land Uses due to Ongoing Conveyor Belt Operations

Ongoing aggregate excavation and conveyance of materials to the Teichert and Granite processing plants may continue to occur during development within the District Area Plans. The conveyors typically operate at the same times as the Teichert and Granite plants.

Conveyor noise level measurements indicate that the 55 dB L50 noise contour is located approximately 350 feet from the operating conveyor, with slightly higher noise levels near conveyor transfer locations. As a result, residential uses constructed within 350 feet of ongoing conveyor operations could be exposed to conveyor noise generation in excess of the County's 55 dB L50 exterior noise standard. If such construction were to occur within that distance, **this impact would be considered significant**.

Mitigation for Impact 9

Because it is possible that either Granite or Teichert conveyor belts could operate concurrently with residential construction within either District Plan Area, consideration of noise mitigation would be required for such development. Specific options for mitigation of conveyor noise to

acceptable levels at future residences constructed within the WJHMP Area are as follows:

A. Disclosure Statements.

All prospective residents of residences located within 350 feet of unshielded conveyors should be provided statements disclosing that operations of aggregate conveyors can and do occur during both daytime and nighttime hours, and that variations in those operations or atmospheric conditions can result in variations in perceived noise levels.

B. Relocation of Conveyor System.

At such a time as development of noise-sensitive land uses within the WJHMP Area is projected to encroach within 350 feet of operating conveyors, the conveyor system could be relocated, at the expense of the developer of the noise sensitive use, to a position further from the residences. While this measure would shift the noise impact zone of the conveyors further away from residences, it would not by itself decrease the actual noise generation of the conveyor system. As a result, eventually additional noise mitigation measures could be required as development moves closer to the relocated conveyor system.

C. Construction of Earth Berms and / or Noise Barriers Adjacent to the Conveyor System.

At such a time as residential development is projected to encroach within 350 feet of operating conveyors, an earth berm or solid noise barrier could be constructed adjacent to the conveyor system to further reduce conveyor noise levels, at the expense of the developer of the noise sensitive use. Such a barrier could take the form of an earthen berm, solid wall, or combination of berms and walls. The noise reduction provided by such a barrier would depend on the relative heights of the conveyor, top of barrier, and nearby residences, as well as the relative distances between the conveyor and noise barrier, and distance from noise barrier to receiver.

Significance after Mitigation: ***Less than Significant.***

Vibration Impacts

Master Plan Area & District Area Plans

Impact 10: Impacts associated with Project-Generated Vibration

Extensive field inspections and monitoring of baseline vibration within the District Plan Areas revealed no discernable sources of vibration which would adversely affect future sensitive land uses located within the project area. In addition, the project does not propose any appreciable sources of ongoing vibration, and short-term vibration generated by project construction activities would be at or below vibration levels currently generated by heavy Teichert and Granite excavation equipment. As a result, vibration impacts either due to the project, or upon the project, are not anticipated, and this **impact is considered less than significant.**

Construction Noise Impacts

Master Plan Area & District Area Plans

Impact 11: Impacts associated with Project Construction

During the construction phases of the project, noise from on-site construction activities, including infrastructure construction, grading, and development of a variety of land use types, would add to the noise environment in the project vicinity.

Activities involved in construction would typically generate maximum noise levels ranging from 85 to 90 dB at a distance of 50 feet (*Federal Transit Administration Noise and Vibration Impact Assessment Manual*, 2018, Table 7-1). Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites.

Provided construction activities occur between the hours of 6 am – 8 pm during weekdays, and 7 am – 8 pm on weekends, construction activities would be exempt from the provisions of the Sacramento County Noise Ordinance (6.68.090). Because on-site construction activities are proposed to adhere to the County's requirements, no adverse on-site or off-site construction noise effects are identified for this project and **this impact is considered less than significant.**

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

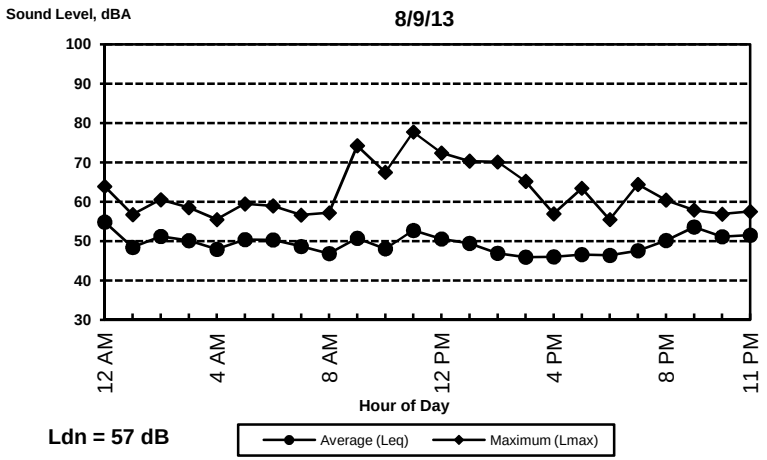
Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

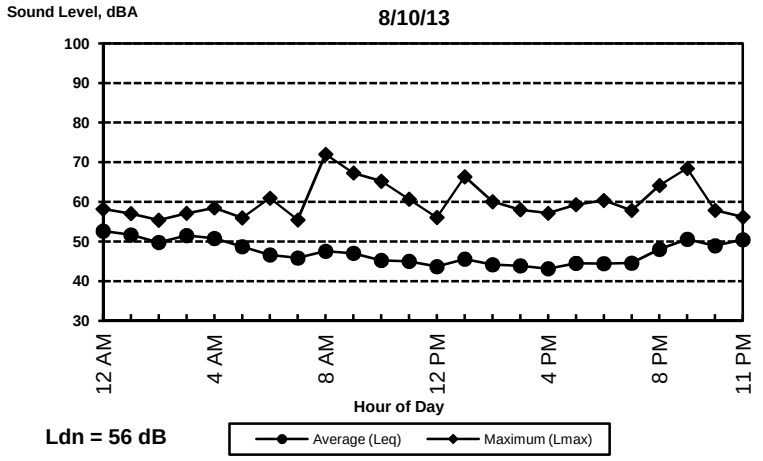
RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

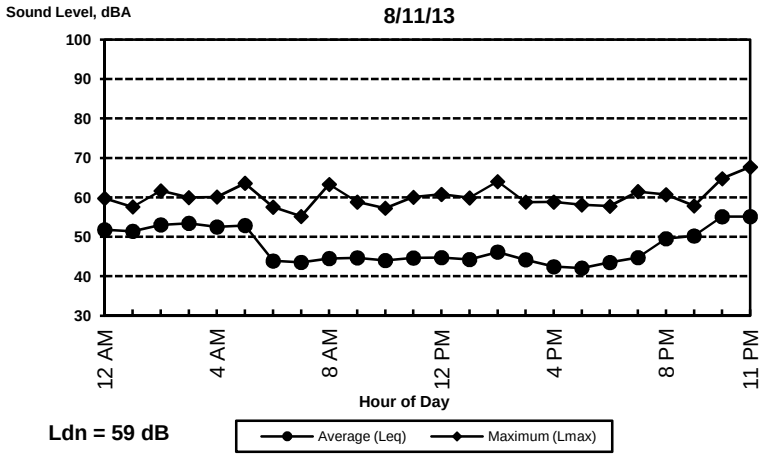
Appendix B-1
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 1 (2013)



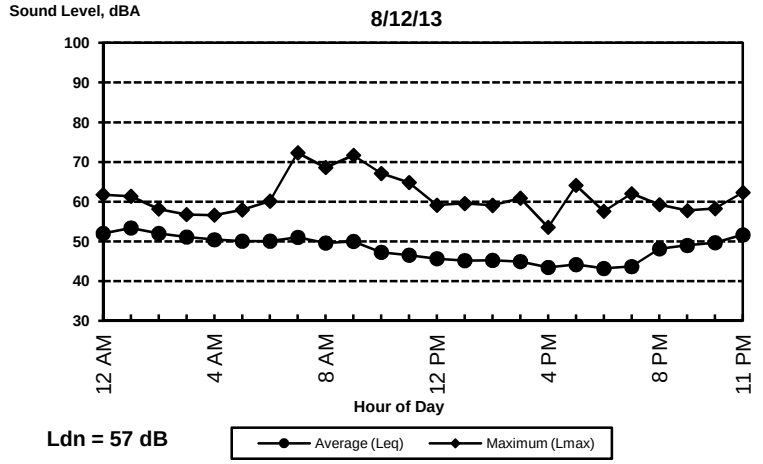
Ldn = 57 dB



Ldn = 56 dB



Ldn = 59 dB



Ldn = 57 dB

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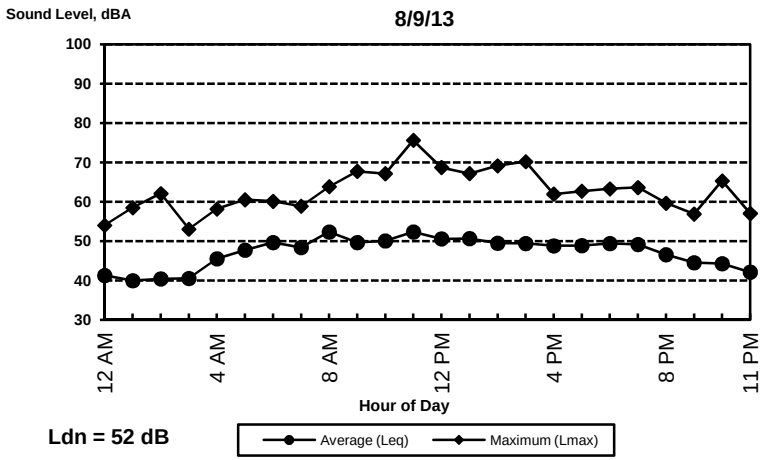
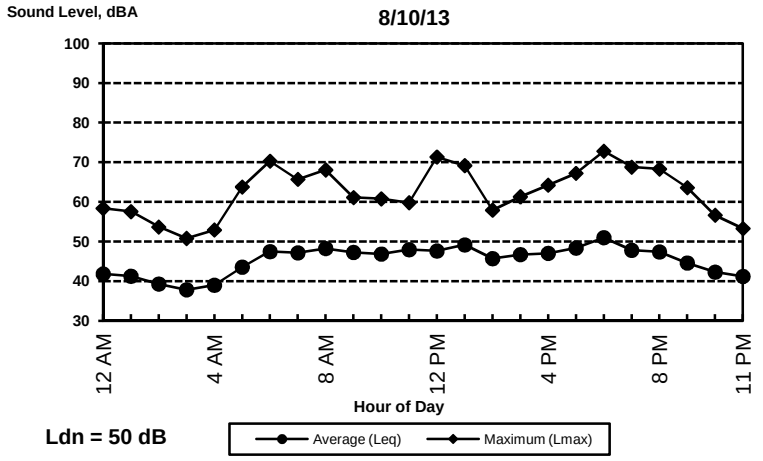
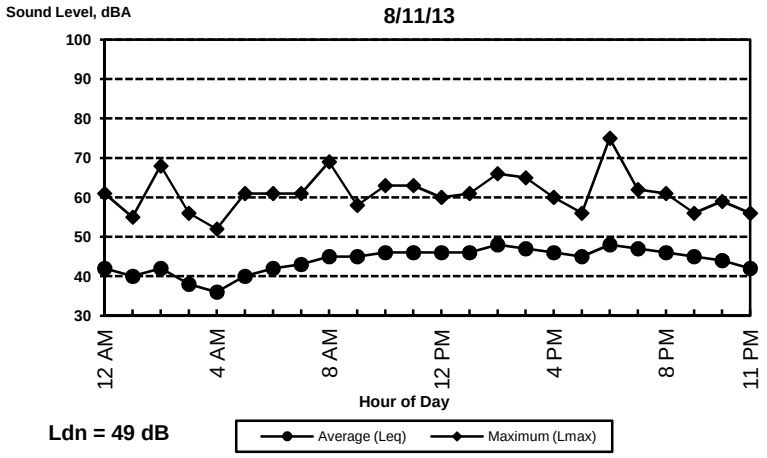
Appendix B-2
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 2 (2013)



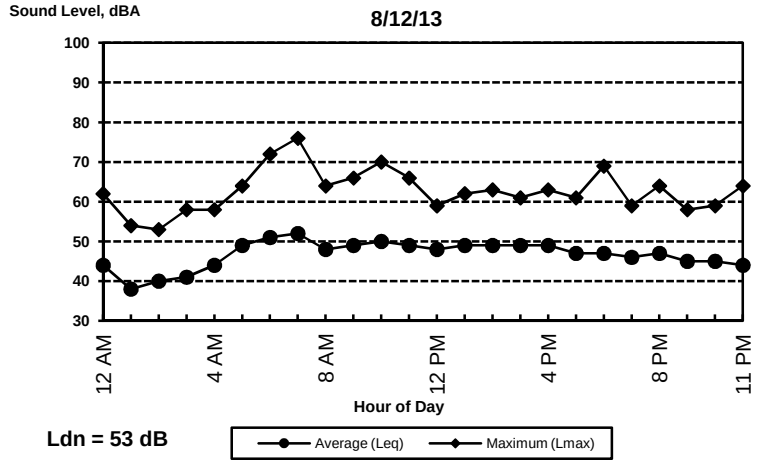
Ldn = 52 dB



Ldn = 50 dB



Ldn = 49 dB



Ldn = 53 dB

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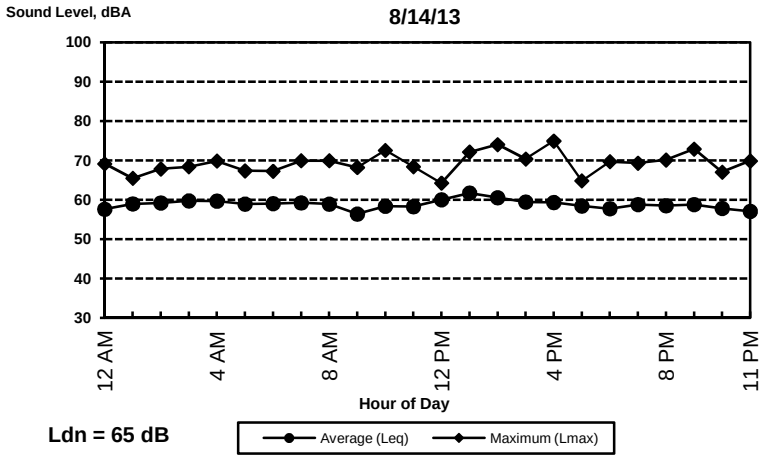
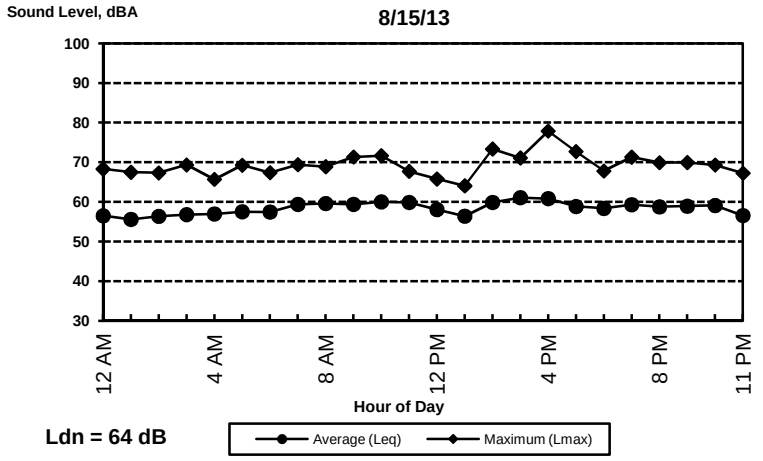
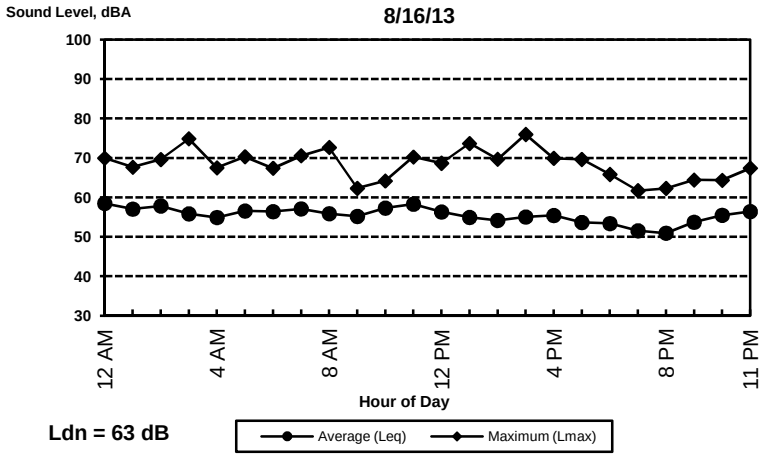
Appendix B-3
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 3 (2013)



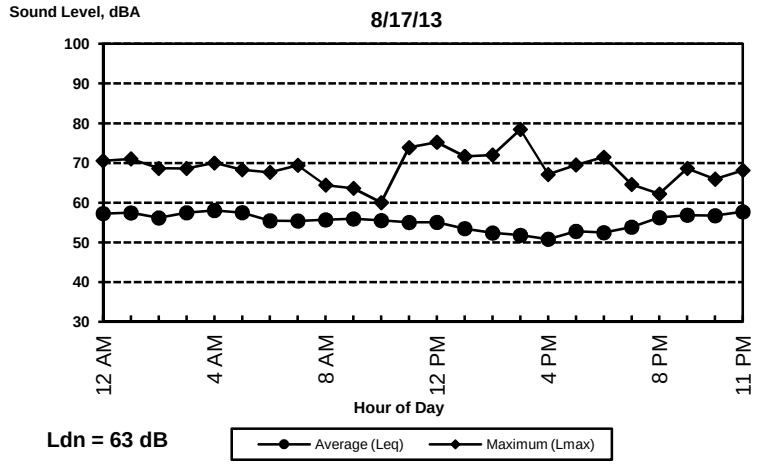
Ldn = 65 dB



Ldn = 64 dB



Ldn = 63 dB



Ldn = 63 dB

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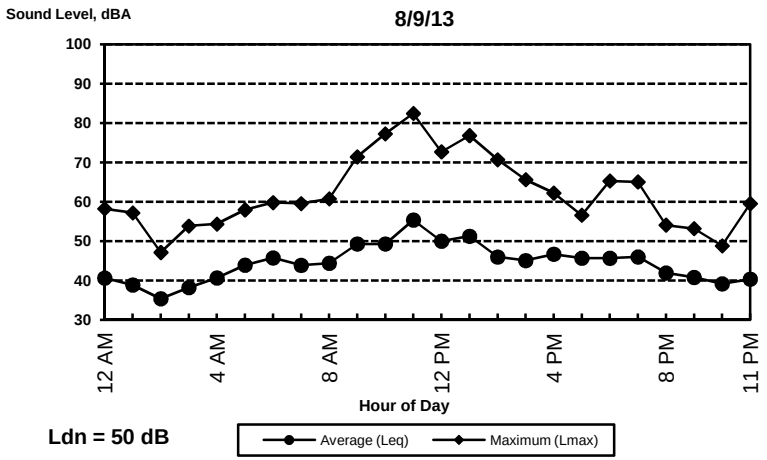
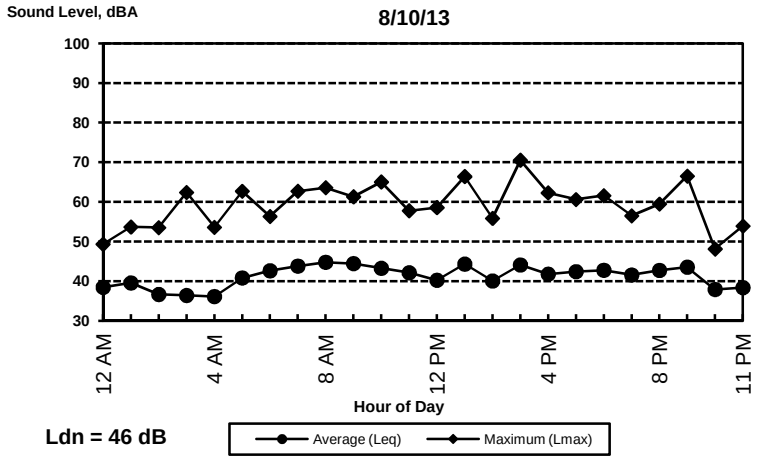
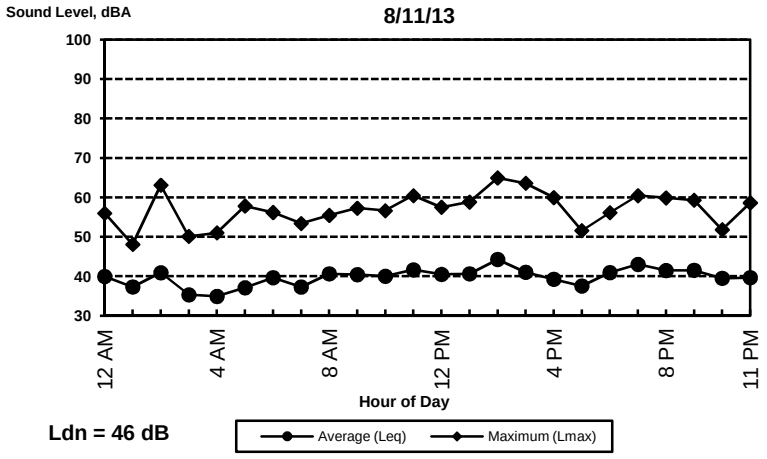
Appendix B-4
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 4 (2013)



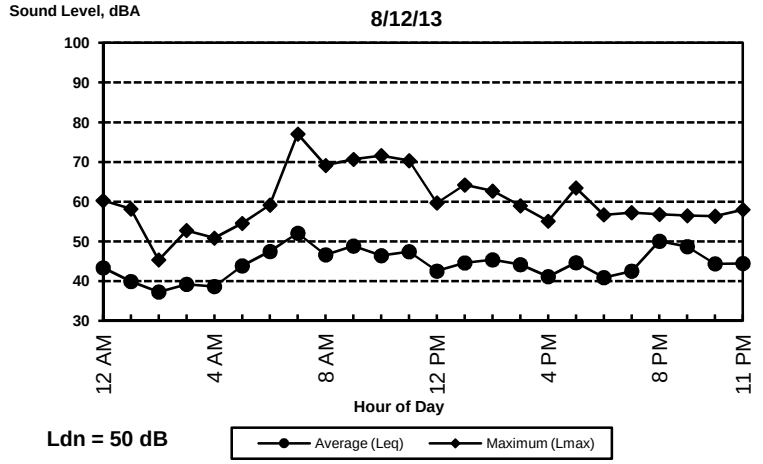
Ldn = 50 dB



Ldn = 46 dB



Ldn = 46 dB



Ldn = 50 dB

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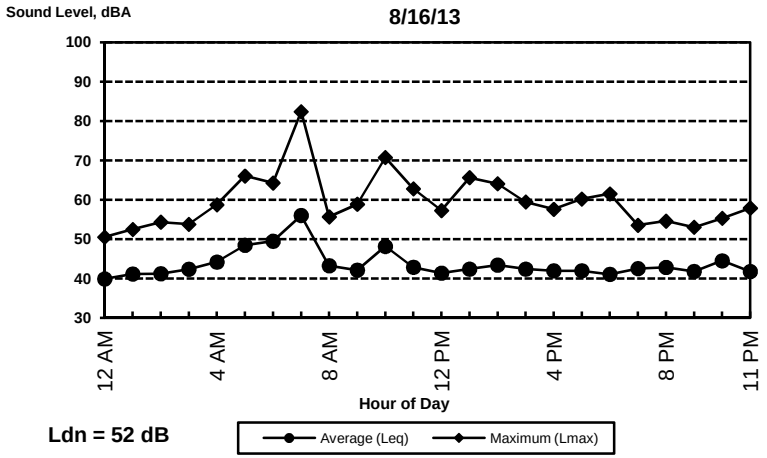
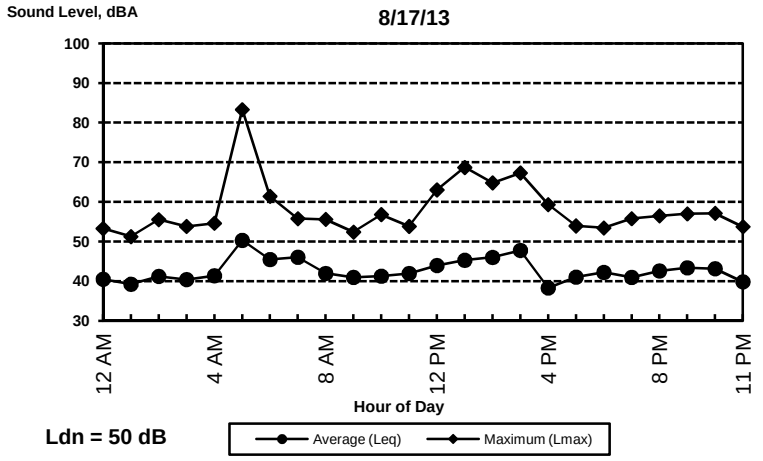
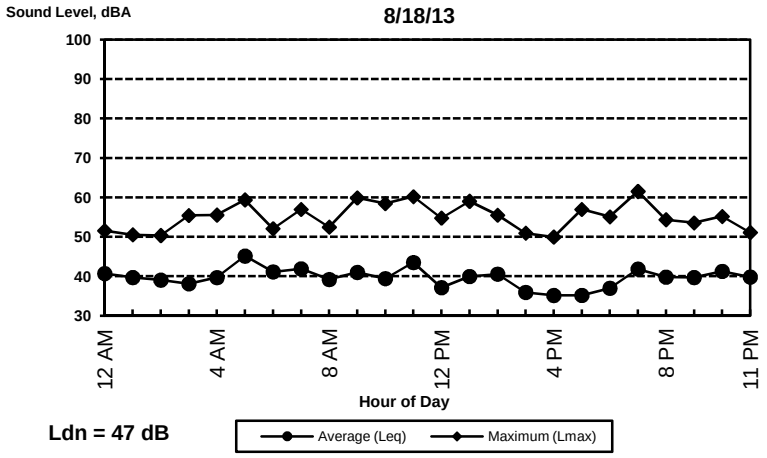
Appendix B-5
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 5 (2013)



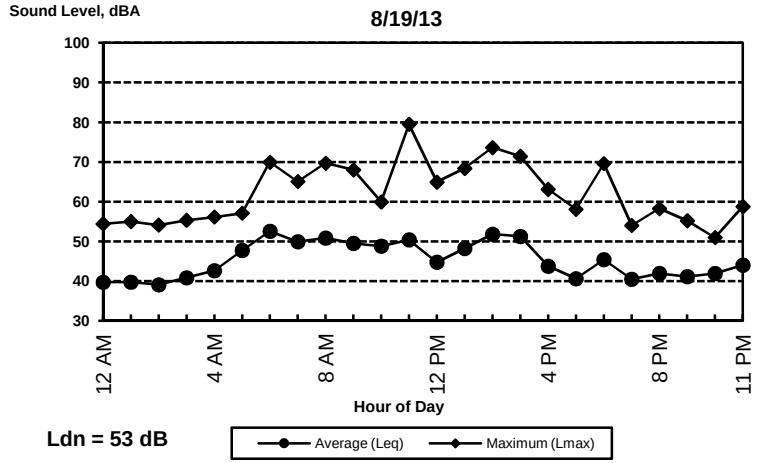
Ldn = 52 dB



Ldn = 50 dB



Ldn = 47 dB



Ldn = 53 dB

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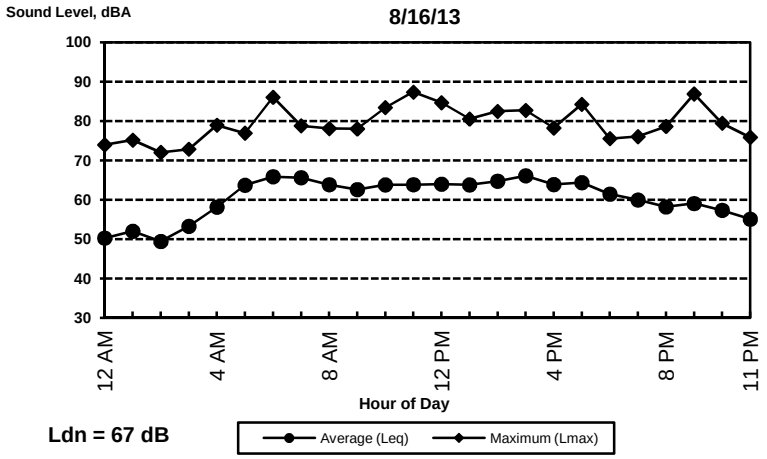
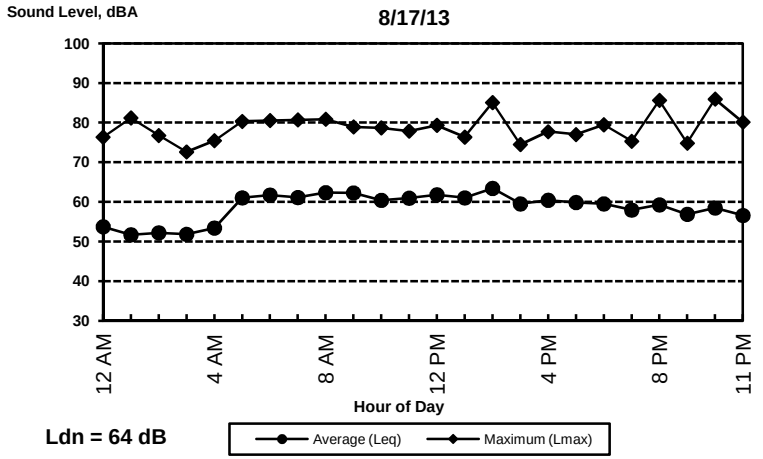
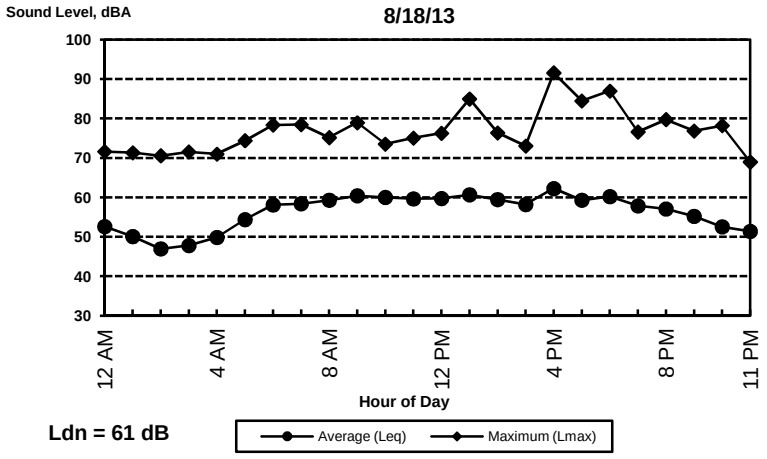
Appendix B-6
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 6 (2013)



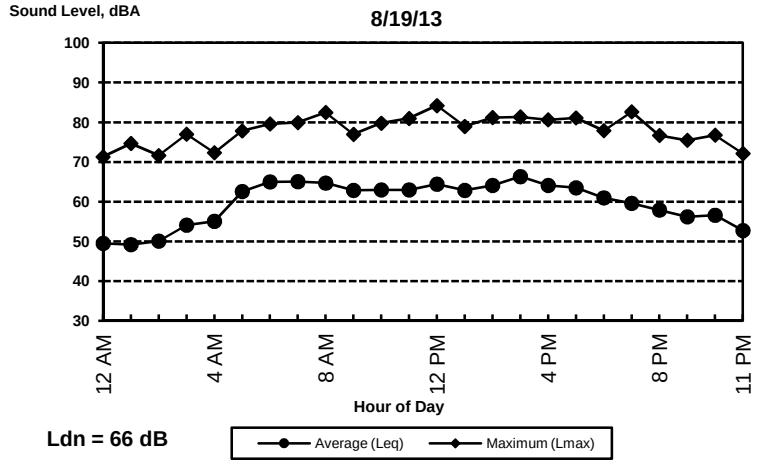
Ldn = 67 dB



Ldn = 64 dB



Ldn = 61 dB



Ldn = 66 dB

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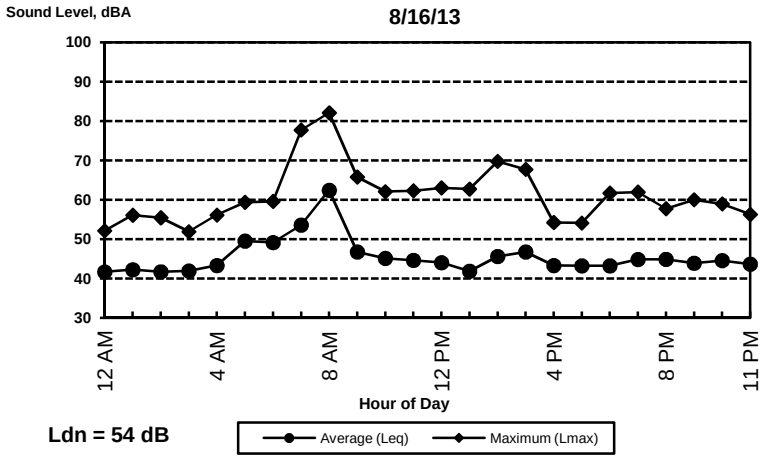
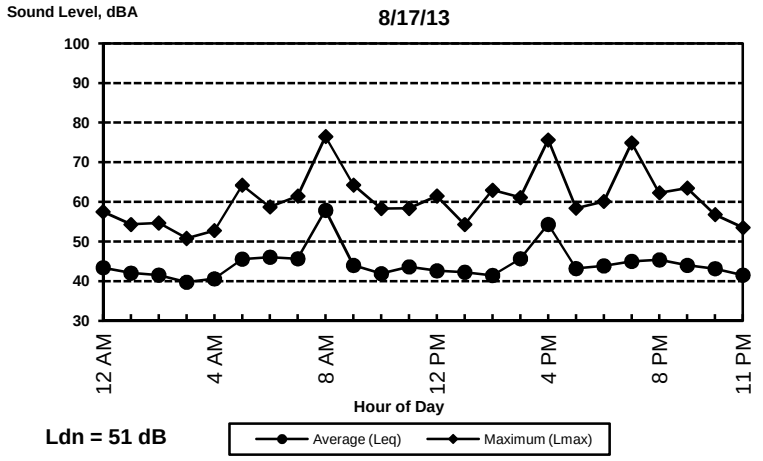
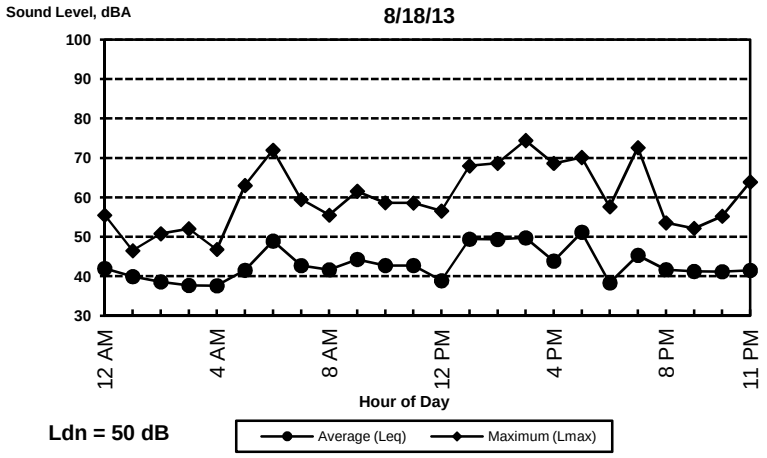
Appendix B-7
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 7 (2013)



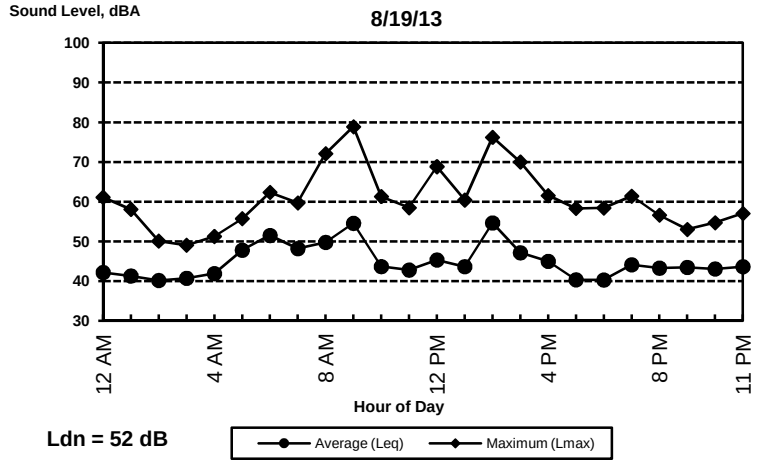
Ldn = 54 dB



Ldn = 51 dB



Ldn = 50 dB



Ldn = 52 dB

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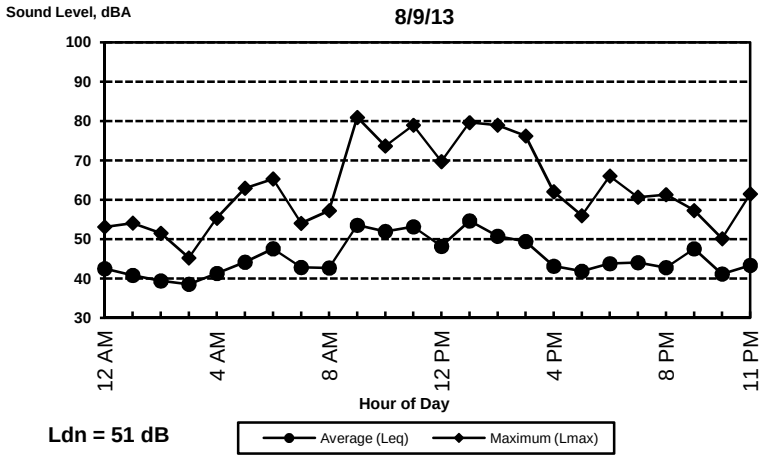
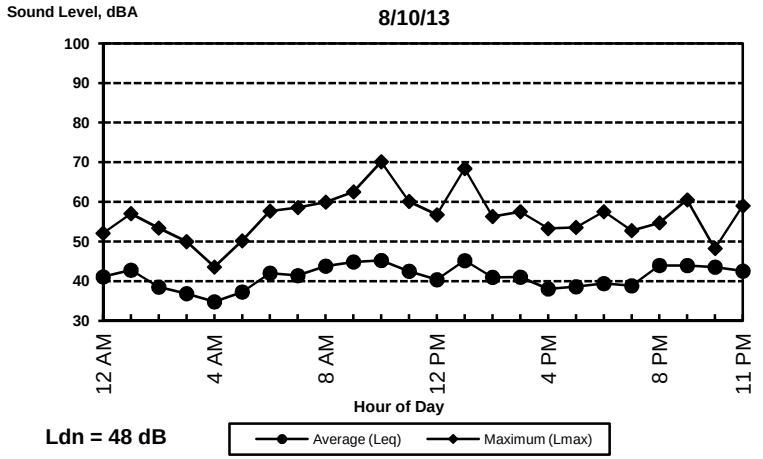
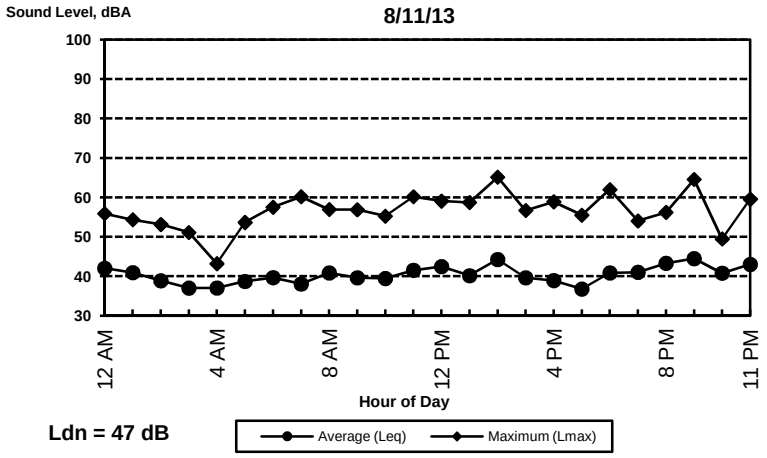
Appendix B-8
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 8 (2013)



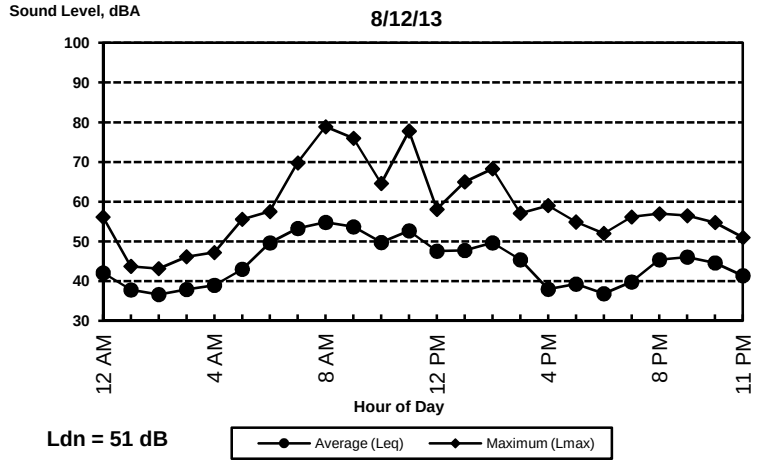
Ldn = 51 dB



Ldn = 48 dB



Ldn = 47 dB



Ldn = 51 dB

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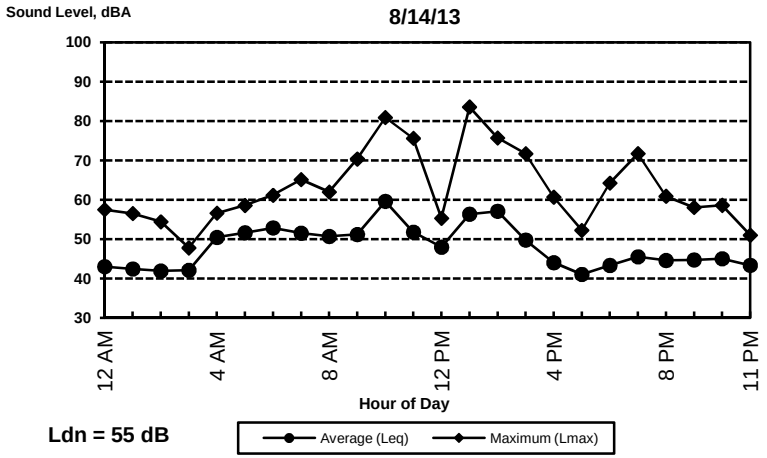
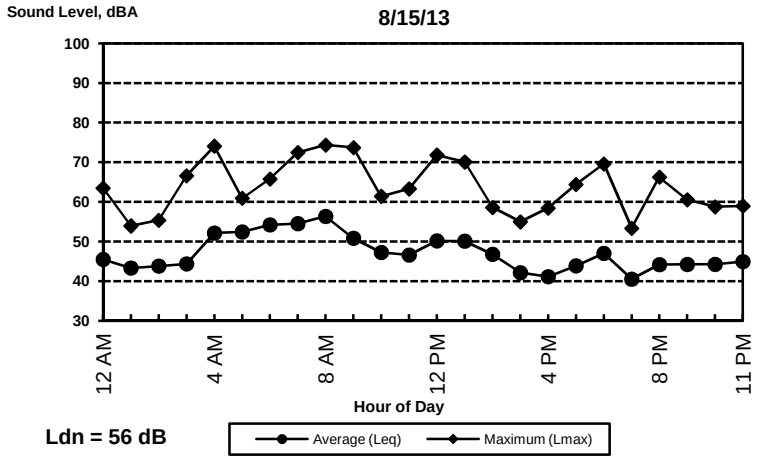
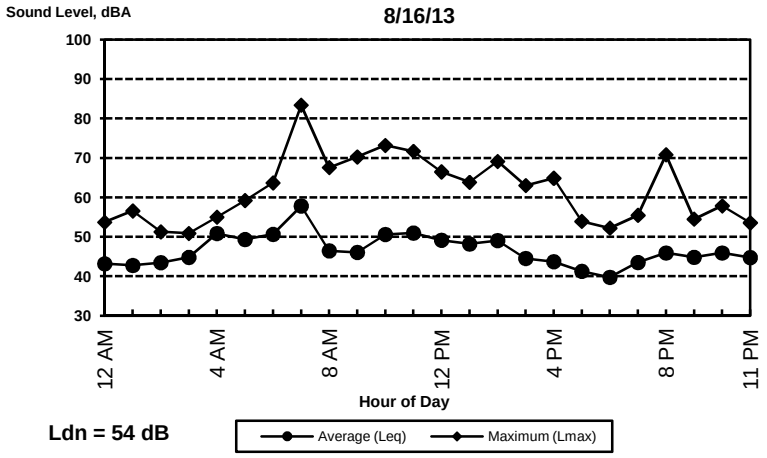
Appendix B-9
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 9 (2013)



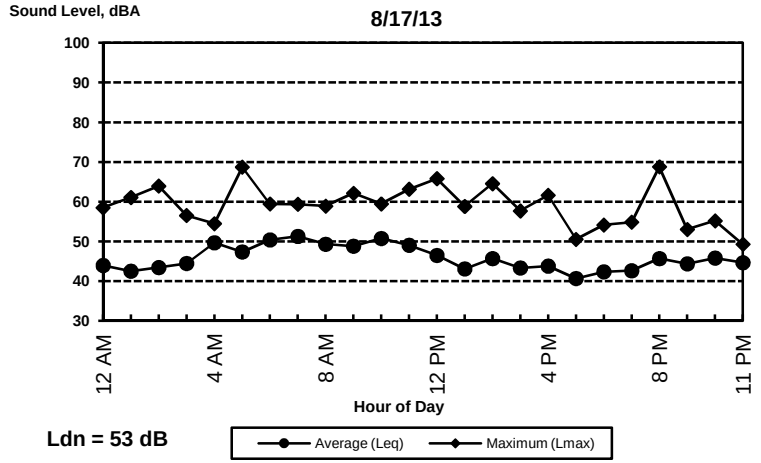
Ldn = 55 dB



Ldn = 56 dB



Ldn = 54 dB



Ldn = 53 dB

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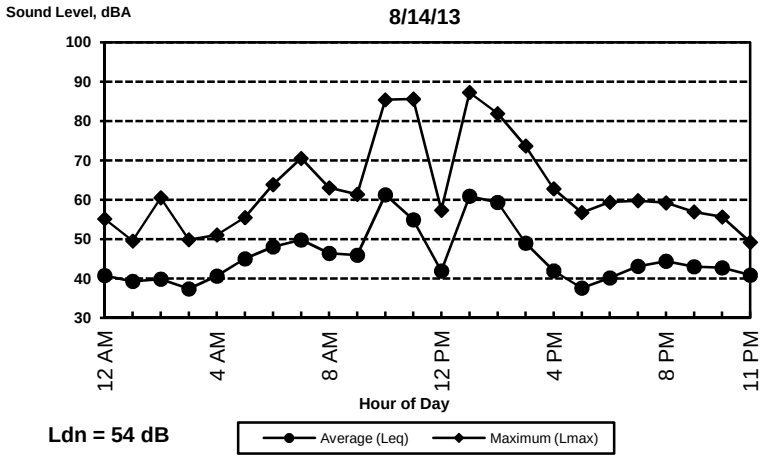
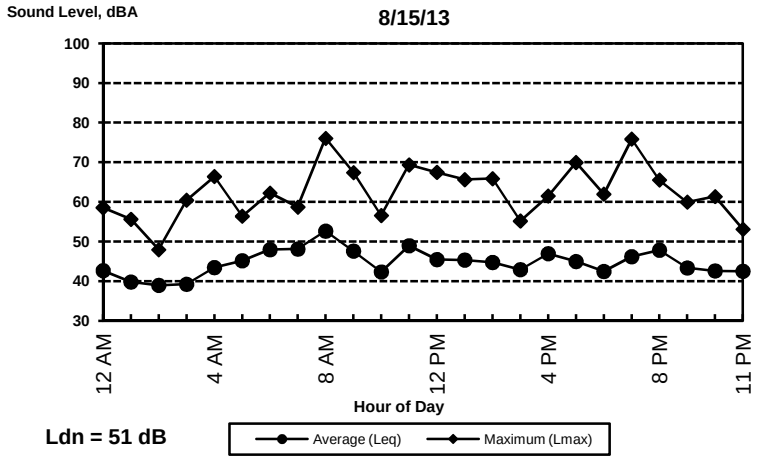
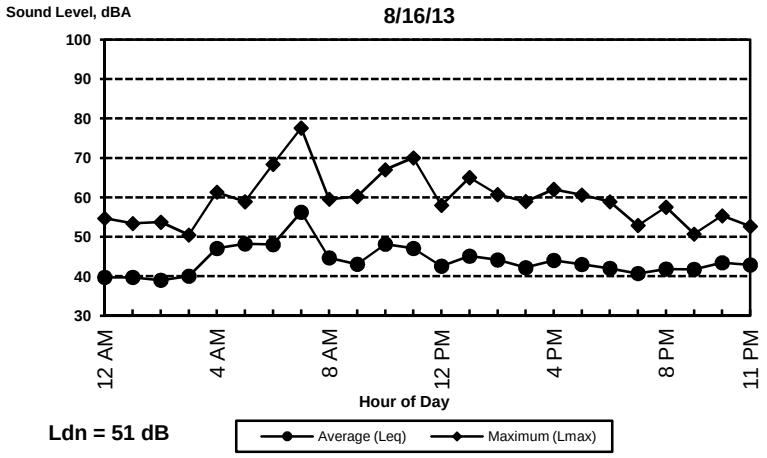
Appendix B-10
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 10 (2013)



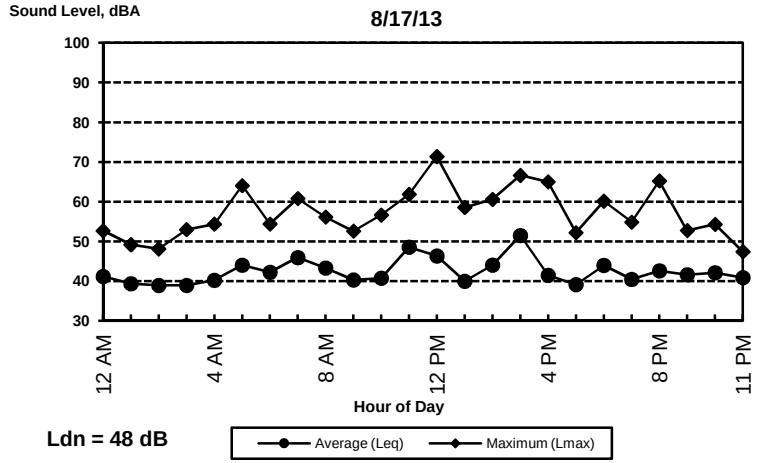
Ldn = 54 dB



Ldn = 51 dB



Ldn = 51 dB



Ldn = 48 dB

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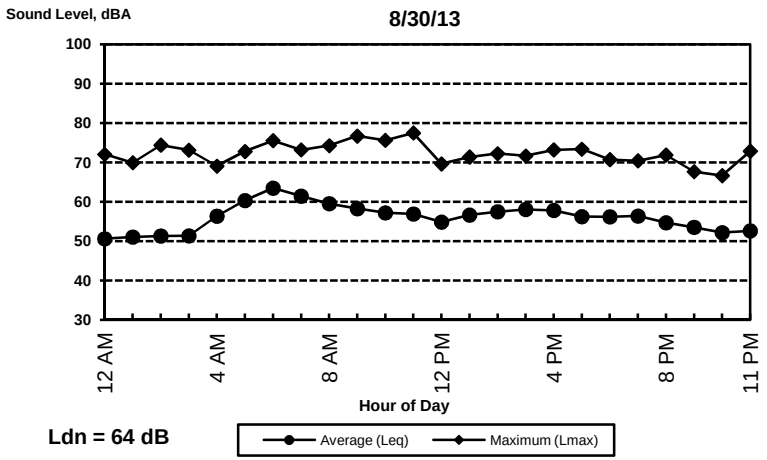
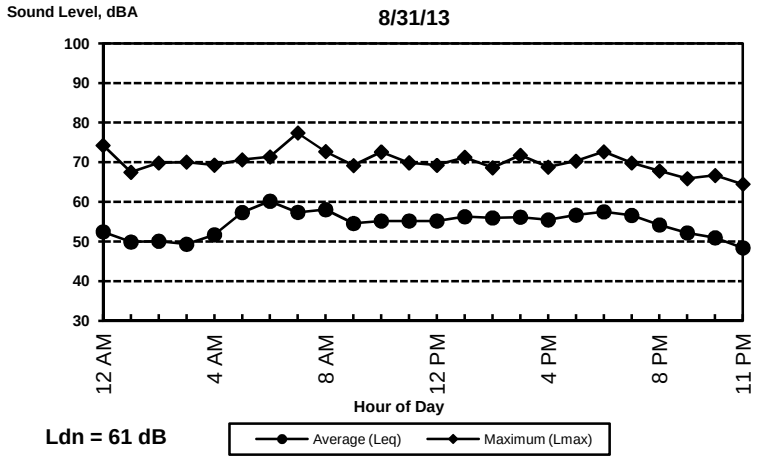
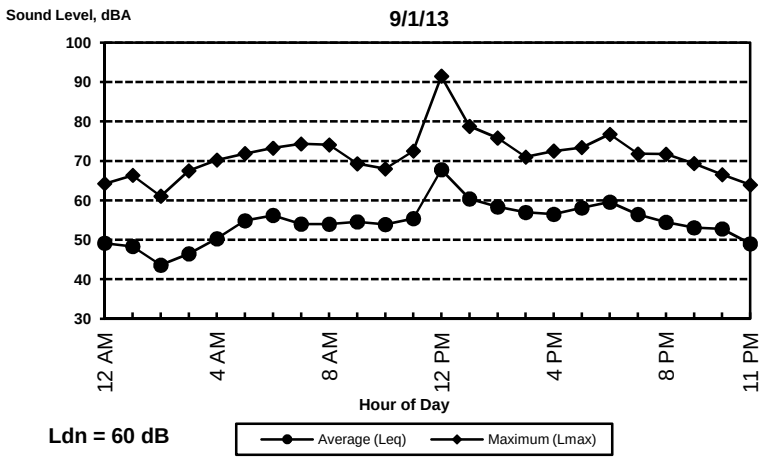
Appendix B-11
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 11 (2013)



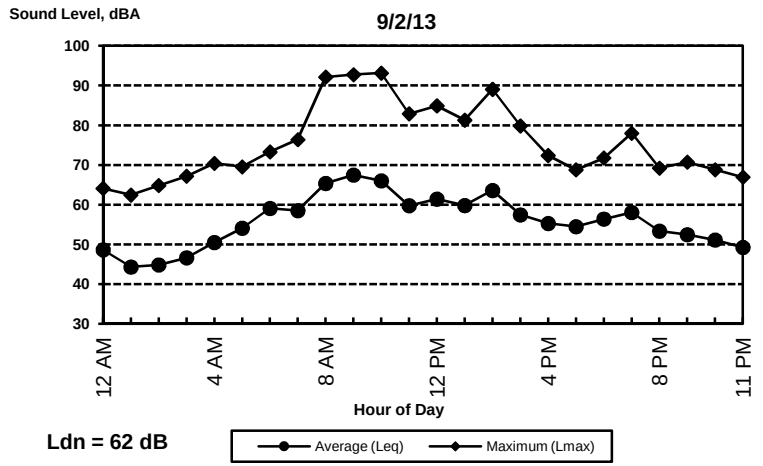
Ldn = 64 dB



Ldn = 61 dB



Ldn = 60 dB



Ldn = 62 dB

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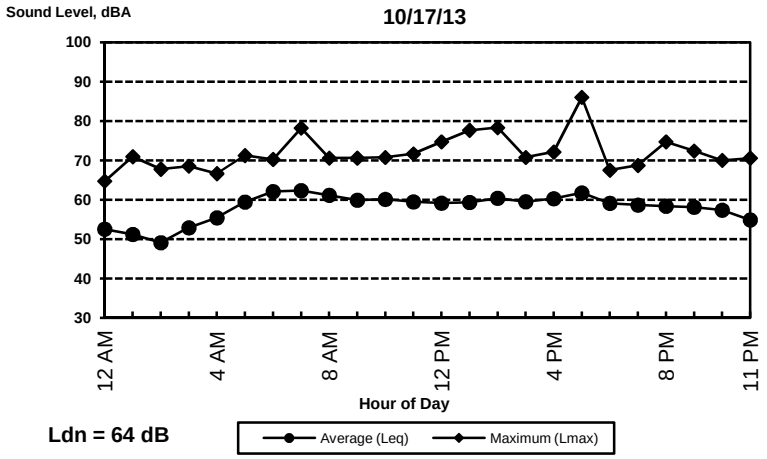
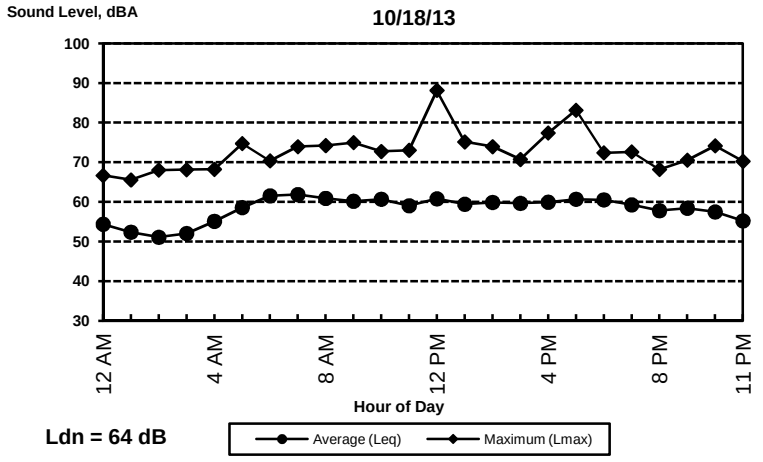
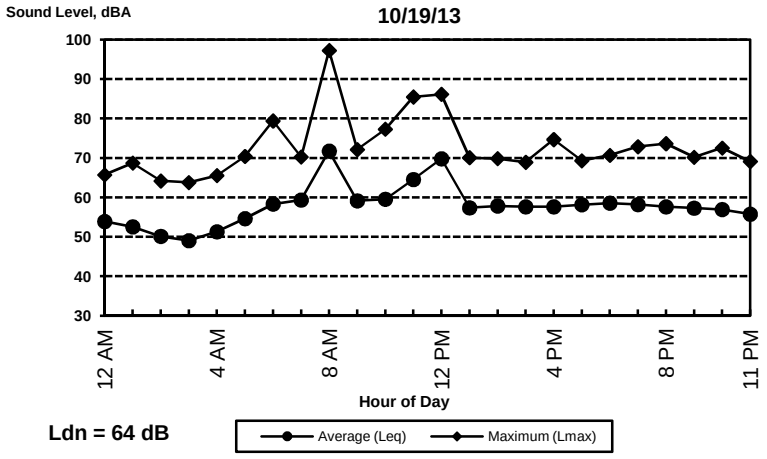
Appendix B-12
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 12 (2013)



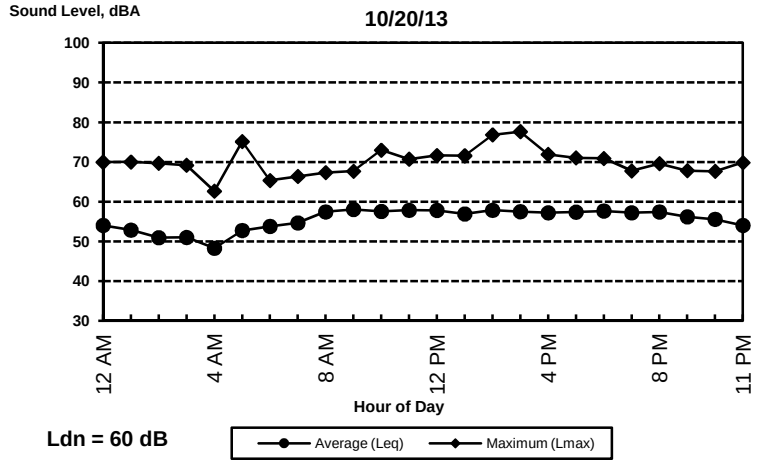
Ldn = 64 dB



Ldn = 64 dB



Ldn = 64 dB



Ldn = 60 dB

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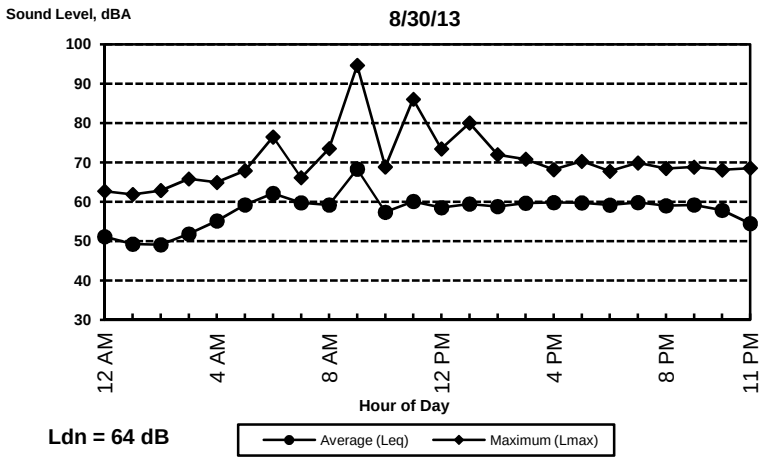
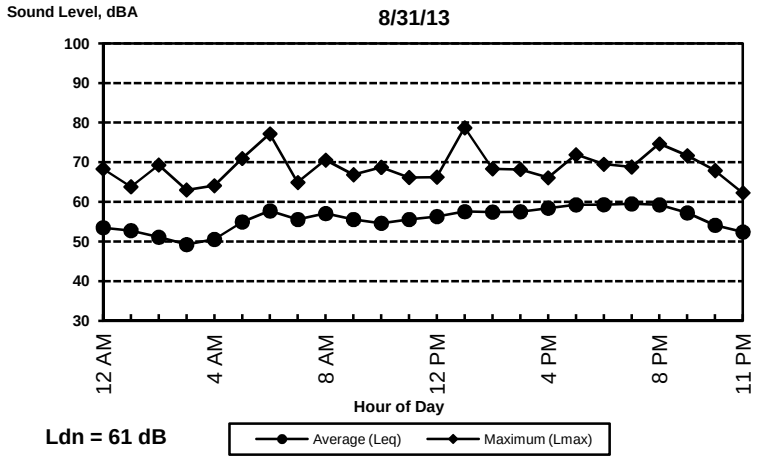
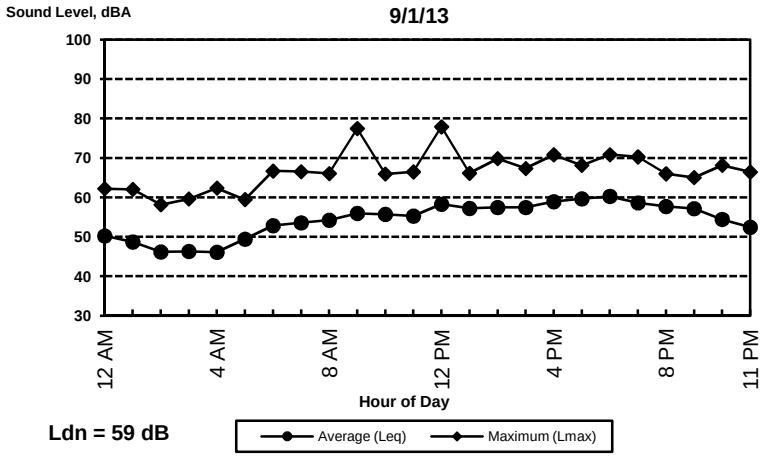
Appendix B-13
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 13 (2013)



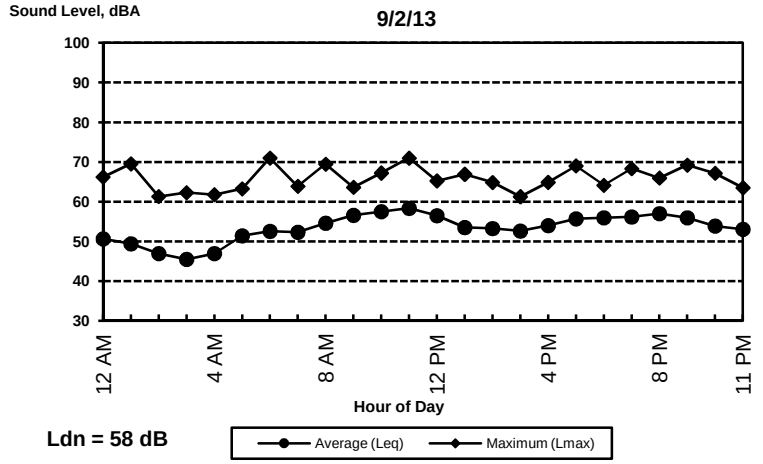
Ldn = 64 dB



Ldn = 61 dB



Ldn = 59 dB



Ldn = 58 dB

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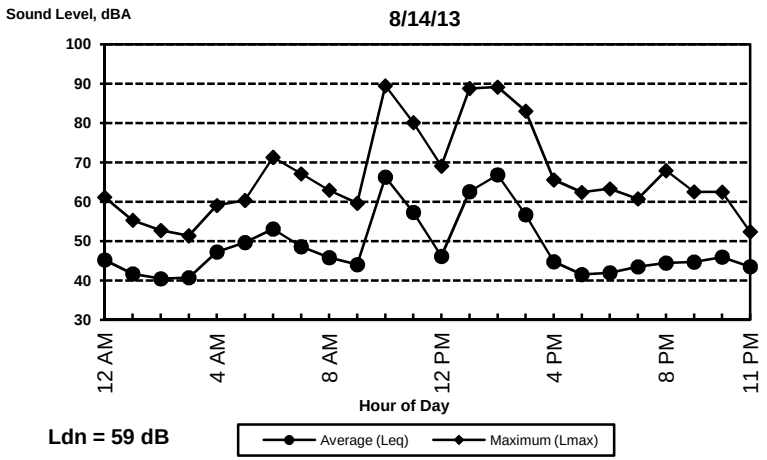
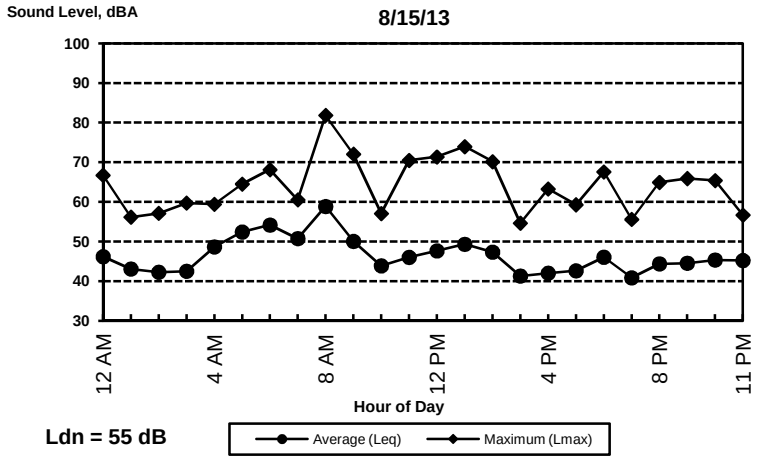
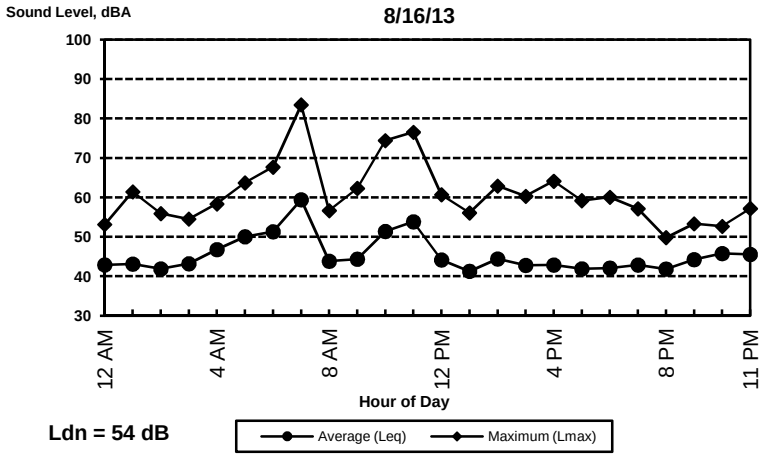
Appendix B-14
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 14 (2013)



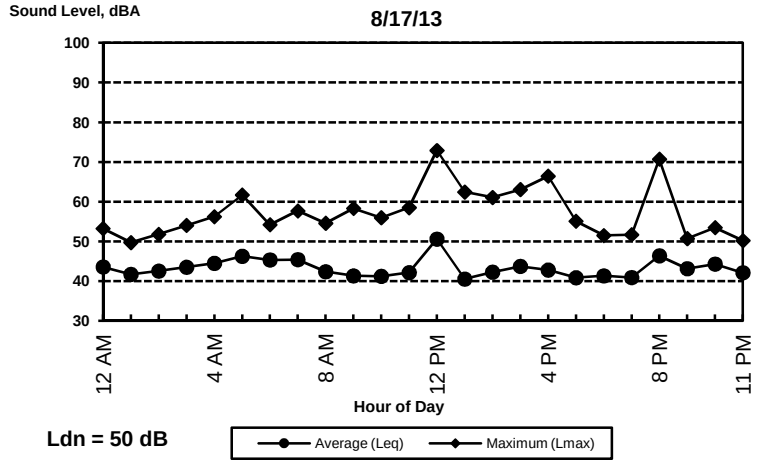
Ldn = 59 dB



Ldn = 55 dB



Ldn = 54 dB



Ldn = 50 dB

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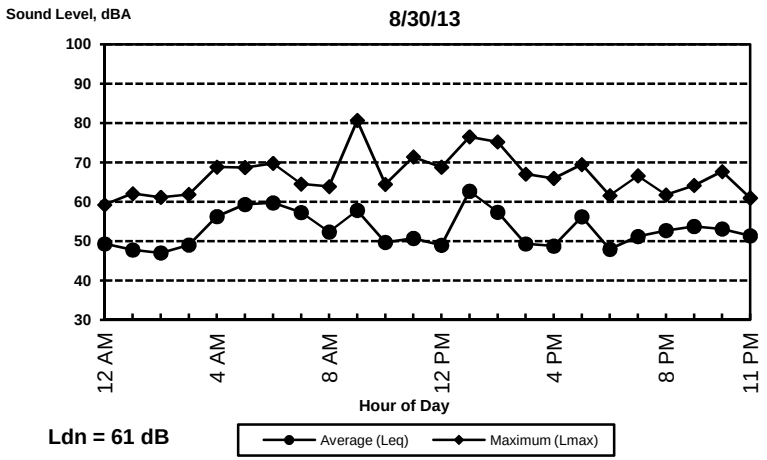
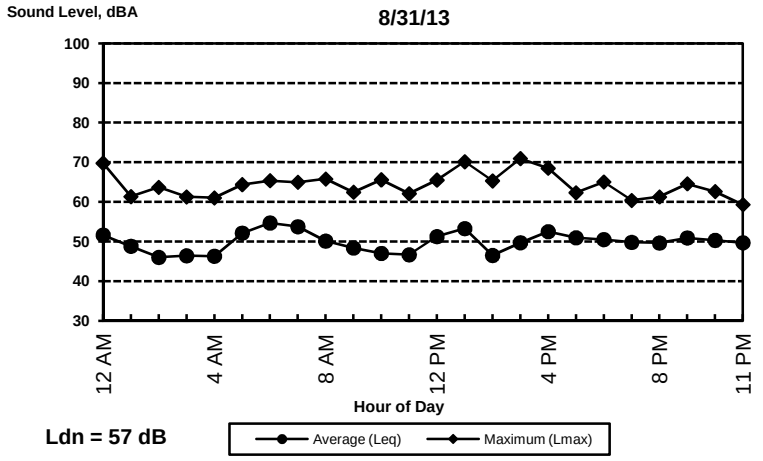
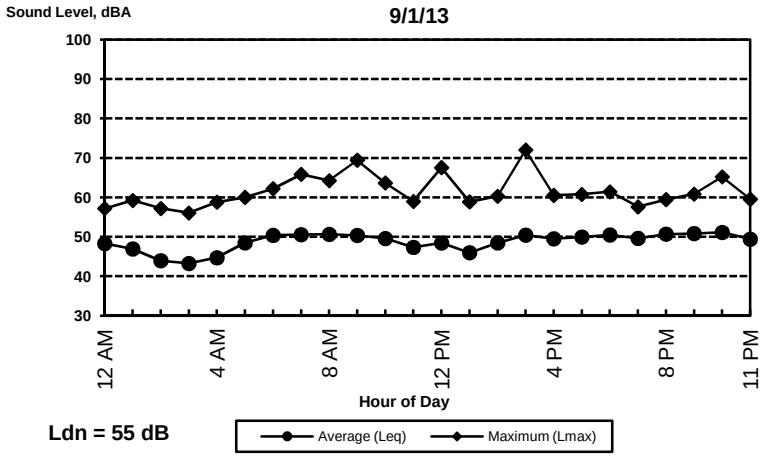
Appendix B-15
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 15 (2013)



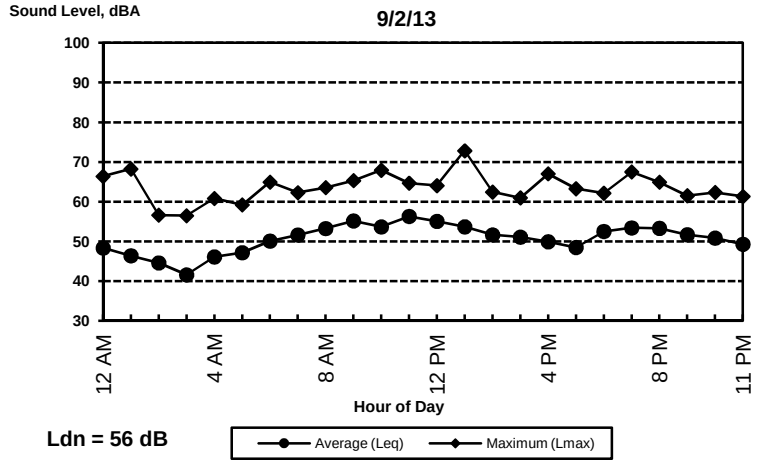
Ldn = 61 dB



Ldn = 57 dB



Ldn = 55 dB



Ldn = 56 dB

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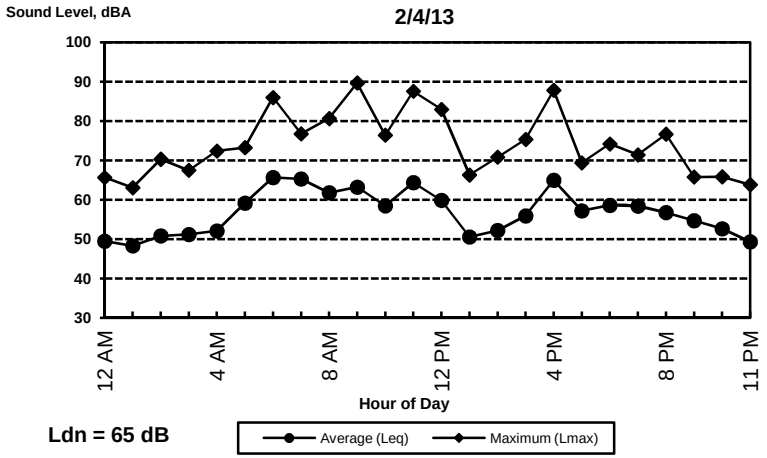
Appendix B-16
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 16 (2013)



Ldn = 65 dB

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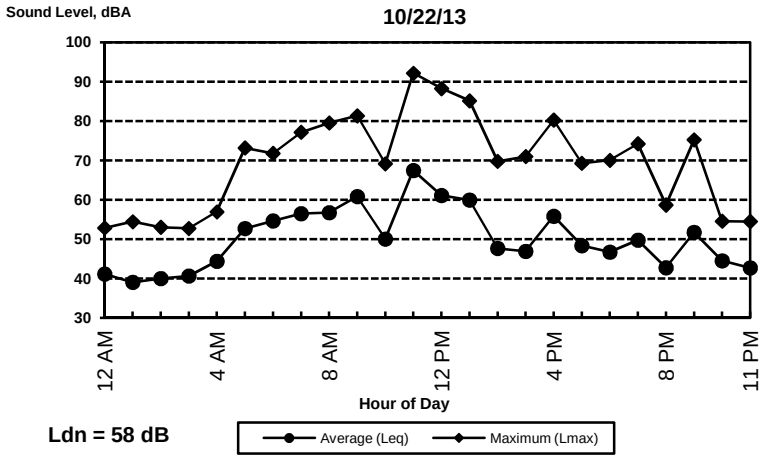
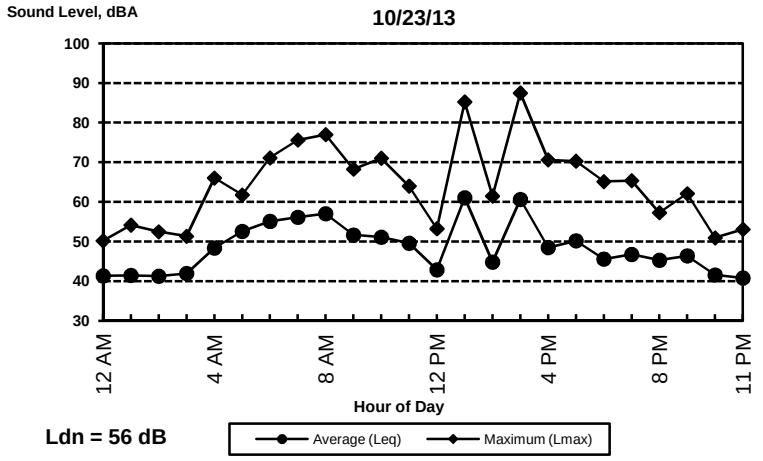
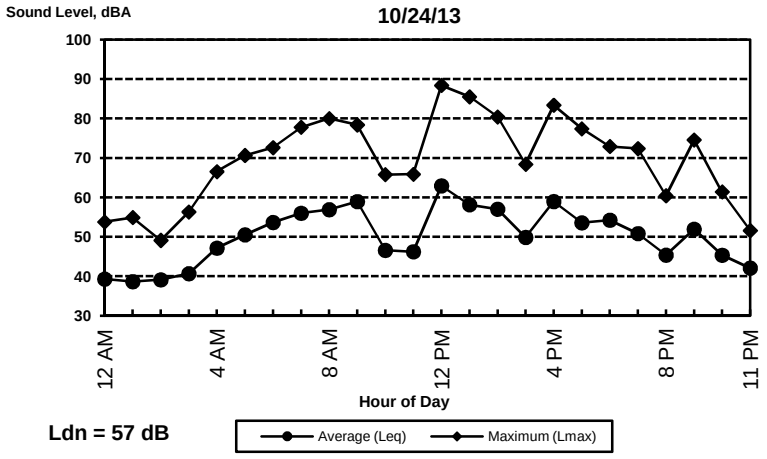
Appendix B-17
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 17 (2013)



Ldn = 58 dB



Ldn = 56 dB



Ldn = 57 dB

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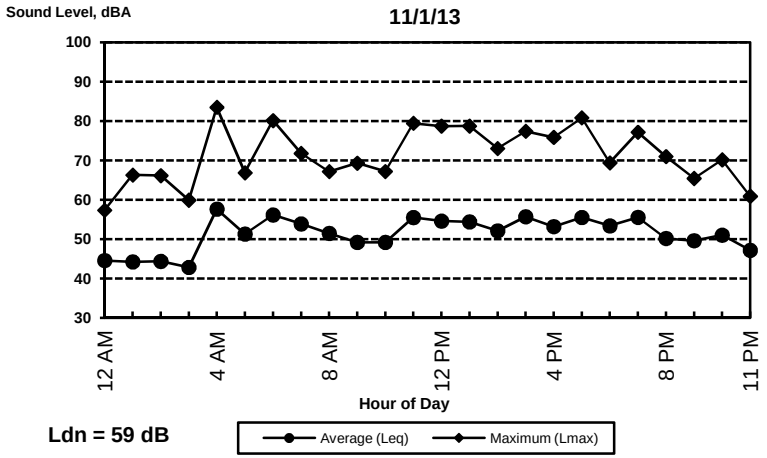
Appendix B-18
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 18 (2013)



Ldn = 59 dB

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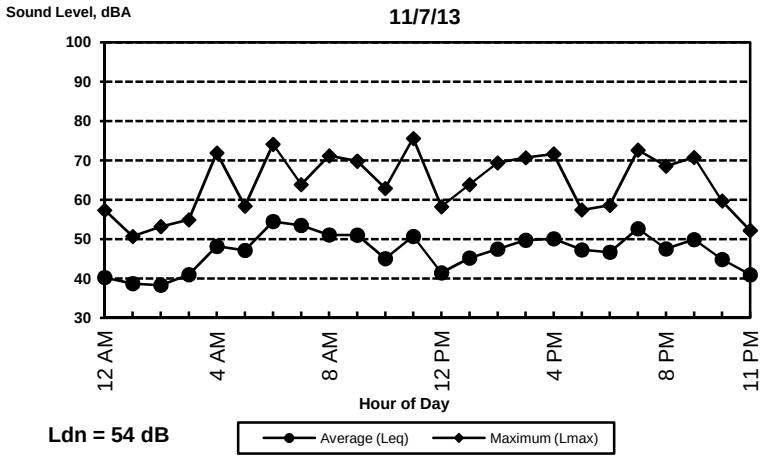
Appendix B-19
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 19 (2013)



Ldn = 54 dB

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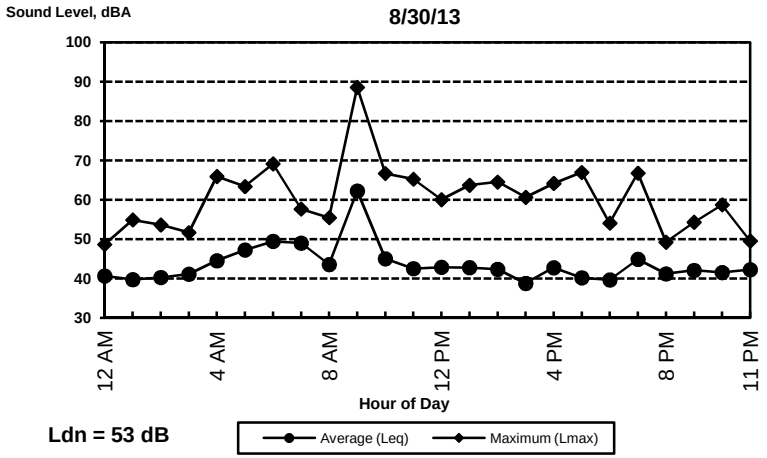
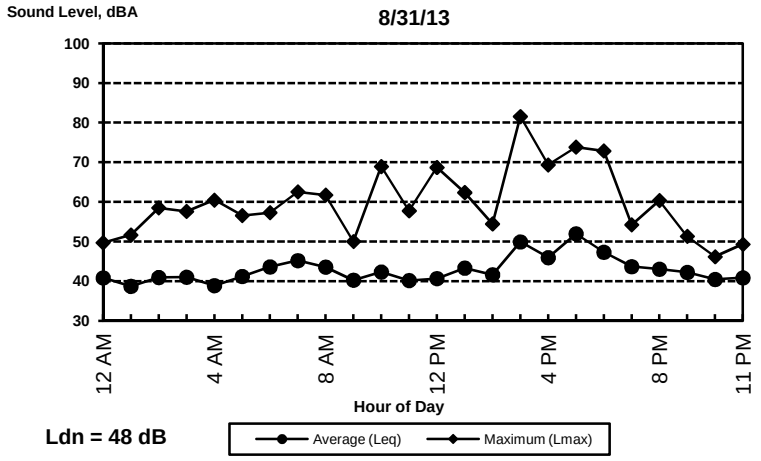
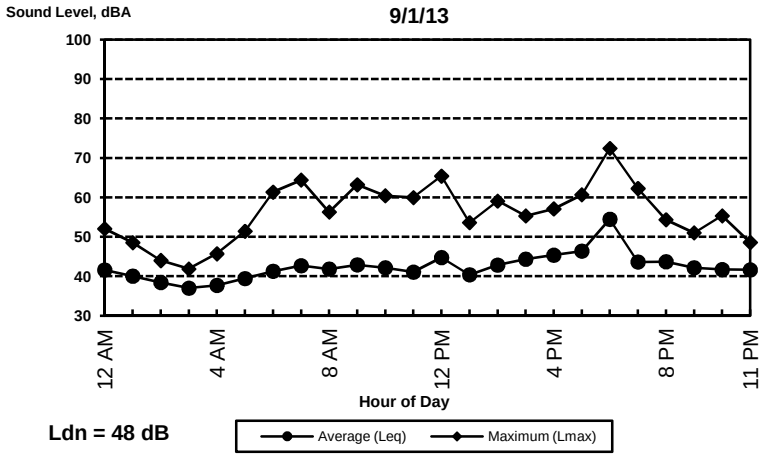
Appendix B-20
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 20 (2013)



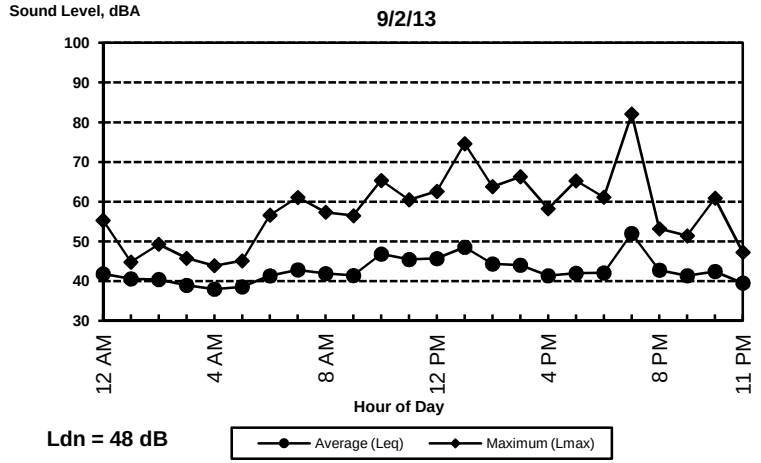
Ldn = 53 dB



Ldn = 48 dB



Ldn = 48 dB



Ldn = 48 dB

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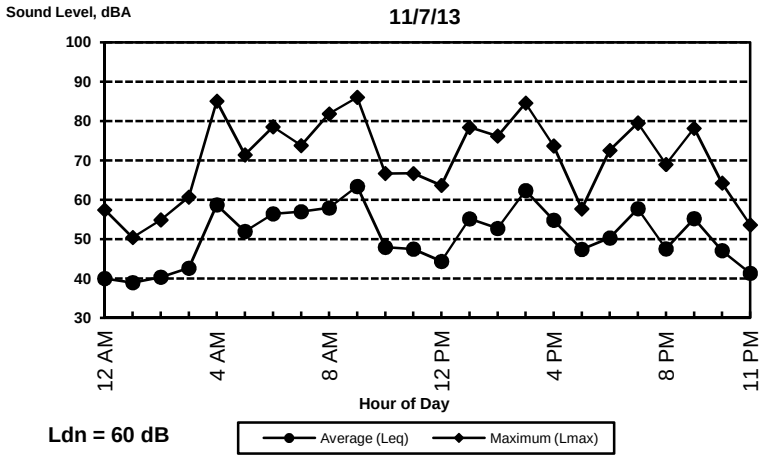
Appendix B-21
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 21 (2013)



Ldn = 60 dB

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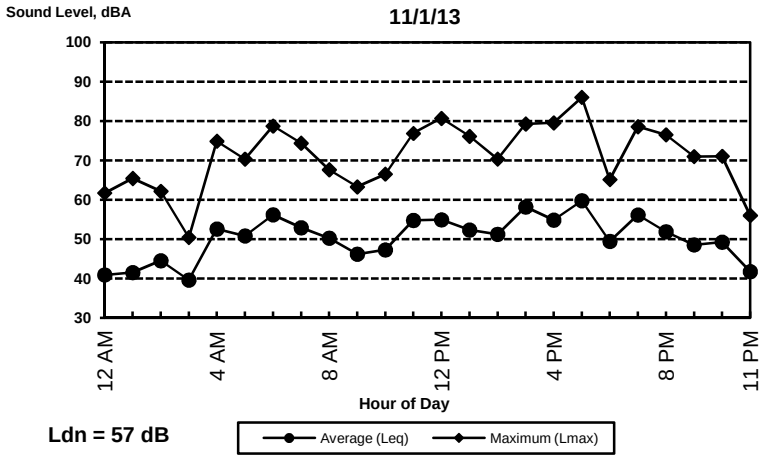
Appendix B-22
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 22 (2013)



Ldn = 57 dB

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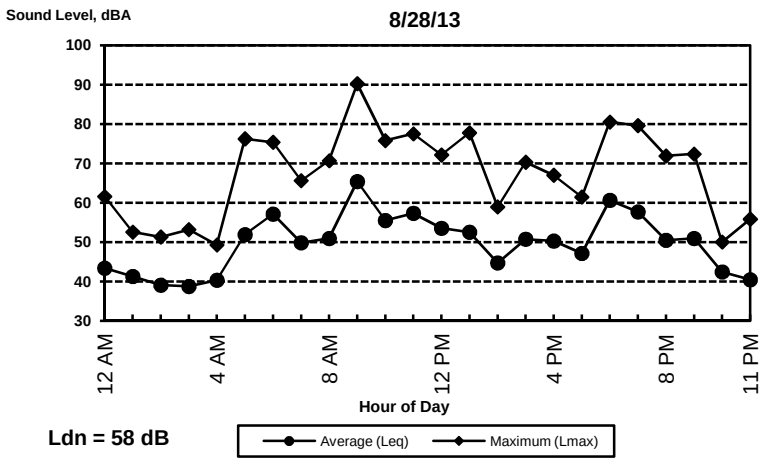
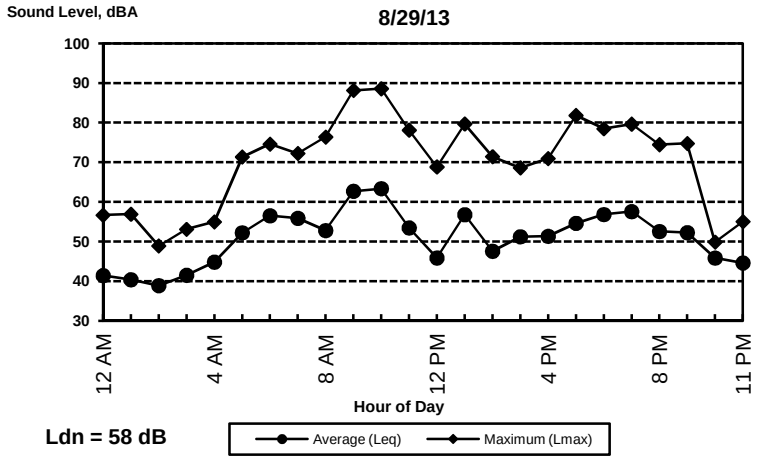
Appendix B-23
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 23 (2013)



Ldn = 58 dB



Ldn = 58 dB

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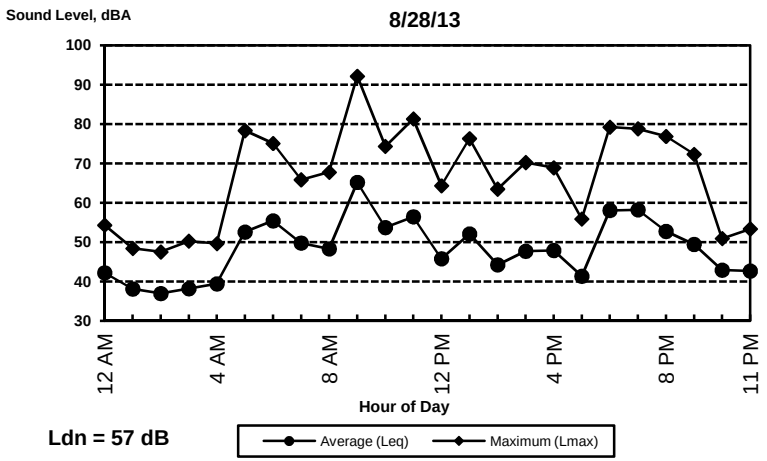
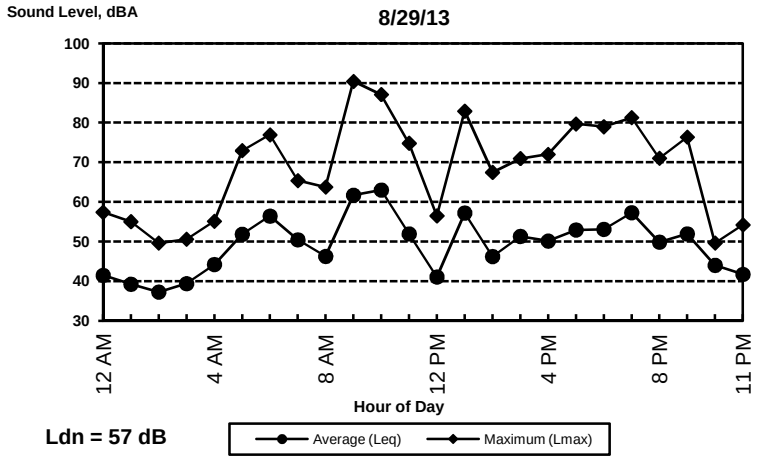
Appendix B-24
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 24 (2013)





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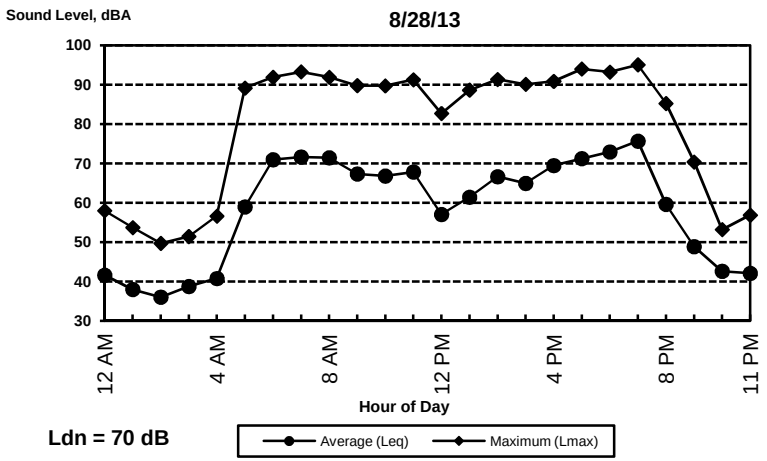
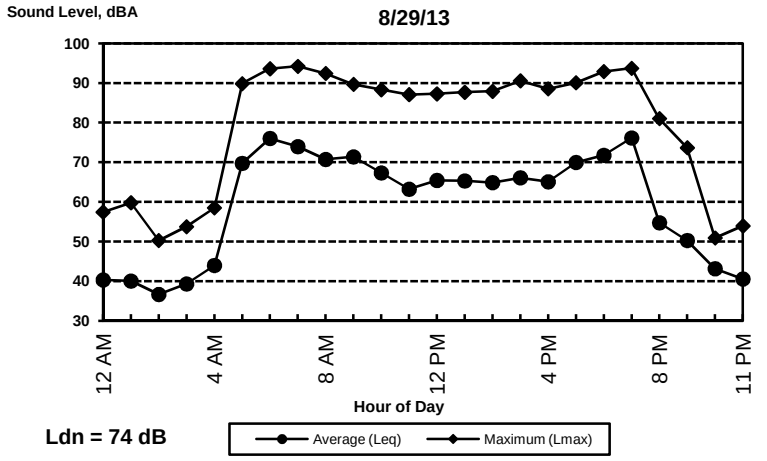
Appendix B-25
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 25 (2013)



Ldn = 70 dB



Ldn = 74 dB

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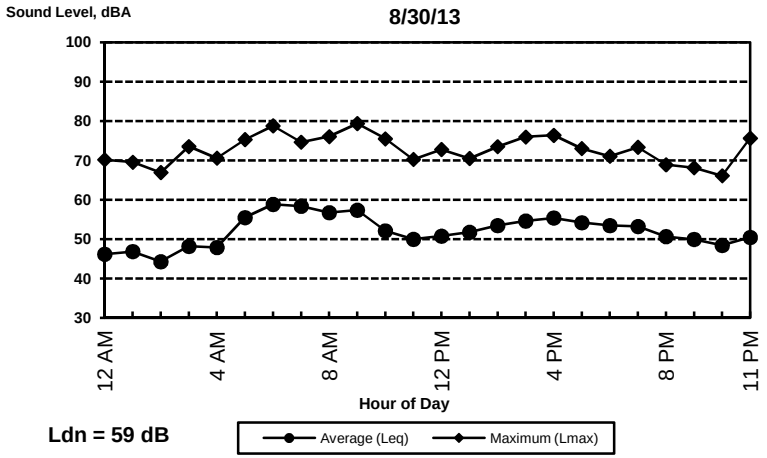
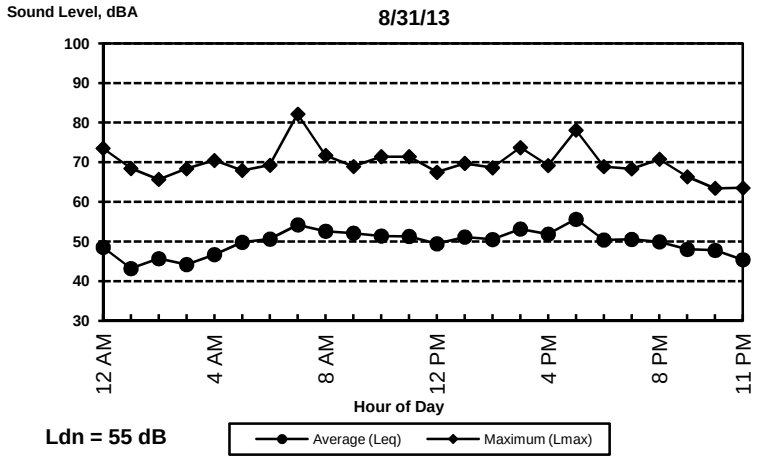
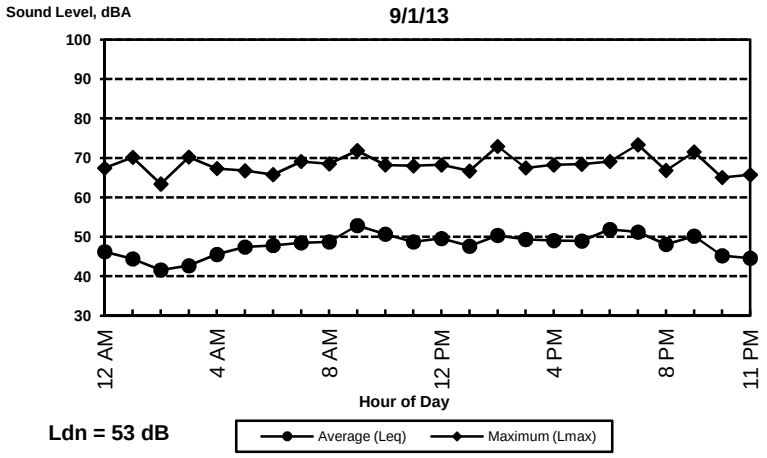
Appendix B-26
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 26 (2013)



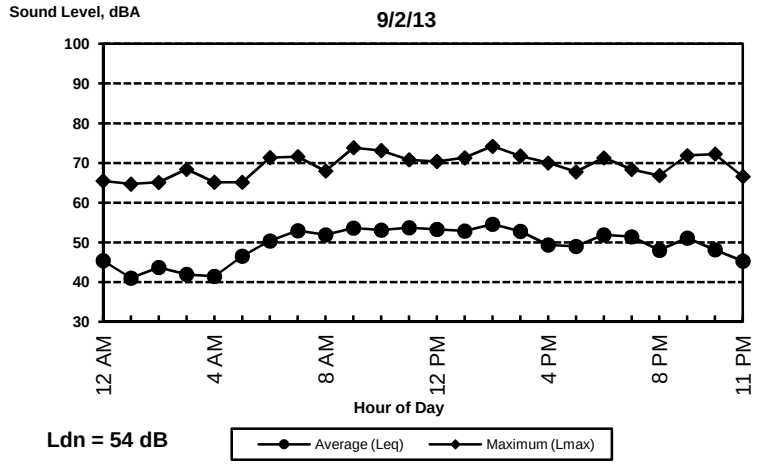
Ldn = 59 dB



Ldn = 55 dB



Ldn = 53 dB



Ldn = 54 dB

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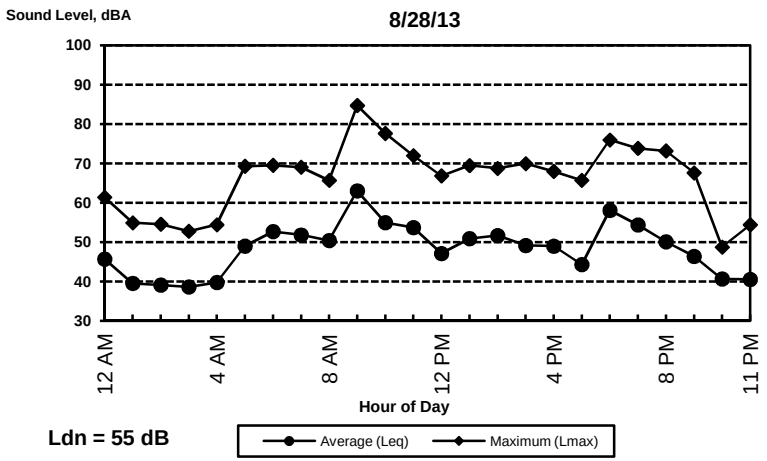
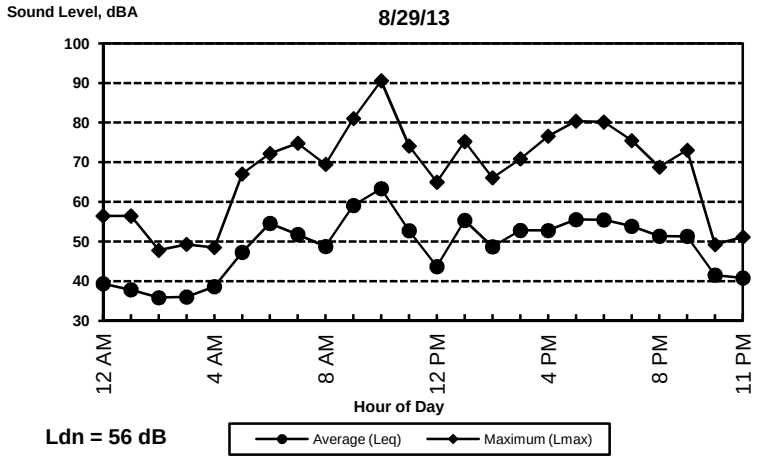
Appendix B-27
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 27 (2013)



Ldn = 55 dB



Ldn = 56 dB

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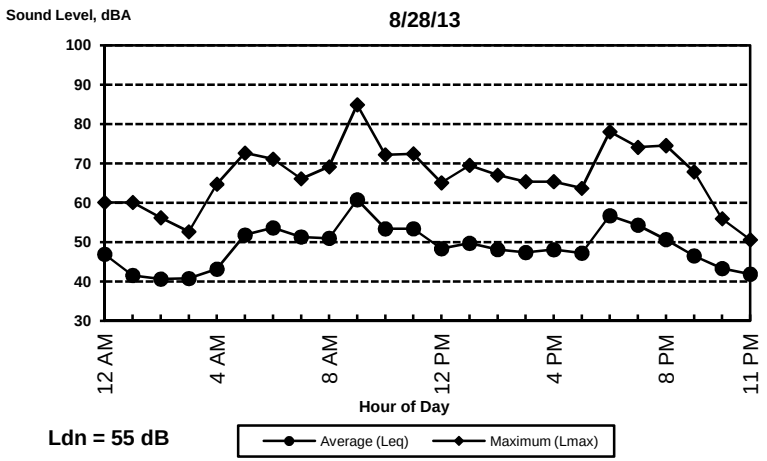
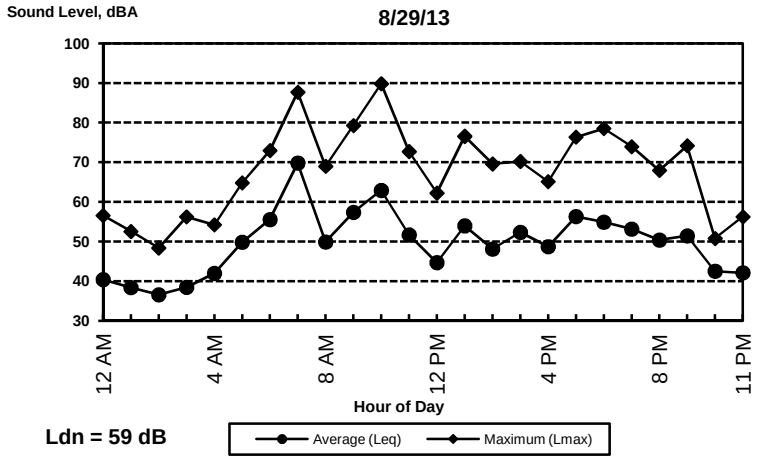
Appendix B-28
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 28 (2013)



Ldn = 55 dB



Ldn = 59 dB

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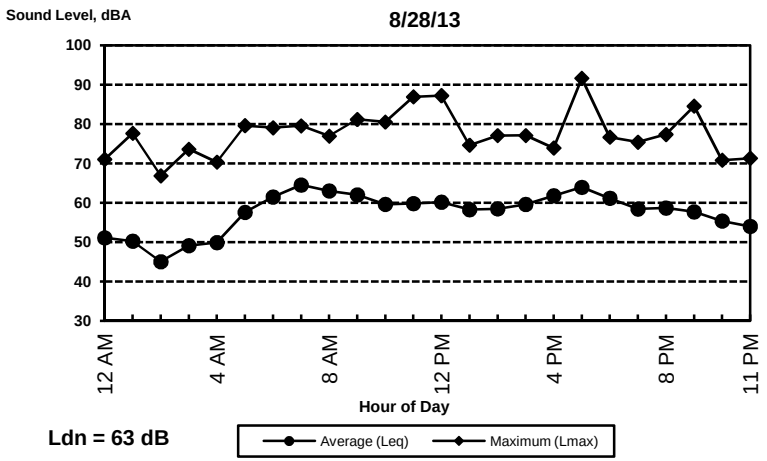
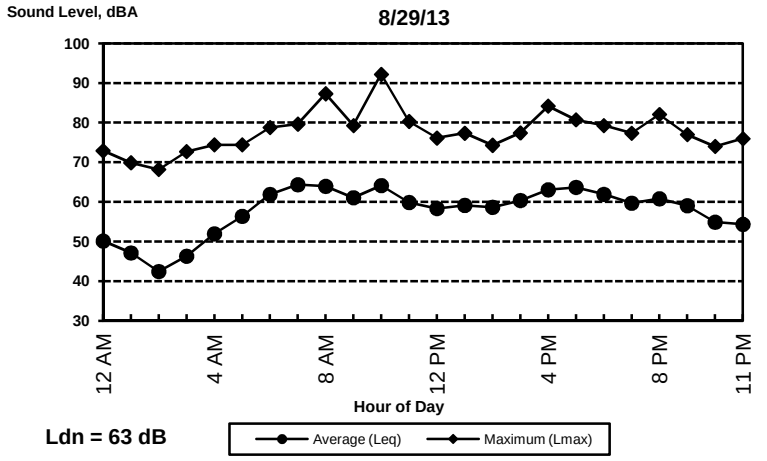
Acoustical Consultants

Appendix B-29
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 29 (2013)





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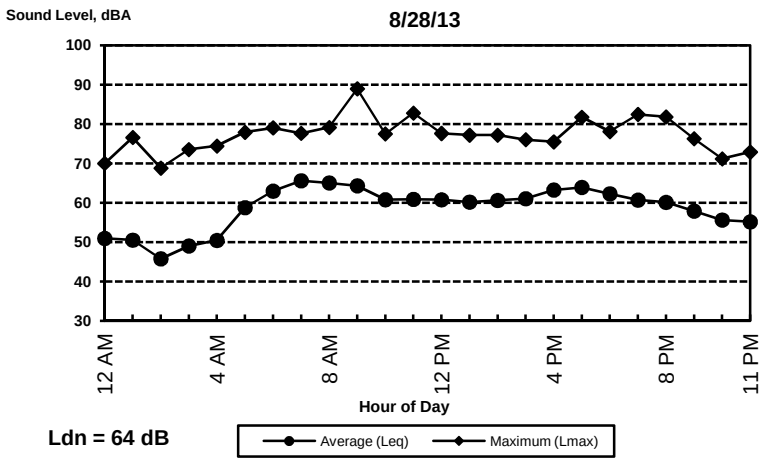
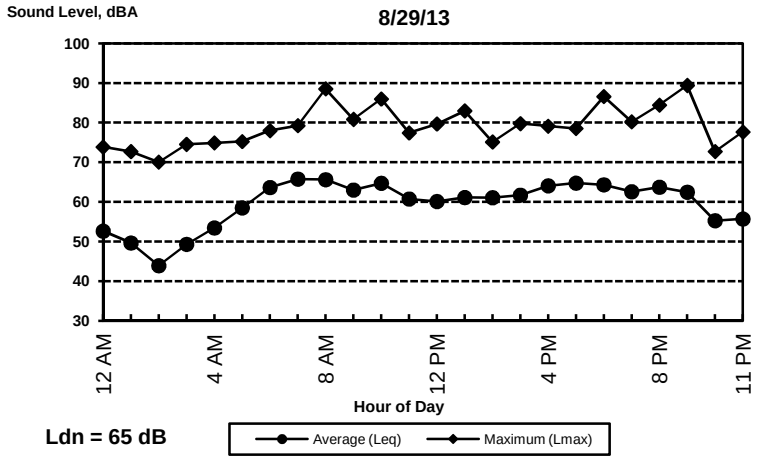
Appendix B-30
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 30 (2013)



Ldn = 64 dB



Ldn = 65 dB

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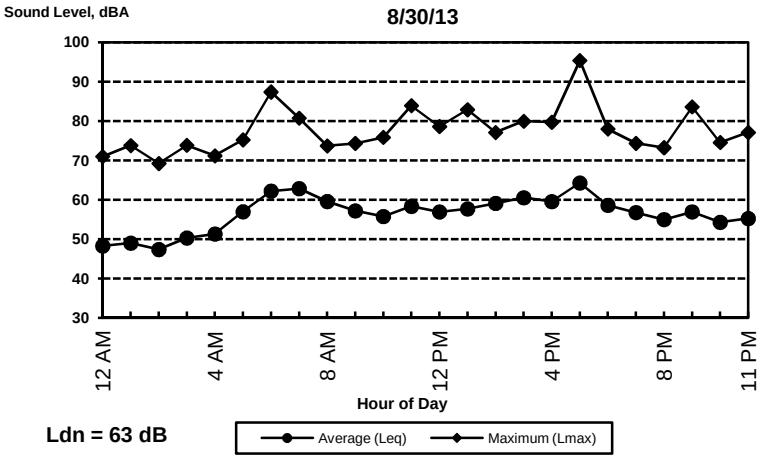
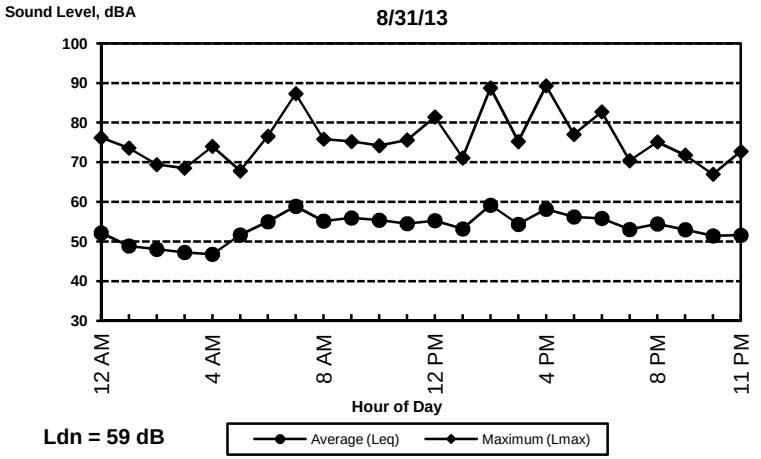
Acoustical Consultants

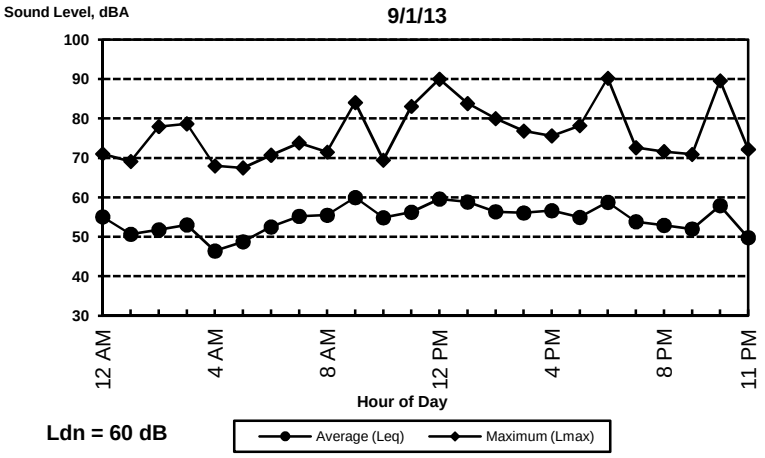
Appendix B-31
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 31 (2013)



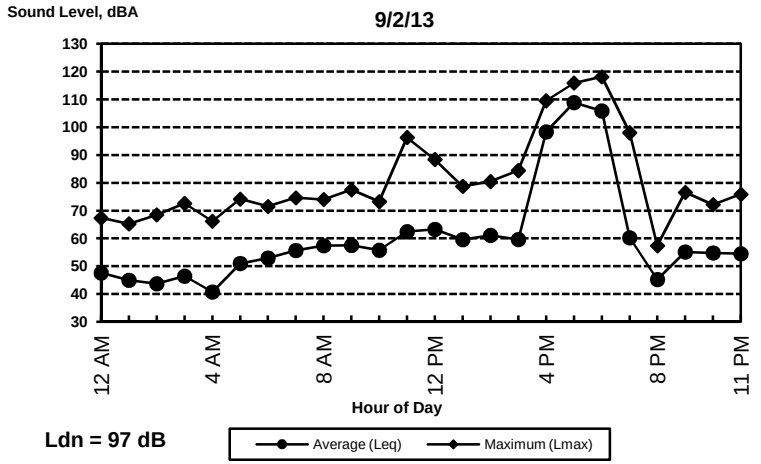
Ldn = 63 dB



Ldn = 59 dB



Ldn = 60 dB



Ldn = 97 dB

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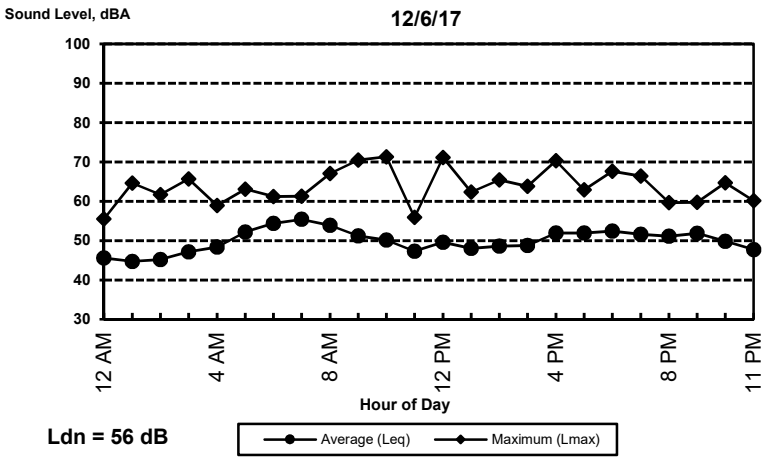
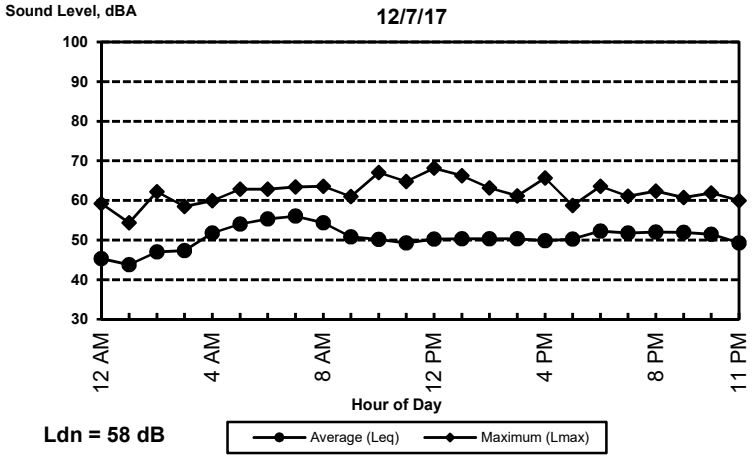
Appendix C-1
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 1 (2017)



Ldn = 56 dB



Ldn = 58 dB

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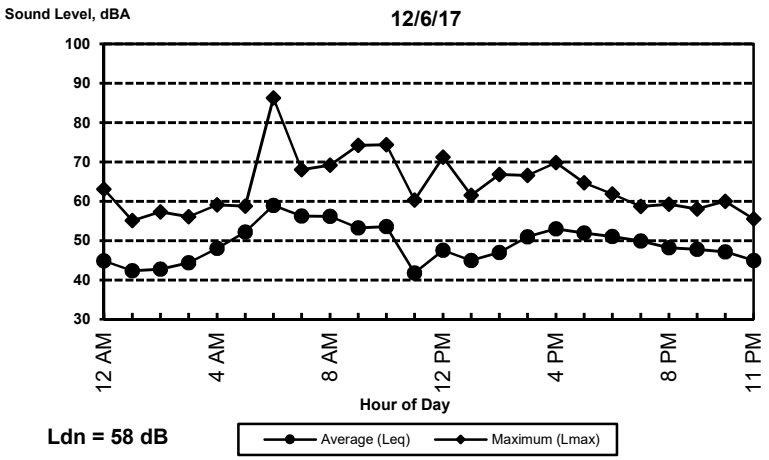
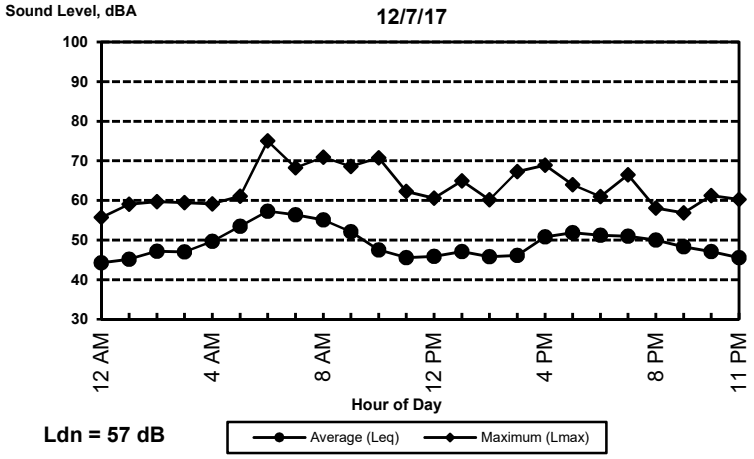
Appendix C-2
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 7 (2017)



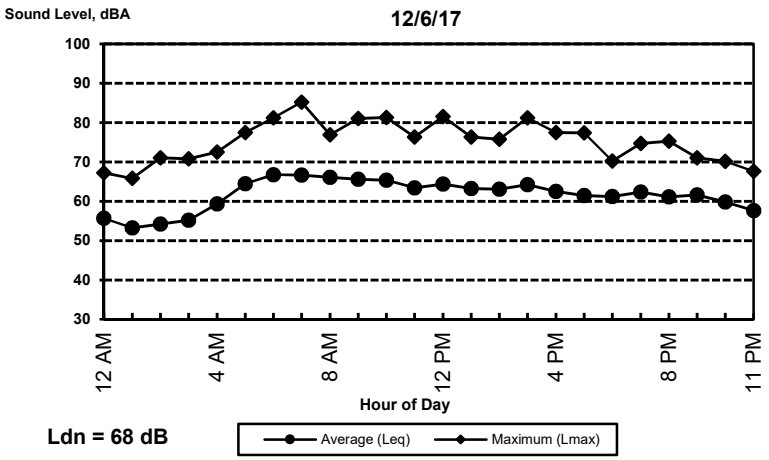
Ldn = 58 dB



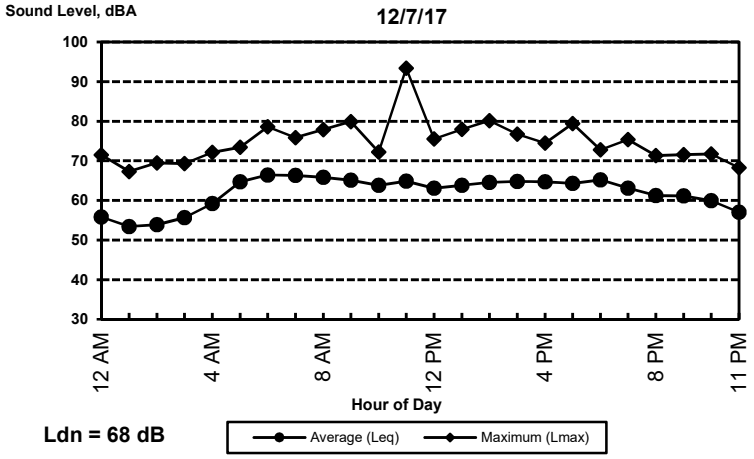
Ldn = 57 dB

BOLLARD
Acoustical Consultants

Appendix C-3
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 12 (2017)



Ldn = 68 dB



Ldn = 68 dB

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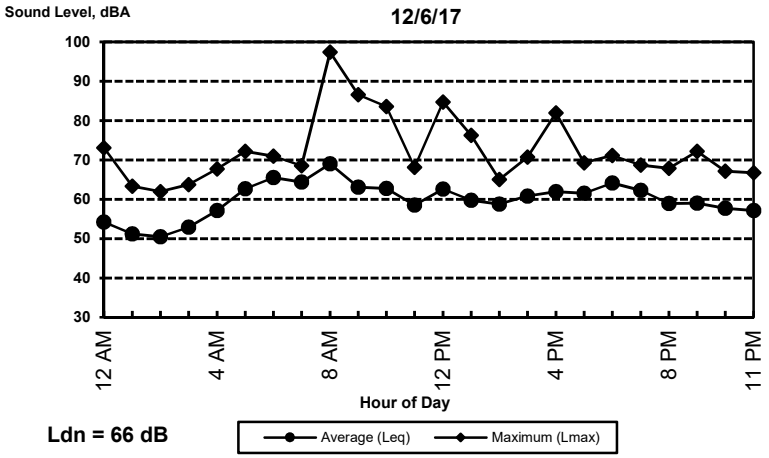
Appendix C-4
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 13 (2017)



Ldn = 66 dB

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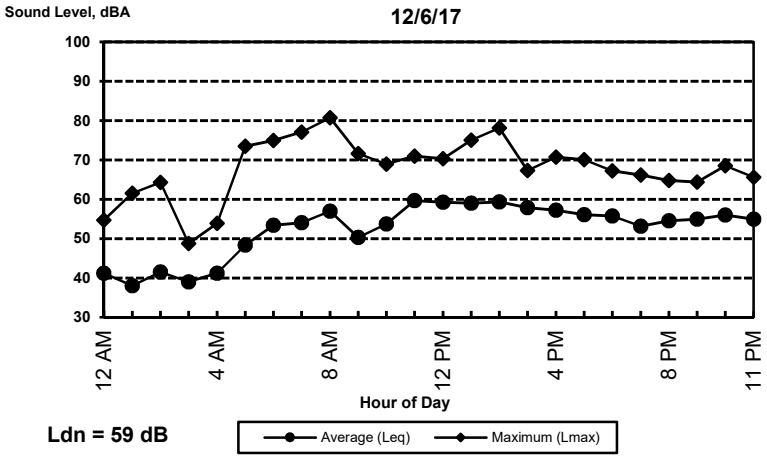
Appendix C-5
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 20-A (2017)



Ldn = 59 dB

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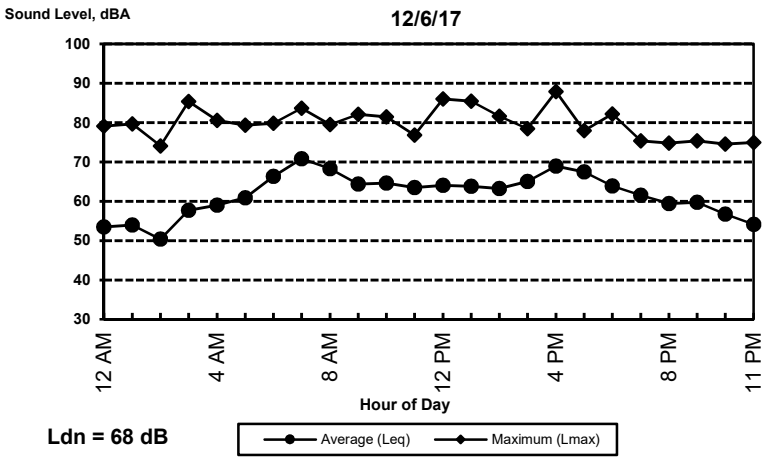
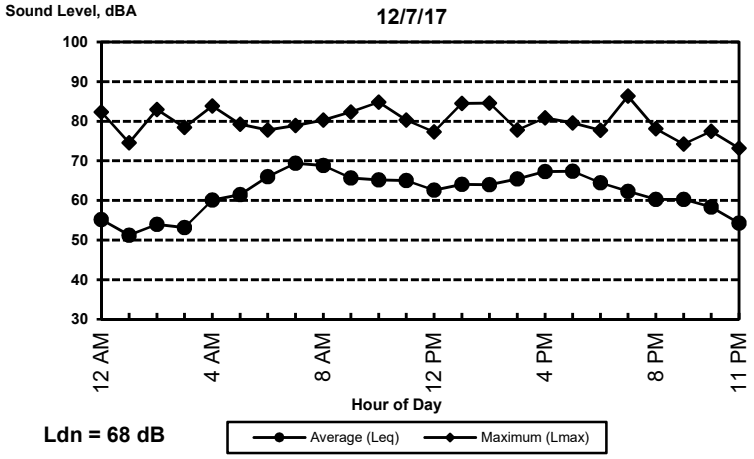
Appendix C-6
West Jackson Master Plan - Sacramento County, California
Long-Term Ambient Noise Monitoring Results - Site 30 (2017)



Ldn = 68 dB



Ldn = 68 dB

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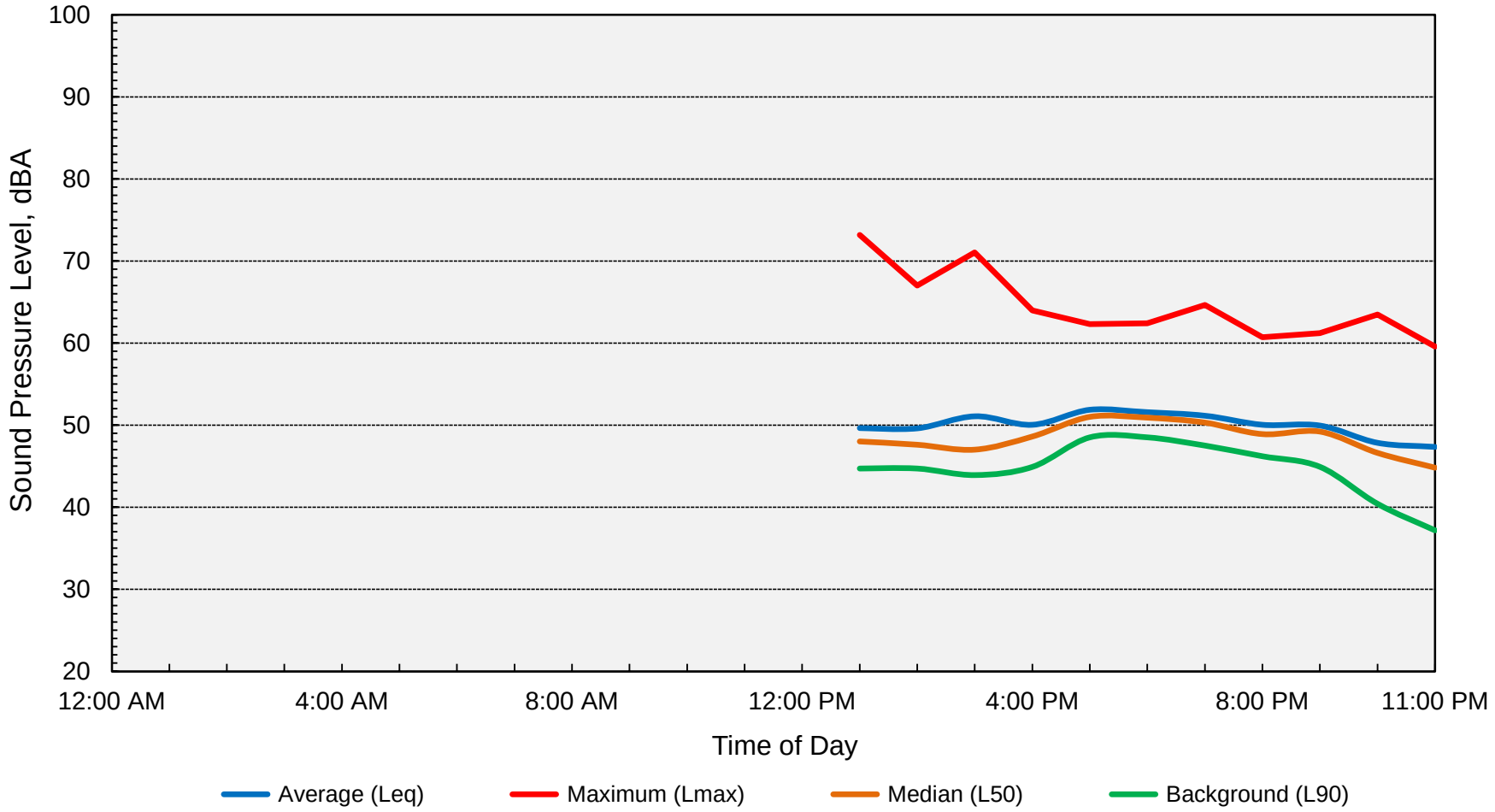
Appendix D-1
Long-Term Ambient Noise Monitoring Results - Site 1
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 55 dB

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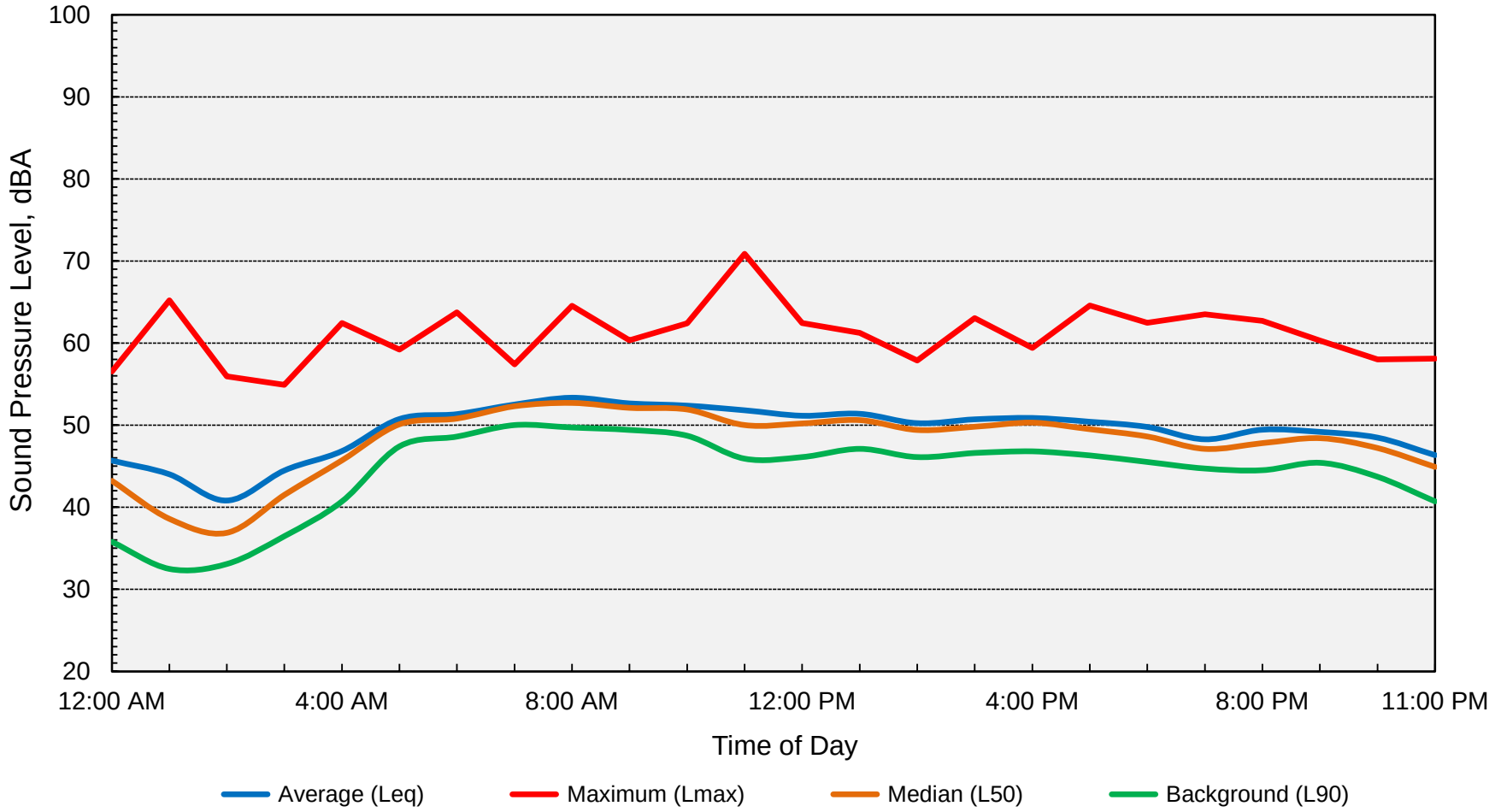
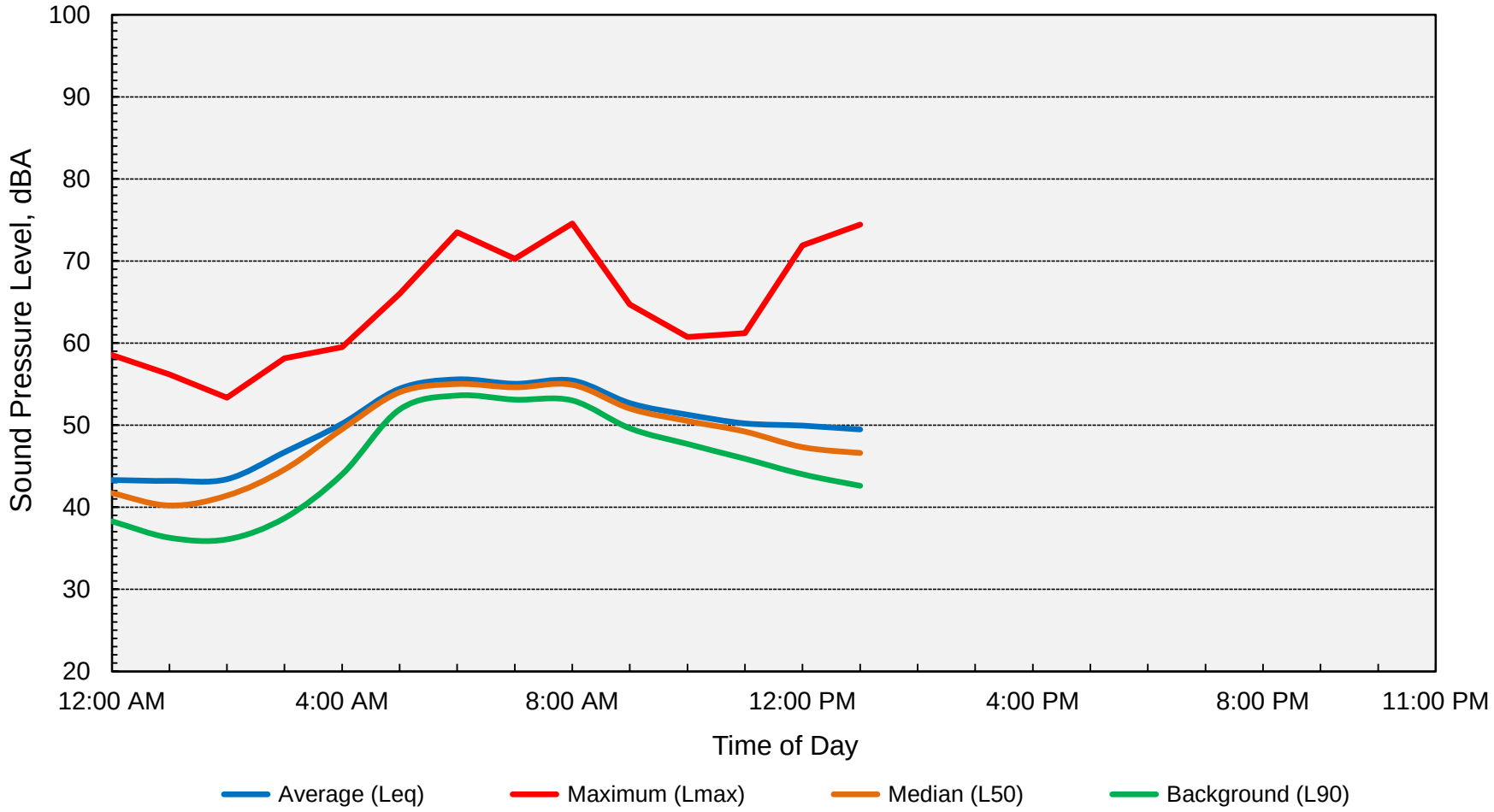
Appendix D-2
Long-Term Ambient Noise Monitoring Results - Site 1
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 55 dB

BOLLARD
Acoustical Consultants

Appendix D-3
Long-Term Ambient Noise Monitoring Results - Site 1
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 58 dB

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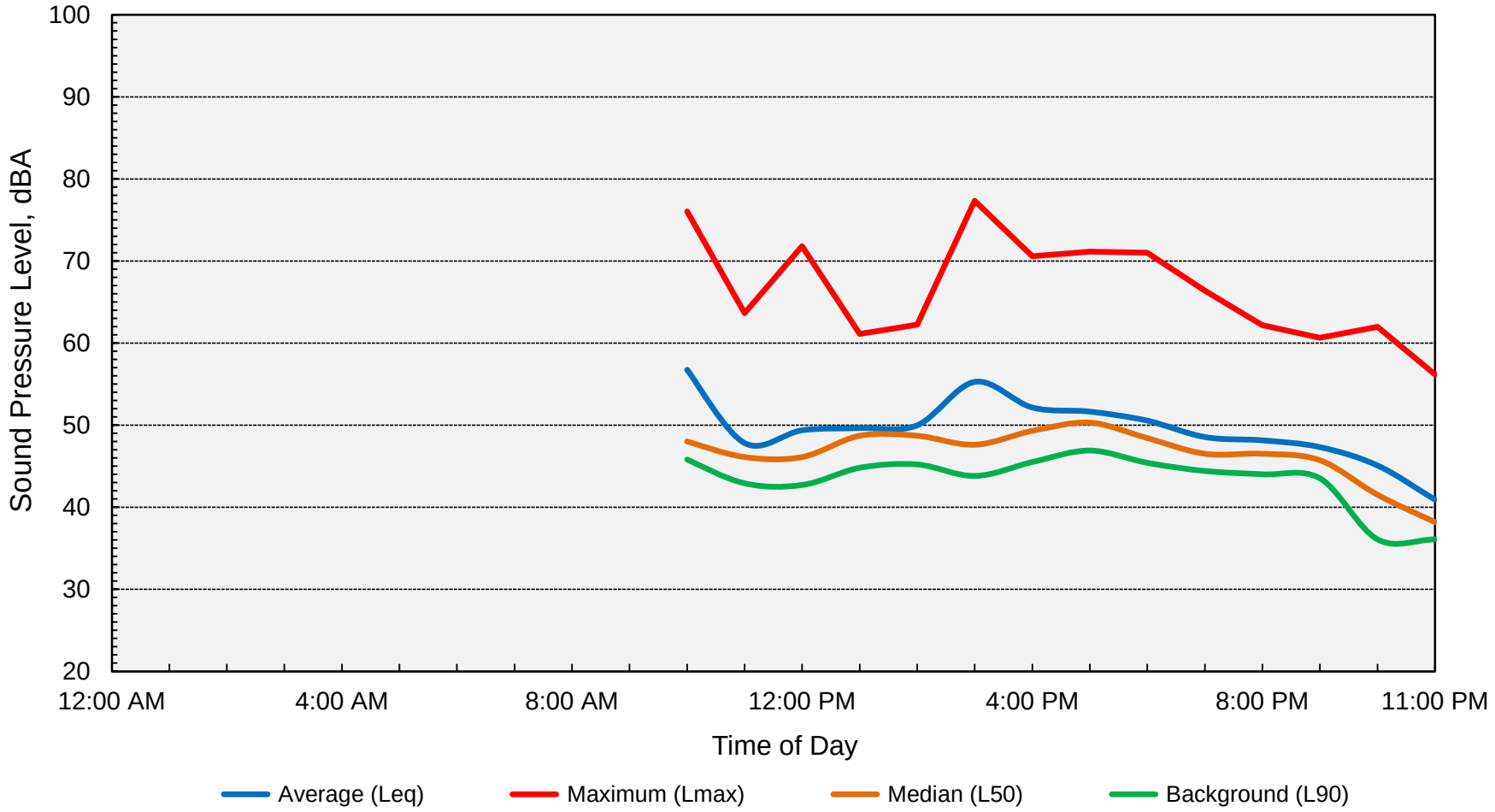
Acoustical Consultants

Appendix D-4
Long-Term Ambient Noise Monitoring Results - Site 7
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 52 dB

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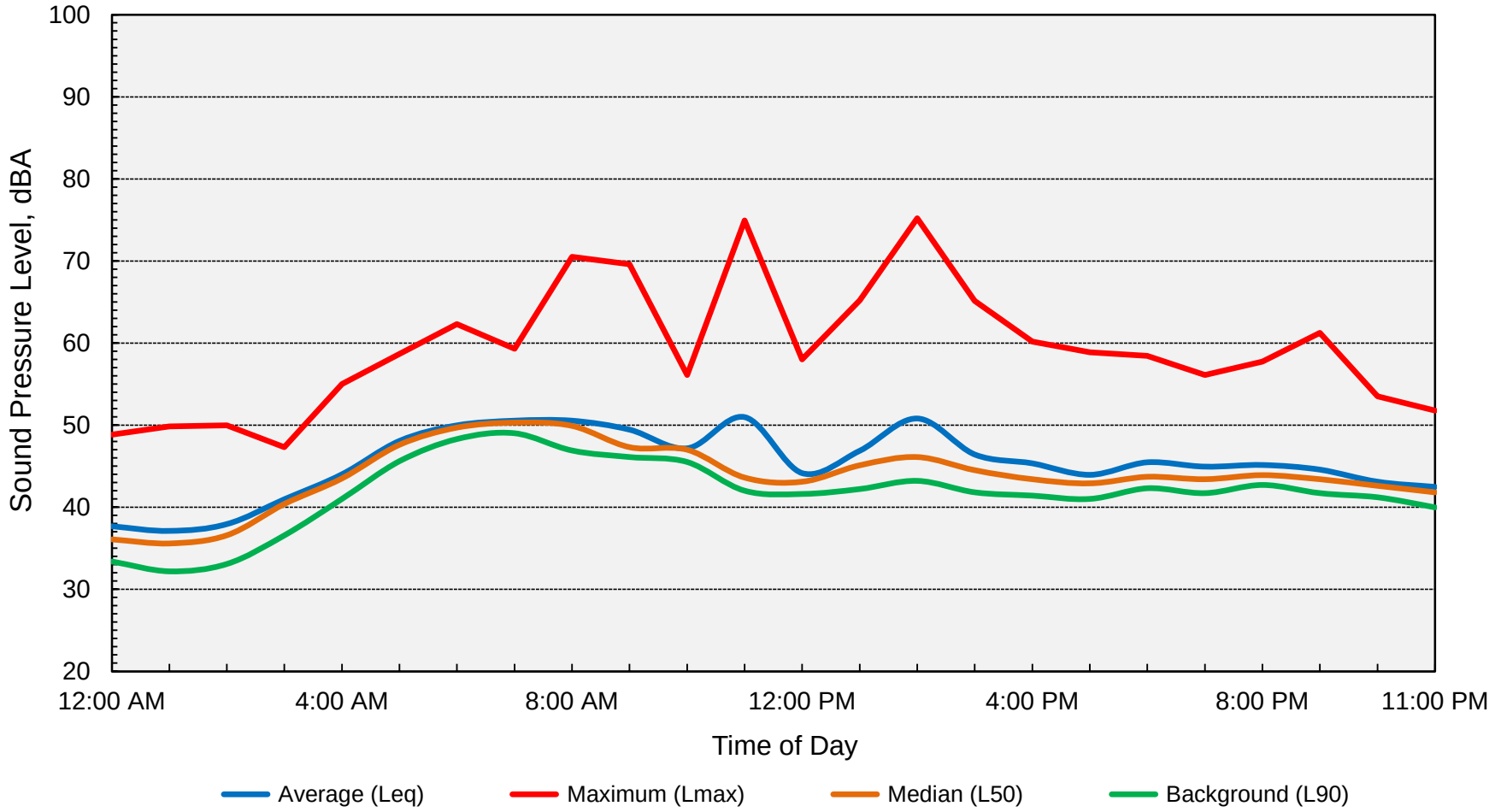
Appendix D-5
Long-Term Ambient Noise Monitoring Results - Site 7
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 52 dB

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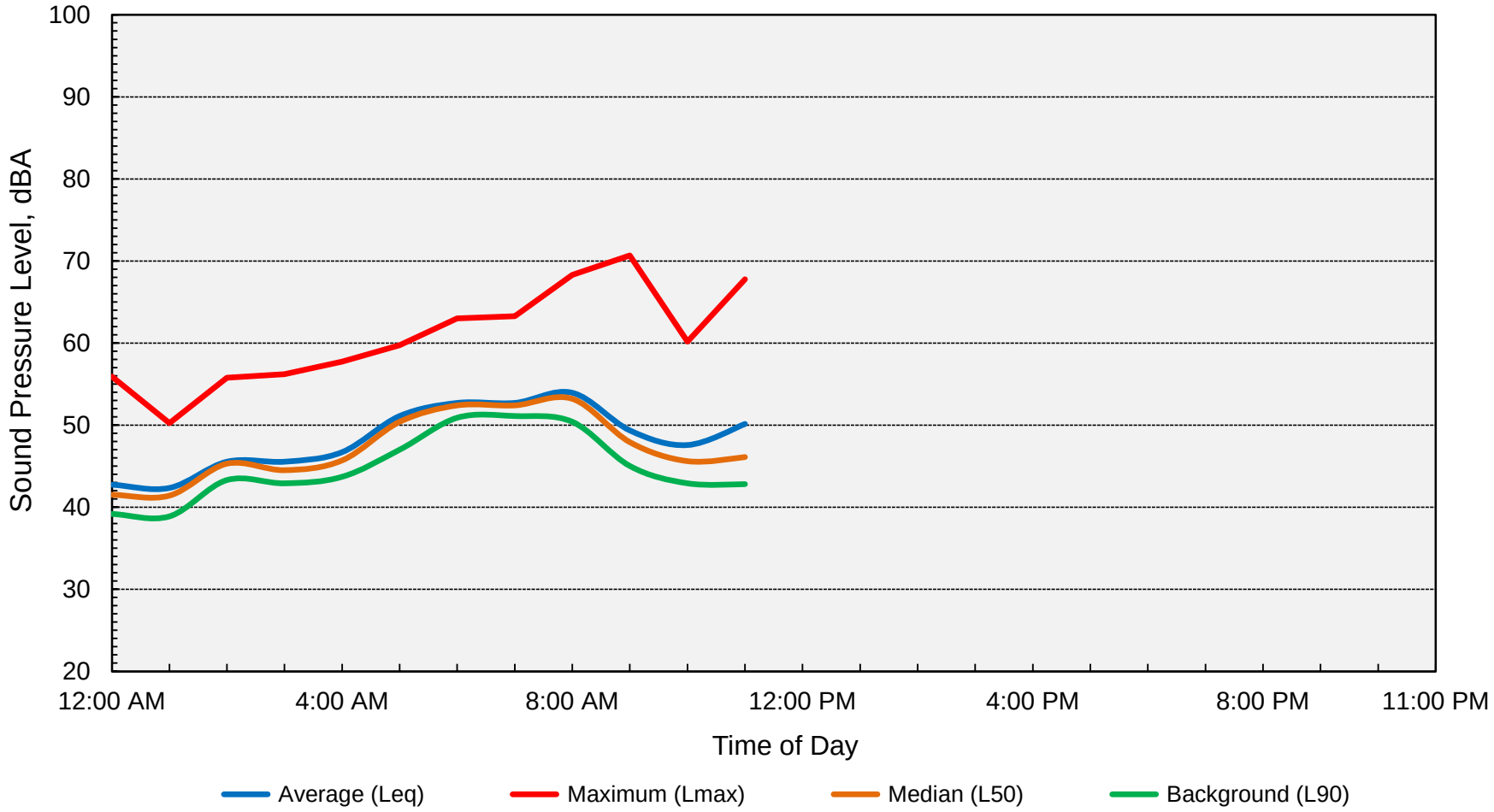
Acoustical Consultants

Appendix D-6
Long-Term Ambient Noise Monitoring Results - Site 7
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 55 dB

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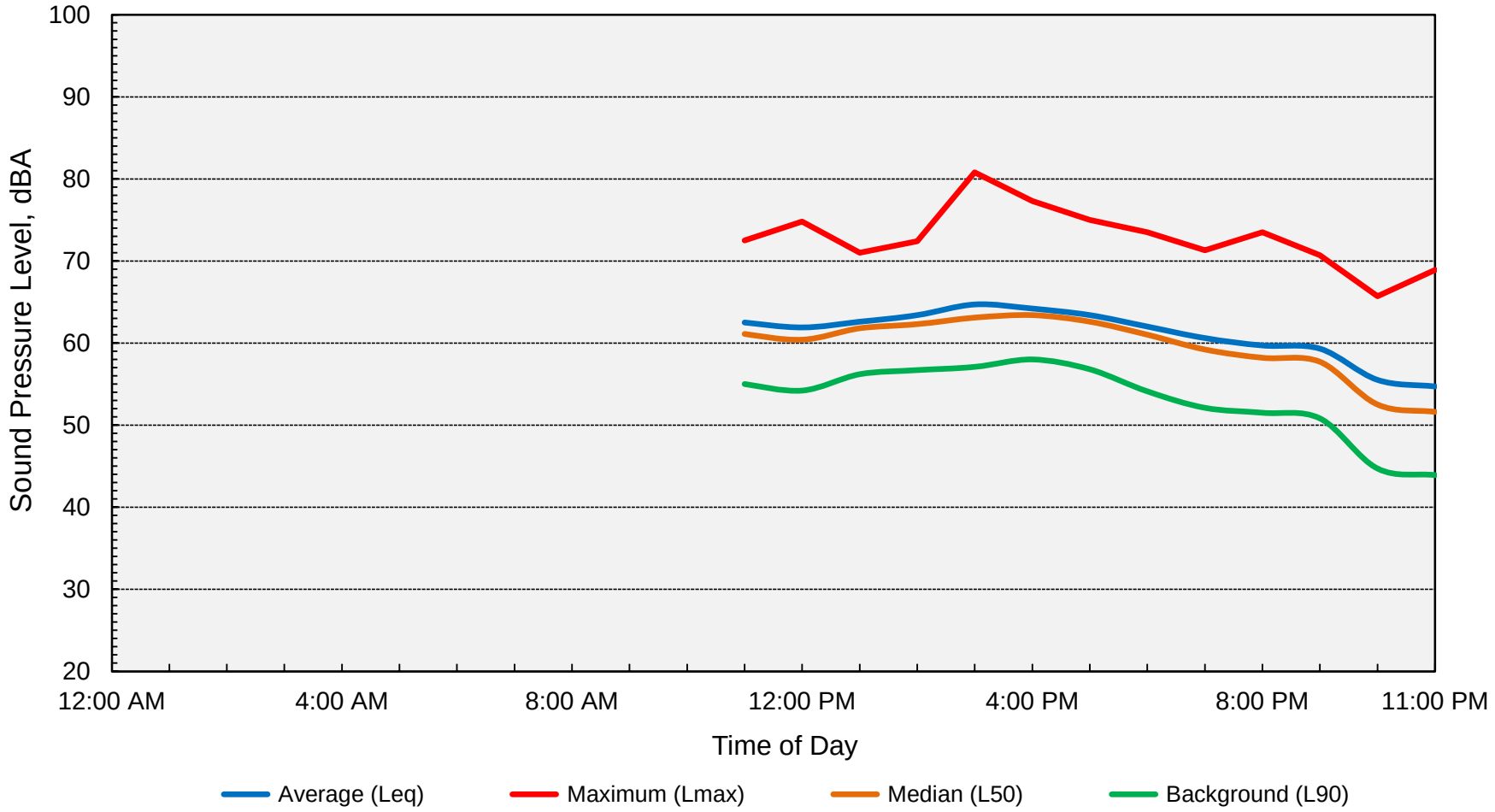
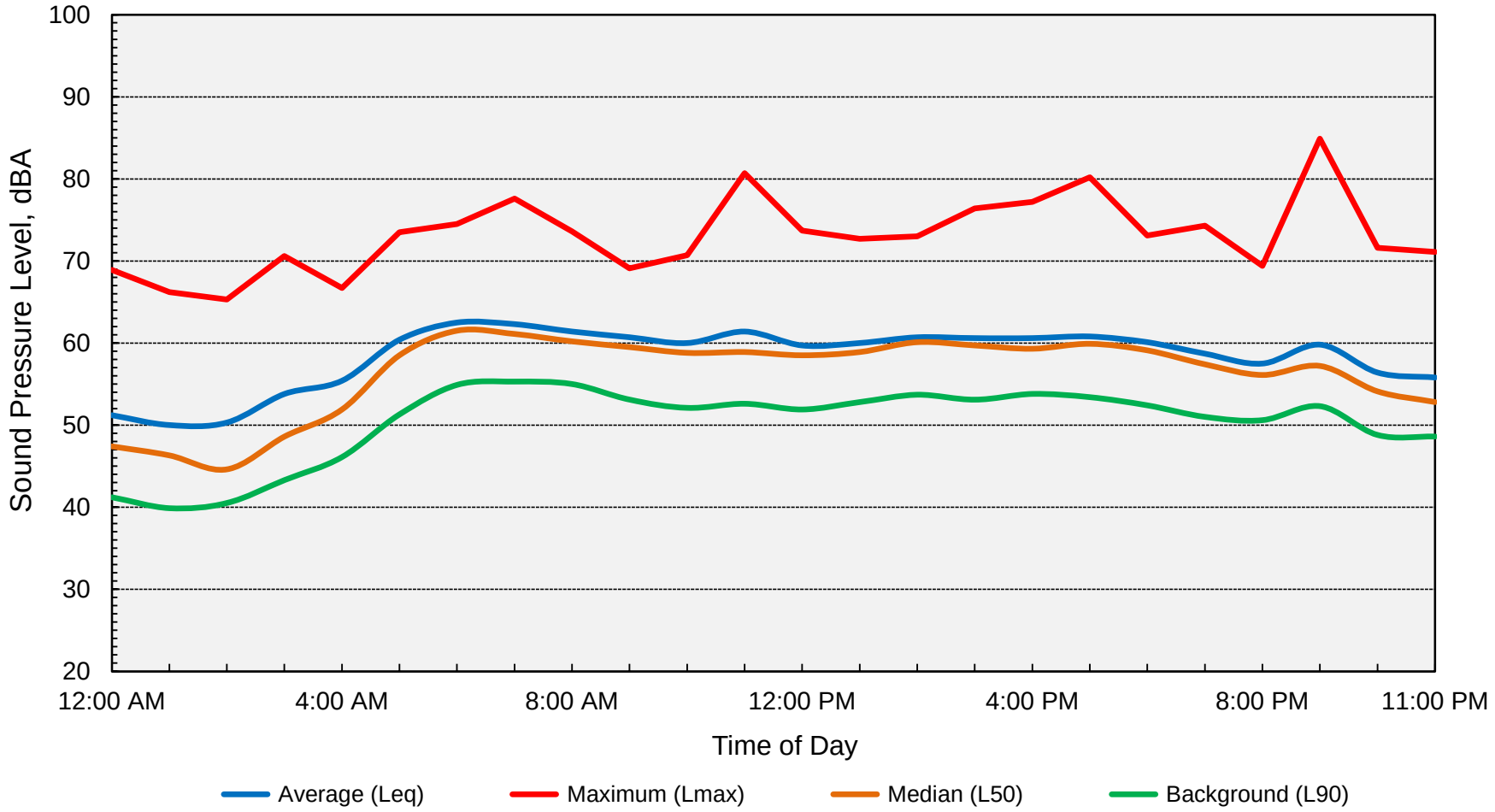
Appendix D-7
Long-Term Ambient Noise Monitoring Results - Site 12
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 64 dB

BOLLARD
Acoustical Consultants

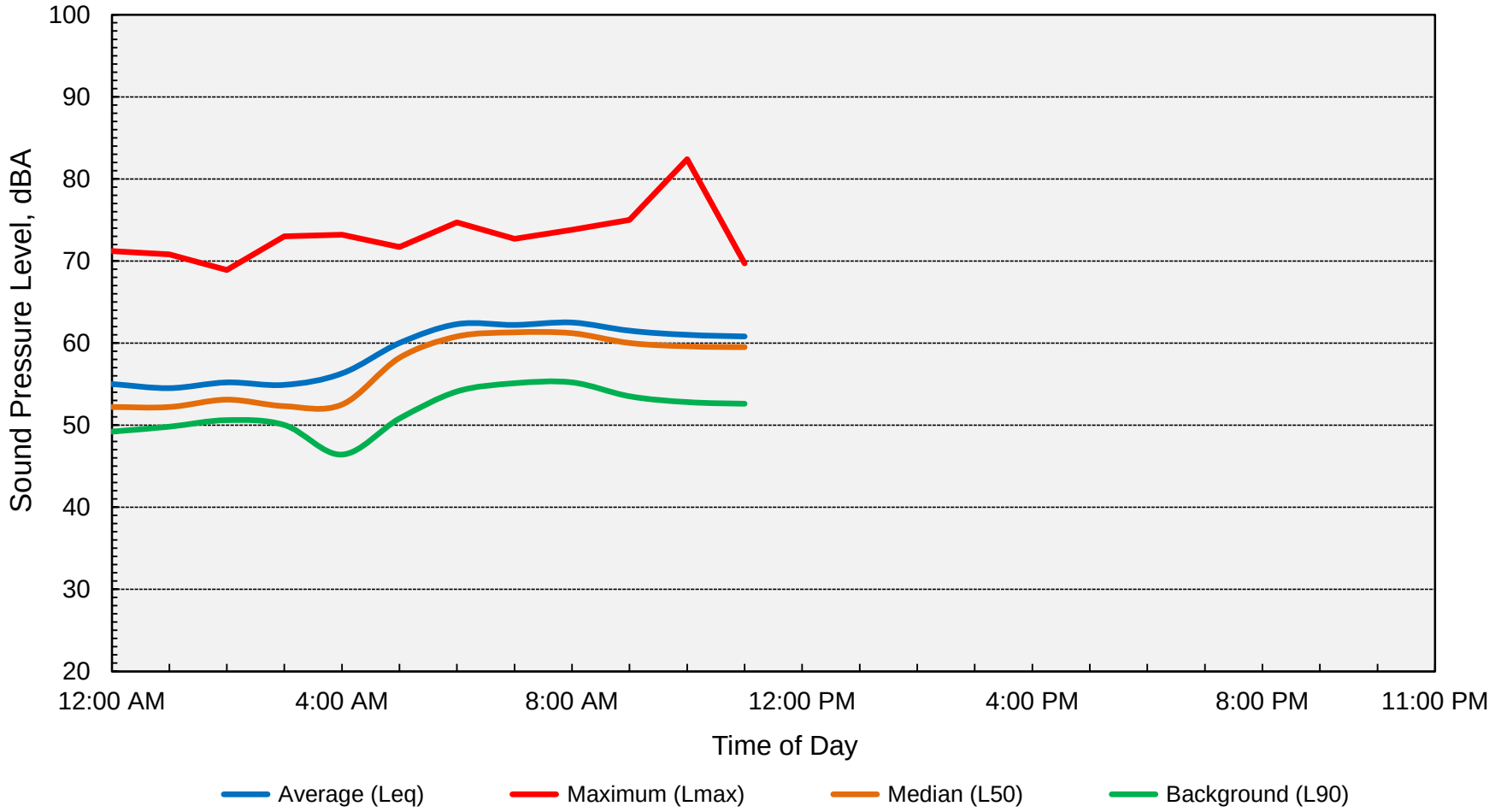
Appendix D-8
Long-Term Ambient Noise Monitoring Results - Site 12
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 64 dB

BOLLARD
Acoustical Consultants

Appendix D-9
Long-Term Ambient Noise Monitoring Results - Site 12
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 65 dB

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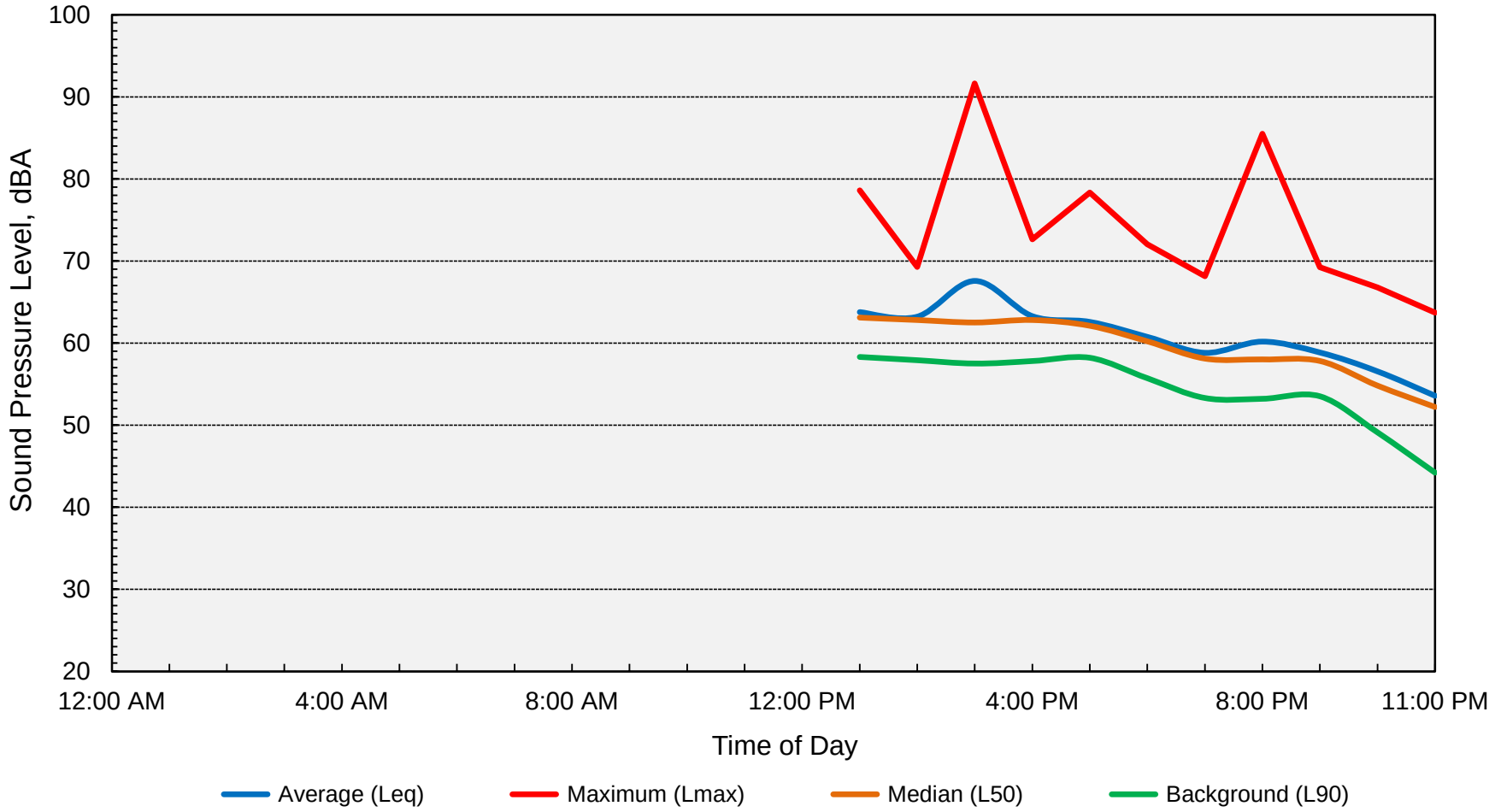
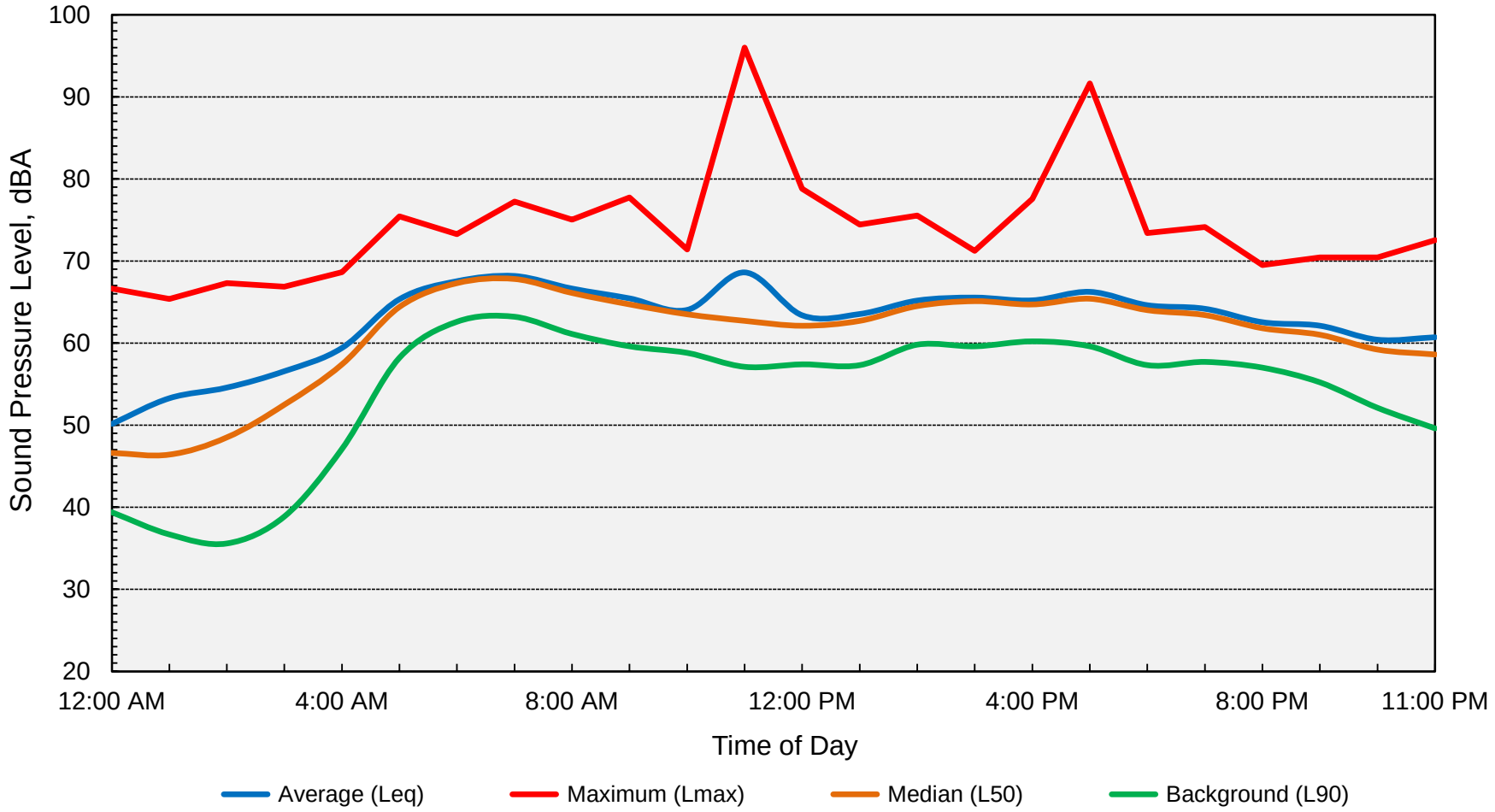
Appendix D-10
Long-Term Ambient Noise Monitoring Results - Site 13
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 64 dB

BOLLARD
Acoustical Consultants

Appendix D-11
Long-Term Ambient Noise Monitoring Results - Site 13
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 69 dB

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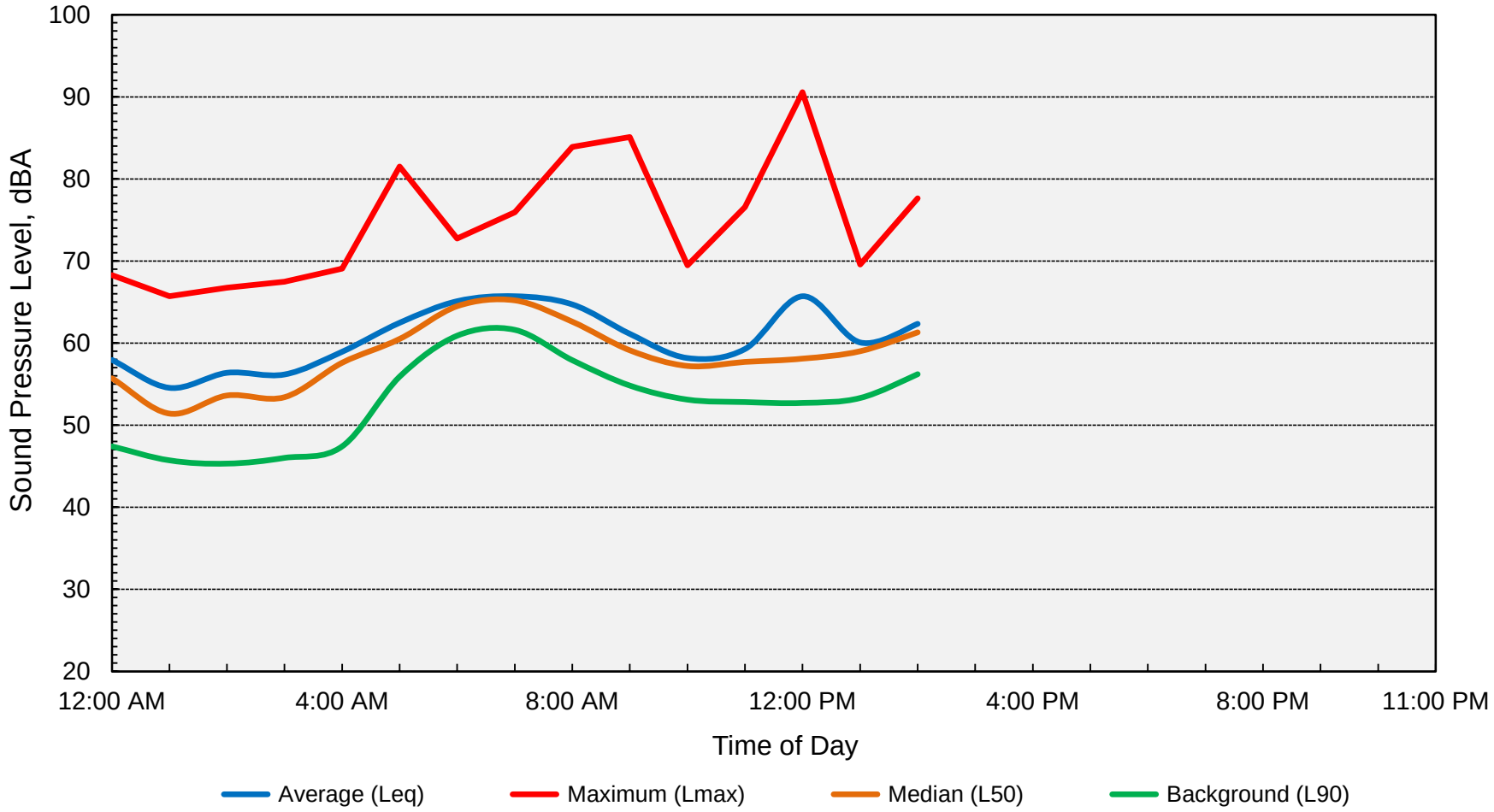
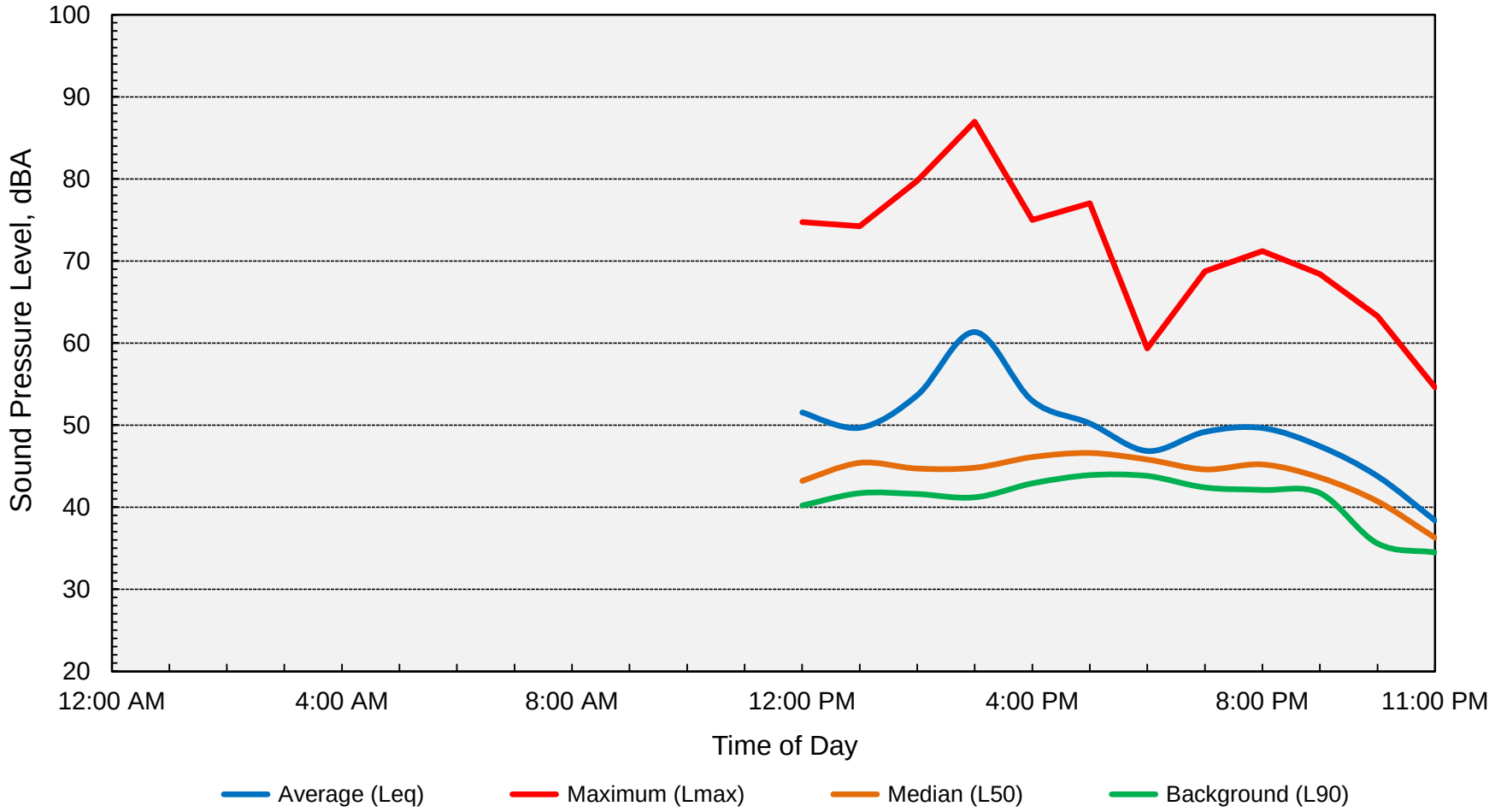
Appendix D-12
Long-Term Ambient Noise Monitoring Results - Site 13
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 67 dB

BOLLARD
Acoustical Consultants

Appendix D-13
Long-Term Ambient Noise Monitoring Results - Site 20
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 53 dB

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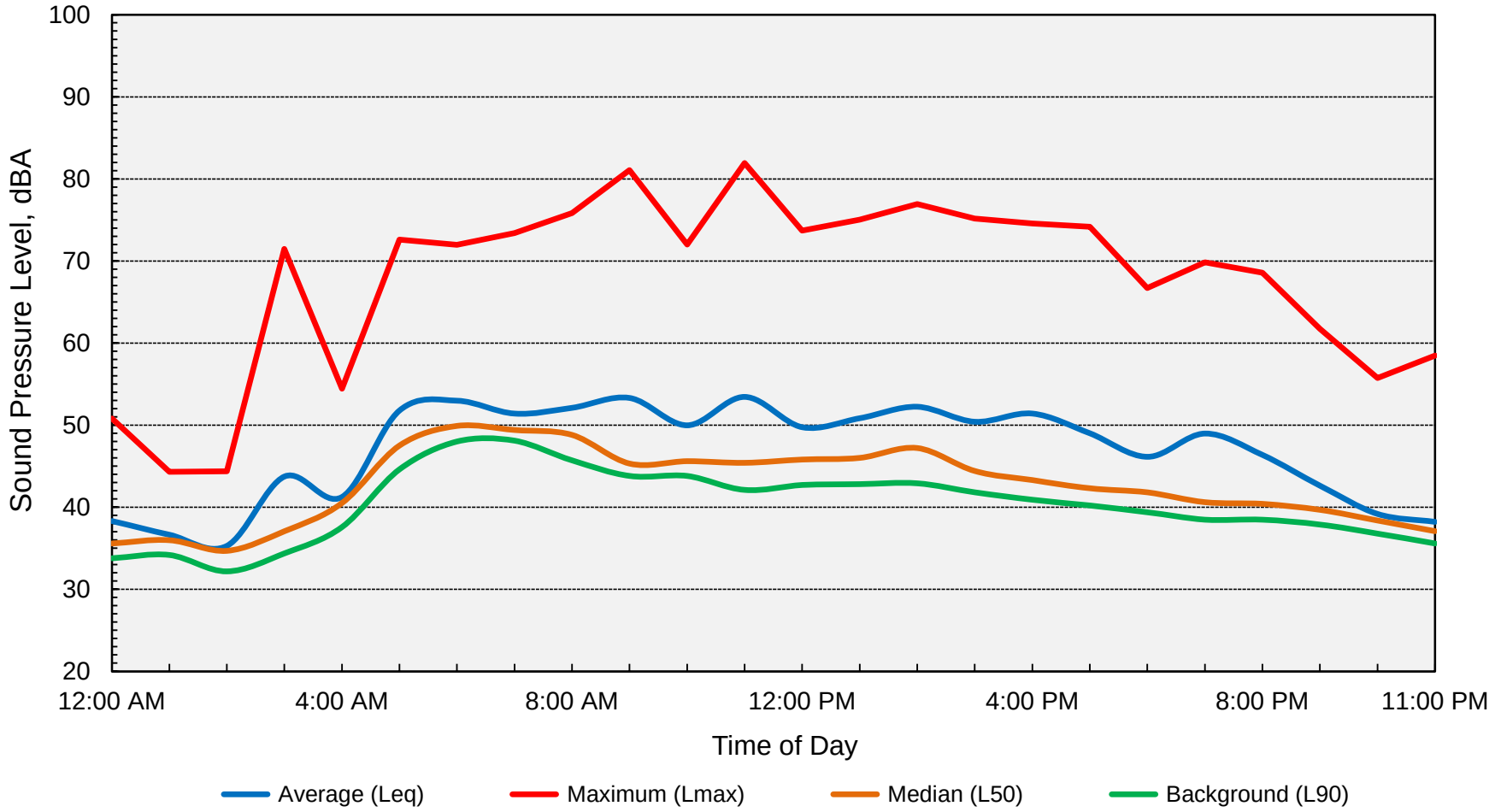
Appendix D-14
Long-Term Ambient Noise Monitoring Results - Site 20
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 54 dB

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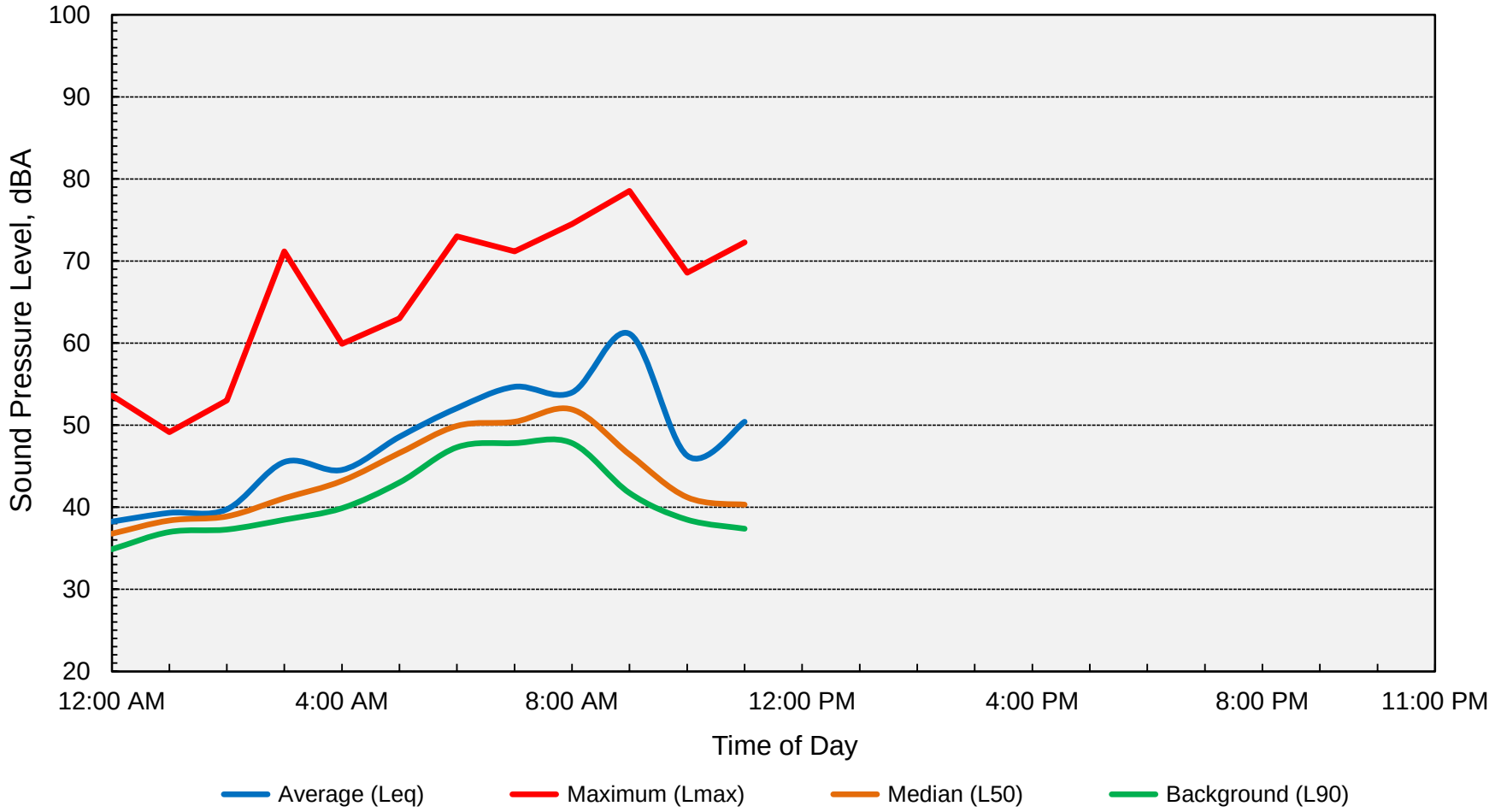
Acoustical Consultants

Appendix D-15
Long-Term Ambient Noise Monitoring Results - Site 20
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 56 dB

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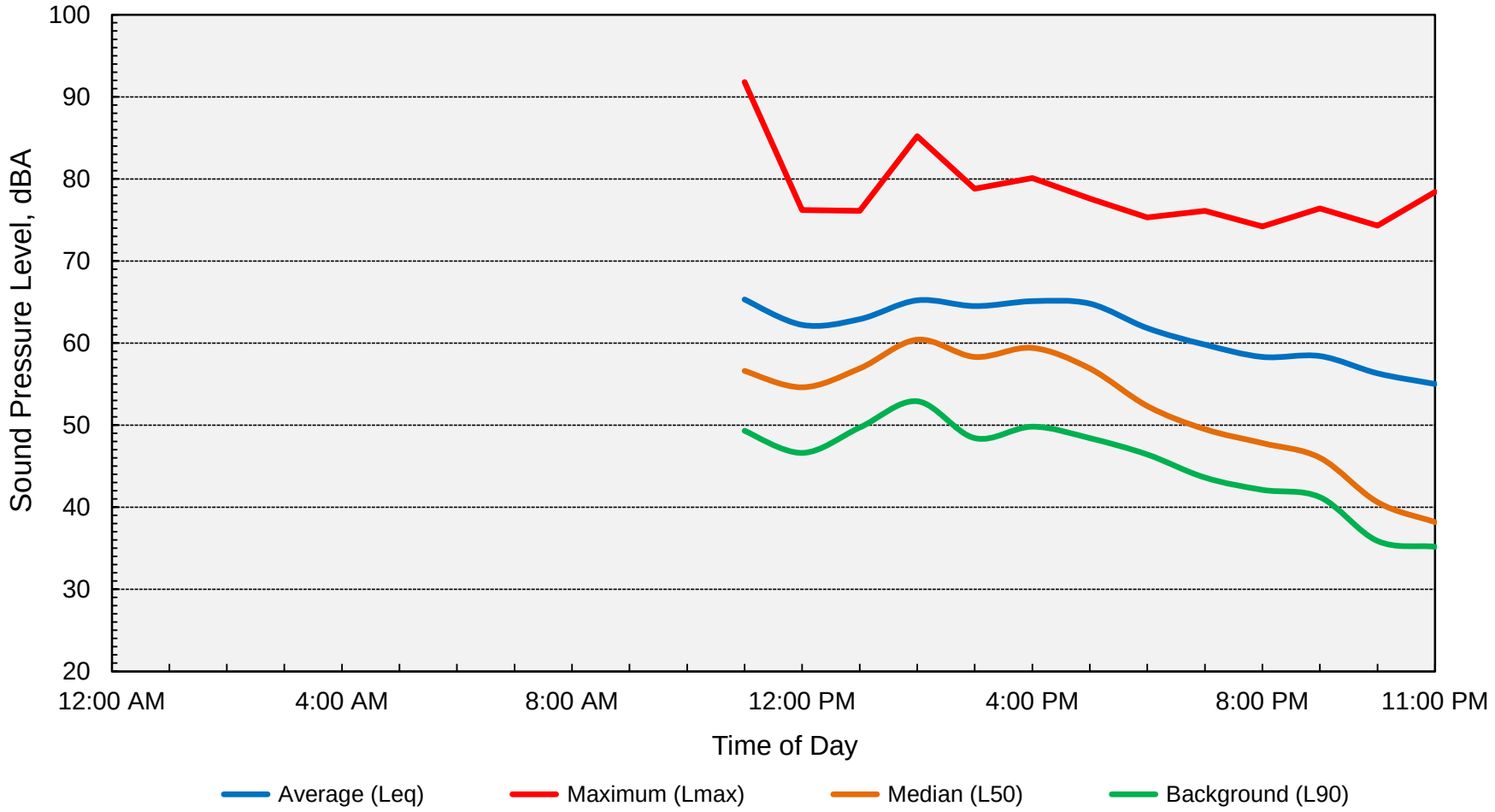
Acoustical Consultants

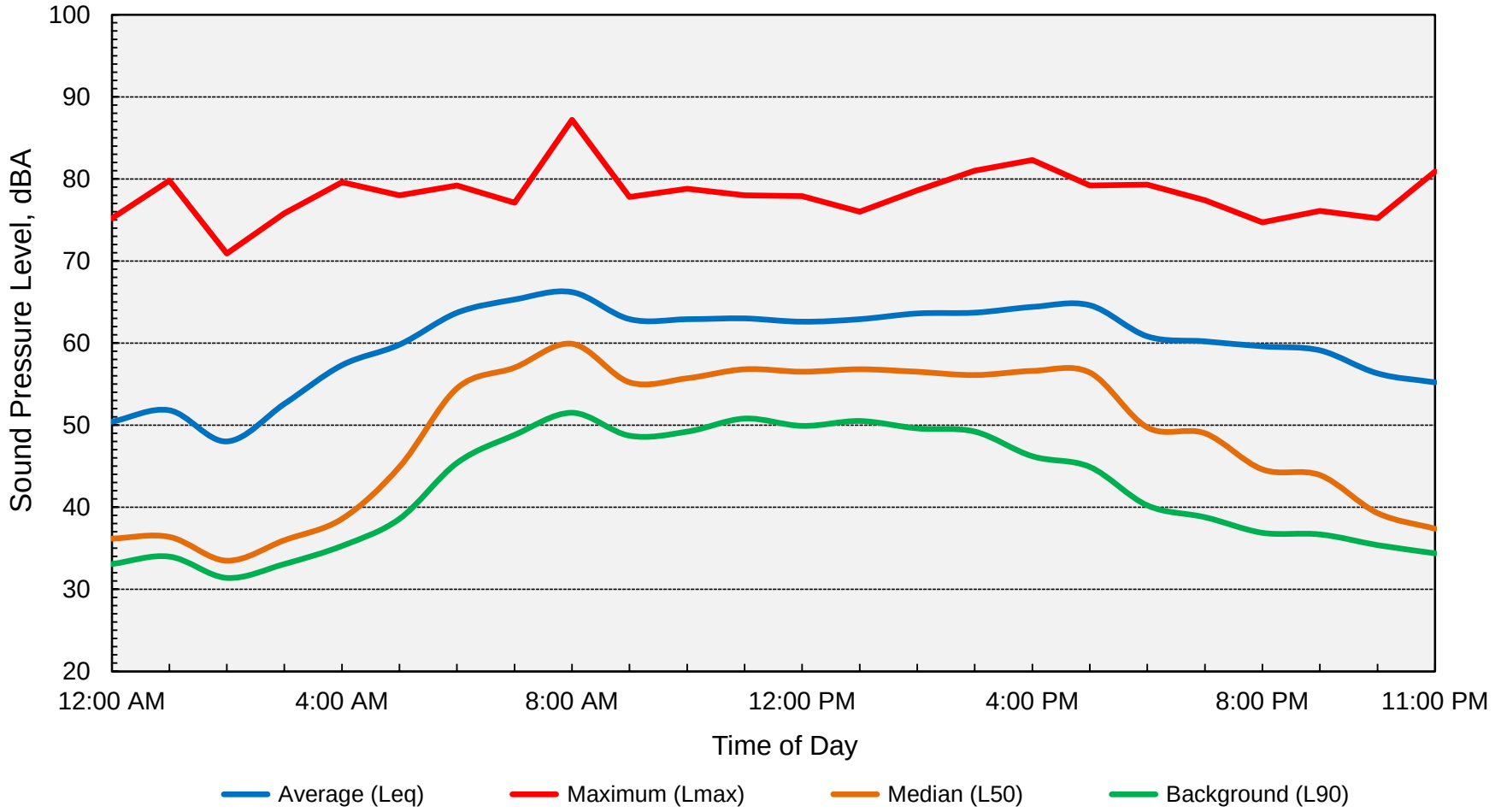
Appendix D-16
Long-Term Ambient Noise Monitoring Results - Site 30
West Jackson Highway Master Plan - Sacramento County, California
Wednesday, November 2, 2022



Computed DNL = 64 dB

BOLLARD
Acoustical Consultants

Appendix D-17
Long-Term Ambient Noise Monitoring Results - Site 30
West Jackson Highway Master Plan - Sacramento County, California
Thursday, November 3, 2022



Computed DNL = 65 dB

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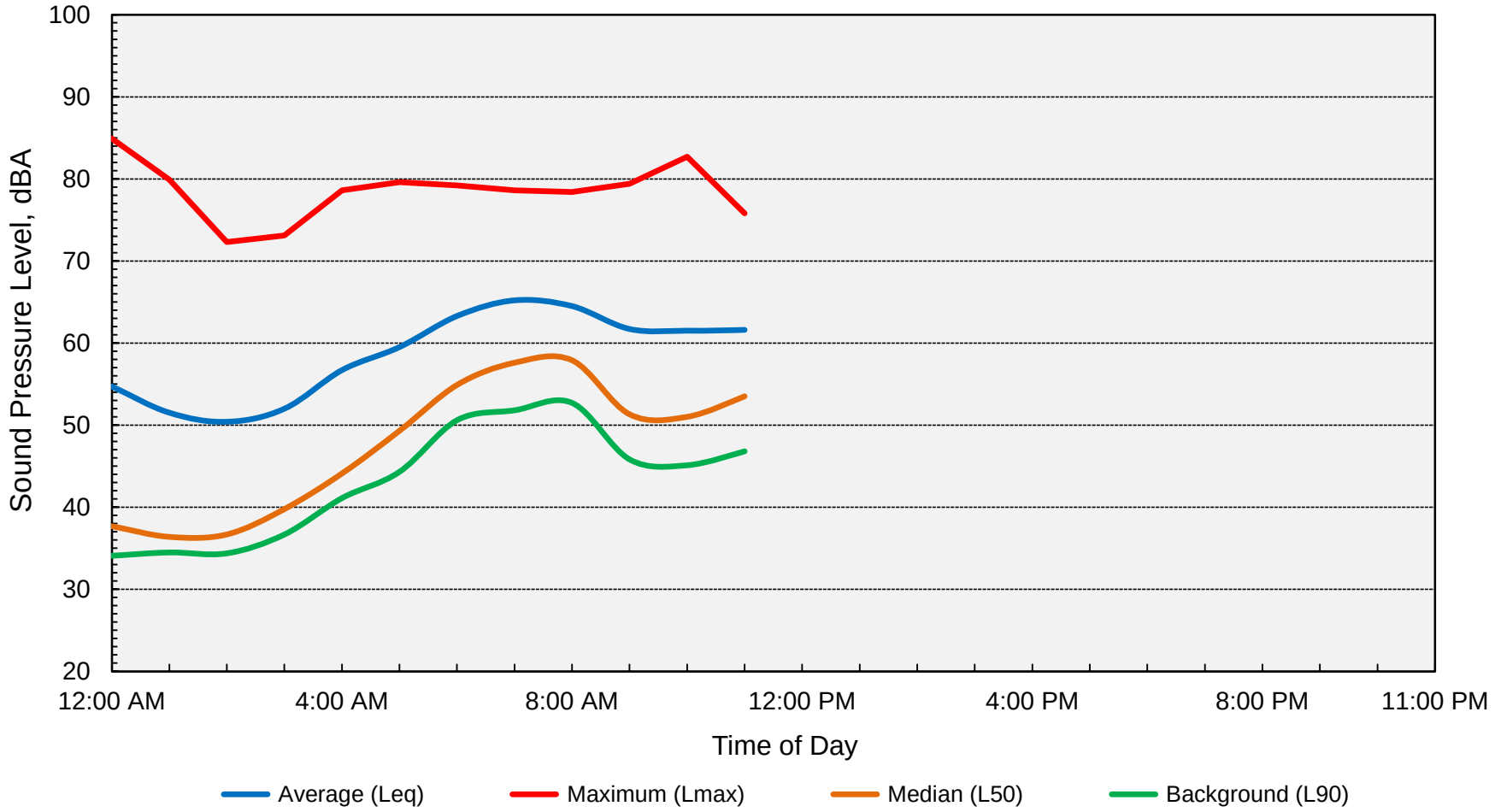
Acoustical Consultants

Appendix D-18
Long-Term Ambient Noise Monitoring Results - Site 30
West Jackson Highway Master Plan - Sacramento County, California
Friday, November 4, 2022



Computed DNL = 66 dB

BOLLARD
Acoustical Consultants

Appendix E-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	20592	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	52590	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	42787	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	38984	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	28651	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	28651	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	30726	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	30726	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	30726	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	22871	80	20	2	3	45	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	22871	80	20	2	3	45	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	22871	80	20	2	3	45	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	22871	80	20	2	3	45	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	22265	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	22883	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	16984	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	16015	80	20	2	5	40	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	12395	80	20	2	5	45	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	6036	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	3411	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	6635	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	8369	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	3674	80	20	2	10	45	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	3674	80	20	2	10	45	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	3674	80	20	2	10	45	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	740	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	740	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	740	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	517	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	189	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	17891	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	15734	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	11092	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	5576	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	5797	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	5355	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	2158	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	2158	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	22960	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	3716	80	20	2	3	40	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	3716	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	3716	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	3716	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	5075	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	5075	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	4203	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	5423	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	4229	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	4473	80	20	2	5	45	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	27495	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	21595	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	14163	80	20	2	5	40	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	7718	80	20	2	5	45	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	6312	80	20	2	5	45	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	6317	80	20	2	5	45	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	3478	80	20	2	8	45	100	0

Appendix E-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	3478	80	20	2	8	45	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	3835	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	37516	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	16634	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	15214	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	10280	80	20	2	3	45	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	2890	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	1790	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	1790	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	7189	80	20	2	6	45	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	6143	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	6143	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	5758	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	5758	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	14720	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	14812	80	20	2	8	55	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	13140	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	13140	80	20	2	8	40	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	17459	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	16064	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	4635	80	20	2	3	25	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	4635	80	20	2	3	25	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	3061	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	3061	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	3737	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	2722	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	53849	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	17500	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	8802	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	12358	80	20	2	8	40	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	10414	80	20	2	8	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	10414	80	20	2	8	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	10414	80	20	2	8	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	10414	80	20	2	8	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	17060	80	20	2	8	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	12616	80	20	2	8	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	12616	80	20	2	8	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	14996	80	20	2	8	40	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	13030	80	20	2	8	45	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	13030	80	20	2	8	45	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	13030	80	20	2	8	45	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	13030	80	20	2	8	45	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	13030	80	20	2	8	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	13030	80	20	2	8	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	10478	80	20	2	8	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	10478	80	20	2	8	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	10478	80	20	2	8	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	10478	80	20	2	8	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	9976	80	20	2	8	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	9976	80	20	2	8	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	13306	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	4616	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	18668	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	9274	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	4618	80	20	2	3	45	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	4618	80	20	2	3	45	100	0

Appendix E-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	4618	80	20	2	3	45	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	656	80	20	2	10	45	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	656	80	20	2	10	45	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	656	80	20	2	10	45	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	656	80	20	2	10	45	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	2786	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	4373	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	4373	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	4373	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	6751	80	20	2	3	20	100	0
84	Mather Field Rd	US 50	Rockingham Dr	37755	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	37520	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	14857	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	6977	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	6593	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	1616	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	1616	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	15800	80	20	2	3	25	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	13573	80	20	2	3	25	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	10710	80	20	2	3	30	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	10710	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	36175	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	19881	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	40920	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	32415	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	25832	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	25832	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	21567	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	19069	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	54500	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	49500	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	34571	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	25811	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	28400	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	25811	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	21878	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	16894	80	20	2	5	50	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	11181	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	7752	80	20	2	5	50	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	5515	80	20	2	3	30	100	0
110	Watt Ave	US 50	Folsom Blvd	65242	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	3962	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	11200	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	14756	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	14756	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	15433	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	2490	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	2490	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	2490	80	20	2	5	40	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	9400	80	20	2	10	40	100	0
118	Zinfandel Dr	US 50	White Rock Rd	45228	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	17923	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	7595	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	7595	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	7595	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	2848	80	20	2	3	40	100	0

Appendix E-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	2848	80	20	2	3	40	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	2848	80	20	2	3	40	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	2848	80	20	2	3	40	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	0	80	20	2	6	0	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	0	80	20	2	6	0	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	6	0	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	6	0	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	0	80	20	2	6	0	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	6	0	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	6	0	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	6	0	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	6	0	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	0	80	20	2	6	0	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	0	80	20	2	6	0	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	0	80	20	2	6	0	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	0	80	20	2	6	0	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	0	80	20	2	6	0	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	0	80	20	2	6	0	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	0	80	20	2	6	0	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	6	0	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	0	80	20	2	6	0	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	0	80	20	2	6	0	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	0	80	20	2	6	0	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	6	0	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	0	80	20	2	6	0	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	6	0	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	0	80	20	2	6	0	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	0	80	20	2	6	0	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	0	80	20	2	6	0	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	0	80	20	2	6	0	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	0	80	20	2	6	0	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	0	80	20	2	6	0	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	0	80	20	2	6	0	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	0	80	20	2	6	0	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	0	80	20	2	6	0	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	0	80	20	2	6	0	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	0	80	20	2	6	0	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	0	80	20	2	6	0	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	0	80	20	2	6	0	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	0	80	20	2	6	0	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	0	80	20	2	6	0	100	0
313	Vineyard Rd	Jackson Road	New Collector	0	80	20	2	6	0	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	0	80	20	2	6	0	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	0	80	20	2	6	0	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	0	80	20	2	6	0	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	0	80	20	2	6	0	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	0	80	20	2	6	0	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	0	80	20	2	6	0	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	6	0	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	6	0	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	0	80	20	2	6	0	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	0	80	20	2	6	0	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	0	80	20	2	6	0	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	0	80	20	2	6	0	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	0	80	20	2	6	0	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	0	80	20	2	6	0	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	0	80	20	2	6	0	100	0

Appendix E-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	0	80	20	2	6	0	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	0	80	20	2	6	0	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	0	80	20	2	6	0	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	0	80	20	2	6	0	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	0	80	20	2	6	0	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	0	80	20	2	6	0	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	0	80	20	2	6	0	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	0	80	20	2	6	0	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	0	80	20	2	6	0	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	0	80	20	2	6	0	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	0	80	20	2	6	0	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	0	80	20	2	6	0	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	0	80	20	2	6	0	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	0	80	20	2	6	0	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	0	80	20	2	6	0	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	0	80	20	2	6	0	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	0	80	20	2	6	0	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	0	80	20	2	6	0	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	0	80	20	2	6	0	100	0
504	Street A	S Bridgewater Dr	Street B	0	80	20	2	6	0	100	0
505	Street B	S Bridgewater Dr	Street A	0	80	20	2	6	0	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	0	80	20	2	6	0	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	0	80	20	2	6	0	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	0	80	20	2	6	0	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	0	80	20	2	6	0	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	0	80	20	2	6	0	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	0	80	20	2	6	0	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	0	80	20	2	6	0	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	0	80	20	2	6	0	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	0	80	20	2	6	0	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	0	80	20	2	6	0	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	0	80	20	2	6	0	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	0	80	20	2	6	0	100	0

Appendix F-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	19040	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	69570	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	62320	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	54620	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	46720	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	41820	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	43950	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	44100	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	46030	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	36700	80	20	2	3	35	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	37970	80	20	2	3	35	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	30260	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	24480	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	30520	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	31710	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	24290	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	20280	80	20	2	5	40	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	12460	80	20	2	5	45	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	6120	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	3570	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	5790	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	8800	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	4150	80	20	2	10	45	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	4190	80	20	2	10	45	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	4190	80	20	2	10	45	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	1380	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	1380	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	1380	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	520	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	250	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	22160	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	21300	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	16680	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	21090	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	20920	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	10730	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	14440	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	9940	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	24700	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	1680	80	20	2	3	30	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	13940	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	12180	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	11740	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	16400	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	16060	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	9990	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	10530	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	8730	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	7120	80	20	2	5	45	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	30370	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	29080	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	21570	80	20	2	5	40	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	14120	80	20	2	5	45	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	11000	80	20	2	5	45	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	11170	80	20	2	5	45	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	10960	80	20	2	8	45	100	0

Appendix F-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	8800	80	20	2	8	45	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	4950	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	52320	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	21790	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	25580	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	20740	80	20	2	3	45	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	13050	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	15900	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	14200	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	7440	80	20	2	6	45	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	6830	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	6830	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	6320	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	6320	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	14370	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	15340	80	20	2	8	55	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	13350	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	13470	80	20	2	8	40	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	19610	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	17460	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	6960	80	20	2	3	25	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	13380	80	20	2	3	25	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	7810	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	3060	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	3990	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	3830	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	60850	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	21630	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	10850	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	31370	80	20	2	6	40	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	33910	80	20	2	6	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	33910	80	20	2	6	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	33910	80	20	2	6	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	33910	80	20	2	6	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	53240	80	20	2	6	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	44370	80	20	2	6	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	45710	80	20	2	6	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	41200	80	20	2	6	35	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	43250	80	20	2	6	35	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	42310	80	20	2	6	35	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	21430	80	20	2	6	35	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	21000	80	20	2	6	35	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	17370	80	20	2	6	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	16240	80	20	2	6	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	13130	80	20	2	8	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	13130	80	20	2	8	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	13130	80	20	2	8	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	13130	80	20	2	8	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	12000	80	20	2	8	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	12000	80	20	2	8	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	14890	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	4870	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	22500	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	29910	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	29100	80	20	2	3	40	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	23640	80	20	2	3	40	100	0

Appendix F-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	19960	80	20	2	3	40	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	1330	80	20	2	10	45	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	1330	80	20	2	10	45	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	1330	80	20	2	10	45	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	1330	80	20	2	10	45	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	2810	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	4360	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	4360	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	4300	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	5090	80	20	2	3	15	100	0
84	Mather Field Rd	US 50	Rockingham Dr	37760	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	43180	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	15150	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	11570	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	9230	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	33240	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	29420	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	13180	80	20	2	3	25	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	9460	80	20	2	3	25	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	6700	80	20	2	3	30	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	26740	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	35230	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	31260	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	60150	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	48090	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	31300	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	30480	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	23030	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	24280	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	53890	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	49760	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	35130	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	26840	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	28750	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	26110	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	22430	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	17850	80	20	2	5	50	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	12800	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	8610	80	20	2	5	50	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	5000	80	20	2	3	30	100	0
110	Watt Ave	US 50	Folsom Blvd	75330	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	3790	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	10210	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	14730	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	14980	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	15850	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	2470	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	2470	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	2470	80	20	2	5	40	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	9600	80	20	2	10	40	100	0
118	Zinfandel Dr	US 50	White Rock Rd	42330	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	17250	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	6290	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	6290	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	6290	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	2280	80	20	2	3	40	100	0

Appendix F-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	2280	80	20	2	3	40	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	2280	80	20	2	3	40	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	2280	80	20	2	3	40	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	0	80	20	2	0	0	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	0	80	20	2	0	0	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	0	0	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	0	0	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	0	80	20	2	0	0	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	0	0	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	0	0	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	0	80	20	2	0	0	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	0	80	20	2	0	0	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	0	80	20	2	0	0	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	0	80	20	2	0	0	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	0	80	20	2	0	0	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	0	80	20	2	0	0	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	0	80	20	2	0	0	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	0	80	20	2	0	0	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	0	80	20	2	0	0	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	0	0	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	0	80	20	2	0	0	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	0	80	20	2	0	0	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	0	80	20	2	0	0	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	0	80	20	2	0	0	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	0	80	20	2	0	0	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	0	80	20	2	0	0	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	0	80	20	2	0	0	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	0	80	20	2	0	0	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	13880	80	20	2	3	40	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	17610	80	20	2	3	40	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	25020	80	20	2	3	40	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	6150	80	20	2	3	40	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	24160	80	20	2	3	40	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	26230	80	20	2	3	40	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	17680	80	20	2	3	40	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	17670	80	20	2	3	40	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	2080	80	20	2	3	35	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	6390	80	20	2	3	35	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	3520	80	20	2	3	35	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	5140	80	20	2	3	35	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	11930	80	20	2	3	35	100	0
313	Vineyard Rd	Jackson Road	New Collector	20980	80	20	2	3	40	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	19780	80	20	2	3	40	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	17210	80	20	2	3	40	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	8780	80	20	2	3	40	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	30430	80	20	2	3	40	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	23590	80	20	2	3	40	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	22610	80	20	2	3	40	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	870	80	20	2	3	25	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	690	80	20	2	3	25	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	2580	80	20	2	3	25	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	1840	80	20	2	3	25	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	1880	80	20	2	3	25	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	3050	80	20	2	3	25	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	2900	80	20	2	3	25	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	3320	80	20	2	3	35	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0

Appendix F-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Existing + West Jackson Project
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	0	80	20	2	0	0	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	0	80	20	2	0	0	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	0	80	20	2	0	0	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	0	80	20	2	0	0	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	0	80	20	2	0	0	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	0	80	20	2	0	0	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	0	80	20	2	0	0	100	0
504	Street A	S Bridgewater Dr	Street B	0	80	20	2	0	0	100	0
505	Street B	S Bridgewater Dr	Street A	0	80	20	2	0	0	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	0	80	20	2	0	0	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	0	80	20	2	0	0	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	0	80	20	2	0	0	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	0	80	20	2	0	0	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	0	80	20	2	0	0	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	0	80	20	2	0	0	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	0	80	20	2	0	0	100	0

Appendix G-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	27240	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	66770	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	52940	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	62600	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	47100	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	45320	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	51270	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	52070	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	52020	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	52190	80	20	2	3	40	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	52220	80	20	2	3	45	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	52390	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	52410	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	44990	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	42300	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	29810	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	16370	80	20	2	5	35	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	14540	80	20	2	5	35	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	8500	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	8010	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	21870	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	37550	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	42770	80	20	2	10	40	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	42630	80	20	2	10	40	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	33520	80	20	2	10	40	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	4620	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	4620	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	4710	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	3670	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	3300	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	24130	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	25170	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	27840	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	40860	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	29970	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	17980	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	9230	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	9430	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	48390	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	4150	80	20	2	3	40	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	11290	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	11840	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	11840	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	11960	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	11960	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	4670	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	5970	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	2520	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	2960	80	20	2	5	40	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	42720	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	37240	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	29890	80	20	2	5	35	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	9760	80	20	2	5	35	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	10420	80	20	2	5	35	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	30290	80	20	2	5	35	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	19680	80	20	2	8	40	100	0

Appendix G-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	11650	80	20	2	8	45	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	14020	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	50520	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	23040	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	20400	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	13770	80	20	2	3	40	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	5770	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	2140	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	2110	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	39480	80	20	2	6	55	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	58610	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	44930	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	34170	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	43400	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	33180	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	42840	80	20	2	8	50	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	36290	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	36380	80	20	2	8	45	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	40570	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	36110	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	3980	80	20	2	3	25	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	4970	80	20	2	3	25	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	7060	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	7180	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	8460	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	22520	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	67180	80	20	2	3	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	48380	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	35840	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	30450	80	20	2	8	35	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	30980	80	20	2	8	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	40320	80	20	2	8	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	34630	80	20	2	8	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	32480	80	20	2	8	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	38240	80	20	2	8	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	31080	80	20	2	8	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	31040	80	20	2	8	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	33920	80	20	2	8	40	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	23120	80	20	2	8	45	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	23190	80	20	2	8	45	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	23000	80	20	2	8	45	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	23000	80	20	2	8	45	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	23010	80	20	2	8	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	23010	80	20	2	8	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	23020	80	20	2	8	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	23020	80	20	2	8	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	22990	80	20	2	8	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	23020	80	20	2	8	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	21910	80	20	2	8	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	22630	80	20	2	8	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	31730	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	3290	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	21620	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	13290	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	5940	80	20	2	3	45	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	6100	80	20	2	3	45	100	0

Appendix G-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	6100	80	20	2	3	45	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	10210	80	20	2	10	45	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	10210	80	20	2	10	45	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	10210	80	20	2	10	45	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	10150	80	20	2	10	45	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	20760	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	14470	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	14470	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	14510	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	8260	80	20	2	3	20	100	0
84	Mather Field Rd	US 50	Rockingham Dr	65530	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	71740	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	15810	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	7280	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	10630	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	1930	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	1930	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	30190	80	20	2	3	40	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	26590	80	20	2	3	40	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	22820	80	20	2	3	30	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	24070	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	43320	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	31970	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	68980	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	67470	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	61290	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	64380	80	20	2	5	45	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	61240	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	55580	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	64250	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	61340	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	38330	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	49020	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	54190	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	54110	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	34760	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	30000	80	20	2	5	45	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	28280	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	15030	80	20	2	5	45	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	7900	80	20	2	3	40	100	0
110	Watt Ave	US 50	Folsom Blvd	98040	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	5420	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	18300	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	31760	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	40310	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	34470	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	56320	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	22050	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	15870	80	20	2	5	50	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	53780	80	20	2	10	55	100	0
118	Zinfandel Dr	US 50	White Rock Rd	82790	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	40800	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	32660	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	32660	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	32660	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	14770	80	20	2	3	40	100	0

Appendix G-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	12590	80	20	2	3	40	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	0	80	20	2	3	0	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	12590	80	20	2	3	40	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	15910	80	20	2	6	35	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	9360	80	20	2	6	35	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	22200	80	20	2	3	40	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	16570	80	20	2	3	40	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	7380	80	20	2	3	50	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	31010	80	20	2	3	40	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	19350	80	20	2	3	40	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	3870	80	20	2	3	35	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	10250	80	20	2	3	40	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	70390	80	20	2	3	40	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	72220	80	20	2	3	40	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	46590	80	20	2	3	40	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	55520	80	20	2	3	40	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	37890	80	20	2	3	40	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	32060	80	20	2	3	40	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	34220	80	20	2	3	40	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	20780	80	20	2	3	40	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	15510	80	20	2	3	40	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	5630	80	20	2	3	25	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	9560	80	20	2	3	35	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	9030	80	20	2	3	35	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	1500	80	20	2	3	40	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	24000	80	20	2	3	40	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	8220	80	20	2	3	40	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	0	80	20	2	0	0	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	7380	80	20	2	3	45	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	7380	80	20	2	3	45	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	0	80	20	2	0	0	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	0	80	20	2	0	0	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	0	80	20	2	0	0	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	0	80	20	2	0	0	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	0	80	20	2	0	0	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	0	80	20	2	0	0	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	0	80	20	2	0	0	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	0	80	20	2	0	0	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	0	80	20	2	0	0	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	0	80	20	2	0	0	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	0	80	20	2	0	0	100	0
313	Vineyard Rd	Jackson Road	New Collector	0	80	20	2	0	0	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	0	80	20	2	0	0	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	0	80	20	2	0	0	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	0	80	20	2	0	0	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	0	80	20	2	0	0	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	0	80	20	2	0	0	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	0	80	20	2	0	0	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	0	80	20	2	0	0	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	0	80	20	2	0	0	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	0	80	20	2	0	0	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	0	80	20	2	0	0	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	0	80	20	2	0	0	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	0	80	20	2	0	0	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0

Appendix G-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative No Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	0	80	20	2	0	0	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	0	80	20	2	0	0	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	0	80	20	2	0	0	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	0	80	20	2	0	0	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	0	80	20	2	0	0	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	0	80	20	2	0	0	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	0	80	20	2	0	0	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	0	80	20	2	0	0	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	0	80	20	2	0	0	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	0	80	20	2	0	0	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	0	80	20	2	0	0	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	0	80	20	2	0	0	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	0	80	20	2	0	0	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	0	80	20	2	0	0	100	0
504	Street A	S Bridgewater Dr	Street B	0	80	20	2	0	0	100	0
505	Street B	S Bridgewater Dr	Street A	0	80	20	2	0	0	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	0	80	20	2	0	0	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	0	80	20	2	0	0	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	0	80	20	2	0	0	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	0	80	20	2	0	0	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	0	80	20	2	0	0	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	0	80	20	2	0	0	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	0	80	20	2	0	0	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	0	80	20	2	0	0	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	0	80	20	2	0	0	100	0

Appendix H-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	26040	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	66770	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	54160	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	66730	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	50810	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	49070	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	57310	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	57380	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	57330	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	54820	80	20	2	3	35	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	54850	80	20	2	3	35	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	55020	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	55160	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	39050	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	37850	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	27060	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	17030	80	20	2	5	35	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	15660	80	20	2	5	35	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	9960	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	9970	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	25980	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	40130	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	40990	80	20	2	10	40	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	42960	80	20	2	10	40	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	33000	80	20	2	10	40	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	11280	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	11900	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	14270	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	10280	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	5080	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	25600	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	26700	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	28700	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	42650	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	30800	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	46100	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	20950	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	21750	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	49790	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	3740	80	20	2	3	30	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	12620	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	19490	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	19990	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	29460	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	29460	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	8710	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	10090	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	4280	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	5310	80	20	2	5	40	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	44850	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	39370	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	31950	80	20	2	5	35	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	13630	80	20	2	5	35	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	15150	80	20	2	5	35	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	23480	80	20	2	5	35	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	23230	80	20	2	8	40	100	0

Appendix H-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	17110	80	20	2	8	40	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	18160	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	51630	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	23960	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	21670	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	17510	80	20	2	3	40	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	3520	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	3580	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	3580	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	42130	80	20	2	6	55	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	60520	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	49920	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	35020	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	40390	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	31290	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	45220	80	20	2	8	50	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	37700	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	37720	80	20	2	8	45	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	43480	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	38780	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	6310	80	20	2	3	35	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	7610	80	20	2	3	35	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	3660	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	3780	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	7920	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	22250	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	68310	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	54570	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	46340	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	31930	80	20	2	6	35	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	33540	80	20	2	6	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	42620	80	20	2	6	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	37410	80	20	2	6	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	35050	80	20	2	6	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	42830	80	20	2	6	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	32910	80	20	2	6	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	36410	80	20	2	6	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	36950	80	20	2	6	35	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	30380	80	20	2	6	35	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	30450	80	20	2	6	35	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	30260	80	20	2	6	35	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	30260	80	20	2	6	35	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	30300	80	20	2	6	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	30300	80	20	2	6	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	50080	80	20	2	6	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	37650	80	20	2	6	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	32060	80	20	2	6	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	29810	80	20	2	6	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	29700	80	20	2	6	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	31410	80	20	2	6	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	40650	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	3070	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	23270	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	15790	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	7420	80	20	2	3	40	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	7580	80	20	2	3	40	100	0

Appendix H-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	7580	80	20	2	3	40	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	17090	80	20	2	10	40	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	17140	80	20	2	10	40	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	19340	80	20	2	10	40	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	30570	80	20	2	10	40	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	25190	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	18330	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	18330	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	18440	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	8900	80	20	2	3	15	100	0
84	Mather Field Rd	US 50	Rockingham Dr	67890	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	75720	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	13540	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	8260	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	11460	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	3480	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	3480	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	40120	80	20	2	3	40	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	37220	80	20	2	3	40	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	35350	80	20	2	3	40	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	28120	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	43930	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	35660	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	69480	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	69360	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	61160	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	63730	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	62070	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	56980	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	65710	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	62760	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	39640	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	50650	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	61210	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	68380	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	47630	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	34940	80	20	2	5	45	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	30320	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	17790	80	20	2	5	45	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	8290	80	20	2	3	40	100	0
110	Watt Ave	US 50	Folsom Blvd	98250	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	5830	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	18740	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	33610	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	42450	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	35300	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	57610	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	23670	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	17170	80	20	2	5	50	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	56440	80	20	2	10	55	100	0
118	Zinfandel Dr	US 50	White Rock Rd	87500	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	46350	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	36300	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	36300	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	36300	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	27540	80	20	2	3	40	100	0

Appendix H-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	20430	80	20	2	3	35	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	18760	80	20	2	3	35	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	16170	80	20	2	3	35	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	16970	80	20	2	6	35	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	9130	80	20	2	6	35	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	22050	80	20	2	3	40	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	16850	80	20	2	3	40	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	10000	80	20	2	3	50	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	36910	80	20	2	3	40	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	19120	80	20	2	3	40	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	7820	80	20	2	3	35	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	16240	80	20	2	3	40	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	71410	80	20	2	3	40	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	74280	80	20	2	3	40	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	50800	80	20	2	3	40	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	65590	80	20	2	3	40	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	42860	80	20	2	3	40	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	36830	80	20	2	3	40	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	37010	80	20	2	3	40	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	23230	80	20	2	3	40	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	13890	80	20	2	3	40	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	6860	80	20	2	3	25	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	9810	80	20	2	3	35	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	9380	80	20	2	3	35	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	1740	80	20	2	3	40	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	30920	80	20	2	3	40	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	8670	80	20	2	3	40	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	17020	80	20	2	3	45	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	0	80	20	2	0	0	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	0	80	20	2	0	0	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	0	80	20	2	0	0	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	0	80	20	2	0	0	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	0	80	20	2	0	0	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	0	80	20	2	0	0	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	0	80	20	2	0	0	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	0	80	20	2	0	0	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	0	80	20	2	0	0	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	0	80	20	2	0	0	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	0	80	20	2	0	0	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	0	80	20	2	0	0	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	0	80	20	2	0	0	100	0
313	Vineyard Rd	Jackson Road	New Collector	0	80	20	2	0	0	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	0	80	20	2	0	0	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	0	80	20	2	0	0	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	0	80	20	2	0	0	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	0	80	20	2	0	0	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	0	80	20	2	0	0	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	0	80	20	2	0	0	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	0	80	20	2	0	0	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	0	80	20	2	0	0	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	0	80	20	2	0	0	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	0	80	20	2	0	0	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	0	80	20	2	0	0	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	0	80	20	2	0	0	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	0	80	20	2	0	0	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	5840	80	20	2	3	25	100	0

Appendix H-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 3 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	2000	80	20	2	3	25	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	1680	80	20	2	3	25	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	1270	80	20	2	3	25	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	1870	80	20	2	3	25	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	17980	80	20	2	3	25	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	2420	80	20	2	3	25	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	9410	80	20	2	3	25	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	3730	80	20	2	3	25	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	1110	80	20	2	3	25	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	3260	80	20	2	3	40	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	10380	80	20	2	3	40	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	11960	80	20	2	3	40	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	11950	80	20	2	3	40	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	9620	80	20	2	3	40	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	1880	80	20	2	3	25	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	2020	80	20	2	3	25	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	3370	80	20	2	3	25	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	2210	80	20	2	3	25	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	2230	80	20	2	3	25	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	5010	80	20	2	3	25	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	4190	80	20	2	3	25	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	1210	80	20	2	3	25	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	4030	80	20	2	3	25	100	0
504	Street A	S Bridgewater Dr	Street B	1900	80	20	2	3	25	100	0
505	Street B	S Bridgewater Dr	Street A	1390	80	20	2	3	25	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	2120	80	20	2	3	25	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	7890	80	20	2	3	25	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	2450	80	20	2	3	25	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	4520	80	20	2	3	25	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	15880	80	20	2	3	25	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	8220	80	20	2	3	25	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	5670	80	20	2	3	25	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	2870	80	20	2	3	25	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	9080	80	20	2	3	25	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	7130	80	20	2	3	25	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	6510	80	20	2	3	25	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	6900	80	20	2	3	25	100	0

Appendix I-1 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Bradshaw Rd	Folsom Blvd	US 50	24460	80	20	2	5	40	100	0
2	Bradshaw Rd	US 50	Lincoln Village Dr	84620	80	20	2	5	35	100	0
3	Bradshaw Rd	Lincoln Village Dr	Old Placerville Rd	76770	80	20	2	5	35	100	0
4	Bradshaw Rd	Old Placerville Rd	Goethe Rd	73340	80	20	2	5	35	100	0
5.1	Bradshaw Rd	Goethe Rd	Collector WJ-8	62160	80	20	2	5	35	100	0
5.2	Bradshaw Rd	Collector WJ-8	Kiefer Blvd	58600	80	20	2	5	35	100	0
6.1	Bradshaw Rd	Kiefer Blvd	Collector WJ-9	53770	80	20	2	5	35	100	0
6.2	Bradshaw Rd	Collector WJ-9	Mayhew Rd	54090	80	20	2	5	35	100	0
6.3	Bradshaw Rd	Mayhew Rd	Jackson Rd	57490	80	20	2	5	35	100	0
7.1	Bradshaw Rd	Jackson Rd	Rock Creek Pkwy	49210	80	20	2	3	35	100	0
7.2	Bradshaw Rd	Rock Creek Pkwy	Collector WJ-10	51610	80	20	2	3	35	100	0
7.3	Bradshaw Rd	Collector WJ-10	Collector WJ-11	47250	80	20	2	3	40	100	0
7.4	Bradshaw Rd	Collector WJ-11	Elder Creek Rd	43190	80	20	2	3	40	100	0
8	Bradshaw Rd	Elder Creek Rd	Florin Rd	51950	80	20	2	3	45	100	0
9	Bradshaw Rd	Florin Rd	Gerber Rd	51660	80	20	2	3	45	100	0
10	Bradshaw Rd	Gerber Rd	Calvine Rd	36900	80	20	2	5	45	100	0
11	Calvine Rd	Waterman Rd	Bradshaw Rd	18310	80	20	2	5	35	100	0
12	Calvine Rd	Bradshaw Rd	Vineyard Rd	14680	80	20	2	5	35	100	0
13	Calvine Rd	Vineyard Rd	Excelsior Rd	9620	80	20	2	5	45	100	0
14	Chrysanthy Blvd	Sunrise Blvd	Rancho Cordova Pkwy	9590	80	20	2	3	40	100	0
15	Douglas Rd	Mather Blvd	Zinfandel Dr	33390	80	20	2	3	40	100	0
16	Douglas Rd	Zinfandel Dr	Sunrise Blvd	50360	80	20	2	3	40	100	0
17	Douglas Rd	Sunrise Blvd	Rancho Cordova Pkwy	43250	80	20	2	10	40	100	0
18.1	Douglas Rd	Rancho Cordova Pkwy	Americanos Blvd	42870	80	20	2	10	40	100	0
18.2	Douglas Rd	Americanos Blvd	Grant Line Rd	31900	80	20	2	10	40	100	0
19.1	Eagles Nest Rd	Kiefer Blvd	N Bridgewater Dr	11220	80	20	2	10	40	100	0
19.2	Eagles Nest Rd	N Bridgewater Dr	S Bridgewater Dr	11620	80	20	2	10	40	100	0
19.3	Eagles Nest Rd	S Bridgewater Dr	Jackson Rd	13130	80	20	2	10	40	100	0
20	Eagles Nest Rd	Jackson Rd	Florin Rd	9110	80	20	2	10	45	100	0
21	Eagles Nest Rd	Florin Rd	Grant Line Rd	4530	80	20	2	10	45	100	0
22	Elder Creek Rd	65th St	Power Inn Rd	27900	80	20	2	3	40	100	0
23	Elder Creek Rd	Power Inn Rd	Florin-Perkins Rd	28360	80	20	2	3	40	100	0
24	Elder Creek Rd	Florin Perkins Rd	South Watt Ave	30940	80	20	2	3	40	100	0
25	Elder Creek Rd	South Watt Ave	Hedge Ave	52900	80	20	2	3	45	100	0
26	Elder Creek Rd	Hedge Ave	Mayhew Rd	33660	80	20	2	3	45	100	0
27	Elder Creek Rd	Mayhew Rd	Bradshaw Rd	40490	80	20	2	3	45	100	0
28.1	Elder Creek Rd	Bradshaw Rd	Vineyard Rd	30740	80	20	2	3	45	100	0
28.2	Elder Creek Rd	Vineyard Rd	Excelsior Rd	25360	80	20	2	3	45	100	0
29	Elk Grove-Florin Rd	Florin Rd	Gerber Rd	47190	80	20	2	3	40	100	0
30.1	Excelsior Rd	Kiefer Blvd	Douglas Rd	5600	80	20	2	3	30	100	0
30.2	Excelsior Rd	Douglas Rd	Collector WJ-1/ Collector JT-1	26970	80	20	2	3	40	100	0
30.3	Excelsior Rd	Collector WJ-1/ Collector JT-1	Collector WJ-2/ Collector JT-2	25900	80	20	2	3	40	100	0
30.4	Excelsior Rd	Collector WJ-2/ Collector JT-2	Jackson Rd	25400	80	20	2	3	40	100	0
31.1	Excelsior Rd	Jackson Rd	Collector WJ-6	36910	80	20	2	3	40	100	0
31.2	Excelsior Rd	Collector WJ-6	Elder Creek Rd	36220	80	20	2	3	40	100	0
32	Excelsior Rd	Elder Creek Rd	Florin Rd	12520	80	20	2	3	40	100	0
33	Excelsior Rd	Florin Rd	Gerber Rd	13080	80	20	2	3	40	100	0
34	Excelsior Rd	Gerber Rd	Calvine Rd	8360	80	20	2	3	40	100	0
35	Excelsior Rd	Calvine Rd	Sheldon Rd	9180	80	20	2	5	40	100	0
36	Florin Rd	Stockton Blvd	Power Inn Rd	47560	80	20	2	5	35	100	0
37	Florin Rd	Power Inn Rd	Florin-Perkins Rd	43690	80	20	2	5	35	100	0
38	Florin Rd	Florin-Perkins Rd	So Watt Ave/ Elk Grove Florin Rd	36490	80	20	2	5	35	100	0
39	Florin Rd	South Watt Ave	Hedge Ave	12010	80	20	2	5	35	100	0
40	Florin Rd	Hedge Ave	Mayhew Rd	13280	80	20	2	5	35	100	0
41	Florin Rd	Mayhew Rd	Bradshaw Rd	40200	80	20	2	5	35	100	0
42.1	Florin Rd	Bradshaw Rd	Vineyard Rd	26070	80	20	2	8	40	100	0

Appendix I-2 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
42.2	Florin Rd	Vineyard Rd	Excelsior Rd	19920	80	20	2	8	40	100	0
43	Florin Rd	Excelsior Rd	Sunrise Blvd	17090	80	20	2	13	45	100	0
44	Folsom Blvd	Howe Ave	Jackson Rd	56000	80	20	2	5	35	100	0
45	Fruitridge Rd	65th St	Power Inn Rd	27610	80	20	2	3	40	100	0
46	Fruitridge Rd	Power Inn Rd	Florin Perkins Rd	31090	80	20	2	3	45	100	0
47	Fruitridge Rd	Florin Perkins Rd	South Watt Ave	27770	80	20	2	3	40	100	0
48	Fruitridge Rd	South Watt Ave	Hedge Ave	24240	80	20	2	3	35	100	0
49.1	Fruitridge Rd	Hedge Ave	Collector WJ-12	24260	80	20	2	3	35	100	0
49.2	Fruitridge Rd	Collector WJ-12	Mayhew Rd	21800	80	20	2	3	35	100	0
50	Grant Line Rd	White Rock Rd	Douglas Rd	41130	80	20	2	6	55	100	0
51.1	Grant Line Rd	Douglas Rd	Chrysanthy Blvd	57810	80	20	2	8	55	100	0
51.2	Grant Line Rd	Chrysanthy Blvd	Kiefer Blvd	47640	80	20	2	8	55	100	0
52.1	Grant Line Rd	Kiefer Blvd	Rancho Cordova Pkwy	37030	80	20	2	6	55	100	0
52.2	Grant Line Rd	Rancho Cordova Pkwy	Jackson Rd	41700	80	20	2	6	55	100	0
53	Grant Line Rd	Jackson Rd	Sunrise Blvd	30160	80	20	2	6	55	100	0
54	Grant Line Rd	Sunrise Blvd	Calvine Rd	43760	80	20	2	8	50	100	0
55.1	Grant Line Rd	Calvine Rd	Elk Grove City Limit	36840	80	20	2	8	45	100	0
55.2	Grant Line Rd	Elk Grove City Limit	Sheldon Rd	36890	80	20	2	8	45	100	0
56	Grant Line Rd	Sheldon Rd	Wilton Rd	45430	80	20	2	8	40	100	0
57	Grant Line Rd	Wilton Rd	Bond Rd	40370	80	20	2	8	40	100	0
58.1	Happy Lane	Old Placerville Road	Routier Ext	13820	80	20	2	3	40	100	0
58.2	Happy Lane	Routier Ext	Kiefer Boulevard	20580	80	20	2	3	40	100	0
59.1	Hedge Ave	Jackson Rd	Rock Creek Pkwy	11760	80	20	2	3	35	100	0
59.2	Hedge Ave	Rock Creek Pkwy	Fruitridge Rd	7720	80	20	2	3	35	100	0
60	Hedge Ave	Fruitridge Rd	Elder Creek Rd	10010	80	20	2	3	35	100	0
61	Hedge Ave	Elder Creek Rd	Florin Rd	22460	80	20	2	3	35	100	0
62	Howe Ave	US 50	Folsom Blvd	71420	80	20	2	5	35	100	0
63	International Dr	Mather Field Rd	Zinfandel Dr	47100	80	20	2	3	40	100	0
64	International Dr	Zinfandel Dr	Sunrise Blvd	39710	80	20	2	3	40	100	0
65	Jackson Rd	Folsom Blvd	Florin Perkins Rd	35860	80	20	2	6	35	100	0
66.1	Jackson Rd	Florin Perkins Rd	14th Ave	44100	80	20	2	6	35	100	0
66.2	Jackson Rd	14th Ave	Rock Creek Pkwy	61980	80	20	2	6	35	100	0
66.3	Jackson Rd	Rock Creek Pkwy	Aspen 1 Dwy	57690	80	20	2	6	35	100	0
66.4	Jackson Rd	Aspen 1 Dwy	South Watt Ave	55370	80	20	2	6	35	100	0
67	Jackson Rd	South Watt Ave	Hedge Ave	66380	80	20	2	6	40	100	0
68.1	Jackson Rd	Hedge Ave	Collector WJ-3	56540	80	20	2	6	40	100	0
68.2	Jackson Rd	Collector WJ-3	Mayhew Rd	57880	80	20	2	6	40	100	0
69	Jackson Rd	Mayhew Rd	Bradshaw Rd	56220	80	20	2	6	35	100	0
70.1	Jackson Rd	Bradshaw Rd	Collector WJ-4	59380	80	20	2	6	35	100	0
70.2	Jackson Rd	Collector WJ-4	Happy Ln	59660	80	20	2	6	35	100	0
70.3	Jackson Rd	Happy Ln	Rock Creek Pkwy	41550	80	20	2	6	35	100	0
70.4	Jackson Rd	Rock Creek Pkwy	Collector WJ-5	41200	80	20	2	6	35	100	0
70.5	Jackson Rd	Collector WJ-5	Collector WJ-6	38910	80	20	2	6	45	100	0
70.6	Jackson Rd	Collector WJ-6	Excelsior Rd	39330	80	20	2	6	45	100	0
71.1	Jackson Rd	Excelsior Rd	Collector JT-3	62220	80	20	2	6	45	100	0
71.2	Jackson Rd	Collector JT-3	Tree View Ln	46480	80	20	2	6	45	100	0
71.3	Jackson Rd	Tree View Ln	Collector JT-4	41360	80	20	2	6	45	100	0
71.4	Jackson Rd	Collector JT-4	Eagles Nest Rd	37600	80	20	2	6	45	100	0
72.1	Jackson Rd	Eagles Nest Rd	Rockbridge Dr	37120	80	20	2	6	45	100	0
72.2	Jackson Rd	Rockbridge Dr	Sunrise Blvd	37910	80	20	2	6	45	100	0
73	Jackson Rd	Sunrise Blvd	Grant Line Rd	45290	80	20	2	8	55	100	0
74	Kiefer Blvd	Florin Perkins Rd	South Watt Ave	4830	80	20	2	5	30	100	0
75	Kiefer Blvd	South Watt Ave	Mayhew Rd	32130	80	20	2	3	40	100	0
76	Kiefer Blvd	Mayhew Rd	Bradshaw Rd	42310	80	20	2	3	40	100	0
77.1	Kiefer Boulevard	Bradshaw Road	Collector WJ-14	50960	80	20	2	3	40	100	0
77.2	Kiefer Boulevard	Collector WJ-14	Routier Ext	47140	80	20	2	3	40	100	0

Appendix I-3 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
77.3	Kiefer Boulevard	Routier Ext	Happy Lane	49820	80	20	2	3	40	100	0
78.1	Kiefer Blvd	Eagles Nest Rd	W Collector MS-1	31900	80	20	2	10	40	100	0
78.2	Kiefer Blvd	W Collector MS-1	Northbridge Dr	29740	80	20	2	10	40	100	0
78.3	Kiefer Blvd	Northbridge Dr	E Collector MS-1	31570	80	20	2	10	40	100	0
78.4	Kiefer Blvd	E Collector MS-1	Sunrise Blvd	39820	80	20	2	10	40	100	0
79	Kiefer Blvd	Sunrise Blvd	Rancho Cordova Pkwy	33580	80	20	2	3	35	100	0
80	Mather Blvd / Norden Ave	Von Karman St	Bleckely St	14820	80	20	2	3	35	100	0
81	Mather Blvd	Bleckely St	Femoyer St	14820	80	20	2	3	35	100	0
82	Mather Blvd	Femoyer St	Douglas Rd	14850	80	20	2	3	35	100	0
83	Mather Blvd-Excelsior Rd	Douglas Rd	Kiefer Blvd	6410	80	20	2	3	15	100	0
84	Mather Field Rd	US 50	Rockingham Dr	63760	80	20	2	5	45	100	0
85	Mather Field Rd	Rockingham Dr	International Dr	73260	80	20	2	5	45	100	0
86	Mather Field Rd	International Dr	Peter A McCuen Blvd	16910	80	20	2	5	40	100	0
87	Mayhew Rd	Folsom Blvd	Goethe Rd	14330	80	20	2	3	40	100	0
88	Mayhew Rd	Goethe Rd	Kiefer Blvd	13680	80	20	2	3	40	100	0
89.1	Mayhew Rd	Jackson Rd	Rock Creek Pkwy	47790	80	20	2	3	40	100	0
89.2	Mayhew Rd	Rock Creek Pkwy	Fruitridge Rd	46860	80	20	2	3	40	100	0
90	Old Placerville Rd	Bradshaw Rd	Granby Dr	22760	80	20	2	3	40	100	0
91	Old Placerville Rd	Granby Dr	Happy Ln	20690	80	20	2	3	40	100	0
92	Old Placerville Rd	Happy Ln	Routier Rd	18090	80	20	2	3	40	100	0
93	Old Placerville Rd	Routier Rd	Rockingham Dr	36350	80	20	2	3	35	100	0
94	Power Inn Rd	Folsom Blvd	14th Ave	47170	80	20	2	5	35	100	0
95	Rockingham Dr	Old Placerville Rd	Mather Field Rd	40280	80	20	2	5	35	100	0
96	South Watt Ave	Folsom Blvd	Kiefer Blvd	81880	80	20	2	5	40	100	0
97	South Watt Ave	Kiefer Blvd	Jackson Rd	70930	80	20	2	5	40	100	0
98.1	South Watt Ave	Jackson Rd	Rock Creek Pkwy	59970	80	20	2	5	40	100	0
98.2	South Watt Ave	Rock Creek Pkwy	Fruitridge Rd	60090	80	20	2	5	40	100	0
99	South Watt Ave	Fruitridge Rd	Elder Creek Rd	59400	80	20	2	5	40	100	0
100	South Watt Ave	Elder Creek Rd	Florin Rd	59670	80	20	2	5	45	100	0
101	Sunrise Blvd	US 50	Folsom Blvd	63100	80	20	2	5	35	100	0
102	Sunrise Blvd	Folsom Blvd	Trade Center Dr	60460	80	20	2	5	35	100	0
103	Sunrise Blvd	Trade Center Dr	White Rock Rd	37470	80	20	2	5	35	100	0
104.1	Sunrise Blvd	White Rock Rd	International Dr	49770	80	20	2	5	35	100	0
104.2	Sunrise Blvd	International Dr	Rio Del Oro Pkwy	53890	80	20	2	5	35	100	0
104.3	Sunrise Blvd	Rio Del Oro Pkwy	Douglas Rd	63690	80	20	2	5	45	100	0
105	Sunrise Blvd	Douglas Rd	Kiefer Blvd	43880	80	20	2	5	40	100	0
106	Sunrise Blvd	Kiefer Blvd	Jackson Rd	33930	80	20	2	5	45	100	0
107	Sunrise Blvd	Jackson Rd	Florin Rd	30370	80	20	2	5	50	100	0
108	Sunrise Blvd	Florin Rd	Grant Line Rd	18270	80	20	2	5	45	100	0
109	Vineyard Rd	Gerber Rd	Calvine Rd	10620	80	20	2	3	40	100	0
110	Watt Ave	US 50	Folsom Blvd	106480	80	20	2	5	45	100	0
111	White Rock Rd	International Rd	Quality Dr	5490	80	20	2	3	35	100	0
112	White Rock Rd	Quality Dr	Zinfandel Dr	18020	80	20	2	3	35	100	0
113	White Rock Rd	Zinfandel Dr	Kilgore Rd	31090	80	20	2	3	35	100	0
114	White Rock Rd	Kilgore Rd	Sunrise Blvd	39540	80	20	2	3	35	100	0
115	White Rock Rd	Sunrise Blvd	Fitzgerald Rd	35570	80	20	2	5	40	100	0
116.1	White Rock Rd	Fitzgerald Rd	Rancho Cordova Pkwy	55810	80	20	2	5	40	100	0
116.2	White Rock Rd	Rancho Cordova Pkwy	Americanos Blvd	21040	80	20	2	5	40	100	0
116.3	White Rock Rd	Americanos Blvd	Grant Line Rd	16530	80	20	2	5	50	100	0
117	White Rock Rd	Grant Line Rd	Prairie City Rd	56000	80	20	2	10	55	100	0
118	Zinfandel Dr	US 50	White Rock Rd	81540	80	20	2	3	35	100	0
119	Zinfandel Dr	White Rock Rd	International Rd	42520	80	20	2	3	35	100	0
120	Zinfandel Dr	International Rd	Baroque Dr	33450	80	20	2	3	40	100	0
121	Zinfandel Dr	Baroque Dr	City Limit	33450	80	20	2	3	40	100	0
122	Zinfandel Dr	City Limit	Douglas Rd	33450	80	20	2	3	40	100	0
123.1	Zinfandel Dr	Douglas Rd	Collector MS-2	22250	80	20	2	3	40	100	0

Appendix I-4 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

BOLLARD Acoustical

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
123.2	Zinfandel Dr	Collector MS-2	Collector MS-3	16860	80	20	2	3	35	100	0
123.3	Zinfandel Dr	Collector MS-3	Collector MS-4	17200	80	20	2	3	35	100	0
123.4	Zinfandel Dr	Collector MS-4	Kiefer Blvd	16970	80	20	2	3	35	100	0
124	14th Ave	Power Inn Rd	Florin Perkins Rd	27820	80	20	2	6	35	100	0
125	14th Ave	Florin Perkins Rd	Jackson Rd	17910	80	20	2	6	35	100	0
126	Chrysanthy Blvd	Rancho Cordova Pkwy	Americanos Blvd	21510	80	20	2	3	40	100	0
127	Chrysanthy Blvd	Americanos Blvd	Grant Line Rd	15790	80	20	2	3	40	100	0
128	Douglas Rd (Extension)	Mather Blvd	Kiefer Blvd	20970	80	20	2	3	50	100	0
129	International Dr	Sunrise Blvd	Rancho Cordova Pkwy	31560	80	20	2	3	40	100	0
130	International Dr	Rancho Cordova Pkwy	Americanos Blvd	18670	80	20	2	3	40	100	0
131	Kiefer Blvd	Rancho Cordova Pkwy	Americanos Blvd	9730	80	20	2	3	35	100	0
132	Kiefer Blvd	Americanos Blvd	Grant Line Rd	19200	80	20	2	3	40	100	0
133	Rancho Cordova Pkwy	US 50	Easton Valley Pkwy	69710	80	20	2	3	40	100	0
134	Rancho Cordova Pkwy	Easton Valley Pkwy	White Rock Rd	72320	80	20	2	3	40	100	0
135	Rancho Cordova Pkwy	White Rock Rd	International Dr	49960	80	20	2	3	40	100	0
136	Rancho Cordova Pkwy	International Dr	Rio Del Oro Pkwy	59540	80	20	2	3	40	100	0
137	Rancho Cordova Pkwy	Rio Del Oro Pkwy	Villagio Dr	37840	80	20	2	3	40	100	0
138	Rancho Cordova Pkwy	Villagio Dr	Douglas Rd	32000	80	20	2	3	40	100	0
139	Rancho Cordova Pkwy	Douglas Rd	Chrysanthy Blvd	33340	80	20	2	3	40	100	0
140	Rancho Cordova Pkwy	Chrysanthy Blvd	Kiefer Blvd	19280	80	20	2	3	40	100	0
141	Rancho Cordova Pkwy	Kiefer Blvd	Grant Line Rd	14180	80	20	2	3	40	100	0
142	Americanos Blvd	White Rock Rd	Douglas Rd	6150	80	20	2	3	25	100	0
143	Americanos Blvd	Douglas Rd	Chrysanthy Blvd	9060	80	20	2	3	35	100	0
144	Americanos Blvd	Chrysanthy Blvd	Kiefer Blvd	8210	80	20	2	3	35	100	0
145	Vineyard Rd	Florin Rd	Gerber Rd	10060	80	20	2	3	40	100	0
146	Rio Del Oro Pkwy	Sunrise Blvd	Rancho Cordova Pkwy	31920	80	20	2	3	40	100	0
147	Rio Del Oro Pkwy	Rancho Cordova Pkwy	White Rock Rd	8590	80	20	2	3	40	100	0
200	Kiefer Blvd	Tree View Ln	Eagles Nest Rd	37180	80	20	2	3	45	100	0
300	Douglas Rd	Excelsior Rd	Rock Creek Pkwy	27160	80	20	2	3	45	100	0
301	Douglas Rd	Rock Creek Pkwy	Kiefer Blvd	36990	80	20	2	3	45	100	0
302	Kiefer Blvd	Happy Ln	Douglas Rd	63170	80	20	2	3	45	100	0
303	Kiefer Blvd	Douglas Rd	Excelsior Rd	33150	80	20	2	3	40	100	0
304	Mayhew Rd	Routier Ext	Bradshaw Rd	39470	80	20	2	3	40	100	0
305	Mayhew Rd	Bradshaw Rd	Jackson Rd	40970	80	20	2	3	40	100	0
306	Mayhew Rd	Fruitridge Rd	Collector WJ-13	30030	80	20	2	3	40	100	0
307	Mayhew Rd	Collector WJ-13	Elder Creek Rd	32580	80	20	2	3	40	100	0
308	Rock Creek Pkwy	South Watt Ave	Hedge Ave	7450	80	20	2	3	35	100	0
309	Rock Creek Pkwy	Hedge Ave	Mayhew Rd	10940	80	20	2	3	35	100	0
310	Rock Creek Pkwy	Mayhew Rd	Bradshaw Rd	4730	80	20	2	3	35	100	0
311	Rock Creek Pkwy East	Excelsior Road	Collector WJ-16	13510	80	20	2	3	35	100	0
312	Rock Creek Pkwy East	Collector WJ-16	Jackson Road	19230	80	20	2	3	35	100	0
313	Vineyard Rd	Jackson Road	New Collector	31060	80	20	2	3	40	100	0
314	Vineyard Rd	New Collector	Collector WJ-18	26270	80	20	2	3	40	100	0
315	Vineyard Rd	Collector WJ-18	Elder Creek Road	25590	80	20	2	3	40	100	0
316	Vineyard Rd	Elder Creek Road	Florin Road	14340	80	20	2	3	40	100	0
317	Routier Ext	Old Placerville Road	Happy Lane	41410	80	20	2	3	40	100	0
318	Routier Ext	Happy Lane	Kiefer Boulevard	34670	80	20	2	3	40	100	0
319	Routier Ext	Kiefer Boulevard	Mayhew Road	39110	80	20	2	3	40	100	0
320	Collector WJ-16	Rock Creek Pkwy	Collector WJ-6	950	80	20	2	3	25	100	0
321	Collector WJ-17	Rock Creek Pkwy	Collector WJ-6	850	80	20	2	3	25	100	0
322	Collector WJ-6	Collector WJ-16/WJ-17	Jackson Road	2730	80	20	2	3	25	100	0
323	Collector WJ-6	Jackson Road	Collector WJ-18	3640	80	20	2	3	25	100	0
324	Collector WJ-2	Excelsior Road	Collector WJ-6	2860	80	20	2	3	25	100	0
325	Collector WJ-18	Vineyard Rd	Collector WJ-6	3360	80	20	2	3	25	100	0
326	Collector WJ-18	Collector WJ-6	Excelsior Road	3270	80	20	2	3	25	100	0
327	Collector WJ-19	Bradshaw Road	Vineyard Road	7820	80	20	2	3	35	100	0
400	Collector JT-1	Excelsior Rd	Collector JT-3	4570	80	20	2	3	25	100	0

Appendix I-5 of 5
FHWA Highway Traffic Noise Prediction Model Inputs
West Jackson Master Plan
File Name: FHWA Segments - Cumulative + 4 Projects
Run Date: 11/10/2022

#	Roadway	From	To	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
401	Collector JT-1	Collector JT-3	Tree View Ln	1550	80	20	2	3	25	100	0
402	Collector JT-3	Kiefer Blvd	Collector JT-1	1840	80	20	2	3	25	100	0
403	Collector JT-3	Collector JT-1	Collector JT-6	1290	80	20	2	3	25	100	0
404	Collector JT-3	Collector JT-6	Collector JT-5	2630	80	20	2	3	25	100	0
405	Collector JT-3	Collector JT-5	Jackson Rd	20070	80	20	2	3	25	100	0
406	Collector JT-4	Jackson Rd	Bridgewater Dr	4440	80	20	2	3	25	100	0
407	Collector JT-5	Collector JT-3	Tree View Ln	10100	80	20	2	3	25	100	0
408	Collector JT-6	Excelsior Rd	Collector JT-3	4370	80	20	2	3	25	100	0
409	Collector JT-6	Collector JT-3	Tree View Ln	850	80	20	2	3	25	100	0
410	Kiefer Blvd	Excelsior Rd	Tree View Ln	31510	80	20	2	3	40	100	0
411	Tree View Ln	Kiefer Blvd	Collector JT-1	10660	80	20	2	3	40	100	0
412	Tree View Ln	Collector JT-1	Collector JT-6	10340	80	20	2	3	40	100	0
413	Tree View Ln	Collector JT-6	Collector JT-5	10250	80	20	2	3	40	100	0
414	Tree View Ln	Collector JT-5	Jackson Rd	7370	80	20	2	3	40	100	0
415	Collector JT-7	Collector JT-3	Tree View Ln	1590	80	20	2	3	25	100	0
416	Collector JT-8	Collector JT-3	Tree View Ln	1740	80	20	2	3	25	100	0
417	Collector JT-9	Jackson Rd	Collector JT-8	3600	80	20	2	3	25	100	0
418	Collector JT-10	Jackson Rd	Collector JT-8	1570	80	20	2	3	25	100	0
419	Collector JT-6	Tree View Ln	Jackson Rd	1770	80	20	2	3	25	100	0
500	S Bridgewater Dr	Collector JT-4	Eagles Nest Rd	5220	80	20	2	3	25	100	0
501	S Bridgewater Dr	Eagles Nest Rd	Northbridge Dr	4620	80	20	2	3	25	100	0
502	N Bridgewater Dr	Northbridge Dr	Eagles Nest Rd	1240	80	20	2	3	25	100	0
503	Northbridge Dr	Kiefer Blvd	Bridgewater Dr	4320	80	20	2	3	25	100	0
504	Street A	S Bridgewater Dr	Street B	1800	80	20	2	3	25	100	0
505	Street B	S Bridgewater Dr	Street A	1440	80	20	2	3	25	100	0
506	Rockbridge Dr	Street B	Stonebridge Dr	1850	80	20	2	3	25	100	0
507	Rockbridge Dr	Stonebridge Dr	Jackson Rd	7640	80	20	2	3	25	100	0
508	Stonebridge Dr	S Bridgewater Dr	Rockbridge Dr	2480	80	20	2	3	25	100	0
509	Stonebridge Dr	Rockbridge Dr	Jackson Rd	4440	80	20	2	3	25	100	0
600	Collector MS-1	Kiefer Boulevard	Collector MS-5	16870	80	20	2	3	25	100	0
601	Collector MS-1	Collector MS-5	Collector MS-4	7670	80	20	2	3	25	100	0
602	Collector MS-1	Collector MS-4	Collector MS-3	6350	80	20	2	3	25	100	0
603	Collector MS-1	Collector MS-3	Collector MS-2	3140	80	20	2	3	25	100	0
604	Collector MS-2	Eagles Nest Road	Collector MS-5	8910	80	20	2	3	25	100	0
605	Collector MS-3	Eagles Nest Road	Collector MS-5	6860	80	20	2	3	25	100	0
606	Collector MS-4	Eagles Nest Road	Collector MS-5	7130	80	20	2	3	25	100	0
607	Collector MS-5	Kiefer Boulevard	Collector MS-1	8770	80	20	2	3	25	100	0

Acoustical Testing Plan for Mather Airport

Residential Sound Insulation Program
ALUC Exception for Units in the 60-65 dB CNEL Contour

HMMH Report No. 311390.002

July 2022

Prepared for:
Sacramento County Department of Airports

Prepared by:
Gene Reindel

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1 Introduction

The Sacramento County's Airport Land Use Compatibility Plan and General Plan (Noise Element, NO-3) prohibits residential development inside the Community Noise Equivalent Level (CNEL) 60 dB contour as determined through a theoretical capacity analysis, which the Sacramento County Department of Airports (SCDA) updates periodically. With the recent update to the Mather Airport theoretical capacity analysis, the proposed West Jackson Master Plan Alternative 1C development would include residential properties within the CNEL 60 to 65 dB contour.

For federally funded airport residential sound insulation programs, the Federal Aviation Administration (FAA) guidelines suggest assigning an exterior level of CNEL 65 dB to all parcels within the CNEL 60 to 65 dB contour. To ensure that the interior CNEL is below 45 dB, with an appropriate margin of error, we would specify a design goal of 25 dB noise level reduction (NLR), which can be achieved with all structural façade elements having a minimum rating of Outdoor-Indoor Transmission Class (OITC) 25.

In accordance with Appendix R "Noise Compatibility Planning/Projects" of FAA Order 5100.38D Airport Improvement Program Handbook[1] (AIP Handbook), SCDA requires an Acoustical Testing Plan (ATP) and testing in accordance with the ATP to ensure the residential properties constructed within the CNEL 60 to 65 dB contour have a minimum average NLR of 25 dB.

The ATP conforms to "best-practices" utilized by industry professionals for over thirty years in sound insulation programs across the nation and includes acoustical testing methods for determining interior noise levels that are outlined in the FAA's adopted guidance[2] per Advisory Circular 150/5000-9A, *Announcement of Availability – Report No. DOT/FAA/PP/92-5, Guidelines for the Sound Insulation of Residents Exposed to Aircraft Noise*, issued in 1992[3]. The various steps outlined in the ATP also comply with requirements set forth in Table R-4 "Pre- and Post-Testing Criteria for Noise Insulation Projects" of Appendix R in the AIP Handbook.

The following sections provide detailed descriptions of the key components in implementing the ATP.

[1] FAA Order 5100.38D "Airport Improvement Program Handbook", Appendix R "Noise Compatibility Planning/Projects", effective date September 30, 2014.

[2] "Guidelines for the Sound Insulation of Residences Exposed to Aircraft Operations", which is attached to FAA Advisory Circular AC150/5000-9a

[3] FAA released an update in June 2022 for which there are modified testing requirements not included in this ATP.

2 Acoustical Testing

The acoustical testing program is to validate that the residential units constructed within the 60 to 65 dB CNEL contour achieves a minimum of 25 dB NLR to provide for appropriate interior habitable spaces from aircraft noise levels.

2.1 Measurement Methodology

Sound insulation measurements have historically been conducted using either an artificial noise source or actual aircraft noise events. An artificial noise source allows measurements to be made at the properties during a brief measurement period, independent from the reliance on aircraft over flights and without the need for multiple sound level meters to simultaneously measure aircraft noise in all habitable rooms.[4] The testing procedure described herein has been developed to accurately measure outdoor-to-indoor noise level reduction (NLR) of rooms.

The equipment required to complete the sound insulation measurements includes:

- Integrating sound level meter (with spectrum logging capability)[5]
- Loudspeaker (active or passive)
- Power amplifier (may be integrated with speaker)
- Signal generator (pink noise or simulated via graphic equalizer)
- Monopod for microphone
- Speaker tripod
- Power cables
- Digital camera
- Measuring tape

The testing procedures generally follow those outlined in the American Society for Testing and Materials (ASTM) Standard E966[6]. The methodology also conforms to good practice in sound insulation programs and the efficiency and flexibility of the testing procedures are enhanced using methods and theories from other sources such as Leo Beranek's "Noise and Vibration Control", which are applied in supplement to the ASTM standard to achieve the same level of overall accuracy in the testing process.

2.2 Measurement Procedures

The acoustical consultant shall use a field kit that includes a signal generator and public announcement (PA) type loudspeaker to produce a noise source of equal energy in each octave band or one-third octave band (referred to in the acoustics field as "pink noise") at an approximate overall sound level of 90 to 100 dB as measured at the exterior building façade under test.

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[4] Defined in the AIP Handbook as living, sleeping, eating or cooking areas. Additional discussion is provided in Section **Error! Reference source not found.**

[5] Either octave band or one-third octave band capability is acceptable. This ATP provides methodology for either instrumentation.

[6] ASTM E966-10$^{\varepsilon 1}$ "Standard Guide for Field Measurements of Airborne Sound Attenuation of Building Facades and Façade Elements", with editorial changes in April 2011.

The loudspeaker will be positioned either on a tripod or placed on the ground unless there is compelling evidence that the roof/ceiling element of the room under test has the potential to contribute significantly to the interior sound level from aircraft operations. Examples of compelling reasons include: existence of weak elements within the roof/ceiling structure, such as sky lights; relatively light weight materials to make up the roof structure; limited airspace between the roof and ceiling; and limited or no use of insulation in the space between the roof and ceiling. In these instances, the speaker will be lifted above the roofline of the home to obtain both exterior façade and roof exposure through the use of an industrial grade hoisting device, such as a bucket truck, scissors lift or mobile crane.

The loudspeaker is directed at the room under test as required in the ASTM Standard E966, typically at a 45-degree incidence angle to minimize the application of adjustments to the data. The goal is to obtain a uniform sound field exposure of the entire exterior surface (façade) of interest, whether a single room or multiple rooms along the same facade. To obtain a uniform sound field along a wider area (testing of multiple rooms along the same façade) requires the speaker to be a greater distance from the façade at an increased volume as compared to the measurement of a single room.

The loudspeaker must be positioned such that the sound field at the façade of the room under test is as uniform as possible (± 2 dB along the façade of measurement) at a 45-degree angle of incidence. Corner rooms with two exterior facades should have both facades exposed simultaneously, with the direction of the speaker aimed at the center of only one of the facades. If only one façade is tested, it must be the least performing façade in terms of potential noise reduction. From the center of the façade, the perpendicular and the parallel distance to the speaker must be roughly equal.

At times the consultant may request that the roof/ceiling structure be tested to determine whether it is a major sound transmission path into a particular room. When measuring the acoustical performance of the roof/ceiling structure, the loudspeaker is placed over the roof such that the other structural elements (i.e., doors, windows, walls, etc.) are shielded from the sound field as much as possible. This often requires the use of a longer hoisting device than is necessary when the loudspeaker is placed over the yard.

With the loudspeaker placed to provide sufficiently uniform sound across the primary façade, octave band or one-third octave band sound level measurements are made both on the exterior and in the interior of the structure using both time and spatial averaging of sound levels. Additional measurements are conducted without the loudspeaker in operation to provide background or ambient sound levels.

2.2.1 Interior measurement method

Interior measurements occur to calculate the NLR for each room tested.

For interior room measurements, the microphone is swept in an elliptical or figure-8 pattern throughout the room volume for a minimum period of 20 seconds to measure the spatial average sound level (Leq) of the room. The microphone should, at all times, be at least 12 inches from sound transmitting elements (window, door, wall, vent, etc.) and from any hard reflective surfaces (e.g., walls, floor, and ceiling).

The interior room Leq is measured by sweeping the microphone as described above with the loudspeaker system turned on. The interior background Leq is measured by repeating the interior room Leq process, but with the loudspeaker system turned off. To ensure no contamination of the interior measurements conducted with the loudspeaker on, the background Leq measured with the speaker off must be at least 10 dB below the noise levels measured in each octave band or one-third octave band with the speaker turned on. To obtain this environment, household noise sources may need to be reduced or eliminated including pet noise, talking, and/or movements within the home and specific appliances or electronic devices may also need to be turned down, turned off or muted such as televisions, radios, phones,

ventilation (fan) systems, refrigerators and fish tanks. All household noise sources will be returned to their original conditions once the measurements are completed.

2.2.2 Exterior measurements methods

For exterior building façade measurements, the microphone is swept in a repeated "S" pattern for a minimum period of 20 seconds to measure the average exterior sound level (Leq) for the room or element of interest.

The exterior room façade Leq is measured by sweeping the microphone as described above with the loudspeaker system turned on. The exterior background Leq is measured by repeating the exterior facade Leq process, but with the loudspeaker system turned off. To ensure no contamination of the exterior measurements conducted with the loudspeaker on, the background Leq measured with the speaker off must be at least 10 dB below the noise levels measured in each octave band or one-third octave band with the speaker on.

There are three measurement methods which may be utilized to determine exterior sound levels. Any of the three methods may be used to determine the sound pressure level at the exterior building façade and these methods, when conducted as prescribed in the ASTM standard, will provide the same outdoor sound pressure level at the exterior facade of the structure under ideal conditions. The variety of methods for determining the outdoor sound pressure levels exist to provide flexibility since no one method can be used in all situations encountered in the field.

Each of the three methods are outlined below, in the preferred order of use.

(1) Flush method:

The flush outdoor measurement procedure[7] is outlined in the ASTM E966 standard. This method requires the microphone to be "very close" to the façade surface, but not so close that it is likely to touch the surface. The ASTM standard indicates that this measurement position requires a subtraction of 5 dB to account for the approximate doubling of the sound pressure (+6 dB) at the façade surface. The flush method is the most common and ideal method because of the ease to accomplish, applicability in most circumstances, assurance of the ability to measure similarly for pre- and post-construction conditions and repeatability of the measurement technique in the field.

(2) Nearby method:

ASTM E966 provides a second method for determining the outdoor sound pressure level: the nearby microphone method[8] with a 2 dB subtraction to the measured level to account for the reflection of sound energy from the façade and back to the microphone. This method requires the microphone to be 4 to 8 feet from the surface. This method also requires that the loudspeaker be positioned far away from the building façade (at least 40 feet) to minimize the increase in sound level associated with the measurement position being 4 to 8 feet closer to the speaker than is the façade. An additional adjustment factor of 1 dB should be subtracted from the measured exterior level to account for this effect.

[7] ASTM E966 Section 8.3.3 describes how to conduct the measurements and Section 8.5.3 provides required adjustments.

[8] ASTM E966 Section 8.3.2 describes how to conduct the measurement and Section 8.5.2 provides required adjustments.

(3) Free-field method:

The third technique, known as the free-field or calibration method[9], requires no adjustment as the measurement is conducted in an environment relatively free of reflective surfaces. The free-field method usually requires a separate speaker set up and measurement. To use the free field method, first measure the distance from the speaker to the façade during the interior room measurement. Then position the loudspeaker in a free-field environment over soft ground and measure the sound level at that same distance from the speaker by sweeping the microphone at the distance determined."

2.2.3 Measurement documentation

Digital photographs must be taken of the following:

- Exterior of each home to aid in identifying the property
- Loudspeaker positions and associated exterior façade areas under test
- Exterior elements that have noticeable product and/or installation defects
- Room interiors to document conditions in case noise modeling is undertaken or retesting is required

The digital camera must be set to the same date and time as the integrating sound level meter and all photographs must have a date and time stamp for reference. Data log sheets must also be completed (digital format is acceptable) that include, at a minimum, the following information:

- Airport code/identifier
- Address of property tested
- Resident last name or site name
- Site or parcel number (if known and applicable)
- Building number and unit number (multi-family only)
- Building floor number and unit type (multi-family only)
- Date and time of the measurements
- Initials of person(s) conducting the testing
- Description of rooms and elements tested
- Speaker set up (ground, tripod, or elevated)
- Noise-exposed room surfaces (façade, roof, or both)
- Exterior measurement method (flush, nearby, or free-field)
- A-weighted Leq noise levels, in dB, and corresponding SLM data file numbers (for interior background, interior test, exterior background, and exterior test)
- Sketch of floorplan, including all eligible rooms and noting all exterior elements
- Documentation on sketch of all loudspeaker positions, including reference distances

2.3 Calculation of Outdoor/Indoor Noise Reduction (OINR)

The Outdoor/Indoor Noise Reduction (OINR) of tested rooms and building elements are calculated from the measured exterior and interior sound levels in each octave band or one-third octave band, as outlined in ASTM E966. The OINR values are used to compute the outdoor-to-indoor Noise Level Reduction (NLR) of aircraft noise as measured in A-weighted decibels, denoted dB.

[9] ASTM E966 Section 8.3.1 describes how to conduct the measurement and Section 8.5.1 provides required adjustments.

The OINR values are computed for each tested eligible room by subtracting the interior noise level measured in each octave band or one-third octave band from the corresponding exterior sound level measurement. The exterior sound level data are first adjusted to account for the acoustic energy reflected from the building façade under evaluation, as outlined previously in report Section 2.2.2. The exterior and interior sound level data collected with the artificial noise source operating are likewise adjusted to account for the ambient acoustical energy measured with the noise source turned off. These are shown in the following equations.

The adjusted exterior level in each octave band or one-third octave band is:

$$L_{Ext\ Adj} = 10\log\left(10^{\frac{L_{Ext\ Measured}}{10}} - 10^{\frac{L_{Ext\ Background}}{10}}\right) - Adj_{Ref\ Energy}$$

The adjusted interior level in each octave band or one-third octave band is:

$$L_{Int\ Adj} = 10\log\left(10^{\frac{L_{Int\ Measured}}{10}} - 10^{\frac{L_{Int\ Background}}{10}}\right)$$

The OINR level in each octave band or one-third octave band is then determined by:

$$OINR = L_{Ext\ Adj} - L_{Int\ Adj}$$

The measurements may also be adjusted per ASTM E966 based on the angle of incidence of the noise source. The acoustical consultant typically attempts to position the loudspeaker to obtain an incident angle of 45 degrees for consistency, repeatability and efficiency as it requires no correction in the calculations. If a different angle-of-incidence is required, the consultant must apply the appropriate correction to the calculations as provided in ASTM E966.

2.4 Calculation of Noise Level Reduction (NLR)

NLR is a single number rating used for the comparison of the difference in outdoor-to-indoor noise levels. This number is typically used to judge the overall effectiveness of airport sound insulation programs.

The NLR of a room is dependent on the frequency (sound spectrum) content of the exterior noise source. For aviation sound insulation programs, the computed NLR values are determined using an appropriate aircraft noise source. The exterior aircraft source spectrum is also A-weighted to resemble human perception and to be consistent with FAA guidelines for assessing aircraft noise in communities.

The exterior aircraft noise spectrum was determined using the theoretical capacity analysis. The T-38A was estimated to be the greatest overall contributor to CNEL sound levels for departures from runways 22 L/R. Figure 1 and Table 1 present the octave band aircraft noise spectrum, normalized to an overall A-weighted sound level of 65 dB. Table 2 provides the corresponding one-third octave band sound levels.

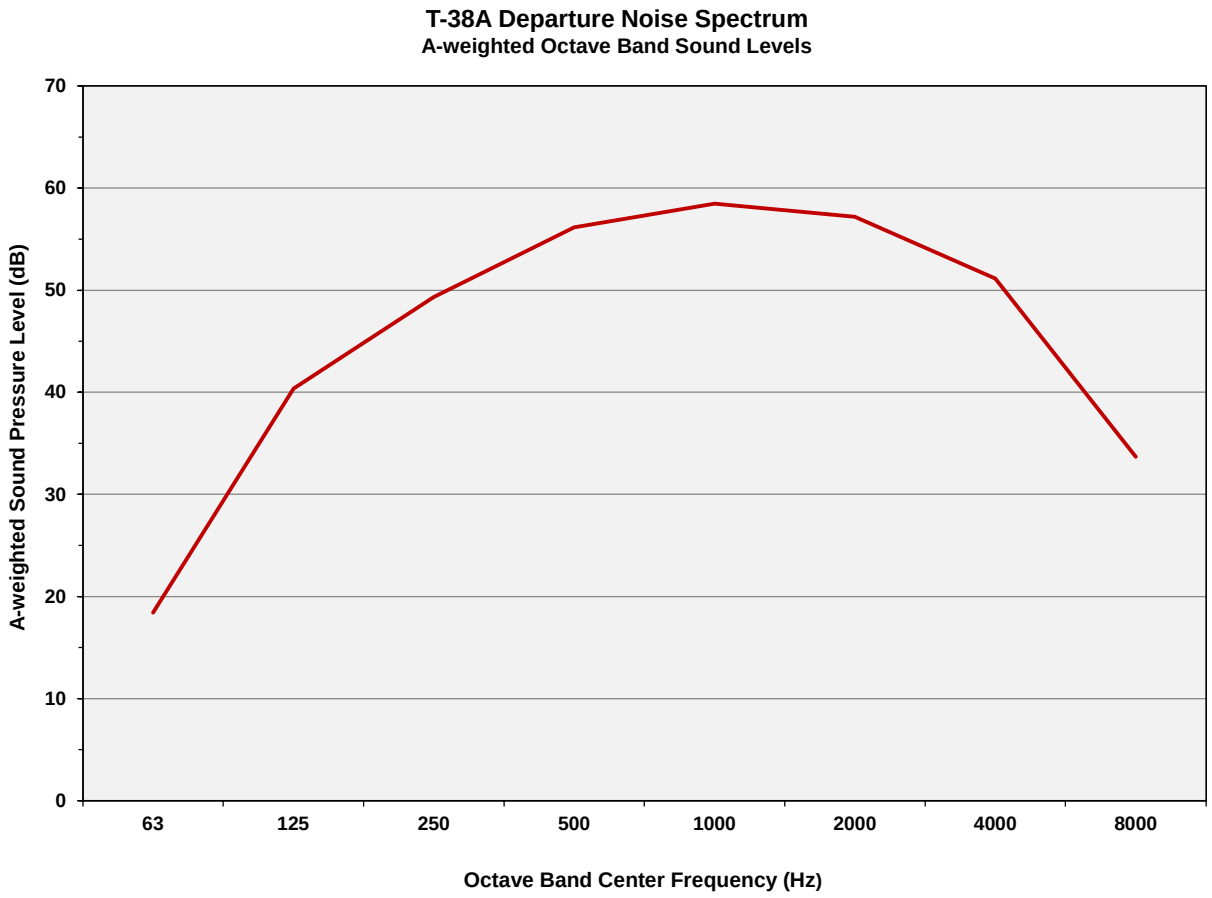

Figure 1. A-weighted Octave Band Aircraft Noise Spectrum

Table 1. A-weighted Octave Band Aircraft Noise Spectrum

Hz	63	125	250	500	1000	2000	4000	8000
dB	20.7	42.6	51.6	58.4	60.8	59.5	53.4	36.0

Table 2. A-weighted One-third Octave Band Aircraft Noise Spectrum

Hz	50	63	80	100	125	160	200	250	315	400	500	630	Hz
dB	11.4	14.7	21.0	30.9	38.2	42.4	42.3	47.3	49.9	52.4	52.4	54.9	dB
Hz	800	1000	1250	1500	2000	2500	3150	4000	5000	6300	8000	10000	Hz
dB	55.8	56.1	55.8	55.3	54.7	53.8	51.6	47.8	42.5	35.2	29.4	24.9	dB

The indoor A-weighted noise source spectrum for each tested eligible room in a structure is obtained by subtracting the measured OINR values from each corresponding octave band or one-third octave band of the exterior A-weighted aircraft source spectrum.

The overall A-weighted interior noise level is then obtained by summing the individual energies calculated for each octave band. The A-weighted NLR value for each tested room, based on the exterior aircraft spectrum, is computed from the difference between the overall outdoor and indoor A-weighted aircraft noise levels. This is shown in the following equations.

The exterior A-weighted total level is:

$$L_{Ext\ Total} = 10log \sum_{i=1}^{k} 10^{\frac{L_{Ext\ Noise\ Source\ Spectrum,i}}{10}}$$

The interior A-weighted total level is:

$$L_{Int\ Total} = 10log \sum_{i=1}^{k} 10^{\frac{L_{Ext\ Noise\ Source\ Spectrum,i} - OINR_i}{10}}$$

where "k" is the total number of octave or one-third octave bands used.

The NLR is then determined by:

$$NLR = L_{Ext\ Total} - L_{Int\ Total}$$

Table 3 presents an example of an octave band measurement calculation.

Table 3. Example Octave Band Measurement Calculation

	Octave Band Center Frequency								A-weighted Total
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Unweighted Measurement Data									
Exterior Background	67.3	66.2	58.4	50.2	48.5	45.6	39.8	34.2	**56.0**
Exterior Measurement (flush)	93.1	93.3	88.3	87.9	88.4	86.8	88.1	89.5	**95.1**
Exterior Adjusted	88.1	88.3	83.3	82.9	83.4	81.8	83.1	84.5	**90.1**
Interior Background	49.1	46.4	37.2	28.1	29.0	23.7	21.4	20.7	**35.6**
Interior Measurement	70.4	70.0	61.4	61.8	60.2	56.8	57.8	54.1	**65.8**
Interior Adjusted	70.4	70.0	61.4	61.8	60.2	56.8	57.8	54.1	**65.8**
Outdoor-Indoor Noise Reduction (OINR)	**17.7**	**18.3**	**21.9**	**21.1**	**23.2**	**25.0**	**25.3**	**30.4**	
A-weighted Aircraft Sound Levels									
Exterior Noise Level	20.7	42.6	51.6	58.4	60.8	59.5	53.4	36.0	**65.0**
Interior Noise Level	3.0	24.3	29.7	37.3	37.6	34.5	28.1	5.6	**42.0**
								Noise Level Reduction (NLR):	***23.0 dB***

Under the "Unweighted Measured Data" section, the *Interior Background* shows the measured interior background octave band levels with the loudspeaker turned off and the A-weighted total. The *Interior Measurement* presents the measured interior octave band levels with the loudspeaker turned on and the A-weighted total. The *Interior Adjusted* provides the interior octave band levels with the measured background sound level contribution removed and the A-weighted total. The *Exterior Background* shows the measured exterior background octave band levels with the loudspeaker off and the A-weighted total. The *Exterior Measurement* shows the measured exterior façade octave band levels with the loudspeaker on and the A-weighted total. The *Exterior Adjusted* provides the exterior octave band levels with the measured background sound level and the façade reflected energy contributions removed and the A-weighted total. In this example, note that the octave band levels and the A-weighted totals both show the measurements with the speaker turned on being more than 10 dB louder than the background levels with the speaker turned off.

The OINR is then developed by subtracting the *Interior Adjusted* level from the *Exterior Adjusted* level for each octave band, as outlined in Section 2.3. Under "A-Weighted Aircraft Noise Source Spectrum" the OINR is subtracted from the *Exterior Spectrum* to obtain the *Interior Spectrum*. The A-weighted acoustical

energy totals of the *Exterior Spectrum* and the *Interior Spectrum* are subtracted to obtain the NLR value, shown on the last line of the example table.

2.5 Extent of Acoustical Testing

According to Appendix R of the AIP Handbook, FAA recommends testing between 10% and 30% of the potentially eligible parcels[10]. In order to verify that homes are constructed in substantial conformance to a particular master permit plan set for a floorplan type and satisfy the design goal of achieving 25 dB Noise Level Reduction (NLR), post-construction acoustical testing of the first home conforming to the master permit plan set for a floorplan type (typically the model home) and at least one additional home for each floorplan type randomly selected during each construction phase to ensure the homes all meet the acoustical goal.

[10] FAA Order 5100.38D Appendix R, Table R-4 "Pre- and Post-Testing Criteria for Noise Insulation Projects", c. "First Step – Initial Testing" Paragraph (3): "Once the sponsor has characterized the diversity of the residences in the noise contour, it will select a representative sample of each type of similarly-constructed residences for testing, which based on industry review is typically 10% to 30%."

3 Compliance Determination

SCDA will determine compliance based on the testing reports provided during each phase of construction. Residential structures with an average NLR of 25 dB or greater will be considered to have met the SCDA requirements for those within the 60 to 65 dB CNEL contour.

APPENDIX J

NOISE MODELING CALCULATIONS

Attenuation Calculations for Stationary Noise Sources

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)
HVAC - 55 dB threshold	70.0	@	3	hard	8	5	0.00	54.9	@	17
HVAC - 60 dB Threshold	70.0	@	3	hard	8	5	0.00	59.5	@	10
Loading Dock Activity	59.0	@	100	hard	8	5	0.00	54.9	@	160
Loading Dock Activity	60.0	@	101	hard	8	5	0.00	49.8	@	325

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 176 and 177 of FTA 2018.

Computation of the ground factor is based on the equation presentd in Table 4-26 on pg. 86 of FTA 2018, where the distance of the reference noise leve can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available: <http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf>Accessed:

Site Preparation (Leq)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,084	55.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Compactor (ground)	83	0.2
Dozer	82	0.4
Backhoe	78	0.4
Roller	80	0.2

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Compactor (ground)	76.0
Dozer	78.0
Backhoe	74.0
Roller	73.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
81.7

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Site Preparation (Lmax)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	203	75.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Compactor (ground)	83	1
Dozer	82	1
Backhoe	78	1
Roller	80	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Compactor (ground)	83.0
Dozer	82.0
Backhoe	78.0
Roller	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
87.2

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Grading (Leq)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,659	55.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dozer	82	0.4
Grader	85	0.4
Grader	85	0.4
Front End Loader	79	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Dozer	78.0
Grader	81.0
Grader	81.0
Front End Loader	75.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
85.4

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Grading (Lmax)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	262	75.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dozer	82	1
Grader	85	1
Grader	85	1
Front End Loader	79	1
		1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Dozer	82.0
Grader	85.0
Grader	85.0
Front End Loader	79.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
89.4

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Building Construction with a Pile Driver (Leq)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	4,628	55.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Impact Pile Driver	101	0.2
Grader	85	0.4
Crane	81	0.16
Front End Loader	79	0.4
Pickup Truck	75	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Impact Pile Driver	94.0
Grader	81.0
Crane	73.0
Front End Loader	75.0
Pickup Truck	71.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
94.3

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Building Construction with a Pile Driver (Lmax)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,019	75.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Impact Pile Driver	101	1
Grader	85	1
Crane	81	1
Front End Loader	79	1
Pickup Truck	75	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Impact Pile Driver	101.0
Grader	85.0
Crane	81.0
Front End Loader	79.0
Pickup Truck	75.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
101.2

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Building Construction without a Pile Driver (Leq)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,229	55.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Grader	85	0.4
Crane	81	0.16
Front End Loader	79	0.4
Pickup Truck	75	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Grader	81.0
Crane	73.0
Front End Loader	75.0
Pickup Truck	71.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
82.8

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Building Construction without a Pile Driver (Lmax)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	209	75.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Grader	85	1
Crane	81	1
Front End Loader	79	1
Pickup Truck	75	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Grader	85.0
Crane	81.0
Front End Loader	79.0
Pickup Truck	75.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
87.4

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Paving (Leq)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,341	55.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Drum Mixer	80	0.5
Paver	77	0.5
Roller	80	0.2
Tractor	84	0.4
Front End Loader	79	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Drum Mixer	77.0
Paver	74.0
Roller	73.0
Tractor	80.0
Front End Loader	75.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
83.6

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Paving (Lmax)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	251	75.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Drum Mixer	85	1
Paver	77	1
Roller	80	1
Tractor	84	1
Front End Loader	79	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Drum Mixer	85.0
Paver	77.0
Roller	80.0
Tractor	84.0
Front End Loader	79.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
89.0

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Architectural Coating (Leq)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	632	55.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Compressor (air)	78	0.4
Compressor (air)	78	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Compressor (air)	74.0
Compressor (air)	74.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
77.0

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log (U.F.) - 20*\log (D/50) - 10*G*\log (D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Architectural Coating (Lmax)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	100	75.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Compressor (air)	78	1
Compressor (air)	78	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Compressor (air)	78.0
Compressor (air)	78.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
81.0

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Nighttime Construction (Leq)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,489	50.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Concrete Mixer Truck	79	0.4
Concrete Mixer Truck	79	0.4
Concrete Pump Truck	81	0.2

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Concrete Mixer Truck	75.0
Concrete Mixer Truck	75.0
Concrete Pump Truck	74.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
79.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Nighttime Construction (Lmax)

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	267	70.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Concrete Mixer Truck	79	1
Concrete Mixer Truck	79	1
Concrete Pump Truck	81	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Concrete Mixer Truck	79.0
Concrete Mixer Truck	79.0
Concrete Pump Truck	81.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
84.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe ram)	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0
chipper		75							

Source:
FHWA Roadway Construction Noise Model, January 2006. Table 9.1
U.S. Department of Transportation
CA/T Construction Spec. 721.560

Distance Propagation Calculations for Stationary Sources of Ground Vibration

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.

— If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.

— If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

STEP 3A: Select the distance to the receiver.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (VdB)	@	distance (ft)	vibration level (VdB)	@	distance (ft)
Impact pile driver	112	@	25	72.0	@	537
Vibratory Roller	94	@	25	74.9	@	108

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

STEP 3B: Select the distance to the receiver.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (PPV)	@	distance (ft)	vibration level (PPV)	@	distance (ft)
Impact pile driver	1.518	@	25	0.199	@	97
Vibratory roller	0.210	@	25	0.198	@	26

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. Washington, D.C. Accessed: December 20, 2020. Page Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

APPENDIX K

VMT ANALYSIS AND MEMORANDA

DKS 428 J STREET, SUITE 340 • SACRAMENTO, CA 95814 • 916.368.2000 • DKSASSOCIATES.COM

MEMORANDUM

DATE: September 25, 2023

TO: Todd Smith and Cameron Shew | County of Sacramento

FROM: David Tokarski and Jim Damkowitch | DKS Associates

SUBJECT: SB 743/ VMT Analysis – West Jackson Highway Master Plan Project #13049

Pursuant to Senate Bill (SB) 743, transportation impacts under CEQA may no longer be measured with automobile delay and level of service (LOS) post July 1, 2020. CEQA guidelines (Section 15064.3) state that vehicle miles traveled (VMT) is generally the most appropriate metric for determining transportation related impacts under CEQA. While VMT was previously calculated for the proposed West Jackson development traffic impact analysis, the applied methodologies were not consistent with recently adopted guidance from Sacramento County. The purpose of this technical memorandum is to document revised VMT calculations that are consistent with the County's Transportation Analysis Guidelines published July 1, 2020. Additionally, the proposed project has been re-analyzed using the updated travel demand model based on SACOG's SACSIM19 Activity Based Travel Demand Model.

VMT metrics associated with the residential components (VMT per Capita) and commercial (office and industrial) components (VMT per Employee) of the project are summarized herein. Retail components are not subject to efficiency metrics (VMT per Employee), but rather net change in VMT. This memorandum also summarizes the County's thresholds, which are based on regional averages calculated from the SACSIM19 Activity Based Travel Demand Model.

VMT ANALYSIS

Following the County's Transportation Analysis Guidelines (TAG), the applicable metrics are VMT per Capita for residential land uses and VMT per Employee for commercial (office) and industrial uses. Local retail is screened from further VMT analysis, while for regional retail the OPR recommended efficiency metric is total net change in VMT. Based on the square footage of each of the retail parcels within the West Jackson plan area, it was determined that while some of the proposed retail uses in West Jackson can be considered to be local serving and therefore screened from further VMT analysis, much of the proposed commercial is large enough to be considered regional serving and therefore must be analyzed.

For land uses that cannot be screened and are subject to further VMT analysis, the project's VMT per Capita and/or VMT per employee are compared to a threshold of 85 or 100 percent of the regional average for each metric as applicable. Regional averages are calculated in this memorandum to be consistent with SACOG's SACSIM19 travel demand model. For commercial/retail uses that are not considered locally serving, the established VMT threshold is no net change in VMT.

County guidelines require that each land use be analyzed separately when identifying impacts. The residential, employment, and retail land uses of the project are discussed below.

SIGNIFICANCE THRESHOLDS

Table 3-3 of the County's Transportation Analysis Guidelines lists significance thresholds for various types of development, as follows:

- Project VMT per Capita exceeds 85 percent of the regional average VMT per Capita.
- Project VMT per Employee for office employment exceeds 85 percent of the regional average VMT per Employee.
- Project VMT per Employee for industrial employment exceeds 100 percent of the regional average VMT per Employee.
- The project's regional retail land uses cause a net increase in regional VMT.
- The project's proposed widening of "regional roadways" cause a net increase in regional VMT. If the project entails widening a state highway facility, the Caltrans Traffic Analysis Framework (TAF) recommends that an Induced VMT increment also be determined.

While each of these project components must be analyzed and documented individually based on their respective threshold of significance, it is important to also consider the project's overall VMT efficiency. Thus, if a project only slightly exceeds the threshold of significance for one project component but falls substantially below the threshold for another, or vice versa, total project impacts can be presented by way of a holistic "VMT Budget" that accounts for the various components of the project.

RESIDENTIAL COMPONENTS (VMT PER CAPITA)

For residential land uses, VMT per Capita is the operative metric for CEQA impact analysis. It includes all vehicle tours (both work/commute vehicle tours and non-work vehicle tours) that start and end at a residence. Home-based tours reflect travel for work, school, recreation, and shopping, but exclude travel that begins and ends away from the home location.

An example of a work/commute vehicle tour that is captured in the VMT per Capita calculation may start at a residence, include a stop to drop a child off at school before proceeding to the work site, and a return to the residence with a stop to pick up dinner. A midday sub-tour beginning and ending at the work site to eat lunch at a restaurant would not be included. A non-work vehicle tour starts

that begins and ends at home may also include intermediate stops. VMT from these tours must include full mileage of the entire tour, including all stops.

VMT per Capita is calculated by first combining VMT from home-based tours generated throughout the day at a residential unit. The home-based VMT for all residential units in the project area is summed and divided by the total resident population of the project, resulting in the project's VMT per Capita.

Table 3-3 of the County's Transportation Analysis Guidelines identifies the threshold of significance as 85 percent of the baseline (no project) regional average VMT per Capita. If the regional VMT per Capita from the residential component of the "with-project" model runs exceeds this threshold, the project is determined to require VMT reduction.

To calculate the appropriate VMT per Capita metric for the proposed project, all project residential units (and their associated households and population) were incorporated into a modified Existing Plus Project version of the SASIM19 model. Additionally, the residential units were isolated into their own traffic analysis zones (TAZs) so their daily travel "tours" per person could be isolated from other land uses. Consistent with the methodology described above for what does or does not count in the calculated VMT per Capita, the results of the project's share of the Existing Plus Project model were compared to the results regionwide for the Existing No Project model. The results are as follows:

- Residential Component
    - Existing (No Project) Regional VMT per Capita: 20.20
        - County Threshold of Significance (85%): 17.17
    - Project Specific VMT per Capita: 14.29
        - As Percentage of Regional Average: 70.7%
        - **Exceeds 85% Threshold: No**

OFFICE AND INDUSTRIAL COMPONENTS (VMT PER EMPLOYEE)

For non-residential land uses, VMT per Employee is used to evaluate commercial (office) and industrial VMT. It includes all commute vehicle tours that begin and end at an employment location. A commute tour may include intermediate stops. An example commute tour begins at a residence, includes a stop to drop a child off at school, includes a stop for breakfast, and ends at a place of work.

VMT for commute tours are summed to the employment location of each tour. The commute VMT for all employment locations in the project area is summed and divided by the total employment of the plan area.

Office VMT per Employee is calculated based on results from TAZs that contain predominantly office land uses. Industrial VMT per Employee is calculated based on results from TAZs that contain predominantly industrial land uses.

Results from the "with-project" model runs were compared to the baseline (no project) results to determine if the project's office component exceeds 85 percent or the project's industrial component exceeds 100% of the regional average VMT per Employee, per Table 3-3 of the County's Transportation Analysis Guidelines.

- Office Component
  - Existing (No Project) Regional VMT per Employee: 16.04
    - County Threshold of Significance (85%): 13.64
  - Project Specific VMT per Employee: 16.23
    - As Percentage of Regional Average: 101.1%
    - **Exceeds 85% Threshold: Yes**
- Industrial Component
  - Existing (No Project) Regional VMT per Employee: 16.04
    - County Threshold of Significance (100%): 16.04
  - Project Specific VMT per Employee: 14.63
    - As Percentage of Regional Average: 91.2%
    - **Exceeds 100% Threshold: No**

WIDENING OF "REGIONAL ROADWAYS" VMT ASSESSMENT

The proposed project would widen existing roadways and construct new roadways. These roadway capacity enhancements could induce more VMT due to changes in background travel demand and/or route or mode choice. Per the TAG, all transportation projects that are regionally significant for potential air quality impacts must also be included in the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). The MTP/SCS is the regional plan that demonstrates compliance with air quality conformity requirements and greenhouse gas reduction targets. As such, roadway projects that are consistent with this plan are part of the regional solution for meeting air pollution and greenhouse gas goals. Roadway projects that are deemed to be consistent with the MTP/SCS would have a less than significant cumulative impact on VMT. Conversely, roadway projects that are not included in the MTP/SCS must be evaluated to determine potential transportation impacts.

Consistent with the guidance in the TAG, to determine the net VMT impact of capacity enhancing improvements, existing or future roadways roadway widenings not already identified in SACOG's MTP/SCS were modeled, with and without project added roadway capacity, to yield the net change in regional VMT. Roadways within and adjacent to West Jackson that are not reflected in the MTP/SCS are as follows:

- Jackson Highway (from Watt Avenue to Excelsior Road): 4.2 Miles
  - MTP/SCS: 2 Lanes
  - With West Jackson: 6 Lanes
- Kiefer Boulevard (from Happy Lane to Excelsior Road): 2.0 Miles

- MTP/SCS: 0-2 Lanes
- With West Jackson: 4-6 Lanes

The above widenings represent an addition of 24.2 lane-miles of roadway to the County's regional roadway system in excess of the roadway widenings identified in the MTP/SCS. According to the TAG, secondary roadways within the project are normally not expected to induce more travel due to their local-serving nature and are therefore not considered in the induced VMT analysis.

The SACSIM model was run without and with the regional roadway widenings listed above (but with all other components of the West Jackson project included). Regional VMT was calculated both without and with the roadway widenings and are summarized as follows:

- Region wide VMT: Existing Conditions Plus West Jackson
  - Without Roadway Widenings: 59,150,613
  - With Roadway Widenings: 59,172,494
  - Difference: +21,880
  - **Increases Total Regionwide VMT: Yes**

RETAIL VMT ASSESSMENT

The County distinguishes between local and regional serving retail land uses. Local serving retail is defined as generally having up to 200,000 square feet of total gross floor area in growth areas, or with a market area of 3 miles or less. Some retail land use designations within West Jackson were determined to fit within the local serving retail definition and could be screened from further VMT analysis. However a majority of the commercial parcels within the project are on sites large enough to be considered regional in nature (i.e., over 200,000 square feet based on floor-area-ratios).

To enumerate the change in net region wide VMT that could be associated with the regional retail portions of the project, the travel demand model was run twice, once with the full project and once with the full project minus the regional retail components. Regionwide VMT was calculated for both scenarios and compared to determine the net impact of the regional serving retail component of the project. This net difference is summarized below.

- Regionwide VMT: Existing Conditions Plus West Jackson
  - Without Regional Retail: 59,127,684
  - With Regional Retail: 59,172,494
  - Difference: +44,810
  - **Increases Total Regionwide VMT: Yes**

PROJECT ROADWAY NETWORK VMT ASSESSMENT

As documented in the LTA, degradation of operations on several project area roadways resulting from the proposed project required additional lanes to be added at affected intersections. To quantify the VMT implications associated with these needed design elements, the model roadway network was modified to include additional lanes on specific segments and the model was re-run to determine changes in VMT. Based on discussions with County staff, the following roadways were widened in the model:

- Widen Mayhew Road from 4 to 6 lanes from Fruitridge to Elder Creek
- Widen Routier Road extension from 4 to 6 lanes from the Mayhew curve to Kiefer

The SACSIM model was run without and with the roadway widenings listed above. Regional VMT was calculated both without and with the roadway widenings and are summarized as follows:

- Region wide VMT: Existing Conditions Plus West Jackson
    - Without Roadway Widenings: 59,172,494
    - With Roadway Widenings: 59,188,647
    - Difference: +16,153
    - **Increases Total Regionwide VMT: Yes**

PROJECT OVERALL EFFECT ON VMT

The prior sections quantified individual impacts on VMT based on project housing, project employment, project roadway widenings, and project retail. To allow for the project's overall impact on VMT to be evaluated, each of the separate VMT metrics were translated into absolute VMT over or under that allowed by County thresholds and guidelines. To translate VMT per Capita and VMT per Employee into absolute VMT, the number of anticipated residents and the number of anticipated employees were multiplied by the amount the VMT exceeds or falls below the appropriate threshold. Per the TAG, it is important to consider that VMT mitigation measures include not only physical improvements (e.g., bike lanes) or travel demand management (TDM) actions (e.g., ridesharing programs), but also changes to the built environment (e.g., density/diversity of land uses, enhanced transit facilities). Built environment factors are often the most effective at achieving VMT reductions and are often assumed as part of the project definition and built into the modeling, rather than analyzed as a separate mitigation. Given that addressing potential impacts on-site is nearly always preferable and more effective than off-site, a "VMT budgeting" approach may be used to reconcile the VMT "savings" and "exceedances." **Table 1** shows the absolute VMT in excess of thresholds for population and employment within the project. For residential uses, the project's VMT per Capita falls below the 85% threshold by 2.89 percentage points, for a total of -112,863 VMT based on a population of 39,110. For office uses, the project's VMT per Employee exceeds the 85% threshold by 2.59 percentage points, for a total of 40,937 excess VMT based on 15,823 office employees. For industrial uses, the project's VMT per Employee falls below the 100% threshold by 1.42 percentage points, for a total of -4,804 VMT based on 3,386 industrial employees. These, combined with an additional 21,880 VMT due to widened roadways, 16,153 VMT due to roadway widenings needed to

address operational deficiencies caused by the project, and 44,810 VMT based on regional retail based on the qualitative analysis above, results in a total of 6,113 VMT above County thresholds.

TABLE 1: PROJECT OVERALL EFFECT ON VMT (VMT BUDGET)

MEASURE	NO PROJECT	PLUS WEST JACKSON	POPULATION	EMPLOYMENT	VMT OVER OR UNDER THRESHOLD
VMT PER CAPITA	20.20	14.29	39,110		-112,863
% OF REGIONAL AVERAGE		70.7%			
VMT PER OFFICE EMPLOYEE	16.04	16.23		15,823	+40,937
% OF REGIONAL AVERAGE		101.1%			
VMT PER INDUSTRIAL EMPLOYEE	16.04	14.63		3,386	-4,804
% OF REGIONAL AVERAGE		91.2%			
PROJECT ROADWAYS BEYOND MTP/SCS					+21,880
PROJECT ROADWAY WIDENINGS TO ADDRESS DEFICIENCIES					+16,153
REGIONAL SERVING RETAIL					+44,810
TOTAL PROJECT VMT OVER/UNDER THRESHOLDS					**+6,113**

Source: DKS Associates, 2023.

Therefore, the sum of specific components of the project exceeds County VMT thresholds and total VMT increases, representing a **significant** impact.

Kimley»Horn

Memorandum

To: Jim Wiley, Taylor & Wiley

From: Chris Gregerson, PE, TE, PTOE, PTP
Tyler Mickelson, EIT

Re: ***West Jackson Highway Master Plan***
Vehicle Miles Traveled Analysis

Date: November 20, 2023

As requested, we have completed a Vehicle Miles Traveled (VMT) analysis for the West Jackson development based on a VMT analysis provided by others on July 24, 2023. The following is a summary of our findings.

Legislative Context

SB 743 is part of a long-standing policy effort by the California legislature to improve California's sustainability and reduce greenhouse gas emissions through denser infill development, a reduction in single occupancy vehicles, improved mass transit, and other actions. Recognizing that the current environmental analysis techniques are, at times, encouraging development that is inconsistent with this vision, the legislature has taken the extraordinary step to change the basis of environmental analysis for transportation impacts from Level of Service (LOS) to Vehicle Miles Travelled (VMT). VMT is understood to be a good proxy for evaluating Greenhouse Gas (GHG) and other transportation related impacts that the State is actively trying to address. While the use of VMT to determine significant transportation impacts has only been considered recently, it is by no means a new performance metric and has long been used as a basis for transportation system evaluations and as an important metric for evaluating the performance of Travel Demand Models.

In January 2019, the Natural Resources Agency finalized updates to the California Environmental Quality Act (CEQA) Guidelines including the incorporation of SB 743 modifications. The Guidelines' changes were approved by the Office of Administrative Law and are now in effect. Specific to SB 743, Section 15064.3(c) states, "A lead agency may elect to be governed by the provisions of this section immediately. The provisions apply statewide as of July 1, 2020."

To aid lead agencies with SB 743 implementation, the Governor's Office of Planning and Research (OPR) produced the Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018) that provides guidance about the variety of implementation questions they face with respect to shifting to a VMT metric. Key guidance from this document includes:

- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis.
- OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development average may be a reasonable threshold. In other words, an office project that generates VMT per employee that is more than 15-percent less than the regional average VMT per employee could result in a significant impact. OPR notes that this threshold is supported by evidence that connects this level of reduction to the State's GHG reduction goals.
- Lead agencies have the discretion to set or apply their own significance thresholds.

Sacramento County released their updated Transportation Analysis Guidelines on September 10, 2020[1]. These updated guidelines include analysis methodology for both VMT and LOS. The VMT methodology outlines both the manner in which practitioners should conduct VMT studies, as well as examples of VMT mitigations and how to analyze their associated VMT reductions. This analysis described in this memorandum is consistent with Sacramento County guidance. Specifically, the thresholds against which the Project is evaluated were calculated as 15-percent below the regional average for residential and office uses and at the regional average for industrial uses.

Analysis

A summary of the VMT performance for the Project's residential, office, and industrial uses, as well as the associated regional thresholds were provided. In addition, West Jackson's VMT per capita and VMT per employee metrics for both Existing plus Project and Super Cumulative plus Project Conditions were provided. **Table 1** provides a summary of the region and Project's performance, as well as the thresholds and the percentage by which the project would have to reduce its relative VMT per capita or VMT per employee to equal the regional threshold.

Table 1 – West Jackson Vehicle Miles Traveled (VMT) Summary

Scenario	Existing No Project	Existing Plus Project	Super Cumulative No Project	Super Cumulative Plus Project
Average VMT/Capita	20.20	14.29	18.40	12.98
Average VMT/Employee(Office)	16.04	16.23	13.31	13.02
Average VMT/Employee (Industrial)	16.04	14.63	13.31	11.81
VMT/Capita Threshold(15% Below Regional Average)	17.17		17.17	
VMT/Employee Threshold(15% Below Regional Average, Office)	13.64		13.64	
VMT/Employee Threshold(Regional Average, Industrial)	16.04		16.04	
% to Reduce to Achieve VMT/Capita Threshold		-20.2%		-32.3%
% to Reduce to Achieve VMT/Office Employee Threshold		15.9%		-4.8%
% to Reduce to Achieve VMT/Industrial Employee Threshold		-9.7%		-35.8%

As shown in **Table 1**, West Jackson would need to reduce its VMT per office employee by 15.9-percent to achieve the regional threshold for office uses for Existing plus Project Conditions. However, West Jackson's residential and industrial land uses are both below the calculated regional threshold and thus do not need to be mitigated.

The regional VMT per capita average is 18.40 and the regional VMT per employee (office and industrial) is 13.31 for Super Cumulative No Project Conditions. Consistent with Sacramento County and CEQA guidance, thresholds for Super Cumulative Conditions were set equal to those for Existing Conditions. As shown in **Table 1**, for Super Cumulative plus Project Conditions, West Jackson's VMT per capita is 32.3-percent below the regional threshold for residential uses. In addition, West Jackson's VMT per industrial employee is 35.8-percent below the regional threshold for industrial uses. However, West Jackson's VMT per office employee would need to be reduced by 4.8-percent to achieve the regional threshold for office land uses.

Prior to making a determination as to whether the addition of West Jackson results in a VMT impact, the VMT reductions related to project features that are not able to be integrated into SACOG's travel demand model, SACSIM, were calculated. SACSIM is the travel demand model used to determine the VMT per capita and VMT per employee for the Project's land uses but is limited in its ability to represent all Project

[1] *Transportation Analysis Guidelines*. County of Sacramento. September 10, 2020.

features such as the implementation of Transportation Management Association (TMA) to reduce vehicle trips. Therefore, an "off-model" analysis is performed to calculate the VMT reductions for each land use type before making an impact determination based on the reduced VMT per capita and VMT per employee values for each land use type. **Table 2** below summarizes the effectiveness of implementing a TMA for the West Jackson Project.

Table 2 – West Jackson's Project Feature VMT Reduction Summary

Mitigation	VMT/Office Employee Reduction (%)
Mandatory Communitywide TMA	12.3%
Total	12.3%

As shown in **Table 2**, when implemented, the TMA will result in reducing the Project's VMT per office employee by 12.3-percent. Application of the TMA would not exceed the 15.9-percent reduction required under Existing Conditions, but would exceed the 4.8-percent reduction required under Super Cumulative Conditions (compared to the threshold set under Existing No Project Conditions) to reduce the Project's impact to less than significant for the office uses. Therefore, because the VMT/employee could not be reduced beyond the required percent reduction, the impact for the office uses would be significant and unavoidable for Existing plus Project Conditions. However, the impact for the office uses would be **less than significant for Super Cumulative plus Project Conditions**.

The calculations to determine the effectiveness of reducing VMT for each component of the TMA are based on two separate methodologies: Sacramento County TMA participation and calculations provided in CAPCOA's most recent version of its VMT Reduction Handbook, *Handbook for analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*[2]. The methodology and calculations for each component of the TMA are outlined below.

It is understood that CAPCOA's VMT Reduction Handbook states that measures used to reduce VMT should only be quantified at either the Project/Site scale or the Plan/Community scale. In addition, the VMT Reduction Handbook states that measure T-6, Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring), which is similar to the design of the West Jackson TMA, is listed as a measure at the Project/Site scale while other mitigation measures listed below occur at the Plan/Community scale. However, the West Jackson TMA program will be a communitywide TMA program that requires mandatory participation from all residents and employers within the West Jackson community. Both residential and non-residential property will be subject to an annual County Service Area (CSA) fee, which will be used for the TMA services and programs and adding reductions for carpooling and rideshare would result in a total VMT reduction of 12.3-percent.

TMA Participation

TMA Selection

As shown in **Table 3**, there are 13 Sacramento area TMAs, of which nine have formal MOUs established with SACOG[3] and 7.2-percent of eligible employees participate. However, all TMAs are not equal in relevance and with concurrence from Sacramento County[4], a subset of TMAs were taken that are more

[2] *Handbook for analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. California Air Pollution Control Officers Association (CAPCOA). January 2022.
[3] *SACOG Federal Congestion Management Process*. SACOG. June 30, 2017.
[4] *Email with Cameron Shew at Sacramento County*. April 12, 2022.

representative of the one to be set up for West Jackson. The five TMAs chosen to better represent the West Jackson TMA include the 50 Corridor TMA, the Placer County Transportation Planning Agency (PCTPA) TMA, the Power Inn Alliance TMA, the Sacramento TMA, and the South Natomas TMA.

Table 3 – TMA Participation in the SACOG Region

TMA-TMO ID	TMA NAME	Employers 2012	Employees 2012	TMA Area sq miles	Number of TMA Employers	Number of TMA Employees	Number of TMA Participants	% of Participants in Participating Employers	% Employers in TMA	% of Employees in TMA	% of TMA Participants
1	50 Corridor TMA	6,927	88,024	89	56	24,436	1,875	7.7%	0.8%	27.8%	2.1%
2	City of Elk Grove	7,246	53,070	1,790	1	6	2	33.3%	0.0%	0.0%	0.0%
3	City of Roseville	2,292	21,035	36	61	6,772	149	2.2%	2.7%	32.2%	0.7%
4	El Dorado County Transportation Commission	138	2,134	4	193	2,560	275	10.7%	139.9%	120.0%	12.9%
5	McClellen Park TMA	1,030	8,645	11	42	1,909	63	3.3%	4.1%	22.1%	0.7%
6	North Natomas TMA	8,525	70,196	1,457	2	15,007	18	0.1%	0.0%	21.4%	0.0%
7	Placer County Transportation Planning Agency	4,514	45,572	20	12	2,824	244	8.6%	0.3%	6.2%	0.5%
8	Point West Area TMA	2,698	32,820	16	99	8,357	158	1.9%	3.7%	25.5%	0.5%
9	Power Inn Alliance	4,358	56,558	42	117	37,212	1,160	3.1%	2.7%	65.8%	2.1%
10	Sacramento TMA	11,447	113,192	68	224	103,579	10,327	10.0%	2.0%	91.5%	9.1%
11	South Natomas TMA	785	8,248	6	195	6,869	829	12.1%	24.8%	83.3%	10.1%
12	Yolo TMA	5,833	85,899	1,023	26	19,048	1,361	7.1%	0.4%	22.2%	1.6%
13	Yuba-Sutter TMA	4,276	41,116	1,252	5	2,589	88	3.4%	0.1%	6.3%	0.2%
	TOTAL TMA areas	**60,069**	**626,509**	**5,814**	**1,033**	**231,168**	**16,549**	**7.2%**	**1.7%**	**36.9%**	**2.6%**
	Non TMA areas	**13,571**	**273,660**								
	Regional Totals	**73,640**	**900,169**						**1.4%**	**25.7%**	**1.8%**

Sources: SACOG Employment Inventory 2012; Commuter Club registration June 2016

1 - McClellan park has grown significantly in number of employers and employees between 2012 and 2016.

VMT per Employee Reduction Calculations

Using the five TMAs chosen to better represent the West Jackson plan, the calculated percent of participants in participating employers is 8.3-percent. Thus, one can infer that if all employees of the employers are within the West Jackson TMA, an 8.3-percent VMT per employee reduction can be taken. However, only two of these five TMAs provide a regional rideshare program, the 50 Corridor TMA and the South Natomas TMA, and the ridesharing program will be provided throughout the entire West Jackson employment community. Rather than providing this program on an employer-by-employer basis, the ridesharing program will be implemented as a single program for all employers and so the benefits will be observed at the Plan/Community scale. Therefore, the total VMT per employee reduction should be the calculated 8.3-percent reduction plus the 4-percent reduction related to the ridesharing program for a total reduction for the TMA program of 12.3-percent.

Programs/Projects within TMA and Associated Reductions[5]

To determine which types of programs and projects could be considered for inclusion within the West Jackson TMA, a review was taken of the programs and projects included within the five existing TMAs chosen to be representative of the Jackson Township TMA. SACOG's *Congestion Management Process* report contains a table on page 87 that summarizes the programs and projects within each TMA. After review of the five representative TMAs, four programs and projects were chosen for inclusion that combined, would equal or exceed the calculated 12.3-percent reduction. These programs are outlined below:

- **Commute Trip Reduction Marketing**: CAPCOA's VMT Reduction Handbook's measure T-7 indicates that implementing a commute trip reduction marketing program at eligible employers can reduce VMT by up to 4-percent. As stated in the Handbook, "Information sharing and marketing promote and educate employees about their travel choices to the employment location beyond driving such as carpooling, taking transit, walking, and biking, thereby reducing

[5] Instead of using mitigation measure T-6, which is a project/site scale application, mitigation measure M-3 (Implement an Innovative Strategy for GHG Mitigation) was used instead. Mitigation measure M-3 is a countywide application but requires mandatory participation.

VMT and GHG emissions." The reduction calculation is based on the percentage of employees that are eligible to get involved with the program. As it is assumed that 100-percent of employees will be eligible to be involved with a ridesharing program, the full 4-percent reduction can be taken. The requirements associated with this mitigation measure include onsite or online commuter information services, employee transportation coordinators, and a guaranteed ride home service as described below. These features of the trip reduction marketing program are generally consistent with how other TMAs operate in the County. For example, the 50 Corridor TMA has an employer-based marketing where staff time and materials are spent on promoting alternative modes of travel, promoting regional trip reduction programs, encouraging employers to offer incentives to reducing trips, and promoting local trip reduction programs. In addition, training and education is provided for employee transportation coordinators as part of the 50 Corridor TMA.

- **Guaranteed Ride Home**: While not a standalone measure, the guaranteed ride home program is an essential component of several of the VMT reduction measures included both within the TMA and additional measures implemented in addition to the TMA. To ensure that employees have the flexibility to adapt to the challenges and circumstances they are presented with day-to-day, they must be sure that if they are without a personal vehicle, they are always able to return home. For example, if an employee is required to work later than when the last available carpool leaves or transit options are no longer available, the only remaining option would be the guaranteed ride home program. If this is not provided, employees may think they need their personal vehicle for flexibility purposes, even if the situation is rare where no other options exist. Thus, to bolster the effectiveness of the mitigations implemented, a guaranteed ride home program must be included.
- **Provide Employer-Sponsored Vanpool**: CAPCOA's VMT Reduction Handbook's measure T-11 indicates that implementing an employer-sponsored vanpool service can reduce VMT by up to 20.4-percent. This is based on a calculation that uses the percent of employees that participate in the vanpool program, the average length of a one-way vehicle commute trip, and various constants to calculate the VMT reduction. Based on data from the CAPCOA Handbook, the average one-way vehicle commute trip length for the Sacramento-Roseville-Arden Arcade region is 14.23 miles. In addition, CAPCOA indicates that the average percentage of employees that participate in a vanpool program is 2.7-percent. This results in a VMT reduction of 4.6-percent. As the CAPCOA Handbook states that this mitigation measure is more appropriately implemented by the employer rather than the developer, each employer will be required to participate in the West Jackson TMA and as such, will be required to have an individual monitoring program. This Transportation System Monitoring (TSM) plan that is developed and implemented with each employer will enable the vanpool mitigation measure to be implemented with each employer.
- **Provide Ridesharing and Carpooling Program**: According to Table T-8.1, the 8-percent maximum attributed to this VMT reduction measure is only applicable in urban contexts while a 4-percent maximum is applicable to suburban contexts. Therefore, the 4-percent maximum rather than the 8-percent maximum was used for this VMT reduction measure. The maximum VMT reduction is based on the percentage of employees that are eligible to get involved with the program. As it is assumed that 100-percent of employees will be eligible to be involved with a ridesharing program, the full 4-percent reduction can be taken.

When adding the 4-percent reduction for the commute trip reduction marketing program with the 4.6-percent reduction for the employer-sponsored vanpool and the 4-percent reduction for providing a rideshare program, a total TMA reduction of 12.6-percent is obtained. However, the previously calculated 12.3-percent total reduction based on existing TMAs in the Sacramento region representative of the West

Jackson TMA was used for this analysis as it is based on local data. Note that this is a conservative estimate because CAPCOA's VMT Reduction Handbook's measure T-6 indicates that up to a 26-percent reduction can be applied to a mandatory project trip reduction program (mandatory TMA participation).

TMA VMT per Capita Reduction

While the residential land uses already fall below the regional threshold and thus do not require mitigation, it is important to note that the ridesharing and carpooling program implemented as part of the West Jackson TMA would also reduce residential VMT per capita. As noted above, the ridesharing and carpooling program would result in up to a 4-percent VMT reduction. However, consistent with the calculations performed for the neighboring Jackson Township development[6], a maximum of 2.1-percent reduction is assumed. This results in West Jackson's VMT per capita being reduced from 14.29 and 12.98 VMT per capita for Existing plus Project and Super Cumulative plus Project conditions, respectively, to 13.99 and 12.71 VMT per capita for Existing plus Project and Super Cumulative plus Project conditions, respectively.

Overall Effect on VMT

To allow for the Project's overall impact on VMT to be evaluated, each of the separate VMT metrics were translated into absolute VMT over or under that allowed by County thresholds and guidelines. To translate VMT per Capita and VMT per Employee into absolute VMT, the number of anticipated residents and the number of anticipated employees were multiplied by the amount the VMT exceeds or falls below the appropriate threshold, as summarized in **Table 4**. Per the County's guidelines, it is important to consider that VMT mitigation measures include not only physical improvements or travel demand management (TDM) actions, but also changes to the built environment (i.e., density/diversity of land uses, enhanced transit facilities). Such built environment factors are often the most effective at achieving VMT reductions and are often assumed as part of the project definition and built into the modeling, rather than analyzed as a separate mitigation. Since mitigating impacts on-site is nearly always preferable and more effective than off-site, a "VMT budgeting" approach may be used to reconcile the VMT "savings" and "exceedances."

As shown in **Table 4**, the Project's VMT per capita falls below the 85-percent threshold by 2.89 percentage points, for a total net of -112,637 VMT below the regional threshold for residential uses based on a Project population of 39,110. For office employment, the Project's VMT per employee exceeds the 85-percent threshold by 2.59 percentage points, for a total of 40,937 excess VMT above the regional threshold based on 15,823 office employees. For industrial employment, the Project's VMT per employee falls below the 100-percent threshold by 1.42 percentage points, for a total net of -4,804 VMT below the regional threshold based on 3,386 industrial employees. The results in a total net change in VMT compared to regional thresholds of -76,429 daily VMT (Net VMT Compared to Threshold (1)).

As shown in **Table 4**, the Project also proposes to construct retail uses and widen roadways both on-site and off-site related to addressing deficiencies and to accommodate Project traffic on-site. The increases in VMT were calculated and discussed in an analysis completed by others[7]. The increases in VMT include an additional 21,880 VMT due to widened roadways beyond the MTP/SCS, an additional 16,153 VMT due to roadway widenings to address deficiencies, and an additional 44,810 VMT associated with regional serving retail. As shown in **Table 4**, when added to the Project's net VMT compared to regional thresholds of -76,429 VMT, the Project now results in a net total of +6,414 VMT (Net VMT Compared to Threshold (2)).

[6] *Jackson Township VMT Mitigation Analysis*. Kimley-Horn. August 4, 2022.
[7] *SB 743/VMT analysis – West Jackson Highway Master Plan*. DKS Associates. August 3, 2022.

However, when incorporating the 12.3-percent reduction achieved by implementing the West Jackson TMA for non-residential uses and 2.1-percent reduction for residential uses, the Project's VMT would be further reduced by -11,737 VMT for residential uses, -31,587 VMT for office uses, and -6,093 VMT for industrial uses. This results in a total VMT reduction of -49,417 VMT from implementing the West Jackson TMA, which results in a final total of -43,003 VMT below County thresholds (Net VMT Compared to Threshold (3)). Therefore, while specific components of the Project exceed County VMT thresholds, VMT savings achieved through VMT reducing features (West Jackson TMA) result in **a less than significant impact for VMT**.

Table 4 – TMA Participation in the SACOG Region

Metric	Residential	Office	Industrial	Total
Regional Average	20.2	16.04	16.04	-
Regional Threshold	17.17	13.64	16.04	-
West Jackson (Project)	14.29	16.23	14.63	-
Population	39,110	-	-	39,110
Employment	-	15,823	3,386	19,209
Net VMT Compared to Threshold (1)	*-112,637*	*40,982*	*-4,774*	*-76,429*
Project Roadways Beyond MTP/SCS VMT	-	-	-	21,880
Roadway Widening to Address Deficienies VMT	-	-	-	16,153
Regional Serving Retail	-	-	-	44,810
Net VMT Compared to Threshold (2)	-	-	-	*6,414*
TMA Reduction (%)	2.1%	12.3%	12.3%	-
West Jackson VMT Efficiency with TMA	13.99	14.23	12.83	-
TMA VMT Reduction	-11,737	-31,587	-6,093	-49,417
Net VMT Compared to Threshold (3)	-	-	-	*-43,003*

VMT Analysis Peer Review Summary

The following comments are provided as part of a peer review conducted on the analysis of the VMT related to regional serving retail and roadway widenings:

- When reviewing the analysis conducted for regional retail, it should be noted that SACOG's travel demand model, SACSIM, is insensitive to the size of the retail. Simply put, whether the retail is 5,000 square-feet or 250,000 square-feet does not affect the distribution/attraction of trips. In addition, when adding retail uses to a travel demand model, an increase in VMT always occurs, regardless of the size and location due to how travel demand models treat retail uses. Therefore, using SACSIM to evaluate regional retail is not recommended and alternative, off-model methodologies should be used. The removal and/or reduction in VMT associated with an alternate analysis approach would further reduce the West Jackson development's net change in VMT.
- It is also recommended that the way regional retail was defined be reconsidered. The memo states that regional retail was defined by calculating total square-feet using Floor-to-Area-Ratio (FAR) and parcel size. However, unless the West Jackson development identifies individual retail

stores that are going to be greater than 200,000 square-feet (the threshold for regional retail as defined by Sacramento County), no component of the retail should be evaluated as being regional serving. Thus, the addition of VMT associated with regional retail should be removed and result in a net reduction in VMT associated with the West Jackson development.

- The induced VMT associated with Project roadway widenings beyond the MTP/SCS for Jackson Road and Kiefer Boulevard is being overstated. This overstatement is due to the short-term induced demand not being reduced from the overall VMT calculation. Due to the elasticity for roadways in the model, the SACSIM documentation[8] states that induced VMT should be reduced by approximately 20-percent. Therefore, this reduction would reduce the net change in VMT for the West Jackson development and when combined with the reductions associated with the TMA mitigation, would result in a negative overall change in VMT.

Findings

Based on the results of this analysis, the following findings are made:

- As shown in **Table 1**, West Jackson's VMT per capita is 20.2-percent below the regional threshold for residential uses, the VMT per office employee will need to be reduced by 15.9-percent to achieve the regional threshold for office uses, and the VMT per industrial employee is 9.7-percent below the regional threshold for industrial land uses for Existing plus Project conditions. These results indicate that West Jackson has a finding of a **less than significant impact** for residential and industrial land uses, but a finding of a **significant impact** for office land uses for Existing plus Project conditions.
- As shown in **Table 1**, for Super Cumulative plus Project Conditions, and when using regional thresholds consistent with Existing Conditions, West Jackson's VMT per capita is 32.3-percent below the regional threshold for residential uses, the VMT per office employee will need to be reduced by 4.8-percent to achieve the regional threshold for office uses, and the VMT per industrial employee is 35.8-percent below the regional threshold. These results indicate that West Jackson has a finding of a **less than significant impact** for residential and industrial land uses, but a finding of a **significant impact** for office land uses for Super Cumulative plus Project Conditions.
    - It is assumed that a 2.1-percent reduction on West Jackson's VMT per capita for residential land uses would also result when implementing the West Jackson TMA ridesharing and carpooling program. Incorporating the 2.1-percent reduction would reduce West Jackson's VMT per capita from 14.29 and 12.98 VMT per capita for Existing plus Project and Super Cumulative plus Project conditions, respectively, to 13.99 and 12.71 VMT per capita for Existing plus Project and Super Cumulative plus Project conditions, respectively.
- As shown in **Table 2**, when implemented, the VMT reducing project features outlined herein will result in reducing the Project's VMT per employee for office land uses by 12.3-percent. These results do not exceed the required 15.9-percent reduction required to meet the regional threshold for office uses for Existing plus Project Conditions but do exceed the 4.8-percent required to meet the regional threshold for office uses for Super Cumulative plus Project Conditions. Therefore, implementing the West Jackson TMA results in the impact for the office uses being reduced to **less than significant for Super Cumulative plus Project Conditions.**
- To allow for the Project's overall impact on VMT to be evaluated for Existing plus Project Conditions, each of the separate VMT metrics were translated into absolute VMT over or under that allowed by County thresholds and guidelines, as summarized in **Table 4**. After converting the VMT per capita and VMT per employee metrics for the residential, office, and industrial land uses

[8] *User Guide and Model Documentation for SACSIM19*. Sacramento Area Council of Governments (SACOG). May 29, 2020.

into total VMT above or below County thresholds, and when combined with an additional 38,033 VMT due to widened roadways and 44,810 VMT based on regional retail, a total of 6,414 VMT above County thresholds is achieved by the Project.

- However, when incorporating the VMT reductions achieved by implementing the West Jackson TMA to the total change in VMT as a Project feature that cannot be modeled using SACSIM, the Project's VMT produced by the office uses would be reduced by 31,587 VMT, the Project's VMT produced by the industrial uses would be reduced by 6,093 VMT, and the Project's VMT produced by the residential uses would be reduced by 11,737 VMT. This results in a total Project VMT reduction of -49,417 VMT from implementing the West Jackson TMA and results in a total of -43,003 VMT below County thresholds for the Project. Therefore, while specific components of the Project exceed County VMT efficiency thresholds, VMT reductions achieved through incorporating Project VMT reducing features that cannot be modeled using SACSIM, **results in a less than significant impact for VMT**.
- Using SACSIM to evaluate regional retail is not recommended and alternative, off-model methodologies should be used. The removal and/or reduction in VMT associated with an alternate analysis approach would further reduce the West Jackson development's net change in VMT.
- It is recommended that the way regional retail is defined be reconsidered. Unless the West Jackson development identifies individual retail stores that are going to be greater than 200,000 square-feet (the threshold for regional retail as defined by Sacramento County), no component of the retail should be evaluated as being regional serving. Thus, the addition of VMT associated with regional retail should be removed and result in a net reduction in VMT associated with the West Jackson development.
- The induced VMT associated with project roadway widenings beyond the MTP/SCS for Jackson Road and Kiefer Boulevard is being overstated. Reducing this VMT, consistent with SACOG guidance for the SACSIM model, and when combined with the reductions associated with the TMA mitigation, would result in a negative overall change in VMT.

APPENDIX L

WATER SUPPLY ASSESSMENTS

Sacramento County Water Agency

Water Supply Assessment for
West Jackson Highway Master Plan

Prepared by Sacramento County Water Agency
December 2023
Updated March 2024

(Administrative Draft Pending
SCWA Board Approval)

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INTRODUCTION

BACKGROUND

The California Water Code (Water Code) requires coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet both existing demands and demands of planned development.

Water Code Sections 10910 – 10915 (inclusive) require land use lead agencies: 1) to identify the responsible public water purveyor for a proposed development project, and 2) to request a "Water Supply Assessment" (WSA) from the responsible purveyor. The objective of a WSA is to demonstrate the sufficiency of a purveyor's water supplies to satisfy the water demands of a proposed development project while still meeting the current and projected water demands of existing customers. Water Code Sections 10910 – 10915 delineate specific information that must be included in a WSA.

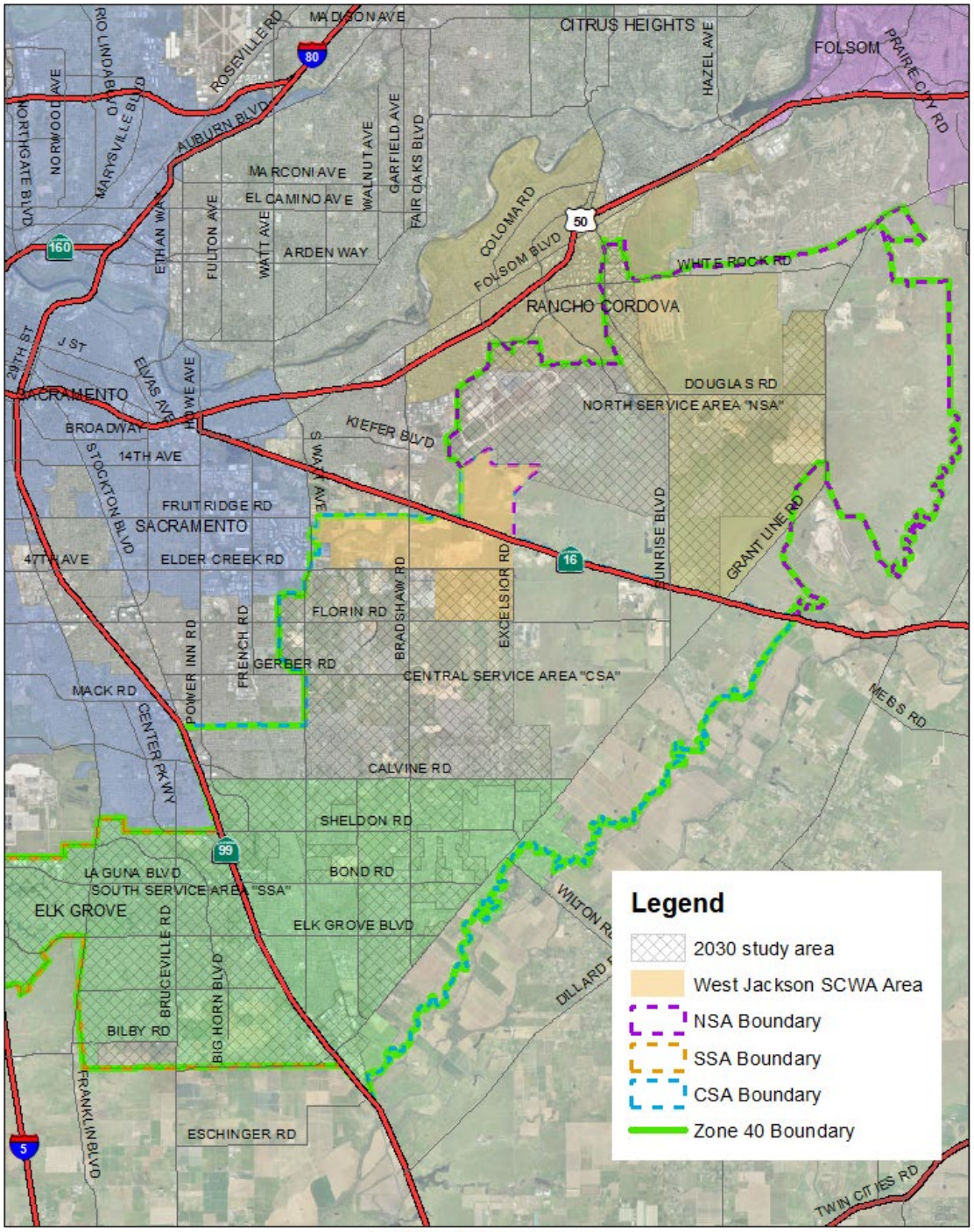
THE PROPOSED DEVELOPMENT PROJECT

The County of Sacramento Department of Planning and Environmental Review (PER) is actively processing the proposed project known as West Jackson Highway Master Plan (Project). The Project encompasses approximately 5,913 acres, of which 4,021 acres are within SCWA's service area, and is located in the central portion of Sacramento County (see **Figures 1 and 2**). The project area is located southeast of the South Watt Avenue/Jackson Highway intersection east to Bradshaw Road, and northeast of South Watt Avenue/Elder Creek Road east to Bradshaw Road. East of Bradshaw Road the project area extends north to Goethe Road, then easterly south of the Mather Airport to Excelsior Road which is the easterly boundary of the project area. The project area extends south along Excelsior Road to Florin Road, which is the southern boundary of the project. The project boundary follows Florin Road westerly to Excelsior Road for approximately 8,000 feet, then north to Elder Creek Road, which becomes the southerly boundary west to Hedge Avenue. The Project is one of the three Master Plan Areas along the Jackson Corridor Planning Area. Additionally, a portion of the Project falls within the Sacramento County Water Agency's (SCWA) benefit zones.

The County of Sacramento Department of Planning and Environmental Review has identified the Sacramento County Water Agency as the responsible water purveyor for the portion of the West Jackson Highway Master Plan that falls within its benefit zones and has requested that SCWA prepare this WSA in accordance with Water Code Sections 10910 – 10915 for that area.

WATER SUPPLY ASSESSMENT OBJECTIVE

The objective of this West Jackson Highway Masterplan WSA is to demonstrate that the planned water supplies for SCWA's Zone 40 are sufficient to meet the demands of the Project in addition to the existing and projected water supply obligations over the next 20 years. The findings of this WSA will be included in the Project's CEQA review by PER.



West Jackson

SACRAMENTO COUNTY WATER AGENCY
DEPARTMENT OF WATER RESOURCES

Figure 1 West Jackson Highway Master Plan SCWA Area Location Map

OVERVIEW OF THE WEST JAKSON HIGHWAY MASTER PLAN WSA

The comprehensive area of the Project overlays the purveyor jurisdictions of both the SCWA and the Californian American Water Company (CalAm) (**see Figure 2**). In general, the boundary between the two water purveyors runs along Fruitridge Road in the east-west direction and Happy Lane in the north-south direction. The SCWA portion of the project site encompasses approximately two thirds of the acreage of the Project and is primarily located in the south and east of the project area. CalAm services the northwest portion of the site and encompasses approximately one third of the acreage of the Project. While some streets will have both CalAm and SCWA owned mains, there are no interconnections between the SCWA system and the CalAm system anticipated at this time. The portion of the Project that overlays SCWA falls within the boundaries of SCWA's Zone 40/41 service area. All references to the Project's land-use area and associated water demands in this WSA will constitute solely the portion within SCWA's jurisdictional boundary.

The SCWA portion of the Project lies entirely within the boundaries of SCWA's Zone 40/41 service area but outside of the 2030 Study Area of the Water Supply Master Plan (WSMP), (SCWA, 2005). In 2016, an amendment to the WSMP (WSMPA) was prepared to include the Project and is pending SCWA's Board of Directors (SCWA Board) approval. In 2016, SCWA also developed the Water System Infrastructure Plan (WSIP) (SCWA, 2016). The WSIP is a staff-level document that describes the projected water supply infrastructure needs to meet the projected built-out water demands in Zone 40, including the Project demands. The infrastructure needs of the project are included in the 2016 WSIP. The water demands associated with the Project have also been included and addressed in the latest Urban Water Management Plan (UWMP) (SCWA, 2020) approved by the SCWA Board on June 15, 2021.

In addition to the above referenced documents, the following documents may be used in whole or in part for the water assessment for Project:

- The Central Sacramento County Groundwater Management Plan (SCGA, February 2006)
- The South American Subbasin Groundwater Sustainability Plan (South American Subbasin Groundwater Sustainability Agencies, October 2021)
- The Final Environmental Impact Report (FEIR) for 2002 Zone 40 Water Supply Master Plan (EDAW, December 2004)
- The Water Forum Agreement (WFA), Sacramento City-County Office of Metropolitan Water Planning, January 2000
- Feasibility Report for Sacramento County Water Financing Authority Series 2007 Revenue Bonds (Sacramento County Water Agency Freeport Project) (MWH, April 2007)
- Sacramento County Water Agency Zone 40 Water Development Fee Study (HDR, August 2023)

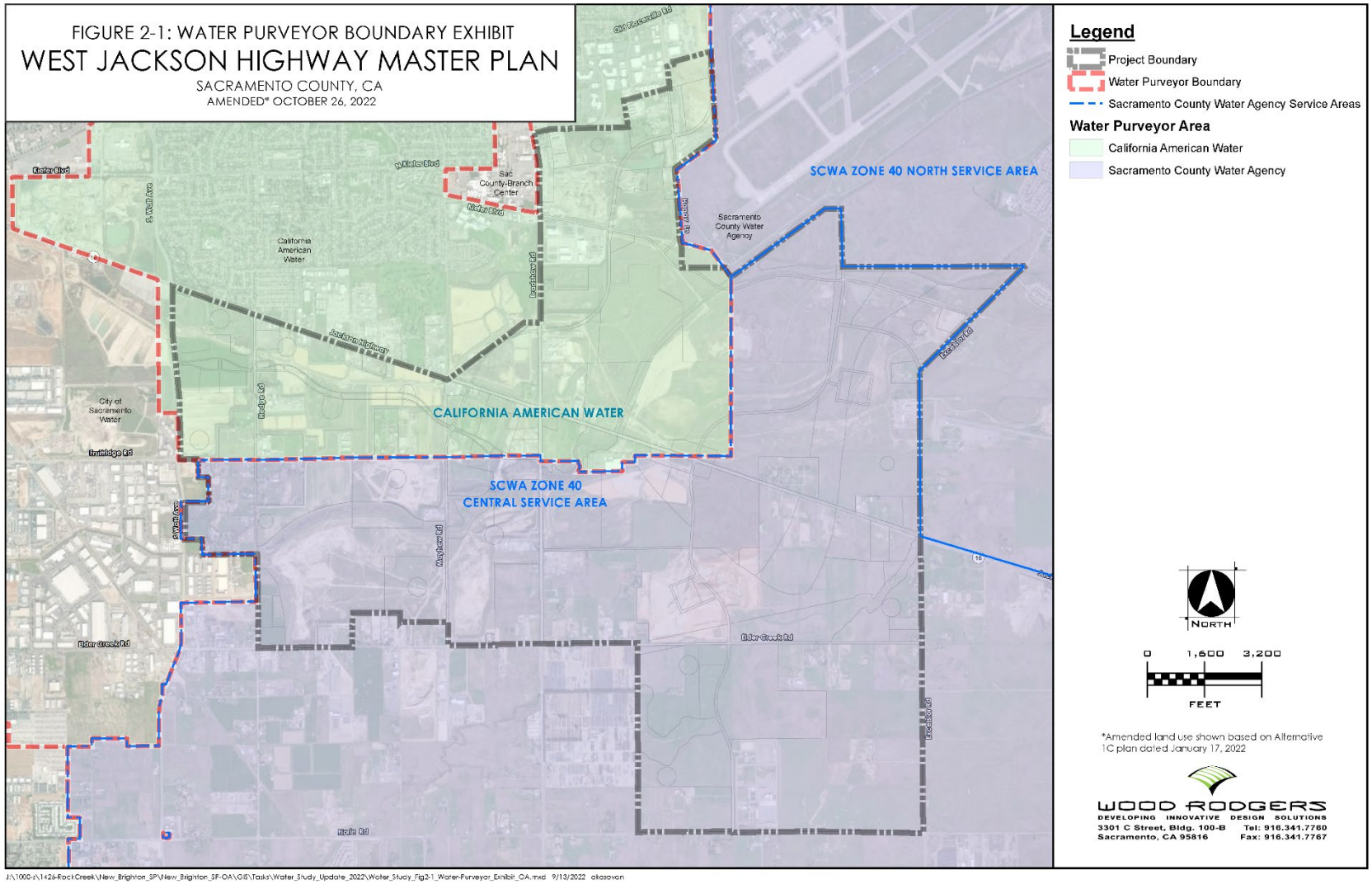


Figure 2 Water Purveyor Boundary Map From West Jackson Highway Master Plan Level 1 Domestic Water Study*

*Note: Water purveyor map sourced from page 6 of *West Jackson Highway Master Plan Level 1 Domestic Water Study, Amended 10/26/2022, Wood Rodgers*.

WSA FOR THE WEST JACKSON HIGHWAY MASTER PLAN PROJECT

Water Code Sections 10910 – 10915 delineate the specific requirements of a WSA. The WSA for the Project is structured according to these requirements.

DETERMINE IF PROJECT IS SUBJECT TO CEQA [Section 10910 (a)]

PER has made the determination that Project is subject to CEQA.

IDENTIFY RESPONSIBLE PUBLIC WATER SYSTEM [Section 10910(b)]

PER has identified SCWA as the responsible public water provider for the Project.

DETERMINE IF UWMP INCLUDES WATER DEMANDS [Section 10910(c)]

The total area for the Project that is within the SCWA benefit zone is estimated to be 4,021 acres. The projected annual water demand for the Project is 6,008 acre-feet per year (AF/year), including system losses. The proposed land use and projected water demand for the Study Area is provided in **Table 1**. See **Figure 3** for a land-use diagram of the entire project area.

Table 1 Proposed Land Use and Water Demand Estimate for the Project

Land Uses	Unit Water Demand Factor (AF/Year/Acre)	Gross Acreage	Water Demand (AF/Year)
Residential Designations			
Multi-family Residential (low density)	2.44	41	100.0
Multi-family Residential (high density)	3.33	149	496.2
Single Family	2.13	1,511	3,218.4
Rural Estate	1.37	95	130.2
Subtotal - Residential		**1,796**	**3,944.8**
Light Industrial	2.02	79	159.6
Commercial	2.02	303	612.1
Public Recreation	2.80	281	786.8
Public	0.81	76	61.6
ROW	0.818	131	23.6
Vacant	-	1,355	-
Subtotal – Non-Residential		**2,225**	**1,643.6**
Total w/o System Loss			**5,588.4**
System Loss (7.5%)			419.2
GRAND TOTAL		**4,021**	**6,007.5**

Note: Information was provided by *West Jackson Highway Master Plan Level 1 Domestic Water Study (Amended October 26, 2022, Wood Rodgers)*. Minor rounding discrepancies account for the difference in total calculated demands identified in the table above and the information provided by Wood Rodgers.

The Project is included in the WSMPA and the estimated demands are accounted for in the current 2020 UWMP, which describes SCWA's existing and projected water demands through

2045. Therefore, the UWMP will serve as the base document for preparing the WSA for the Project.

The projected population growth for Zone 40 was based on the estimated annual number of new connections. First, the buildout population was estimated based on the projected number of dwelling unit connections at buildout. The annual number of new connections was then estimated. The details of population projection for Zone 40 are documented in the WSIP. The WSIP developed buildout land use acreage by type of land use, which was used to quantify the buildout number of dwelling units and water system connections. That assessment included those in the 2030 Study Area and the new growth areas such as the Project. The UWMP adopts the findings and results of the WSIP and presents the population growth projection in 5-year intervals from 2020 to 2045. Note that buildout is projected to occur after 2045 in Zone 40. The 5-year interval population projection is shown in **Table 2** below. The UWMP estimates the water demands for SCWA's service areas in 5-year increments for the 20-year projection (2020 to 2045), as shown in Table 4-10 of the UWMP. A summary of the pertinent data from these tables is presented in **Table 3** below.

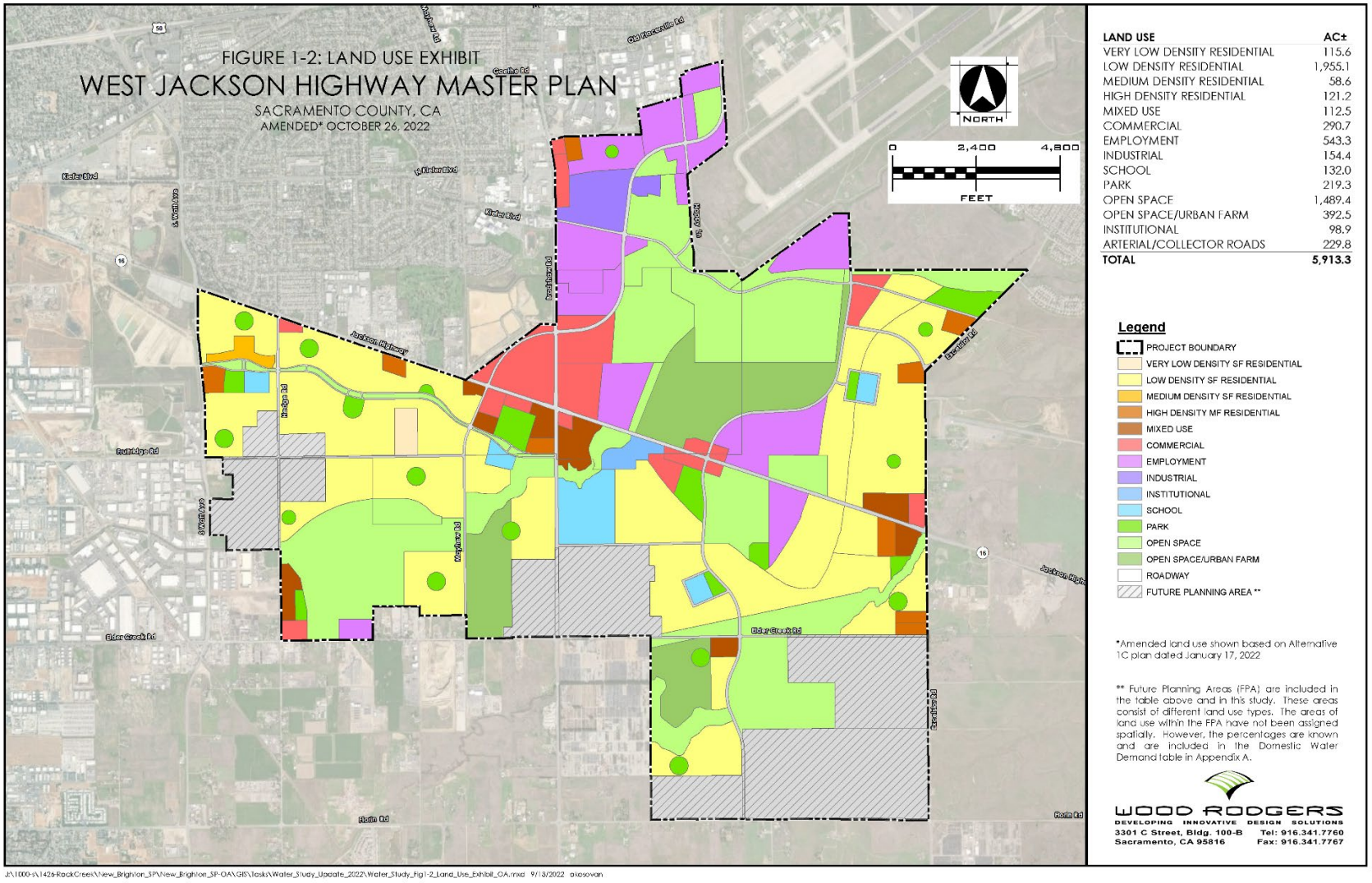


Figure 3 Land Use Diagram From West Jackson Highway Master Plan Level 1 Domestic Water Study*

*Note: Land use diagram sourced from Page 4 of *West Jackson Highway Master Plan Level 1 Domestic Water Study (Amended 10/26/2022, Wood Rodgers)*

Table 2 Population Projection for SCWA Zone 40

SCWA Service Areas	2020	2025	2030	2035	2040	2045
Zone 40 - North Service Area, Central Service Area, South Service Area[1]	169,000	197,027	225,054	253,081	275,698	298,314

[1] Population developed in the 2020 UWMP – see Table 2-7: Zone 40 Population Forecast tied to UWMP connection Projections.

Table 3 Water Demands for SCWA Zone 40 – Normal Year (AF/Year)

SCWA Service Areas	2025	2030	2035	2040	2045
Zone 40 - North Service Area, Central Service Area, South Service Area[1]	46,235	54,494	62,006	68,143	74,388

[1] Water demands developed in the 2020 UWMP – see Table 4-10(a): Zone 40 Forecast Potable Water Use

The water demands for all other dry year scenarios can be found in the 2020 UWMP Chapter 4.

The water demands associated with the Project are substantially included in all tables above and in the UWMP. **Table 4** shows the estimated water demand growth for the Project.

Table 4 Projected Water Demand Growth in Five-Year Increments for the Project (AF/Year)

	2025	2030	2035	2040	2045
Projected Water Demand(1)	1,201	2,401	3,602	4,802	6,008(2)

Notes
1. Information was provided by Wood Rodgers, Inc. 10/18/23.
2. Minor discrepancies in totals provide by applicant and calculated by SCWA due to rounding differences.

IDENTIFY EXISTING WATER SUPPLIES FOR THE PROJECT [Section 10910(d)]

SECTION 10910(d)(1)

Section 10910(d)(1) requires identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the Project and a description of the quantities of water obtained by SCWA pursuant to these water supply entitlements, water rights, or water service contracts in previous years.

Chapter 3 of the 2020 UWMP details all SCWA water supplies. Specifically, 3.1 details Surface Water Rights and Contracts and 3.2 details Groundwater. The Project water demands, as part of the Zone 40 water demand, will ultimately be met by conjunctive use of groundwater and surface water and a small portion of recycled water as described in the 2020 UWMP.

SECTION 10910(d)(2)

Section 10910(d)(2) requires SCWA to demonstrate that water supplies required to serve the Project exist. Section 10910(d)(2) defines what constitutes "proof."

Section 10910(d)(2)(A)

This subsection requires written contracts or other proof of entitlement to the water supplies identified for the Project. The contracts and agreements for the surface water supplies are available for review at the offices of the County of Sacramento, Department of Water Resources.

Initial water demands of the Project could be met with groundwater. SCWA will exercise its right as a groundwater appropriator to extract groundwater from the basin for delivery to the Project; surface water will be from existing entitlements diverted from the Sacramento River and treated at the VSWTP. In the long-term, the water demands for the Project will be met in accordance with the conjunctive use program described in the WSMP.

Section 10910(d)(2)(B)

This subsection requires a copy of the capital outlay program for financing the delivery of the identified water supply to the Project. The documents described below are available for review at the offices of the County of Sacramento, Department of Water Resources.

A financing plan for the construction of groundwater and surface water facilities needed to realize the conjunctive use program identified in the WSMP was approved by SCWA Board. The financing plan, as outlined in Chapter 7 of the WSMP, identifies the necessary water facility projects and estimated costs associated with implementation of said conjunctive use program (Capital Improvement Program or CIP). Section 8.3 of the WSMPA identifies additional infrastructure and a Capital Improvement Plan necessary to serve the Project area.

In addition to the WSMP, the Feasibility Report for Sacramento County Water Financing Authority Series 2007 Revenue Bonds (Sacramento County Water Agency Freeport Project) (MWH, April 2007), and the Sacramento County Water Agency Zone 40 Water Development Fee Study (HDR, August 2023) evaluated and updated the total cost and fee requirements of the Zone 40 conjunctive use program incorporating all future Zone 40 expenditures for major capital facilities (i.e., surface water treatment plants, groundwater treatment plants, major transmission mains, etc.). Funding to meet SCWA's capital and annual funding requirements was then implemented by the SCWA Board through the issuance of revenue bonds for certain projects and the adoption of user fee and development fee increases over time.

SCWA's capital outlay program includes the means for financing facilities to deliver the identified water supply to the Project. Specifically, all facilities needed to serve the Project are included in the CIP that was financed through the above-described revenue bonds, user fee, and development fee. The development fee and user fee, as described in Titles 3 and 4 of the

Sacramento County Water Agency Code, will continue to provide revenue to finance all aspects of the Zone 40 conjunctive use program, including repayment of debt financing. Both fee programs are evaluated periodically and adjusted, if necessary, to accommodate changes in the service area, water demands, needed capital projects, and required debt financing. Based on the CIP, a 10-year CIP is annually updated by the SCWA Board.

Section 10910(d)(2)(C)

This subsection requires identification of any federal, state, and local permits required for construction of the facilities identified for delivering the water supply to the Project.

Water deliveries to the Project will be made through connecting to the existing T-mains surrounding the Project and additional infrastructure internal to the Project as detailed in the WSIP. The 2016 WSIP accounts for the infrastructure needs of this Project. Federal, state, and local permits for the construction of the facilities for delivering water supply to the project will undergo site-specific environmental review and approval. Required permits identified pursuant to the review will have to be obtained prior to acceptance of bids for construction of any project. SCWA does not foresee any regulatory or legal impediments to completing any necessary further environmental review and obtaining those permits when the need arises.

Section 10910(d)(2)(D)

This subsection requires identification of any regulatory approvals required for delivery of the water supply to the Project.

Water production, treatment, and storage facilities will be added to SCWA's public water system permit issued by the California Department of Public Health (DPH) and the design of these facilities will require review and approval by DPH. No other regulatory approvals are anticipated.

New water service and discretionary approval of any project may be withheld until compliance with the Endangered Species Act (ESA) is demonstrated. Depending upon the source of water, compliance may be demonstrated by one of the following: participation in the South Sacramento Habitat Conservation Plan (SSHCP); a letter from the US Fish and Wildlife Service (USFWS) to the project proponent and/or federal agency indicating the Project is not likely to adversely affect or result in a take of listed species; incidental take coverage through a biological opinion for the project; or, incidental take coverage through an ESA section 10(a)(1)(B) permit for the project. This requirement may be a condition of approval for any discretionary action taken by the local land use authority.

IDENTIFY PARTIES DEPENDENT UPON PROPOSED SUPPLY [Section 10910(e)]

SECTION 10910(e)

Section 10910(e) states:

"If no water has been received in prior years by the public water system…, under the existing water supply entitlements, water rights, or water service contracts [identified to serve the proposed project], the public water system,…shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts to the same source of water as the public water system,…, has identified as a source of water supply within its water supply assessments."

The intent of this section is to identify any potential conflicts that may arise from the exercise of a water supply entitlement, water right, or water service contract to serve a proposed project if such water supply entitlement, water right, or water service contract has not been previously exercised.

Use of Groundwater

The water demands of Zone 40 (including the Project) will be met with groundwater and surface water. SCWA has previously exercised its rights as a groundwater appropriator to meet the water demands of its customers and will continue to exercise those rights to provide treated groundwater supplies to the Project.

Use of Surface Water

The surface water supplies associated with SCWA's conjunctive use program fall into the following categories:

1) Purchased water supplies available through a current USBR CVP contract.
2) Purchased water available through the City of Sacramento for use within the American River Place of Use (POU).
3) Water supplies available through SWRCB Permit 21209.
4) SWRCB Appropriative Water Right License 1062
5) SWRCB Appropriative Water Right License 4060
6) Agreement Between Sacramento County, SCWA and Aerojet with respect to Transfer of GET Water
7) Contract Between State of California Department of Water Resources and North Delta Water Agency
8) 2002 Wholesale Agreement Between SRCSD and SCWA
9) 2004 Agreement with the City of Sacramento for Wholesaling and/or Wheeling Water Service for Sacramento International Airport and Metro Air Park
10) 2000 Agreement Between City of Sacramento and the Sacramento County Water Agency to Treat and Deliver (Wheel) Surface Water
11) 2000 Memorandum of Understanding Regarding the Operation of A Water System Interconnection at 2750 Mercantile Drive
12) Fruitridge Vista Water Company Contract now held by Cal American Water Company

For USBR CVP purchased water and SWRCB Permit 21209 surface water, the parties that could most directly be affected are other CVP contractors, State Water Project (SWP) contractors, water rights holders subject to Term 91 conditions, and riparian diverters downstream of SCWA's point of diversion. The point of diversion is at a site near the community of Freeport on the Sacramento River.

The source of POU water supply is wholesale water from the City of Sacramento to serve the area that lies within the POU. Delivery of this water to SCWA has been included in the City of Sacramento's long-range plan for perfecting their American River water rights. The diversion location, timing, and volume of delivery are currently under negotiation.

DOES SUPPLY FOR PROJECT INCLUDE GROUNDWATER? [Section 10190(f)]

SECTION 10910(f)

As stated earlier, the water supply for Zone 40 (including the Project) include groundwater. Section 10910(f) requires additional information about groundwater to be presented in this WSA.

Section 10910(f)(1)

Section 10910(f)(1) requires a review of groundwater information contained in the UWMP relevant to the identified water supply for the Project. Section 3.2 of the 2020 UWMP provides a description of the applicable groundwater basins, the status of groundwater management, overdraft conditions, historical groundwater pumping, and the remediated groundwater supply.

Section 10910(f)(2)

Section 10910(f)(2) requires a description of the groundwater basin and the efforts being taken to prevent long-term overdraft.
Section 3.2.2 of the 2020 UWMP describes groundwater management in the South American Subbasin. Below is information for historical context.

- **South American Subbasin (5-21.65)**

For the Project, SCWA would pump groundwater from the South American Subbasin as defined by the California Department of Water Resources (DWR) Bulletin 118. According to Bulletin 118, the South American Subbasin is defined as the area bounded on the west by Interstate 5 and the Sacramento River, on the north by the American River, on the south by the Cosumnes and Mokelumne rivers and on the east by the Sierra Nevada.

Groundwater in the South American Subbasin is generally classified as occurring in a shallow aquifer (Laguna or Modesto Formation) and in a deep aquifer (Mehrten Formation). The Laguna or Modesto Formation consists of older alluvial deposits of loosely to moderately compacted sand, silt, and gravel deposited in alluvial fans. These deposits are moderately permeable and have a thickness of about 100 to 650 feet. The deeper Mehrten Formation is a sequence of fragmented volcanic rocks which crops out in a discontinuous band along the eastern margin of the basin. It is composed of black volcanic sands, stream gravels, silt, and clay inter-bedded with

intervals of dense tuff breccia. The sand and gravel intervals are highly permeable and the tuff breccia intervals act as confining layers. The thickness of the Mehrten Formation is between 200 and 1,200 feet. Groundwater is located from 20 to 100 feet below the ground surface depending on when and where the measurement is taken. The base of the potable water portion of the deep aquifer is located approximately 1,400 feet below the ground surface.

Intensive use of groundwater over the past 60 years has resulted in a general lowering of groundwater elevations. Over time, isolated groundwater depressions have grown and coalesced into a single cone of depression that is centered in the southwestern portion of the basin. Groundwater level trends through much of the basin have generally declined consistently from the 1950s and 1960s to about 1980 by 20 to 30 feet. From 1980 through 1983, water levels recovered by about 10 feet and remained stable until the beginning of the 1987-1992 drought; however, wells in the vicinity of Rancho Cordova appear to have recovered less than other wells in the basin since 1995 (generally less than 10 feet). From 1995 to 2003 most groundwater levels recovered to levels that were generally higher than levels prior to the 1987 through 1992 drought. Much of this recovery can be attributed to the increased use of surface water in the South American Subbasin, and the fallowing of previously irrigated agricultural lands transitioning into new urban development areas. In the central portion of the South American Subbasin groundwater level trends observed in California Department of Water Resources monitoring wells generally vary between 40 feet above to 40 feet below mean sea level over the period of the 1950's through the 2000's.

Recharge of the aquifer system occurs along active river and stream channels where extensive sand and gravel deposits exist, particularly along the American, Cosumnes, and Sacramento rivers. Additional recharge occurs along the eastern boundary of Sacramento County at the transition point from the consolidated rocks of the Sierra Nevada to the alluvial-deposited basin sediments. This recharge is classified as subsurface recharge along with underground flow into and out of the basin with adjacent groundwater basins. Other sources of recharge include deep percolation from applied surface water and precipitation.

The sustainable yield for the South American Subbasin was estimated as a part of the Groundwater Sustainability Plan development process, under the mandate of the 2014 Sustainable Groundwater Management Act (SGMA), using analysis of data and information from a number of groundwater modeling scenarios from the *Integrated Water Resources Model of the Cosumnes, South American, and North American* (CoSANA model) for historical, baseline and project conditions reflecting various hydrologic and operational conditions in the Subbasin. The scenarios used a 50-year hydrologic period, which represented reasonably long-term conditions in the Subbasin. The goal of the analysis was to establish a sustainable yield to avoid causing undesirable results as defined and established as part of the GSP Sustainable Management Criteria (SMC). The estimated long term annual sustainable yield of groundwater from the South American Subbasin is 235,000 AF/year. Supply and demand inputs into the CoSANA model for both current baseline conditions (water years 1970-2019) and projected baseline conditions (water year 2040) included SCWA Zone 40 operations and inclusive of those potentially associated with the LEACP. The full CoSANA model report may be viewed as *Appendix 2 –B CoSANA Model Report* of the South American Subbasin Groundwater Sustainability Plan and may be accessed at http://sasbgroundwater.org/resources.html

- **Sustainable Groundwater Management Act (SGMA)**

The Sustainable Groundwater Management Act (SGMA), passed by the California legislature in 2014, requires local entities to jointly assess groundwater conditions in their local areas and to develop a Groundwater Sustainability Plan (GSP) by a specified deadline to ensure that sustainable conditions are achieved within 20 years of GSP adoption. An effective and efficient groundwater management plan is critical to the health and welfare of the people, the environment and all other uses and users of groundwater in a local area.

Six local entities responded to the mandate of SGMA and formed Groundwater Sustainability Agencies (GSAs) within the South American Subbasin (SASb). Sacramento Central Groundwater Authority (SCGA), Omochumne-Hartnell Water District (OHWD), Sloughhouse Resource Conservation District (SRCD), North Delta GSAs (NDGSA), Reclamation District 551 (RD 551), and Sacramento County, agreed to work together to develop and implement a GSP for the SASb. The South American Subbasin Groundwater Sustainability Plan (October 2021) was approved by the California Department of Water Resources on July 27, 2023. A copy of the GSP as submitted, may be viewed at http://sasbgroundwater.org/.

The local entities represented by the six GSAs in the SASb included the City of Sacramento, Sacramento County Water Agency, City of Elk Grove, City of Rancho Cordova, City of Folsom, Rancho Murieta, Sacramento Regional County Sanitation District, Elk Grove Water District, OHWD, SRCD and Reclamation Districts. A variety of local interests are also represented by these GSAs, including agricultural-residential water users, agricultural water users, public water systems, local land use planning agencies, environmental interests, surface water users, the federal government, tribal governments, disadvantaged communities, groundwater monitoring and reporting entities, holders of overlying groundwater rights, adjacent Subbasins, industrial users, commercial users, remediation pumpers, natural ecosystems, and the general public. Many of these local entities have a long history with groundwater and surface water management in the SASb and are well equipped to perform SGMA-required planning functions.

The six GSAs in the SASb have undertaken a thorough and timely review of past, current and projected future water resources needs and groundwater conditions to meet SGMA requirements for GSP development. Throughout the development of the SASb GSP, regular communication and engagement activities were conducted to inform and receive input from local stakeholders and the general public. The SASb GSP includes a comprehensive groundwater subbasin description, which was used in the development of a regional surface and ground water model that quantifies current water budgets and projects future conditions associated with population growth, land use changes, water conservation, climate change, and consideration of beneficial projects that are planned to occur over the next five to ten years. The SASb GSP also includes a thorough assessment of the impacts of predicted future groundwater levels on beneficial users, including groundwater-dependent ecosystems, shallow wells, and interconnected surface water. Importantly, these assessments are used to develop measurable sustainable management criteria

that avoid significant and unreasonable impacts to these beneficial users, and that can be monitored and adjusted throughout plan implementation.

The key finding of the SASb GSP, based on thorough analysis of the best available information, is that the basin will be sustainable over the next twenty years as long as planned recycled water, recharge and other projects are implemented. These projects will raise groundwater levels above current levels, maintain storage volumes, and protect ecosystems, interconnected surface water, and shallow well users. Although projected climate change conditions will increase groundwater use, these effects are not expected to cause the SASb to become unsustainable or to cause significant decreasing trends in groundwater conditions. A groundwater monitoring network comprised of more than 50 wells will be used to track groundwater levels and groundwater quality. Management criteria set at each well in the network will be implemented to assess these conditions over time and ensure that levels and quality remain within a range that avoids significant and unreasonable impacts to beneficial uses and users of groundwater. Once approved by the GSAs, the activities identified and developed through the SASb GSP development process will be implemented, including:

- Ongoing monitoring and annual reporting on conditions in the SASb;
- Ongoing public engagement and outreach;
- Coordination among the GSAs and with neighboring subbasins;
- Development and implementation of a shallow well protection and monitoring program;
- Coordination with regional entities to develop a regional water bank;
- Coordination with land use agencies and water supply agencies to promote consistency with the GSP;
- Coordination with regional agencies in the development of updated climate change projections; and,
- Preparation of a five-year update to the GSP to be submitted in 2027

- **SCWA Conjunctive Use Program**

Section 3.2 and Appendix E of the WSMP provide detailed descriptions of the Zone 40 conjunctive use program. SCWA's operational approach for preventing overdraft of the groundwater basin underlying Zone 40 and optimizing the use of both groundwater and surface water is discussed in detail in these sections. The FEIR for 2002 Zone 40 Water Supply Master Plan includes an extensive analysis of the effects of the Zone 40 conjunctive use program on the groundwater basin and on various recharge sources. A summary of the conjunctive use program is as follows:

SCWA's conjunctive use program is a coordinated approach to manage surface water and groundwater supplies to maximize the yield of available water resources. The conjunctive use program for SCWA includes the use of groundwater, surface water, remediated water, and recycled water supplies. The program also includes the construction of a surface water diversion structure, a surface-water treatment plant, and water conveyance pipelines, as well as groundwater extraction, treatment, and distribution facilities.

This conjunctive use program relies on an abundance of surface water in wet years when as much surface water as possible will be diverted, within entitlement limitations, minimizing the use of groundwater. During these years the groundwater aquifer will be allowed to naturally replenish. In dry years, when surface water availability is reduced, SCWA will pump more groundwater from the replenished aquifer. Using surface water and groundwater conjunctively makes it easier for SCWA to meet demands in a single dry year or in multiple dry years. The goal of the conjunctive use program is to meet all demands during wet and dry years.

SCWA has adopted policies to ensure systematic, incremental implementation of its conjunctive use program. These policies are also consistent with the terms of the WFA, which is intended to maintain a long-term sustainable groundwater supply. The policies are included in the SCWA's UWMP and WSMP, which include specific action items to ensure implementation. Action items include development of additional surface water supply and treatment facilities to provide water during wet years, development of groundwater facilities to provide groundwater during dry years, in-lieu "banking" of groundwater during wet years, development and implementation of demand management and water conservation strategies, development of water reclamation facilities to meet non-potable demands, and development of a financing plan to implement these action items.

The conjunctive use program was included in the development of the SASb GSP's water budget and sustainable yield.

Section 10910(f)(3)

Section 10910(f)(3) requires a description of the volume and geographic distribution of groundwater extractions from the basin for the last five years.

Table 5 identifies past volumes of groundwater extracted by SCWA in Zone 40 between 2000 – 2022. The 2020 UWMP contains 2016-2020 in Table 3-29.

Table 5 Historical Groundwater Pumping in Zone 40, 2000 – 2022

Year	(Acre-Feet/Year)
2000	20,022
2001	22,306
2002	22,949
2003	22,745
2004	25,790
2005	29,184
2006	31,162
2007	31,249
2008	34,225
2009	34,249
2010	32,171
2011	29,809
2012	26,363
2013	23,274
2014	19,683
2015	20,675
2016	18,856
2017	17,157
2018	16,748
2019	14,654
2020	22,475
2021	22,057
2022	25,604

Through the water supply master planning process, SCWA identified a system of sixteen separate well fields throughout Zone 40. A distributed groundwater extraction strategy was selected because it would minimize drawdown effects of pumping by spreading extraction over a wide geographic area. The approximate locations of the SCWA's current and future well fields is shown in **Figure 3**.

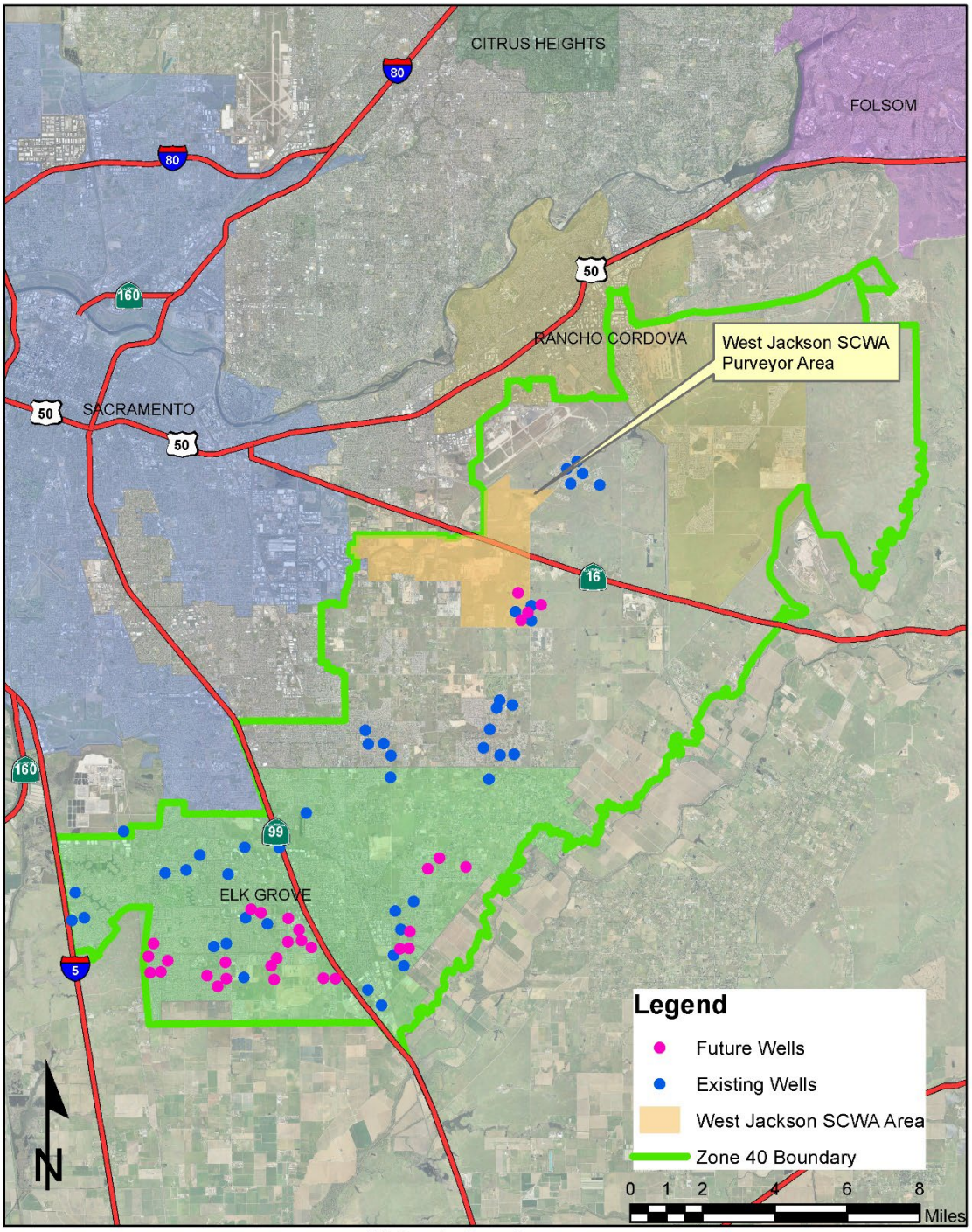


Figure 4 Existing and Future Well Fields in SCWA Zone 40

Section 10910(f)(4)

Section 10910(f)(4) requires a description of the projected volume and geographic distribution of groundwater extractions from the basin.

Groundwater use has declined since the VSWTP has come online, but it will increase over time as water demand continues to grow in Zone 40. In wet and normal years, groundwater pumping will be minimized because surface water becomes the major water supply source. In dry years, groundwater pumping will increase significantly as surface water availability is considerably reduced. Section 3.2.2 Zone 40 Groundwater in the 2020 UWMP describes groundwater use through 2045.

Section 10910(f)(5)

Section 10910(f)(5) requires an analysis of the sufficiency of the groundwater basin to meet the demands associated with the Project.

The Groundwater Sustainability Plan development process for the South American Subbasin estimated a long-term sustainable average annual yield of 235,000 AF/year and provided for SCWA's groundwater needs as identified in the WSMP. The WSMP describes a conjunctive use program that identifies and projects a long-term average use of groundwater to meet identified water demands, including the demand associated with the Project. The South American Sub-basin GSP also accounts for growth in the Project area.

SCWA's conjunctive use program has been extensively analyzed and documented in the WSMP, the FEIR for 2002 WSMP (certified in February 2006), the FEIR – WFA (certified in 1999), and the WFA.

DETERMINATION OF SUFFICIENCY

SCWA determines that it has identified sufficient water supplies to meet the water demands of the Project over the next 20 years during normal, single dry, and multiple dry years.

SCWA makes this determination based on the information provided in this WSA and on the following specific facts:

- SCWA's conjunctive use program is a sustainable water supply program that provides a 100-percent reliable water supply while protecting environmental values and stabilizing the groundwater basin underlying Zone 40.
- SCWA's conjunctive use program has been extensively analyzed and documented in the WSMP, the FEIR for 2002 WSMP (certified in February 2006), the FEIR – WFA (certified in 1999), and the WFA. All referenced documents have been subjected to thorough technical peer review and public scrutiny.
- The Project will be served by water supplies made available through SCWA's conjunctive use program.
- A financing plan for SCWA's conjunctive use program for constructing facilities required for delivering groundwater and surface water to the Project has been approved by the SCWA Board through its adoption of the WSMP, Bond Feasibility Reports, and the Sacramento County Water Agency Code.

The 2020 UWMP demonstrates that SCWA's total projected water supplies during normal, single dry, and multiple dry water years meet the proposed water demands over the next 20 years.

CONCLUSION

This WSA documents all required information specifically delineated by Water Code Sections 10910 – 10915. It demonstrates that SCWA's water supplies are sufficient to satisfy the water demands of the currently proposed Project while still meeting the current and projected water demands of existing customers in the next 20 years. If there are significant changes to land uses for the proposed Project in the future, this WSA may need to be revisited and updated accordingly.

California American Water

Water Supply Assessment for
West Jackson Highway Master Plan

February 2024

I. Introduction

On August 14, 2023, the County of Sacrmento submitted a letter to California American Water requesting a Water Supply Assessment (WSA) for the proposed West Jackson Highway Project (Project). This WSA was prepared pursuant to the **California Water Code [Section 10910]**. California American Water's 2020 Urban Water Management Plan (2020 UWMP) for the Suburban-Rosemont service area did not include water demands for the Project; therefore, this assessment addresses the ability of California American Water to serve water to this Project.

II. Project Overview

The Project encompasses approximately 5,913 acres and is in the central part of Sacramento County. The Project area is located southeast of the South Watt Avenue/Jackson Highway intersection east to Bradshaw Road, and northeast of South Watt Avenue/Elder Creek Road east to Bradshaw Road. East of Bradshaw Road, the Project area extends north to Goethe Road, then easterly south of the Mather Airport to Excelsior Road, which is the easterly boundary of the Project area. The Project area extends south along Excelsior Road to Florin Road, which is the southern boundary of the Project. The Project boundary follows Florin Road westerly to Excelsior Road for approximately 8,000 feet, then north to Elder Creek Road, which becomes the southerly boundary west to Hedge Avenue. The Project is partially located within California American Water's Suburban-Rosemont service area. This includes 1,892 acres in the northwest portion of the Project area bound roughly by Fruitridge Road to the south and Happy Lane to the east. The remaining portion of the Project area will be served by Sacramento County Water Agency.

Wood Rogers, Inc. submitted a Level 1 Domestic Water Study in 2018. In 2022, a revision to this study was submitted that updated projected demands. Changes to the demands generally included an increase in Low Density Residential, Mixed Use, and Park zoning and a decrease in High Density Residential, Commercial, and School zoning. The total acreage of the Project site remains the same, but the annual water demand increased from 973 million gallons (MG) to 996 MG, for a difference of 23 MG. The original and revised demands attached at the end of this document.

III. Water Demands [Section 10910(c)]

California American Water's 2020 UWMP for Suburban-Rosemont did not include the proposed demands for the Project. There have been no significant changes or updates to demand projections for California American Water's Suburban-Rosemont service area since the 2020 UWMP. Historical demands from the past five years are presented in **Table 1**.

Table 1: Historical Demands

Year	2018	2019	2020	2021	2022
Demand (MG)	2,691	2,629	2,872	2,622	2,699

Future demands were estimated by applying historical growth rates as well as the projected demands for the Project. While it is probable that Project will take longer than 20 years to complete, for the purpose of this WSA the Project was conservatively projected to be built-out and in service by 2045. The Project is assumed to begin in 2025, with 25% of the Project completed by 2030, 50% completed by 2035, 75% completed by 2040, and 100% completed by 2045. Projected demands are shown in **Table 2**.

Table 2: Projected Demands

Year	2023	2024	2025	2030	2035	2040	2045
Demand (MG)	2,709	2,718	2,727	3,024	3,322	3,620	3,920

IV. Water Supply [Section 10910(d)]

A. Identification of Water Supply Entitlements [Section 10910(d)(1)]

California American Water's Suburban-Rosemont service area is served primarily by groundwater wells. These wells draw water from the South American Subbasin (SASb). This basin is not adjudicated, therefore rights to the groundwater are based on the water rights of the property owner. As is the case with most municipal water providers, California American Water delivers water to parcels that it does not own. This is considered an appropriative use of groundwater. There is no permitting required for the use of groundwater in this case; however, the use of groundwater is limited to what is used by the overlying property owners.

California American Water has an agreement with the City of Sacramento to purchase water. In 2010, CAW revised an existing wholesale supply agreement with the City to receive a maximum of 3.46 million gallons per day (MGD) of non-firm supply during off-peak periods (October 15th through May 14th), plus an additional 2.3 MGD of firm capacity, for a total of 5.76 MGD. Because the non-firm capacity of 3.46 MGD can only be used during seven months of the year, the total yearly amount available is calculated to be 1,576 MG. However, in a dry year or multiple dry years, it is assumed that only the firm supply would be available. Additionally, this agreement includes three of California American Water's service areas, so it is assumed that this firm supply would be available to each of these service areas proportional to their respective demands. For the Suburban-Rosemont service area, this equates to 403 MG.

Total firm supply availability is summarized in **Table 3** for a normal year, a dry year, and multiple dry years.

Table 3: Supply by Year Type

Year Type	Source	Capacity (MG)
Normal Years	Groundwater Wells	9,279
	Purchased Water	1,576
	Total	10,855
Single Dry Year	Groundwater Wells	9,279
	Purchased Water	403
	Total	9,682
Multiple Dry Years	Groundwater Wells	9,279
	Purchased Water	403
	Total	9,682

B. Demonstration of Water Supply [Section 10910(d)(2)]

Section 10910(d)(2)(A), contracts or proof of entitlements: The agreement between California American Water and the City of Sacramento for purchased water is documented in both California American Water's and City of Sacramento's 2020 UWMPs, which can be found on the Department of Water Resources website at wuedata.water.ca.gov.

California American Water has appropriative rights to the groundwater extracted from groundwater wells.

Section 10910(d)(2)(B), capital outlay program: California American Water's Capital Improvement Program (CIP) must be approved by the California Public Utilities Commission (CPUC). The current approved CIP from the 2019 General Rate Case (GRC) can be found on the CPUC website at cpuc.ca.gov, Decision D.21-11-018, Appendix B, Attachment C-4. California American Water is currently awaiting a CPUC decision for its latest GRC filed in 2022, which contains an updated CIP.

Section 10910(d)(2)(C), permits for construction of infrastructure: The Project will connect to existing California American Water infrastructure. The Project owners will be responsible for providing the infrastructure to convey water to the development, including obtaining any permits for construction.

Section 10910(d)(2)(D), regulatory approvals: The Project is located within California American Water's existing service area, therefore no regulatory approvals are required in order to convey water to the Project.

V. Supply and Demand Assessment [Section 10910(c)(3)]

California American Water has sufficient supply to meet projected demands in normal, dry, and multiple dry years through 2045, as shown in **Table 4**. However, it should be noted that the groundwater wells are aging, and as they age, they tend to lose production capacity and are at risk of failure. California American Water has a well replacement plan in place that prioritizes replacement of wells that are at high risk of failure, whether it be due to age or other factors. This analysis assumes that these wells are replaced when needed to replace diminished capacity or avoid failure and that replacement wells are of similar production capacity.

Table 4: Supply and Demand

Year Type	Source	2022	2025	2030	2035	2040	2045
Normal Years	Supply (MG)	10,855	10,855	10,855	10,855	10,855	10,855
	Demand (MG)	2,699	2,727	3,024	3,322	3,620	3,920
	Surplus/Deficit (MG)	8,156	8,128	7,831	7,533	7,234	6,935
Single Dry Year	Supply (MG)	9,682	9,682	9,682	9,682	9,682	9,682
	Demand (MG)	2,699	2,727	3,024	3,322	3,620	3,920
	Surplus/Deficit (MG)	6,983	6,955	6,658	6,360	6,061	5,762
Multiple Dry Years	Supply (MG)	9,682	9,682	9,682	9,682	9,682	9,682
	Demand (MG)	2,699	2,727	3,024	3,322	3,620	3,920
	Surplus/Deficit (MG)	6,983	6,955	6,658	6,360	6,061	5,762

VI. Maximum Day Demand Analysis

According to California Code of Regulations, Title 22 Section 64554, a public water system's water source(s) shall have the capacity to meet the system's maximum day demand. **Table 5** presents a comparison of maximum day demand versus supply.

Table 5: Maximum Day Demand and Supply

Year	2023	2024	2025	2030	2035	2040	2045
Supply (MGD)	27.7	27.7	27.7	27.7	27.7	27.7	27.7
Maximum Day Demand (MGD)	14.1	14.2	14.2	15.9	17.5	19.1	20.7
Surplus/Deficit (MGD)	13.6	13.5	13.5	11.9	10.3	8.6	7.0

VII. Groundwater Withdrawals [Section 10910(f)]

Section 10910(f)(1), groundwater information in the UWMP: California American Water's 2020 UWMP identified the SASb as the source of groundwater for its Suburban-Rosemont service area. The Suburban-Rosemont service area currently has 25 operational groundwater wells with a total capacity of approximately 19,319 gallons per minute (gpm), which equates to 10,154 MG per year. The firm capacity of these wells, or the capacity with the largest well out of service, is 17,654 gpm, or 9,279 MG. These well capacities were updated from the 2020 UWMP with current well pump efficiency tests.

Section 10910(f)(2)(A), description of groundwater basin: The SASb is a high priority subbasin surrounded by the American, Cosumnes, Mokelumne, and Sacramento Rivers to the north, south and west, and the foothills of the Sierra Nevada to the east. The SASb is comprised of two aquifers; the upper and lower aquifers are described as follows in the SCGA Alternative Submittal:

"The upper fresh-water aquifer is wedge-shaped along the eastern side of the basin (dipping and thickening westward) but is relatively flat-lying on the western side. The thickness can vary up to approximately 300 feet, but is typically 200 feet, and the bottom can extend to an elevation of approximately 200 feet below mean sea level. The upper aquifer is generally correlative to the Laguna Formation and other similar/younger sediments.

The lower fresh-water aquifer is similar in shape to the upper aquifer, but considerably larger. The wedge portion of the lower aquifer, on the eastern side of the basin, rests on bedrock (relatively impermeable) and can extend to depths between 800 and 1,200 feet below mean sea level. Within the center and western portions of the basin, the base of the lower aquifer extends to depths between 1,200 and 2,000 feet below mean sea level, to the top of the unusable water. This unusable water may occur at depths of 800 feet below mean sea level beneath the Delta area of the South American Subbasin. The lower aquifer is generally correlative to the Mehrten Formation and pre-Mehrten sediments.

The Laguna and Mehrten Formations were deposited during the Pliocene and Miocene Epochs, respectively, (Gutierrez, 2011) of the Tertiary or Neogene Period (2.6 to 23.0 million years ago) in a fluvial environment (DWR, 1974). These formations are comprised of interbedded layers of gravel, sand, silt, and clay with numerous channel deposits within the South American Subbasin. The deposits are wedge-shaped and dip gently and thicken in a westerly direction. The Laguna Formation is derived from granitic and

metamorphic rocks while the Mehrten Formation is derived from andesitic rock. The Mehrten Formation also includes dense, hard layers of tuff-breccia."

"The cones-of-depressions…were developed during the middle of the last century as groundwater was pumped extensively for agricultural land uses, and were known to not be in a state of equilibrium (i.e., groundwater levels still falling) in the mid 1980's. The majority of the subbasin's recharge occurs from the percolation of rainfall and irrigation water and from the rivers that bound three sides of the subbasin, including the Delta."

Section 10910(f)(2)(C), Groundwater Sustainability Plan (GSP): California enacted the Sustainable Groundwater Management Act in 2014 and this requires that the state's high and medium priority groundwater basins develop a GSP to balance pumping and recharge to the basin. To accomplish this, six Groundwater Sustainability Agencies (GSAs) were formed to develop one GSP for the SASb. The GSP was finalized in 2022 and can be found on the SASb website at sasbgroundwater.org. The key finding of the GSP is that the basin will be sustainable over the next twenty years as long as planned recycled water, recharge, and other projects are implemented.

Section 10910(f)(3), description and analysis of the amount of groundwater pumped: Actual groundwater withdrawals for the past five years are shown in **Table 6**.

Table 6: Historical Groundwater Withdrawals

Year	2018	2019	2020	2021	2022
Groundwater Withdrawals (MG)	2,570	2,466	2,531	2,622	2,590

VIII. Infrastructure Requirements

The Project owners will be responsible for providing the necessary infrastructure to convey water to the development. This will include water mains and peaking facilities, including a tank (or tanks) and booster pump station, capable of meeting peak hour demand requirements pursuant to Title 22 Section 64554. Preliminary hydraulic modeling results show that the existing Suburban-Rosemont system has adequate pressures and flow to serve the development. Further modeling will be performed as the development plans progress.

IX. Conclusion of Sufficiency

In conclusion California American Water has sufficient supply for future demands, including the West Jackson Highway Project, through 2045. This includes normal years, dry years, and multiple dry years.

Proposed Project Demands, Original (2018) and Revised (2022)

Land Use	Area (acres)		Average Annual Demand (MG)		Average Day Demand (gpm)		Maximum Day Demand (gpm)		Peak Hour Demand (gpm)	
	2018	**2022**	**2018**	**2022**	**2018**	**2022**	**2018**	**2022**	**2018**	**2022**
Very Low Density Residential	20	20	10	10	18	18	37	37	74	74
Low Density Residential	391	444	292	331	556	631	1111	1,261	2,223	2,522
Medium Density Residential	18	18	15	15	29	29	57	57	115	115
High Density Residential	42	35	49	41	93	79	186	157	372	314
Mixed Use	28	50	32	58	61	111	122	222	245	443
Commercial	282	210	199	149	379	282	758	565	1516	1,130
Employment	326	321	231	227	439	433	877	865	1755	1,731
Industrial	75	75	53	53	101	101	201	202	403	404
School	22	13	21	13	41	25	81	50	162	99
Park	30	60	29	59	55	111	110	223	220	446
Open Space (Irrigated)	29	27	29	27	55	51	110	102	220	204
Open Space (Non-irrigated)	367	358	0	0	0	0	0	0	0	0
Open Space / Urban Farm	140	140	0	0	0	0	0	0	0	0
Institutional	23	23	7	7	13	13	25	25	51	51
Arterial / Collector Roads	100	99	6	6	12	12	24	24	48	47
Total	**1,892**	**1,892**	**973**	**996**	**1,851**	**1,896**	**3,701**	**3,790**	**7,403**	**7,580**