ValleyLink
Connecting People, Housing, and Jobs

Appendix C:
Permits and Avoidance, Minimization, and Mitigation Measures

Appendix C: Permits and Avoidance, Minimization, and Mitigation Measures

Table C-1 lists the potential permits and approvals that could be required for the Proposed Project. The Tri-Valley – San Joaquin Valley Regional Rail Authority (Authority) would continue to coordinate with federal, local, regional, and state agencies to ensure that necessary permits and approvals are received.

Table C-2 contains a comprehensive list of avoidance, minimization, and mitigation measures associated with the Proposed Project. This comprehensive list of measures addresses specific impacts and federal requirements described in Chapter 3 of the EA, as well as local- and state-specific requirements and best practices that have been identified through the California Environmental Quality Act (CEQA) analysis conducted for the Proposed Project. The Authority is assumed to be ultimately responsible for all of the avoidance, minimization, and mitigation measures included in Table C-2. Responsible parties include cooperative agencies, contracted parties. etc., who will contribute to the implementation of the avoidance, minimization, and mitigation measures.

Table C-1: Permits, Funding, and Other Approvals Anticipated for the Proposed Project

Agencies	Funding, Approval, or Permit
Federal Agencies	
Federal Transit Administration	National Environmental Policy Act (NEPA) review and approval, funding
U.S. Army Corps of Engineers (USACE)	Permit for discharges into waters of the United States under Section 404 of the Clean Water Act (CWA)
U.S. Fish and Wildlife Service (USFWS)	Consultation under Section 7 of the Endangered Species Act: issuance of a Biological Opinion
U.S. Bureau of Reclamation	Permit for the bridge crossing of the Delta-Mendota Canal
State Agencies	
California State Transportation Authority (CalSTA)	Potential source of funding
California Department of Fish and Wildlife (CDFW)	Streambed alteration agreement for the placement of structures affecting waterways under Section 1602 of the Fish and Game Code: incidental take permits for take of state-listed wildlife and plant species under the California Endangered Species Act Section 2081
California Department of Toxic Substances Control (DTSC)	Review of worker health and safety plan
California Department of Transportation (Caltrans)	Encroachment permit for encroachment on state roadways and highways; potential source of funding
California Department of Water Resources (DWR)	Encroachment permit for construction activities within the State Water Project right-of-way
California High Speed Rail Authority (CAHSRA)	Potential source of funding
California Public Utilities Commission (CPUC)	Approvals required for all improvements
Native American Heritage Commission	Identification of Native American tribe contacts; review of Sacred Lands file

Agencies	Funding, Approval, or Permit
State Historic Preservation Office	Consultation under Section 106 of the National Historic Preservation Act
State Water Resources Control Board (State Water Board)	Coverage under the general construction activity storm water permit under Section 402 National Pollutant Discharge Elimination System (NPDES)
Regional Agencies and Transportation Agencies	
Tri-Valley – San Joaquin Valley Regional Rail Authority (Authority)	Certification of CEQA environmental document; project proponent; project funding
Alameda County Transportation Commission (ACTC)	Concurrence on project plans in the I-580 corridor prior to approval of Caltrans encroachment; potential source of funding
State Water Quality Control Board (State Water Board)	Water quality certification for discharges into waters of the U.S. under the CWA Section 401 water quality certification; waste discharge requirements for discharges into waters of the State under the Porter-Cologne Water Quality Control Act
San Joaquin Council of Governments (SJCOG)	Funding coordination
Metropolitan Transportation Commission (MTC)	Funding coordination
Bay Area Rapid Transit District (BART)	Coordination of station connections with BART
Local Agencies	
Alameda County	Encroachment permit for construction in county right-of-way Use and building permits for improvements outside rail right-of-way
City of Pleasanton	Encroachment permit for construction in city right-of-way Use and building permits for improvements outside rail right-of-way
City of Livermore	Encroachment permit for construction in city right-of-way Use and building permits for improvements outside rail right-of-way
Dublin San Ramon Services District	Approval required for utilities relocation
Zone 7	Approval required for utilities relocation
Cal Water	Approval required for utilities relocation
San Joaquin County	Encroachment permit for construction in county right-of-way Use and building permits for improvements outside rail right-of-way
Other Parties	
Pacific Gas & Electric Company (PG&E)	Approval required for electrical and gas utilities relocation
East Bay Municipal Utility District (EBMUD)	Approval required for water utilities relocation
Sprint	Approval required for communications utilities relocation
AT&T	Approval required for communications utilities relocation
FTR Energy Services	Approval required for gas utilities relocation
Comcast	Approval required for communications utilities relocation
Union Pacific Railroad (UPRR)	Project approval: right of entry permit(s) for work conducted within UPRR right-of-way; design and installation permits/construction maintenance agreements for structures and facilities

Table C-2: Avoidance, Minimization, and Mitigation Measures

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description

3.2 Aesthetics	**AES-1: Install visual barriers between construction work areas and sensitive residential and recreational viewers.**	AES-1: To reduce impacts from the invasion of privacy and the change in visual quality associated with staging areas, construction zones, or operational facilities, the construction contractor under the direction of the Authority will install temporary visual barriers between stationary construction work areas and sensitive residential viewers (e.g., where residences are directly adjacent to construction areas) and recreational viewers (e.g., where parks are directly adjacent to construction areas).
		Because construction would occur in the median or in close proximity to I-580, where residential and recreational viewers do not come into direct visual contact with the construction site, and because and there are no residences or recreational areas that would be affected by staging areas identified for the Tri-Valley area, it will not be necessary to place barriers along the Tri-Valley Alignment or in proximity to the Dublin/Pleasanton Station, Isabel Station, or Southfront Road Station.
		Barriers will be placed to obscure views of stationary work areas (e.g., staging areas or areas of fixed construction) in other locations (not noted above) where construction activity and equipment would be disruptive and likely to lower the existing visual quality, and where residential or recreational viewers are directly adjacent to the construction areas. These efforts will include the following actions and performance standards:
		• The construction contractor under the direction of the Authority will install visual barriers to minimize sensitive viewers' (i.e., residents and recreational areas) views of construction work areas.
		  ○ The visual barriers will be placed to protect residents and recreational areas within 0.25 mile of Proposed Project element construction sites where residents or recreationalists would have unobstructed views of the construction area. The visual barrier may be chain-link fencing with privacy slats, fencing with windscreen material, a wood barrier, or other similar barrier.
		  ○ The visual barrier will be a minimum of 6 feet high to help maintain the privacy of residents and block ground-level views toward stationary construction activities.
		Although the visual barriers would introduce a temporary visual intrusion, they would greatly reduce the visual effects associated with visible construction activities, and screening construction activities and protecting privacy is deemed desirable. The visual barriers are an effective means for reducing the visibility of active construction work areas, thereby minimizing the impact on existing localized visual quality.
		Responsible Party: Construction contractor under the direction of the Authority
		Timing: Pre-construction and during construction
		Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the visual screening plan prior to construction.

3.2 Aesthetics	**AES-2: Limit construction near residences to daylight hours.**	AES-2: The construction contractor under the direction of the Authority will ensure that activities scheduled to occur between 7:00 a.m. and 6:00 p.m. near residential areas within 0.25 mile of construction sites, other than construction in I-580, will not take place before or past daylight hours, which vary according to season. This will reduce the amount of construction experienced by viewer groups because most construction activities would occur during business hours, when most viewer groups are likely to be at work. This will also eliminate the need to operate high-wattage lighting sources near residences. Construction along I-580 will be required to control nighttime construction lighting, in accordance with AMM AES-3. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the construction plans prior to construction.
3.2 Aesthetics	**AES-3: Minimize fugitive light from portable sources used for construction.**	AES-3: The construction contractor will ensure that any nighttime lighting used for nighttime construction will be evaluated for its ability to safely light the construction work area while reducing light spill and glare. At a minimum, the construction contractor will minimize Proposed Project related light and glare to the maximum extent feasible, given safety considerations, for all viewer groups. Color-corrected halide lights or balloon lights, if suitable for construction of the Proposed Project, will be used. Portable lights will be operated at the lowest allowable wattage and height; they will be raised to a height no greater than 20 feet, except for pedestrian bridge and flyover work. Lights will be screened and directed downward toward work activities and away from the night sky and nearby residential areas to the maximum extent possible. The number of nighttime lights used will be minimized to the greatest extent possible. Directional lighting and shields will be used when night construction is necessary to prevent light intrusion into adjacent properties. This measure will also help to ensure that glare is minimized for nighttime drivers along I-580 and I-205. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the construction plans prior to construction.
3.2 Aesthetics	**AES-4: Use selective grading and planting techniques in the Altamont section.**	AES-4: Prior to construction mobilization, the construction contractor under the direction of the Authority will develop a grading and revegetation plan that identifies site-specific measures to remediate exposed soil and terrain issues, create a smooth transition between disturbed and natural habitats, and mitigate visual effects in the Altamont section. The term "construction mobilization" refers to the moment approval is given for materials and supplies, construction equipment, construction facilities and staging, and personnel to be physically on-site, and for site modifications to begin. Existing information—such as topographical maps,

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		vegetative surveys or records, and photographs—that show pre-existing site-specific (or reference-site) conditions prior to construction will be evaluated and used as tools for restoring disturbed sites. In general, however, the majority of sites will be evaluated for restoration to native habitat because of the amount of terrain alteration as well as vegetation and habitat loss that could result from construction of the proposed alignment and stations in the Altamont section. At a minimum, the grading and revegetation plans will meet the following performance standards: • The existing terrain in the Altamont section will be used as an asset to create curvilinear roadways that locate access roads parallel to slopes. Access roads running perpendicular to slopes will be avoided. This will reduce the visibility of access roads and make them more harmonious with the natural terrain. This technique will not be used where doing so would constitute a negative impact on sensitive habitats or sensitive species that outweighs the reduction of visual effects. • As applicable, natural terrain will be used for the construction of surface parking areas as well, except where slopes exceed Americans with Disabilities Act access standards. This will create subtle, gently undulating surface parking lots with visual variety. • All terrain will be designed and graded to be rounded, avoiding sharp angles and steep or abrupt grade breaks or slope cuts. All exposed slopes will be seeded for erosion control and aesthetics. The Authority will require construction contractors to incorporate native grass to standard seed mixes, which may be nonnative; however, under no circumstances will any invasive grass plant species be incorporated into the seed mix. Slope shall conform to Caltrans Highway Design Manual standards. If slope is greater than 2:1, it needs to be approved by the Caltrans District Landscape Architect. • Special attention will be paid to transitions between undisturbed and disturbed terrain to ensure that the transition appears as natural as possible and to blend the lines between the two for a natural, organic appearance. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the construction plans prior to construction.
3.2 Aesthetics	**AES-5: Landscape parking facilities at stations.**	AES-5: This mitigation measure would apply to parking lots at all stations. The construction contractor under the direction of the Authority will ensure that surface parking lots will be planted with trees and groundcover to improve aesthetics and provide shade and reduce heat island effects. If space allows, street trees will also be planted in association with surface parking lots. Shrubs may also be used if space allows. All landscaping will be designed to ensure passenger safety (e.g., so that security cameras and safety lighting are not obscured). No invasive plant species will be used under any circumstances. In addition, plant palettes will use drought-tolerant plant species, with a strong emphasis on California native plant species that are appropriate for a given site. An irrigation and maintenance program will be implemented during the plant establishment period and continued, as needed, to ensure plant survival. The landscaping plan will maximize the use of planting zones that are water efficient. Landscaped areas will be irrigated with a "smart" watering system that evaluates site conditions and plant materials and compares them with weather conditions to avoid overwatering. To avoid undue water flows, the irrigation system will be managed so that any broken spray heads, pipes, or other components are fixed within 1 to 2 days, or the zone or system will be shut down until it can be repaired. Responsible Party: Construction contractor for landscaping done as part of construction under the direction of the Authority. Operator for landscaping during operations under the direction of the Authority. Timing: Pre-construction, during construction, post construction, during operation Actions: Authority will include as a contract requirement. Contractor shall include landscaping plans in construction plans for Authority review prior to construction. Contractor shall include irrigation and maintenance plan. Operator shall follow same procedures as construction contractor.
3.2 Aesthetics	**AES-6: Apply aesthetic design treatments to pedestrian bridges, viaduct structures, and retaining walls with high visibility along I-580 and from roadways in the Altamont section.**	AES-6: The construction contractor under the Authority will implement an aesthetic design treatment for new pedestrian bridges over tracks, and bridges with high visibility. Colored concrete will be considered to complement or match existing aesthetics with light buff/tan or gray color pallets to complement the natural seasonal colors. The design motif applied to structures will reflect a combination of naturally colored surfaces and surfaces that are textured to appear as natural materials (e.g., rock or cobble) or that incorporate a design theme (e.g., wildlife and plants of local, native oak woodlands; traditional architectural elements such as inset panels; or other design reflecting local heritage or environment) using form liners. This will provide visual interest, soften verticality, reduce glare, and be more visually pleasing to viewers than plain surfaces for exterior-facing barriers and girders on bridges that will be visible to traffic or recreational viewers passing under the bridge, decking, abutments and side supports, and columns. Nearby examples of such treatments include the I-5/French Camp interchange in Stockton and the SR 99/Sheldon Road overcrossing in Elk Grove. Nonlocal examples include Maryland 216 in Prince Georges County, Maryland; US 54/East Kellogg Drive and South Oliver Street interchange in Wichita, Kansas; and Roberts Road Bridge in Los Gatos, California. Roughened surfaces will soften the verticality of the surfaces by providing visual interest and reducing the amount of smooth surface that can reflect light. Additionally, the texture application will deter graffiti and reduce maintenance. The aesthetics for the Proposed Project elements will be implemented to complement and enhance the aesthetic quality for the highway viewers and the local community. These project elements shall include appropriate architectural style, material, texture, and color on the bridges, fences, barriers, columns, slope paving, abutment walls, retaining walls, and lighting. Conceptual and design plans for project components that would be constructed within Caltrans right-of-way shall be submitted to the Caltrans District Landscape Architect for review and to obtain approval during the design phase of the project and prior to beginning construction. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction

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		Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the construction plans prior to construction.
3.2 Aesthetics	**AES-7: Underground new electric transmission lines in visually sensitive areas.**	AES-7: Where feasible, the Authority will underground new electric transmission line utilities in visually sensitive areas to minimize their visual intrusion upon the landscape. This mitigation measure applies to new electric transmission lines east of Greenville Road that may be associated with the MOW facility. Undergrounding will be a priority. However, undergrounding will not be used where implementation constitutes an additional adverse impact on sensitive habitats or sensitive species that outweighs the reduction in visual effects. Therefore, underground electric transmission lines may daylight to avoid such areas. In such cases, the Project engineer will identify site-specific location adjustments to minimize tree removal and strategically locate new transmission lines along designated scenic routes in a manner that reduces the visual impacts on scenic resources and views along those routes. Measures shall be taken to maximize protection of designated Classified Landscaped Freeway and Scenic Highway. Implementation of this measure will minimize the effects on existing visual quality and character that result from new electric transmission lines in visually sensitive locations, and from the associated removal and pruning of mature vegetation along proposed new transmission lines. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the construction plans prior to construction.
3.2 Aesthetics	**AES-8: Apply aesthetic surface treatments to structures in visually sensitive areas.**	AES-8: This measure applies to new fencing, pedestrian bridge safety barriers, safety railings, retaining walls, and grade separations in the Altamont section. This measure also applies to infrastructure at the Tracy OMF/OSS; and to all signal houses associated with the proposed alignments that would be visible to residents and from recreational areas and local roadways. The construction contractor will ensure that these features will be colored or painted a shade that is two to three shades darker than the general surrounding area. Colors will be chosen from U.S. Department of the Interior, Bureau of Land Management, Standard Environmental Colors Chart CC-001, June 2008, which provides suitable colors for a variety of landscape types. Because color selection will vary by location, the facility designer will employ the use of color panels, which will be evaluated from key observation points during common lighting conditions (e.g., front lighting versus backlighting) to aid in the selection of an appropriate color. Color selections will be made from the coloring of the most prevalent season. Panels will be a minimum of 3 feet by 2 feet. They will be evaluated from various distances, within 1,000 feet, to ensure the best possible color. Paints used for the color panels and structures will be color-matched directly from the physical color chart rather than digital or color-reproduced versions of the color chart. Paints will be a dull, flat, or satin finish to reduce the potential for glare; the use of glossy paints for surfaces will be avoided. Appropriate paint types will be selected that ensure durability for the finished structures. The appropriate operating agency or organization will maintain the paint color over time. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the construction plans prior to construction.
3.2 Aesthetics	**AES-9: Replace disturbed vegetation along landscaped freeways.**	AES-9: The Authority will work with the appropriate California Department of Transportation (Caltrans) district landscape architect to determine whether disturbed portions of landscaped freeways (as defined in Section 3.2 of the EA) require replanting, and to what extent. Trees and shrubs will be replaced at a ratio based on regulatory agency determination. Container sizes and species will be determined in coordination with the appropriate Caltrans District Landscape Architect. Disturbed groundcover will be replanted to match existing groundcover unless the Caltrans District Landscape Architect specifies otherwise. Irrigation of replacement plants will also be coordinated with the appropriate Caltrans District Landscape Architect because watering may occur with existing irrigation systems or irrigation systems may need to be installed. Any irrigation lines that are damaged in the state right-of-way because of Proposed Project construction will be replaced in accordance with Caltrans standards and in coordination with the appropriate Caltrans District Landscape Architect. No invasive plant species will be planted under any circumstances. The project shall preserve the officially designated Classified Landscaped Freeway within the project limits. The highway planting with irrigation and plant establishment period shall be implemented to enhance the corridor aesthetic quality for the highway viewers and the local community. Conceptual and design plans for project components that would be constructed within Caltrans right-of-way shall be submitted to the District Landscape Architect for review and to obtain approval during the design phase of the project and prior to beginning construction. In accordance with Caltrans policy in the Project Development Procedure Manual, Chapter 29, replacement planting work will be funded by the roadway contract, with a 1-year plant establishment period if the estimated cost is under $300,000. Replacement planting work with a cost of over $300,000 will be completed under a separate contract with a 3-year minimum plant establishment period. This policy applies to all highway planting projects within the state operational right-of-way regardless of the funding source. The estimated cost of highway planting is the total sum of the bid items for planting and irrigation work and does not include the cost of traveler and worker safety features, or stormwater pollution prevention plan items. Where feasible, replacement trees and planting shall be installed within the project limits adhering to safety standards. If the project impacts any native tree species, within the state right-of-way, Caltrans biologist shall determine the minimum tree replacement ratio. Responsible Party: Construction contractor under the direction of the Authority

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		Timing: Pre-construction, during construction, post construction Actions: Authority will include as contract requirement. Contractor shall include landscaping plans in construction plans for Authority review prior to construction. Contractor shall include irrigation and maintenance plan to Caltrans satisfaction. Caltrans approval of landscaping, irrigation, and maintenance plan.
3.2 Aesthetics	**AES-10: Apply minimum lighting standards.**	AES-10: This measure applies to all permanent sources of lighting installed as part of the Proposed Project. The construction contractor under the direction of the Authority will ensure that artificial outdoor lighting will be limited to safety and security requirements, will be designed using the Illuminating Engineering Society's design guidelines, and will be in compliance with International Dark-Sky-Association–approved fixtures. Lighting will be designed to have minimum impact on the surrounding environment, using downcast cut-off type fixtures that direct light only toward objects requiring illumination. Shielding will be used where needed to ensure that light pollution is minimized. Therefore, lights will be installed at the lowest allowable height to cast low-angle illumination that minimizes incidental light spill onto adjacent properties and open spaces, or backscatter into the nighttime sky. The lowest allowable illumination level will be used for all lighted areas, and the number of nighttime lights needed to light an area will be minimized to the highest degree possible. Light fixtures will have nonglare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency, with daylight sensors or timed with an on/off program. Parking garage lighting will be designed to meet safety requirements but will use locational motion-activated sensing, so there is regular-intensity lighting when a person is near a row of vehicles, then lower-intensity lighting after a period of inactivity when no one is near the vehicles. Lights will provide good color rendering, with natural light qualities and the minimum intensity feasible for security, safety, and personnel access needs. Lighting, including light color rendering and fixture types, will be designed to be aesthetically pleasing. All light-emitting diode (LED) lighting will avoid the use of blue-rich white light (BRWL) lamps or a correlated color temperature that is higher than 3,000 degrees Kelvin. Wherever possible and pragmatic, the Authority will use fixtures and lighting control systems that conform to the International Dark-Sky Associations' Fixture Seal of Approval program. In addition, LED lights will use shielding to ensure that nuisance glare and light spill do not affect sensitive residential viewers. Luminaires will be chosen for the ability to provide horizontal and vertical beam control for better control in directing what is illuminated. Luminaires will also incorporate photometric reflector systems that are designed to reduce light pollution. Lights in parking lots and along pathways and station platforms will employ shielding to minimize offsite light spill, ambient light glow, and glare. They will also be screened and directed away from residences and adjacent uses to the highest degree possible. The amount of nighttime lights used will be minimized to the highest degree possible to ensure that spaces are not unnecessarily over-lit, while still maintaining minimum adequate lighting to provide the necessary visibility for security. For example, the amount of light can be reduced by limiting ornamental light posts to high-use areas and using bollard lighting on travelway portions of the pathways. To ensure safety, interior parking structure lighting would be allowed, but the unnecessary overuse of interior nighttime lighting will be minimized so that the structure is not over-lit when not actively in use. Technologies to reduce light pollution evolve over time. Current design measures may help control light pollution but may not be the most effective means of control once the Proposed Project is de-signed. Therefore, all design measures used to reduce light pollution will employ the technologies available at the time of Proposed Project design to allow for the highest potential reduction in light pollution. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the construction plans prior to construction.
3.3 Agricultural Lands	**AG-1: Restore Important Farmlands used for temporary construction activities.**	AG-1: Prior to any ground-disturbing activities at the site of a temporary disturbance area on Important Farmland, the contractor under the direction of the Authority will engage a qualified agricultural restoration specialist or soil scientist to prepare a site restoration plan. The purpose of the plan will be to return each disturbed site to similar slope and soil conditions after construction is complete. This restoration plan will address site-specific actions (e.g., topsoil salvage and replacement, soil decompaction), the sequence of implementation, and the parties responsible for implementation and successful achievement of restoration. Before beginning construction on Important Farmland, the contractor will (1) submit the qualifications of the restoration specialist or soil scientist to the Authority for review and approval and (2) after Authority approval, coordinate with the specialist to develop a draft restoration plan and will submit the restoration plan to the Authority for review and obtain Authority (and, if applicable, the landowner) approval. The restoration plan will also include time-stamped photo documentation of the pre-construction conditions of all temporary disturbance areas. The Authority will ensure that the contractor will return all construction access, material laydown, and staging areas on Important Farmlands to a condition equal to the pre-construction staging condition. This requirement is included in the design-build construction contract requirements. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction, during construction, post construction Actions: Authority will include as contract requirement. Contractor shall include restoration plans for Authority review prior to construction. Contractor shall document farmland restoration after construction. Authority will review and approve restoration plans prior to construction. Authority will review and approve restoration documentation after construction
3.3 Agricultural Lands	**AG-2: Conserve Important Farmlands (Prime Farmland and Unique Farmland).**	AG-2: The Authority shall implement one of the following methods to minimize the loss of Prime Farmland at a 1:1 ratio (i.e., 1 acre on which easements are acquired to 1 acre of Prime Farmland removed from agricultural use) that is permanently converted to nonagricultural use by the Proposed Project and 0.5:1 for Important Farmland parcels that are divided into severed or remnant parcels that are not viable for continued agricultural production: • The Authority will enter into an agreement with the Department of Conservation and its California Farmland Conservancy Program to implement agricultural land mitigation in Alameda County. The California Farmland Conservancy Program is a statewide grant program that supports local efforts to establish agricultural conservation easements and land improvement projects for the purpose of preserving important agricultural

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		land resources and enhancing sustainable agricultural uses. The Authority will fund the California Farmland Conservancy Program's work to identify suitable agricultural land for mitigation of impacts and fund the purchase of agricultural conservation easements from willing sellers in Alameda County. • Pay in-lieu fees to an established, agreed-upon (by County and Authority) mitigation program with a presence in Alameda County (e.g., Tri-Valley Conservancy, California Rangeland Trust) to fully fund the acquisition and maintenance of agricultural land or easements in perpetuity. The performance standards for this measure are to preserve Important Farmland in an amount commensurate with the quantity and quality of the converted farmlands, within Alameda County and San Joaquin County where the impacts occur. The Authority will document implementation of Mitigation Measure AG-2 through the agreement and a report to the Authority Board showing completion of conservation easement acquisition. Responsible Party: Authority Timing: Pre-construction, during construction, post construction Actions: Authority will develop agreement and fund the agreement by no later than the end of construction. Authority will report completion of the agreement to the Authority Board prior to the completion of construction.
3.4 Air Quality	**AQ-1: Implement advanced emissions controls for off-road equipment during construction.**	AQ-1: The Authority shall require the following construction equipment exhaust emissions requirements to be included in construction contract specifications: • All off-road equipment greater than 25 horsepower and operating for more than 20 total hours over the entire duration of construction activities shall have engines that meet or exceed either EPA or CARB Tier 4 Final off-road emission standards, if commercially available. Lesser-tier engines shall be allowed on a case-by-case basis when the contractor has documented that no engine equipment or emissions equivalent retrofit equipment is available for a particular equipment type that must be used to complete construction. Documentation shall consist of signed written statements from at least two construction equipment rental firms or equivalent. • A copy of each unit's certified tier specification and any required CARB or air pollution control district operating permit shall be collected by the contractor at the time of mobilization of each piece of equipment and included in monthly reporting to the Authority. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include an emissions control plan in construction plans for Authority review prior to construction. Contractor shall document field compliance with the equipment requirements and provide to Authority periodically during construction. Authority will review and approve emissions control prior to construction. Authority will review compliance with equipment requirements during construction.
3.4 Air Quality	**AQ-2: Implement off-road equipment engine maintenance and idling restrictions during construction.**	AQ-2: The Authority shall require the following construction equipment exhaust emissions requirements to be included in construction contract specifications: • The construction contractor shall minimize off-road equipment idling times either by shutting equipment off when not in use or reducing the maximum idling time to 2 minutes. Clear signage will be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. • All equipment shall be checked by a certified visible emissions evaluator. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include an emissions control plan in construction plans for Authority review prior to construction. Contractor shall document field compliance with the equipment requirements and provide to Authority periodically during construction. Authority will review and approve emissions control prior to construction. Authority review of compliance with equipment requirements during construction.
3.4 Air Quality	**AQ-3: Implement fugitive dust controls during construction.**	AQ-3: The Authority shall require the following fugitive dust control requirements to be included in construction contract specifications. Under the direction of the Authority, the construction contractor shall implement basic and enhanced control measures at all construction and staging areas to reduce construction-related fugitive dust. The following measures are based on BAAQMD's CEQA guidelines and are in conformance with San Joaquin Valley Air Pollution Control District fugitive dust control requirements (Regulation VIII). <u>Basic Fugitive Dust Control Measures</u> • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day. • All haul trucks transporting soil, sand, or other loose material off-site will be covered. • All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.

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		• A publicly visible sign will be posted with the telephone number and the name of the person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the district will also be visible to ensure compliance. Enhanced Fugitive Dust Control Measures for Land Disturbance • All exposed surfaces will be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by laboratory samples or moisture probe. • All excavation, grading, and/or demolition activities will be suspended when average wind speeds exceed 20 mph. • Wind breaks (e.g., trees, fences) will be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity. • Vegetative ground cover (e.g., fast-germinating native grass seed) will be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. • The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time will be limited. Activities will be phased to reduce the amount of disturbed surfaces at any one time. Measures for Entrained Road Dust • All trucks and equipment, including their tires, will be washed off prior to leaving the site. • Site accesses to 100 feet from the paved road will be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel. • Sandbags or other erosion control measures will be installed to prevent silt runoff to public roadways from sites with a slope greater than 1 percent. • All vehicle speeds on unpaved roads will be limited to 15 mph. • All unpaved roads will be watered twice daily. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as a contract requirement. Contractor shall include an emissions control plan in construction plans for Authority review prior to construction. Contractor shall document field compliance with the equipment requirements and provide to Authority periodically during construction. Authority will review and approve emissions control prior to construction. Authority review of compliance with equipment requirements during construction.
3.4 Air Quality	**AQ-4: Offset project construction emissions in the SFBAAB.**	AQ-4: Prior to construction, the Authority or its contractor under the direction of the Authority, will enter into a memorandum of understanding (MOU) with the Bay Area Clean Air Foundation (Foundation), a public non-profit and supporting organization for the BAAQMD, to reduce NO_X to below the appropriate CEQA threshold levels. The mitigation offset fee amount will be determined at the time of mitigation to fund one or more emissions reduction projects within the SFBAAB. The Foundation will require an additional administrative fee of no less than 5 percent. The mitigation offset fee will be determined by the Authority or its contractor and the Foundation based on the type of projects available at the time of mitigation. When the CEQA threshold is exceeded, these funds may be spent to reduce either VOC or NO_X emissions (ozone precursors). This fee is intended to fund emissions reduction projects to achieve reductions, with the estimated tonnage of emissions offsets required starting in the first year of construction. Documentation of payment will be provided to the Authority or its designated representative. The MOU will include details regarding the annual calculation of required offsets the Authority must achieve, funds to be paid, administrative fee, and the timing of the emissions reduction projects. Acceptance of this fee by the Foundation will serve as an acknowledgment and commitment by the Foundation to (1) implement an emissions reduction project(s) within a timeframe to be determined based on the type of project(s) selected after receipt of the mitigation fee designed to achieve the emission reduction objectives and (2) provide documentation to the Authority or its contractor describing the project(s) funded by the mitigation fee, including the amount of emissions reduced (tons per year) in the SFBAAB from the emissions reduction project(s). To qualify under this mitigation measure, the specific emissions reduction project(s) must result in emission reductions in the SFBAAB that are real, surplus, quantifiable, enforceable, and will not otherwise be achieved through compliance with existing regulatory requirements or any other legal requirement. Funding will need to be received prior to contracting with participants and should allow enough time to receive and process applications to fund and implement off-site reduction projects prior to commencement of project activities being reduced. This will roughly equate to 1 year prior to the required mitigation; additional lead time may be necessary depending on the level of off-site emission reductions required for a specific year. The implementation of this mitigation measure would not be expected to affect air quality in the BAAQMD because purchasing emissions offsets would not result in any physical change to the environment, and therefore would not result in other secondary environmental impacts. In addition to NO_X, the implementation of emission-reduction projects could result in reductions of other criteria air pollutants and/or GHGs. However, this would be a secondary effect of this mitigation measure and is not a required outcome to mitigate any impacts of the Proposed Project. Responsible Party: Authority or its contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will enter into a MOU with the Bay Area Clean Air Foundation. Authority to report implementation of the MOU to Authority Board prior to construction.
3.5 Biological Resources	**BIO-1: Implement worker environmental awareness training.**	BIO-1: Before any equipment staging, grading, or vegetation removal in areas supporting or potentially supporting sensitive biological resources (e.g., aquatic, riparian, and wetlands habitat; habitat for special-status wildlife species; active bird nests; or active bat roosts), the Authority will prepare and implement a worker environmental awareness training program. The training program will be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid effects on sensitive biological resources, and the penalties for not complying with applicable state and federal laws and permit requirements. The training program will be delivered by a biologist and will include information on the life history and habitat requirements of special-status species potentially occurring in the Proposed Project area, the importance of

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		protecting habitat, and the terms and conditions of the biological opinion and other applicable permits. The training program will also cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during construction. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall include in an environmental awareness training plan as part of construction plans for Authority review prior to construction. Authority will review and approve the environmental awareness plan prior to construction.
3.5 Biological Resources	**BIO-2: Protect sensitive natural communities, including riparian habitat, during construction.**	BIO-2: The Authority will ensure that before site preparation a resource specialist (i.e., biologist, botanist, ecologist, or soil scientist) will clearly identify, using high-visibility construction fencing or markers (e.g., lathe or pin flags), any sensitive natural communities to be preserved, including riparian habitat, abutting the Proposed Project Footprint. Construction will not encroach on sensitive natural communities that the resource specialist identifies to be preserved. The resource specialist will use the verified wetland delineation, soils data, and land cover data to confirm the location of sensitive natural community boundaries, based on existing conditions at the time of the avoidance marking. Exclusion fencing or markers will be installed before construction activities are initiated, and the fencing will be maintained in the section throughout the construction period. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable. No construction activity, traffic, equipment, or materials will be permitted in fenced sensitive natural community areas to be preserved. Exclusion fencing and markers will be removed following completion of construction activities. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-3: Limit vegetation removal and restoration.**	BIO-3: Vegetation removal will be limited to the designated work areas needed for access and workspace. Where possible, vegetation removal in temporary work areas will be cut above soil level to promote regrowth of established plants following construction. The Authority will restore temporarily disturbed areas to the pre-construction contours and functions to the maximum extent practicable. Exposed slopes and bare ground will be reseeded with native local grasses and shrubs to stabilize and prevent erosion. Where disturbance includes the removal of trees and woody shrubs, coordination with the appropriate permitting agency will be warranted, and planting may be required. A native hydroseed mix will be identified in the plans and specifications. Seeding of areas that have been disturbed by the project will be conducted by the Authority or its contractor under the direction of the Authority prior to the beginning of each wet season (November 1). Seed will be applied in late fall to improve germination. If more than 30 days will elapse before the application of the seed mix, a temporary soil stabilizer will be applied to disturbed soils except in wetlands. Establishment of vegetation cover in disturbed areas will be monitored at the end of the first growing season. The seed mix will be reapplied in the fall if adequate cover (total vegetation cover at least 30 percent) is not achieved by the end of the first growing season. Reseeded areas will be covered with a nontoxic stabilizing (i.e., tackified) mulch or seed-free hay material. Responsible Party: Construction contractor under the direction of the Authority Timing: During construction Actions: Authority will include as contract requirement. Authority will review and approve the construction plan prior to construction.
3.5 Biological Resources	**BIO-4: Prevent introduction or spread of invasive plant species.**	BIO-4: To reduce the spread of invasive nonnative plant species and minimize the potential decrease of palatable vegetation for wildlife species, the Authority will comply with EO 13112, Invasive Species (1999), which includes the following actions to avoid and minimize the spread or introduction of invasive plant species. • Construction equipment and vehicles will be cleaned in a designated wash area prior to entering and exiting the construction site. • Construction supervisors and managers will be educated about invasive plant identification and the importance of controlling and preventing the spread of invasive plant infestations. • Small, isolated infestations will be treated with eradication. • Surface disturbances will be minimized to complete the work. • Native, noninvasive species, or nonpersistent hybrids will be used in erosion control plantings to stabilize site conditions and prevent invasive plant species from colonizing. • Weed-free imported erosion control materials (or rice straw) will be used in upland areas. • One year after construction, the Authority will conduct a monitoring visit to each active or previously active (within 1 year) improvement footprint to ensure that no new occurrences of invasive plant species not previously present have become established. Any newly established invasive species not previously present will be eradicated. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction, during construction, post construction Actions: Authority will include as contract requirement. Contractor shall include in an invasive species control plan in the construction plans for Authority review prior to construction. Contractor shall complete post-construction monitoring and conduct remedial action if needed and submit monitoring report to Authority. Authority will review and approve the invasive species control plan prior to construction. Authority will review and approve the post construction monitoring report.

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3.5 Biological Resources	**BIO-5: Implement avoidance of nighttime light disturbance.**	BIO-5: Prior to construction requiring nighttime lighting, a lighting plan will be prepared by the construction contractor under the direction of the Authority verifying how the nighttime construction lighting will be shielded and directed downward in such a manner to minimize the light that falls outside the construction site boundaries. The lighting plan will be submitted to FTA and the Authority for review and approval prior to any work requiring nighttime lighting. The lighting plan will describe the type of lighting that will be used, maximum level of lumens to be emitted, and a schematic showing where lighting equipment will be stationed and which cardinal direction(s) the lighting equipment will face. Any nighttime lighting used for nighttime construction will be evaluated for its ability to safely light the construction work area while reducing light spill and glare. At a minimum, the construction contractor will minimize Proposed Project related light and glare, given safety considerations, for all viewer groups. Color-corrected halide lights or balloon lights, if suitable for construction of the Proposed Project, will be used. Portable lights will be operated at the lowest allowable wattage and height; they will be raised to a height no greater than 20 feet, except for pedestrian bridge and flyover work. Lights will be screened and directed downward toward work activities and away from the night sky and sensitive biological areas (e.g., wetlands, ponds) to the maximum extent possible. The number of nighttime lights used will be minimized to the greatest extent possible. Directional lighting and shields will be used when night construction is necessary to prevent light intrusion into adjacent areas. Permanent lighting will be equipped with shields to focus light downward onto the appropriate subject area and to avoid having light escape beyond the Proposed Project footprint. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction, during construction, post construction Actions: Authority will include as contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve the lighting plan.
3.5 Biological Resources	**BIO-6: Implement water quality/erosion control best management practices (BMPs).**	BIO-6: The Authority will prepare a stormwater pollution prevention plan that identifies appropriate erosion and sediment control BMPs to minimize any wind- or water-related erosion, in compliance with the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities. These measures will include, at a minimum, the following: • Significant earth moving-activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1-inch of rain or more). • Stockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days. • No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material will be allowed to enter or be placed where it may be washed by rainfall or runoff into waters of the U.S. or drainages. No discharge of excessively turbid water will be allowed, and all equipment will be well-maintained and free of leaks. • No discharge of pollutants from vehicle and equipment cleaning will be allowed into any storm drains or watercourses. • Vehicle and equipment fueling, and maintenance operations will be kept at least 100 feet away from watercourses and sensitive habitats (e.g., wetlands), except at established commercial gas stations or established vehicle maintenance facilities. • Concrete waste will be collected in washouts, and water from curing operations will be collected and disposed of. Neither will be allowed into watercourses. • Spill containment kits will be maintained on-site during construction operations and/or staging or fueling of equipment. • Dust control measures will include use of water trucks and dust palliatives to control dust in excavation-and-fill areas; covering temporary access road entrances and exits with rock (rocking); and covering temporary stockpiles when weather conditions require. • Graded areas will be protected from erosion using a combination of silt fences and fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (e.g., jute or coir) will be used as appropriate on sloped areas. Erosion control materials that use plastic or synthetic monofilament netting will not be used in the Proposed Project Footprint. This will include products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials will include natural fibers, such as jute, coconut, twine, or other similar fibers. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority shall include as contract requirement. Contractor shall prepare a SWPPP that shall be submitted to the appropriate Regional Water Quality Control Board for review and approval.
3.5 Biological Resources	**BIO-7: Avoid entrapment of wildlife species.**	BIO-7: To prevent inadvertent entrapment of wildlife during construction, excavated holes or trenches more than 1 foot deep with walls steeper than 30 degrees will be covered by the contractor with plywood or similar materials at the close of each working day. Alternatively, an additional 4-foot-high vertical barrier will be used to further prevent the inadvertent entrapment of wildlife. If it is not feasible to cover an excavation or provide an additional 4-foot-high vertical barrier, independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. Culverts or similar enclosed structures with a diameter of 4 inches or greater that are stored at a construction site will be inspected for federally listed wildlife species before the pipe is subsequently used or moved. Responsible Party: Construction contractor under the direction of the Authority Timing: During construction Actions: Authority shall include as contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve construction plans prior to construction.
3.5 Biological Resources	**BIO-8: Construction requirements for work areas.**	BIO-8: The Authority will impose the following site restrictions to avoid or minimize effects on federally listed species and their habitats: • Routes and boundaries of roadwork will be clearly marked before the start of construction or grading. • All food and food-related trash items will be enclosed in sealed trash containers and will be properly disposed of off-site. • No pets belonging to construction personnel will be allowed anywhere in the work area during construction. • No firearms will be allowed in the work area except for those carried by authorized security personnel or local, state, or federal law enforcement officials.

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		• A spill response plan will be prepared. Hazardous materials (e.g., fuels, oils, or solvents) will be stored in sealable containers in a designated location that is at least 50 feet from any hydrologic features. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority shall include as contract requirement. Contractor shall include in construction plans for Authority review prior to construction. Authority will review and approve construction plans prior to construction.
3.5 Biological Resources	**BIO-9: Protect vernal pool-endemic species surveys.**	BIO-9: **Identification and Avoidance of Vernal Pool Habitat:** During the development of final project designs, a biologist will survey the Proposed Project Footprint and a 250-foot buffer (where access is granted) to map suitable habitat for vernal pool-endemic species, including vernal pool fairy shrimp, and assess if the habitat is occupied. One wet season (October 15 through May 31) survey and one dry season (June 1 through October 14) survey will be completed within 3 years of each other in areas with the potential to have vernal pools or other suitable habitat for hosting vernal pool fairy shrimp species. Where possible, the Authority will refine the design of the Proposed Project to avoid direct impacts to vernal pool features and the area within 250 feet of them. Responsible Party: Construction contractor under the direction of the Authority Timing: During final design Actions: Authority shall include as contract requirement. Contractor shall develop a vernal pool survey plan for Authority review and approval, conduct surveys and report results in Authority prior to construction. Authority will review and approve the survey plan and survey report prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-10: Protect vernal pool-endemic species during construction.**	BIO-10: **Seasonal Restrictions and Exclusion:** Where vernal pools or their 250-feet buffers cannot be avoided, the following measures will be implemented by the contractor under the direction of the Authority to minimize disturbance to the features and surrounding area: • All ground-disturbing activities in or within 250 feet of vernal pool habitat will either be scheduled to take place entirely during the dry season (April 15 to October 14, depending on seasonal inundation conditions and guidance from the biologist) or will be scheduled to begin in the dry season with work during the wet season avoiding impacts to vernal pool habitat (i.e., removal of vernal pool features in the Proposed Project Footprint must take place during the dry season). Outside of the dry season, a USFWS-approved biological monitor will be present when work is occurring within 250 feet of a vernal pool feature to ensure protection of the feature. • To ensure vernal pool habitat outside the Proposed Project Footprint is protected, the Authority or its contractor shall install exclusion fencing and erosion control measures along the construction limits in areas where vernal pool features will be avoided prior to any ground disturbance. A biologist will supervise installation of the exclusion fencing. If vernal pools and their associated buffer cannot be fully avoided, a biologist may recommend a reduced buffer in consideration of site-specific conditions or the nature of nearby activities. The biologist will coordinate with the Authority and FTA on the appropriate buffer reduction and may contact USFWS for input. • When dry-season temporary access is needed across vernal pool features, wetland mats or similar temporary structures will be used year-round to minimize ground and vegetation disturbance. This restriction will not apply to existing paved or unpaved access routes, including railroad grades. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority shall include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-11: Compensate for loss of vernal pool habitat.**	BIO-11: The Authority will compensate for the loss of occupied vernal pool habitat in the form of conservation credits purchased at an appropriate USFWS-approved conservation bank in an amount consistent with either the EACCS or SJMSCP within 18 months of issuance of the Biological Opinion. Compensatory mitigation credits will be purchased at an 11:1 ratio (mitigation area to effect area) in accordance with the EACCS and SJMSCP. The conservation bank, specific amount, and type of credits will be coordinated with USFWS and confirmed following the final design plans. Responsible Party: Authority shall implement compensatory mitigation for vernal pool species, as necessary. Timing: Pre-construction and during construction Actions: Authority will prepare a compensatory mitigation plan prior to construction and will implement all required compensatory activities prior to the end of construction. Authority will report completion of the compensatory mitigation to the Authority Board at the end of construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.

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3.5 Biological Resources	**BIO-12: Protect host plants for monarch butterfly.**	BIO-12: In order to reduce effects to Monarch butterfly, the following measures would be implemented by the Authority or its contractor under the direction of the Authority: **Surveys and Host Plant Avoidance During Construction:** If vegetation clearing is proposed to occur between March 1 and September 30, a biologist will conduct pre-construction surveys for milkweed in the Proposed Project Footprint and within 20 feet of the Proposed Project Footprint within 14 days before work is initiated in each area with multiple surveys anticipated based on the construction phasing schedule. Any host plants within the project footprint would be inspected for eggs or larvae, and it they are present, they would be relocated by a biologist to suitable host plants outside of the project footprint. The biologist will flag any milkweed outside of the Proposed Project Footprint but within 20 feet of the project footprint for avoidance. **Milkweed Seeding:** Native milkweed seeds will be included in the native seed mix as detailed in CM-3. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction Actions: Authority shall include as contract requirement. Contractor shall prepare a milkweed survey plan for Authority review prior to construction. Authority will review and approve the milkweed survey plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-13: California tiger salamander, western spadefoot toad, and California red-legged frog surveys.**	BIO-13: **Screening Surveys and Buffers:** During final project design, a biologist with the Authority or its contractor under the direction of the Authority will conduct wet season surveys for suitable aquatic habitat for California tiger salamander, western spadefoot, and California red-legged frog to determine where these species are or may be present in or within 250 feet of the Proposed Project Footprint (where access is granted). The biologist will identify, evaluate, and flag (pin flags or 4-foot lath) suitable aquatic habitat to be preserved outside of the Proposed Project Footprint and up to 250 feet from the edge of the Proposed Project Footprint and flag small mammal burrows that may be used by the species within 10 feet of the Proposed Project Footprint. Where possible, the Authority will refine the design of the Proposed Project to avoid direct impacts to suitable aquatic habitat, the area within 250 feet of the habitat, and small mammal burrows. Responsible Party: Biologist with the Authority or its contractor under the direction of the Authority Timing: During final design Actions: Authority shall include as contract requirement. Contractor shall prepare a survey plan for California tiger salamander, western spadefoot, and California red-legged frog for Authority review prior to construction. Authority will review and approve the survey plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-14: Protect California tiger salamander, western spadefoot toad, and California red-legged frog during construction.**	BIO-14: **Seasonal Restrictions:** If the construction schedule can accommodate seasonal restrictions, vegetation removal (including mowing) and ground-disturbing activities that occur within 250 feet of suitable aquatic habitat will be conducted during the dry season (June 1 to October 14). California tiger salamander, western spadefoot, and California red-legged frog are less likely to be present in the waterbodies or moving across the upland habitats during this period. **Burrow Avoidance and Exclusion:** Small mammal burrows outside of the Proposed Project Footprint will be avoided, and a 10-foot no-disturbance buffer around the burrows will be marked with fencing at the edge of the work area. For large concentrations of burrows within the project footprint that cannot be avoided, exclusion fencing may be installed around such areas prior to the wet season (October 15 to May 31) so that amphibians do not relocate to them as their aquatic habitat dries. **Flagging and Fencing:** The Authority or its contractor shall protect adjacent habitat areas by installing both ESA high-visibility construction fencing and wildlife exclusion fencing (when feasible) as well as erosion control fencing at the maximum practicable distance from the work site, or if feasible, at least 250 feet from the aquatic habitat edge, wet or dry, to make it easily visible by construction crews. **Construction Monitoring and Relocation:** For vegetation removal and ground-disturbing activities that must take place during the wet season (October 15 to May 31), a biologist by the Authority or its contractor under the direction of the Authority will conduct daily surveys for federally listed amphibians in aquatic habitat each morning prior to the start of construction activities within 250 feet of suitable habitat to determine if individuals are present. If individual amphibians are observed, a permitted biologist will relocate them to suitable habitat at least 300 feet from the construction boundary in accordance with a relocation plan approved by FTA, the Authority, and USFWS prior to the start of construction occurring within 250 feet of suitable habitat. Relocation sites will be confirmed in coordination with USFWS. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority shall include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.

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3.5 Biological Resources	**BIO-15: Implement measures to prevent amphibian disease spread.**	BIO-15: Under the direction of the Authority, the contractor will comply with the Declining Amphibian Task Force Fieldwork (DAPTF) Code of Practice (DAPTF 1998) to prevent the introduction and spread of amphibian diseases and parasites. Specific measures to be implemented include: • Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each study site. • Boots, nets, traps, etc., should then be scrubbed with 70% ethanol solution (or sodium hypochlorite 3 to 6%) and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland. • When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean and store them separately and the end of each field day. • When amphibians are collected, ensure the separation of animals from different sites and take great care to avoid indirect contact between them (e.g., via handling, reuse of containers) or with other captive animals. Isolation from un-sterilized plants or soils which have been taken from other sites is also essential. Always use disinfected/disposable husbandry equipment. Responsible Party: Construction contractor under the direction of the Authority Timing: During construction Actions: Authority shall include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-16: Compensate for the loss of aquatic habitat for amphibians.**	BIO-16: The Authority will compensate for the loss of aquatic breeding habitat for California tiger salamander and California red-legged frog in the form of conservation credits purchased at an appropriate USFWS-approved conservation bank in an amount consistent with either the EACCS or SJMSCP within 18 months of issuance of the Biological Opinion. The proposed mitigation ratio is 2.5:1 (mitigation area to effect area) based on the locations of the effects and mitigation sites as defined in the EACCS or SJMSCP. The conservation bank, specific amount, and type of compensation will be coordinated with USFWS, and confirmed following the final design plans. This compensation would also benefit western spadefoot by protecting aquatic habitat it may use. Responsible Party: Authority shall implement compensatory mitigation for special-status species, as necessary Timing: During final design, pre-construction, during construction, post construction Actions: Authority will prepare a compensatory mitigation plan prior to construction and will implement all required compensatory activities prior to the end of construction. Authority will report completion of the compensatory mitigation to the Authority Board at the end of construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-17: Northwestern pond turtle screening.**	BIO-17: **Nesting Area Screening Surveys:** During final project design, survey of potentially occupied habitat will be conducted (where access is granted) by the Authority or its contractor under the direction of the Authority. During the nesting season (roughly May through July), screening surveys to detect northwestern pond turtle nesting activity would be concentrated within 402 meters (1,319 feet) of suitable aquatic habitat and should focus on areas along south- or west-facing slopes with bare hard-packed clay or silt soils or a sparse vegetation of short grasses or forbs. Areas where nesting is observed will be recorded, buffered by a 25-foot radius, and when possible, the buffered area will be avoided through refinements to the design of the Proposed Project or as described in AMM BIO-18 Seasonal Work Restrictions. Responsible Party: Construction contractor under the direction of the Authority Timing: During final design and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-18: Protect northwestern pond turtle during construction.**	BIO-18: **Seasonal Work Restrictions:** Work within known or suspected nesting locations should be limited to the period between October 1 and April 30 to avoid the nesting season (roughly May through July) and the 90-day incubation period (through September 30) when active nests and hatchlings may be present in the nest chamber. **Preconstruction Surveys:** Where potentially occupied aquatic habitat is present or nesting areas identified by the nest screening surveys cannot be seasonally avoided, a biologist shall survey the work site no more than 48 hours before the onset of activities for signs of northwestern pond turtles and/or northwestern pond turtle nesting activity (i.e., recently excavated nests, nest plugs) or nest depredation (partially to fully excavated nest chambers, nest plugs, scattered eggshell remains, eggshell fragments). Construction monitoring of aquatic habitats should focus on suitable aerial and aquatic basking habitat such as logs, branches, rootwads, and riprap, as well as the shoreline and adjacent warm, shallow waters where pond turtles may be present below the water surface beneath algal mats or other surface vegetation. In areas found to or suspected to be occupied by northwestern pond turtle, the following measures will be implemented:

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		Work Site Exclusion: If preconstruction surveys identify occupied nests at or adjacent to work areas that cannot be seasonally avoided, wildlife exclusion fencing should be placed around the perimeter of the work area (with an appropriate buffer, if necessary, to allow construction activities up to the exclusion fencing) between October 1 and April 30 of the preceding year to avoid the nesting season (roughly May through July) and the 90-day incubation period (through September 30) when active nests and hatchlings may be present in the nest chamber. The fencing should be equipped with one-way escape features to allow any wildlife within the future work site to evacuate the area before work begins. Prior to the commencement of work, the excluded work area should be cleared by a biologist before ground-disturbing activities take place. Additionally, in areas that will not be directly impacted, exclusion buffers and nest enclosures will be installed to prevent hatchlings from entering construction areas. **Relocation:** In the event that construction will fully remove an occupied aquatic habitat, a relocation plan will be developed including suitable relocation sites approved by USFWS occurring within occupied habitat. The biologist will relocate individuals to the nearest predetermined relocation site identified within the relocation plan. If USFWS approves of moving the animal, the biologist shall be allowed sufficient time to move the northwestern pond turtle(s) from the work site before work activities begin. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-19: San Joaquin kit fox surveys.**	BIO-19: In areas that have the potential to support kit fox dens, which will include all areas of annual grassland and all ruderal areas adjacent to grasslands and agricultural areas, the following will be implemented. **Initial Den Surveys:** During final design of the Project, a biologist will then conduct surveys to identify potential San Joaquin kit fox dens in the Proposed Project Footprint and surrounding 200 feet (where access is granted), in accordance with the Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (2011 USFWS Standard Recommendations). Different San Joaquin kit fox den types will be defined in accordance with the 2011 USFWS guidance. For dens that are located within the proposed work area and cannot be avoided, a biologist will determine whether the dens are natal dens, and are or were recently occupied using USFWS guidelines. Occupied or recently occupied natal dens will be documented and reported to FTA and USFWS in accordance with USFWS procedures. If unoccupied dens are located in the project footprint, the biologists will collapse the den by and in accordance with USFWS procedures. The biologists will prepare a report summarizing the survey observations and results, including maps depicting the locations of potential kit fox dens—and if possible—occupancy. Where possible, the Authority will refine the design of the Proposed Project to avoid direct impacts to active natal dens and the area within 200 feet of them. **Pre-construction Den Surveys:** Pre-construction surveys will be conducted in any areas identified as containing occupied or recently occupied dens during the initial den surveys. In accordance with the 2011 USFWS Standard Recommendations, pre-construction surveys are to be conducted no less than 14 days and no more than 30 days before the initiation of construction at each environmental footprint (e.g., 1 week ahead of the construction crew for linear components). Construction activities will not take place within 100 feet of a potential den during the natal period (February 1 through September 30). If a known den or natal or pupping den is present 100 feet outside of the permanent Proposed Project Footprint, then a 200-foot no-disturbance exclusion zone during the natal period (100-foot buffer during the non-natal period) will be established around the den, with orange construction fencing at the edge of the disturbance limits nearest the den. If a known den or natal or pupping den is present in the permanent effects zone of the Proposed Project Footprint or within 200 feet of the Proposed Project Footprint during the natal period (100-foot buffer during the non-natal period), the foxes will be excluded outside of the natal period (from November 1 through January 31). A summary report will be prepared by the biologists following completion of all fox avoidance and exclusion activities. Responsible Party: Construction contractor under the direction of the Authority Timing: During final design, pre-construction, and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-20: Protect San Joaquin kit fox during construction and operations.**	BIO-20: **Site Inspections and Entrapment Avoidance:** In areas where occupied or recently occupied dens are identified during pre-construction surveys (CM-21), site inspections prior to the initiation of work each day will be completed to ensure that foxes are not present and that new dens are not being created. Any new dens will be removed using USFWS-approved methods described above. Discouraging the denning within materials stored on site will be done by installing fencing or elevating materials off of the ground. Pipes will be capped, and trenches will contain exit ramps to avoid direct entrapment during construction activities. **Restrictions and the Use of Rodenticide:** During construction and operations, the use of second-generation anticoagulant rodenticides, such as brodifacoum, bromadiolone, difenacoum, and difethialone, will be avoided in San Joaquin kit fox habitat areas. Other pesticides and herbicides may be used in accordance with EPA guidelines. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction

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		Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-21: Compensate for the loss of San Joaquin kit fox denning habitat.**	BIO-21: The Authority will compensate for the loss of denning habitat for San Joaquin kit fox in the form of conservation credits purchased at an appropriate USFWS-approved conservation bank in an amount consistent with the EACCS (zones North, East, and Central-West) within 18 months of issuance of the Biological Opinion. The proposed mitigation ratio is 3:1 (mitigation area to effect area) based on the habitat effects and guidance in the EACCS. The conservation bank, type, and amount of compensation credit will be coordinated with USFWS and will be confirmed following initial den surveys and final design plans. Responsible Party: Authority shall implement compensatory mitigation for special-status species, as necessary. Timing: Pre-construction, during construction, post construction Actions: Authority will prepare a compensatory mitigation plan prior to construction and will implement all required compensatory activities prior to the end of construction. Authority will report completion of the compensatory mitigation to the Authority Board at the end of construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-22: Palmate-bracted bird's-beak surveys.**	BIO-22: During final design of the Proposed Project, a biologist will conduct surveys for palmate-bracted bird's-beak in suitable habitat (all areas of wetland and grassland habitat with alkaline soils) within the Proposed Project Footprint and a 250-feet buffer (where access is granted) of the Proposed Project Footprint. Suitable habitat will be delineated based on desktop review, although general field surveys will be conducted in advance of focused plant surveys to refine the area of potential habitat for palmate-bracted bird's beak. The focused surveys will be conducted during an appropriate identification period in accordance with CDFW protocols. The identification period of palmate-bracted bird's beak is anticipated to be during its reported flowering period between June and August (Jepson Flora Project 2024); a known reference population within 5 miles of the Action Area or less will be checked within one week of conducting surveys to confirm that it is identifiable at the time of survey. The results of the surveys will be documented in brief reports or technical memoranda. If feasible, the project design would be modified to avoid impacts to palmate-bracted bird's beak, if they are discovered in the Proposed Project Footprint. Responsible Party: Construction contractor under the direction of the Authority Timing: During final design Actions: Authority will include as contract requirement. Contractor shall prepare a survey plan for Palmate-bracted bird's-beak for Authority review prior to construction. Authority will review and approve the survey plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-23: Protect palmate-bracted bird's-beak during construction.**	BIO-23: **Avoidance of Palmate-bracted Bird's Beak:** If palmate-bracted bird's-beak plants are found in the Proposed Project Footprint and can be avoided, a 50-foot no-disturbance buffer will be installed around the plants. If palmate-bracted bird's-beak plants are present in the Proposed Project Footprint and cannot be avoided (work within 50 feet), then a propagation and monitoring plan will be prepared by the Authority and reviewed by FTA prior to coordination with USFWS, as described below. Directly affected areas containing palmate-bracted bird's-beak will be documented by a biologist. Documentation will include density and percent cover; abundance; key habitat characteristics, including soil type, associated species, hydrology, and topography; and photographs of pre-construction conditions. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-24: Develop palmate-bracted bird's beak propagation and monitoring plan.**	BIO-24: **Propagation and Monitoring Plan:** If palmate-bracted bird's-beak plants are present in the Proposed Project Footprint and cannot be avoided (work within 50 feet), then a salvage, propagation and monitoring plan will be prepared by the Authority and submitted to FTA and USFWS for review and approval before construction occurs in those areas. The plan may include provisions for performance that address survivability requirements, maintenance, monitoring, implementation, and annual reporting requirements. Monitoring and success criteria applicable to federally listed plant salvage, relocation, or propagation will require the following: • At least two surveys must be conducted per monitoring year. • At least 80 percent of the planted area must support vegetation composition and density consistent with reference population conditions. • At least 80 percent of the planted area must support target species amounts similar to reference feature conditions. • A minimum of five consecutive years of monitoring must be conducted to ensure that success criteria are met.

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		• Remedial actions must be performed to restore the intended ecological function of planted areas that fail to meet the success criteria for three consecutive years. • A worker environmental training program (AMM BIO-1) will be conducted to brief construction personnel on the need to avoid effects on sensitive biological resources. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-25: Compensate for tree removal during construction.**	BIO-25: During final design of the Proposed Project, a tree avoidance, minimization, and replacement plan will be developed by the Authority in consultation with a certified arborist and in consultation with cities, counties, and affected property owners. The plan will contain the following provisions: • The definition of what is and is not a tree for the purposes of this mitigation will be the same as the tree definition used in each municipality. • Prior to the construction phase, the Authority will assess the potential to modify the construction methods and access of alignment alternatives, station alternatives, and other facilities to avoid or minimize the amount of tree removal or pruning necessary to be consistent with maintenance, operational, and safety requirements. The Authority or its contractor under the direction of the Authority will consult with each jurisdiction along the route to identify where tree removals can and cannot be avoided with near-term and long-term design measures. • Tree pruning during construction will be done in accordance with arboricultural industry–recommended practices. • If pruning will result in the loss of 25 percent or more of an individual tree's canopy, then the Authority will consider the tree removed, and it will be replaced in a manner consistent with the following replacement requirements: o Where specific replacement ratios or specifications are provided in the local tree ordinance or guidance, the Authority will replace protected trees using the local requirements as specifically described in Table 3.5-10 of the Valley Link Project Subsequent Environmental Impact Report. o Where specific replacement ratios or specifications are not provided in local tree ordinances (City of Pleasanton, City of Dublin, City of Livermore, and Alameda County, the Authority will replace protected trees on a 2:1 basis using 15-gallon trees (i.e., two 15-gallon trees would be planted for each protected tree removed). o For unprotected trees in all locations, the Authority will replace trees on a 1:1 basis using 15-gallon trees (i.e., one 15-gallon tree would be planted for each unprotected tree removed). o Consistent with Executive Order 13112 on invasive species, when the Authority or its contractor replaces trees, the Authority will use native tree species insofar as it is practicable. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction, during construction, post construction Actions: Authority will include as contract requirement. Contractor shall conduct a 100% tree survey of the construction footprint prior to construction and submit a tree survey report to Authority. Authority review of tree survey report, review, and approval of avoidance memorandum, review, and approval of tree replacement plan.
3.5 Biological Resources	**BIO-26: Protect Crotch's bumble bee and western bumble bee nesting habitat and floral resources.[a]**	BIO-26: Prior to the start of construction, biologist(s) with the Authority or its contractor under the direction of the Authority will conduct botanical surveys in late spring/early summer to identify and map concentrations of flowering plants that provide food resources for special-status bumble bees. The areas containing high densities and varieties of flowering plants will be evaluated by a biologist to determine whether they provide suitable foraging habitat for special-status bumble bees. The habitat evaluation surveys will follow recommendations in the Rusty Patched Bumble Bee Habitat Assessment Form and Guide. If moderate- to high-quality foraging habitat for Crotch's and/or western bumble bee is identified in the Proposed Project area based on the habitat evaluation, these areas will be surveyed by a biologist(s) (with experience conducting bumble bee surveys) within 1 year prior to the start of construction. Surveys will be conducted during four evenly spaced sampling periods during the flight season (March through September). For each sampling event, the biologist(s) will survey suitable habitat using nonlethal netting methods (visual encounter surveys with no netting) for 1 person-hour per 3 acres of the highest quality habitat, or until 150 bumble bees are sighted, whichever comes first. If initial sampling of a given habitat area indicates that the habitat is of low quality or nonexistent, no further sampling of that area will be required. General guidelines and best practices for bumble bee surveys would follow USFWS' Survey Protocols for the Rusty Patched Bumble Bee (*Bombus affinis*) (USFWS 2019), which are consistent with other bumble bee survey protocols used by the Xerces Society. If special-status bumble bees are determined to not be present in the Proposed Project area, or if a biologist (experienced with bumble bees) concludes that there is a very low likelihood that the species is present, then no additional mitigation is required. If surveys identify occupied Crotch's and western bumble bee habitat in the Proposed Project footprint, the project biologist will then conduct additional pre-construction surveys of such habitat for active bee nest colonies and associated floral resources (i.e., flowering vegetation on which bees from the colony are observed foraging) no more than 30 days prior to any ground disturbance between March and September. The purpose of this pre-construction survey would be to identify active nest colonies and associated floral resources outside of permanent impact areas that could be avoided by construction personnel. The project biologist would establish, monitor, and maintain no-work buffers around nest colonies and floral resources identified during surveys. The size and configuration of the no-work buffer would be based on best professional judgment of the project biologist. At a minimum, the buffer would provide at least 20 feet of clearance around nest entrances and maintain disturbance-free airspace between the nest and nearby floral

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		resources. Construction activities would not occur in the no-work buffers until the colony is no longer active (i.e., no bees are seen flying in or out of the nest for three consecutive days, indicating that the colony has completed its nesting season, and the next season's queens have dispersed from the colony). A worker environmental training program (AMM BIO-1) will be conducted by the Authority or its contractor to brief construction personnel on the need to avoid effects on sensitive biological resources. If Crotch's bumble bee and/or western bumble bee are formally listed under CESA, the Authority will work with CDFW to discuss compensatory mitigation for impacts on occupied habitat. At this time, compensatory mitigation for Crotch's bumble bee and western bumble bee is not proposed. If and/or when compensatory mitigation is proposed, it may include the below activities, which would be determined during consultation with CDFW. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-27: Encourage growth of nectar and pollen-producing plants.** [a]	BIO-27: To encourage growth of additional nectar and pollen-producing plants in the Proposed Project area, disturbed grasslands that provide potential bumble bee habitat and will be revegetated by the Authority or its contractor using a seed mix combination that includes nectar and pollen-producing plants commonly used as a food source by Crotch's and western bumble bee. Plants of the following genus are appropriate: Cirsium sp., Eriogonum sp., Solidago sp., Aster sp., Centaurea sp., and Penstemon sp. These annual plants will be incorporated into the seed mix, as applicable for the existing habitat conditions. To minimize impacts on bees from herbicide drift, herbicide application around stations and rail facilities will be performed using handheld equipment and will be restricted to a 20-foot buffer around facility structures. The contractor will use an herbicide that has been shown to be less toxic to amphibians and invertebrates, such as 2,4 D. Herbicides containing the surfactant POEA, considered toxic to aquatic and terrestrial wildlife, will not be used in the Proposed Project area. The most current information on herbicide toxicity on wildlife will be used to inform future decisions about herbicide use during operations. If required, impacts on occupied habitat (confirmed through surveys) would be compensated for at a ratio of up to 3:1, unless a higher ratio is required pursuant to an authorization issued under CESA—through the purchase of CDFW-approved bank credits or through preservation of habitat in perpetuity, including suitable habitat currently preserved by the Authority. Responsible Party: Contractor and project operator under the direction of the Authority Timing: During construction, post construction, project operation Actions: Authority will include as contract requirement. The Authority will include requirements in construction and operational contracts in accordance with this measure. Authority will prepare a compensatory mitigation plan prior to construction and will implement all required compensatory activities prior to the end of construction. Contractor and Project Operator shall develop protocols regarding seed mix and herbicide use. Authority will report completion of the compensatory mitigation to the Authority Board at the end of construction. The Authority will include requirements in operational contracts in accordance with this measure.
3.5 Biological Resources	**BIO-28: Protect California glossy snake, coast horned lizard, and San Joaquin coachwhip.** [a]	BIO-28: The Authority will implement the measures listed below to protect California glossy snake, coast horned lizard, and San Joaquin coachwhip during construction. A biologist will conduct pre-construction surveys and construction monitoring in suitable habitat (i.e., open grassland and scrub with sandy, friable soils) to protect special-status lizards. Prior to construction or restoration activities in California annual grassland, riparian habitat, and California scrub with sandy soils or dense leaf litter, the biologist will conduct a pre-construction survey for special-status reptiles. This survey will include: • Ensuring that all motorized vehicles and equipment observe a 5-mile-per-hour speed limit during construction activities while not on existing rails in the environmental footprints. • Staking the limits of the construction work areas and fencing them with small-mesh construction fencing, buried to a minimum depth of 6 to 10 inches below the ground, to reduce the likelihood of lizards reentering the active construction area. • Capturing and releasing special-status lizards into similar nearby habitat areas, as designated by the biologist. • Removing lizard exclusionary fences following completion of construction. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-29: Protect American badger and mountain lion, and their habitat.**	BIO-29: As described in AMM BIO-19, within 1 year, but no less than 3 months prior to initiating construction, a biologist with the Authority or its contractor under the direction of the Authority will then conduct surveys to identify potential San Joaquin kit fox dens in the Proposed Project Footprint and surrounding 200 feet, in accordance with the Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (2011 USFWS Standard Recommendations). This survey will also identify potential American badger dens. The biologists will include the American badger survey observations and results in the San Joaquin kit fox report (AMM BIO-19), including maps depicting the locations of badger dens, and if possible, occupancy. Prior to construction, a biologist will implement pre-construction surveys of previously identified American badger dens. In accordance with the 2011 USFWS Standard Recommendations, pre-construction surveys are to be conducted no less than 14 days and no more than 30 days before the initiation of construction at each environmental footprint (e.g., 1 week ahead of the construction crew for linear components). Construction activities will not take place within 100 feet of a potential den during the natal period (February 1 through September 30). If a known den or natal or pupping den is present 100 feet outside of the permanent project footprint, then a 200-foot no-disturbance exclusion zone during the natal period (100-foot buffer during the non-natal period) will be established around the den, with orange construction fencing at the edge of the

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		disturbance limits nearest the den. If a known den or natal or pupping den is present in the permanent project footprint or within 200 feet of the Proposed Project footprint during the natal period (100-foot buffer during the non-natal period), the badger(s) will be excluded outside of the natal period (from November 1 through January 31). A summary report will be prepared by the biologists following completion of all badger avoidance and exclusion activities. ***Mountain Lion:*** Within 1 year but no less than 3 months prior to initiating construction, a biologist with the Authority or its contractor under the direction of the Authority will identify known and potential wildlife corridors, wildlife crossings, and known mountain lion movement data in the Proposed Project footprint and surrounding 5 miles. Biologist(s) will identify potential mountain lion movement areas and potential denning areas; compile mountain lion movement and territory data from mountain lion telemetry and other studies; and perform camera and track surveys to determine the location of transit areas, communication posts, and potential denning areas. Based on research documenting mountain lion avoidance behavior of human disturbance and roads, camera and track surveys would be conducted within 2,000 feet of the Proposed Project footprint. CDFW will be consulted in the final survey design and will be given the environmental footprints. The biologists will prepare a report summarizing the survey observations and results, including maps depicting the locations of potential mountain lion use area and den sites, and if possible, occupancy. Mountain lion den types will be defined by the terminology generally consistent with the 2011 USFWS guidance for San Joaquin kit fox. Prior to construction, biologists will implement pre-construction surveys of previously identified potential mountain lion dens to determine whether there is mountain lion sign in the vicinity. Pre-construction surveys are to be conducted no less than 14 days and no more than 30 days before the initiation of construction at each environmental footprint (e.g., 2 weeks ahead of the construction crew for linear components). Construction activities will not take place within 2,000 feet of a potential den during the breeding and natal period (February 1 through September 30). If a known den is present in the permanent project footprint or within 2,000 feet of the Proposed Project footprint, consultation with CDFW will occur. A summary report will be prepared by the biologist(s) and submitted following completion of all mountain lion avoidance and minimization activities. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-30: Compensate for American badger and mountain lion habitat loss.**	BIO-30: The Authority will provide compensatory mitigation for American badger habitat and mountain lion loss through, or in an amount consistent with, either the EACCS or SJMSCP. For impacts on American badger habitat and mountain lion habitat that occur outside of the EACCS or SJMSCP coverage area, the Authority will provide compensatory mitigation for the loss of occupied American badger habitat and mountain lion habitat, as agreed on with USFWS and CDFW, before construction impacts occur. The occupancy of suitable habitat will be determined during the identification process of dens, as part of the avoidance and minimization efforts discussed previously. • Conduct routine eradication of invasive species to maintain the intended vegetation diversity, density, and height, consistent with American badger habitat requirements, for a minimum of 5 years. • Conduct biological monitoring surveys to confirm suitable American badger habitat conditions and document ground squirrel presence. • Restrict deeds to maintain and manage the preserve for American badger habitat in perpetuity, with the ability to grant the preserve to a habitat conservancy, public agency, or other local habitat management entity. • Preserve maintenance and funding reserves. Compensatory mitigation will be provided for mountain lion habitat loss, as agreed on with CDFW, before construction impacts occur. Compensatory mitigation may be in the form of mitigation credit purchased from a CDFW-approved bank, preservation and enhancement of suitable habitat, or other agreed-on form of mitigation. Habitat preservation and enhancement will require the development and implementation of a management plan with the following success criteria to ensure that the preserved area is managed as suitable mountain lion habitat in perpetuity. • Conduct routine inspection and maintenance of existing wildlife crossings and new wildlife crossing options. • Conduct routine eradication of invasive plant species to maintain the intended vegetation diversity, density, and height, consistent with maintaining native faunal population habitat requirements, for a minimum of 5 years. • Conduct biological monitoring surveys of habitat preserved and/or enhanced to confirm suitability for mountain lion habitat conditions. • Document species presence and use of preserved habitat. • Restrict deeds to maintain and manage the preserve for mountain lion in perpetuity, with the ability to grant the preserve to a habitat conservancy, public agency, or other local habitat management entity. Preserve maintenance and funding reserves. Responsible Party: Authority shall implement compensatory mitigation for special-status species, as necessary. Timing: Pre-construction, during construction, post construction Actions: Authority will prepare a compensatory mitigation plan prior to construction and will implement all required compensatory activities prior to the end of construction. Authority will report completion of the compensatory mitigation to the Authority Board at the end of construction.

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3.5 Biological Resources	**BIO-31: Protect nesting birds.**	BIO-31: ***Protect Nesting Birds During Project Construction***: To the maximum extent feasible, vegetation removal (e.g., tree removal, herbaceous plant removal, mowing, control burn) will be scheduled during the nonbreeding season of birds (September 1 through January 31). If vegetation cannot be removed in accordance with this timeframe, pre-construction surveys for nesting birds and additional protective measures will be implemented. If construction activities will occur during the bird nesting season (February 1 through September 15), pre-construction surveys will be conducted for nesting birds within 300 feet of the active construction work area by the Authority or its contractor under the direction of the Authority. A 300-foot survey buffer will be used for raptors and a 100-foot radius for passerines. Pre-construction surveys will occur no more than 7 days prior to the onset of ground-disturbing and vegetation-disturbing activities (including clearing, grubbing, staging, and vegetation trimming or removal) at each construction area. If active nests are found in the active construction work area, a no-disturbance buffer will be established around the nest, and the buffer perimeter will be marked with high-visibility fencing, flagging, or wood stakes. To the extent possible, structure demolition/modification will occur outside of the nesting season to avoid impacts on active nests affixed to structures before they become active during the nesting season (February 1 through September 15). If structure demolition activities cannot occur outside of the nesting season, inactive nests will be removed from the structure to be demolished, and nest exclusion measures (e.g., fine mesh netting, panels, or metal projectors) will be installed outside the nesting season. No more than 7 days prior to structure demolition activities, a biologist will conduct a pre-construction survey of all potential nesting habitat on the structures to be demolished/modified and the surrounding areas for the presence of active nests. If active nests are found on the structures or in the affected area, then demolition/modification activities will not proceed until the biologist verifies that all nests on the structures are inactive. After all surveys and/or nest deterrence activities are completed, the biologist will complete a memorandum detailing the survey effort and results and submit the memorandum to the Authority within 7 days of survey completion. ***Protect Nesting Birds During Maintenance Activities:*** The Authority or its contractor under the direction of the Authority will conduct vegetation and structural maintenance activities associated with the operation of Valley Link outside of the bird nesting season (February 1 to August 31) to the extent feasible. If vegetation and structural maintenance during the nesting season is unavoidable, the Authority or its contractor will retain a wildlife biologist with demonstrated nest-searching experience to conduct pre-construction surveys for nesting birds within 300 feet of the vegetation and structural maintenance locations. Adjacent lands outside the ROW will be scanned with binoculars, including any Project operations areas, the ROW, and/or publicly accessible areas. The pre-construction surveys will occur no more than 7 days prior to maintenance activities (including removing or trimming vegetation, modifying structures that provide nesting habitat, clearing ground, grubbing, staging) at each contiguous maintenance area. If active nests are found in the area to undergo maintenance activities, no-disturbance species-specific buffer zones will be established by the biologist and marked with high-visibility fencing, flagging, or pin flags. No maintenance activities will be allowed within the buffer zones. The size of the buffer will be based on the species' sensitivity to disturbance and planned work activities in the vicinity; typical buffer sizes are 250 feet for raptors and 50 feet for other birds (i.e., passerines). The buffer will remain in effect until the nest is no longer active, as determined by the biologist. Buffers for any nests found outside of the area to undergo maintenance activities, but within 250 feet of the maintenance location, will be established, based on the biologist's best professional judgment as to whether the work would result in nest disturbance and/or abandonment. If a lapse in maintenance activities of 7 days or longer at a previously surveyed area occurs, another pre-construction survey will be conducted. After all surveys activities are completed at each continuous maintenance activity area within a given segment, the biologist will complete a memorandum detailing the survey effort and results and submit the memorandum to the Authority within 7 days of survey completion. Responsible Party: Construction contractor and project operator under the direction of the Authority Timing: Pre-construction, during construction, project operation Actions for Construction Impacts: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction. Actions for Operational Impacts: The Authority will include requirements for vegetation maintenance contracts in accordance with this measure. The Project Operator will prepare vegetation management guidelines for the Project. Vegetation maintenance guidelines shall only apply to areas in the vicinity of nesting birds and roosting bats. Project Operator to prepare annual vegetation maintenance monitoring reporting. Project Operator completion of vegetation management guidelines and review by CDFW. Authority review of annual vegetation maintenance monitoring reports.
3.5 Biological Resources	**BIO-32: Protect golden eagles.**	BIO-32: Prior to construction activities between February 1 and September 15, surveys for golden eagles will be conducted by the Authority consistent with the guidance of the Protocol for Evaluating Bald Eagle Habitat and Populations in California (Jackman and Jenkins 2004) and Interim Golden Eagle Inventory and Monitoring Protocols and Other Recommendations. The number of surveys needed to determine the status of nesting will be dependent on the conditions during the surveys and behavior of the eagles. If needed, biologists will coordinate with USFWS regarding the extent and number of surveys. Surveys would generally be conducted between January and July. Survey methods and results will be reported to USFWS. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
3.5 Biological Resources	**BIO-33: Protect Swainson's hawk nests.**	BIO-33: Prior to construction activities occurring between March 1 and September 15, focused surveys for nesting Swainson's hawks will be conducted by the construction contractor under the direction of the Authority. Survey methods will follow those prescribed in Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000), and generally be conducted between February and July. Survey methods and results will be reported to CDFW. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-34: Compensate for Swainson's hawk foraging habitat loss.**	BIO-34: Compensatory mitigation will be provided by the Authority for Swainson's hawk foraging habitat loss (i.e., replacement of existing grassland or agricultural field with new structures) in the Central Valley through or in an amount consistent with the SJMSCP. To compensate for impacts on Swainson's hawk foraging habitat outside of the HCP coverage area, off-site habitat management lands will be preserved, as described in California Department of Fish and Game's (now CDFW) Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California. Land will be preserved up to a 1:1 to 0.25:1 ratio (acreage preserved: acreage affected), depending on the distance between the affected areas and the nearest active nest (within 1 mile). Responsible Party: Authority shall implement compensatory mitigation for special-status species, as necessary. Timing: Pre-construction, during construction, post construction Actions: Authority will prepare a compensatory mitigation plan prior to construction and will implement all required compensatory activities prior to the end of construction. Authority will report completion of the compensatory mitigation to the Authority Board at the end of construction.
3.5 Biological Resources	**BIO-35: Protect burrowing owls and burrowing owl habitat.**	BIO-35: Prior to any construction activity in burrowing owl nesting (February 1 through August 31) or wintering habitat, a pre-construction survey will be conducted by a wildlife biologist for the Authority or its contractor under the direction of the Authority. Burrowing owl take avoidance surveys will be conducted no less than 14 days prior to and 24 hours before initiating ground disturbance, pursuant to the California Department of Fish and Game's (now CDFW) Staff Report on Burrowing Owl Mitigation. If construction is planned to occur during the nesting season (February 1 through August 31), a breeding season burrowing owl survey will be conducted by a wildlife biologist in the year prior to construction. The survey will be conducted to determine whether there is a breeding pair within approximately 500 feet of the environmental footprint, unless the biologist determines that a smaller survey buffer around the Proposed Project footprint is warranted, based on pre-existing background disturbance and conditions. Survey visits will be timed in accordance with CDFW guidelines. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-36: Compensate for burrowing owl habitat loss.**	BIO-36: Compensatory mitigation will be provided by the Authority for burrowing owl habitat loss through, or in amounts consistent with, either the SJMSCP or the EACCS, depending on the impact locality, or as agreed on with CDFW. For impacts on burrowing owl habitat that occur outside of the SJMSCP and EACCS coverage areas, compensatory mitigation will be provided for the loss of occupied owl habitat before construction impacts occur. Occupancy of owl habitat will be determined during implementation of mitigation. Compensatory mitigation may occur in the form of mitigation credit purchased from a CDFW-approved bank, with burrowing owl habitat credits and/or preservation of suitable habitat. Mitigation credit purchase or habitat preservation will occur up to a 3:1 ratio (compensation area to habitat loss area). Habitat preservation will require the development and implementation of a management plan with the following success criteria to ensure that the preserved area is managed as suitable burrowing owl habitat in perpetuity: • Perform routine mowing or grazing to maintain vegetation height consistent with burrowing owl habitat requirements. • Conduct biological monitoring surveys to confirm suitable owl habitat conditions, and document ground squirrel and burrowing owl presence for a minimum of 5 years. • Restrict deeds to maintain and manage the preserve for burrowing owl in perpetuity, with the ability to grant the preserve to the EACCS Conservancy or to the SJMSCP Joint Powers Authority. • Preserve maintenance and funding reserves. Responsible Party: Authority shall implement compensatory mitigation for special-status species, as necessary. Timing: Pre-construction, during construction, post construction Actions: Authority will prepare a compensatory mitigation plan prior to construction and will implement all required compensatory activities prior to the end of construction. Authority will report completion of the compensatory mitigation to the Authority Board at the end of construction.
3.5 Biological Resources	**BIO-37: Develop feasibility study for wildlife movement corridors.**	BIO-37: Wildlife movement corridor conditions will be evaluated by the Authority, and feasibility and design of new corridors will be determined in consultation with USFWS and CDFW. Wildlife crossings will be designed to facilitate movement by common and special-status species, including mountain lion, San Joaquin kit fox, California tiger salamander, and California red-legged frog. Wildlife crossings will be approved by USFWS prior to implementation.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		Responsible Party: Authority and construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. The Feasibility Study shall be submitted along with modified designs to Authority prior to submission to any necessary regulatory agencies. Authority will review and approve the Feasibility Study and modified designs prior to submission to regulatory agencies. Regulatory agency review and approval prior to construction. This measure is pending issuance of the Biological Opinion and may be superseded by measures identified in it.
3.5 Biological Resources	**BIO-38: Protect roosting bats.** [a]	BIO-38: Where feasible, construction activities that could potentially affect bats that could occur in the construction site (i.e., pallid bat, Townsend's big-eared bat, other common species of bats) will be conducted outside of the maternity season of bats (April 1 through September 15) and prior to the beginning of the hibernation period (November 1). Measures to avoid and minimize impacts on sensitive bats species will be determined in coordination with CDFW, and may include the following: **Trees** To avoid and minimize impacts on maternity roosts and hibernating bat species, the Authority will ensure that trees will be removed or trimmed by the contractor between September 1 and October 30. A biologist (i.e., a biologist with experience with tree-roosting habitats and life histories of local bats) will examine trees for suitable bat roosting habitat (e.g., large tree cavities, loose or peeling bark, basal hollows, or large snags) 7 to 14 days before tree removal or trimming. Trees will also be evaluated to determine whether they provide suitable habitat for foliage-roosting bats. If the biologist determines that trees to be removed or trimmed provide suitable bat roosting habitat, the biologist will monitor tree removal/trimming. The biologist will make recommendations to implement measures to avoid and minimize disturbance or mortality of bats, such as conducting trimming and removal in the late afternoon or evening, when it is closer to the time that bats would normally arouse; removing the tree in pieces rather than felling an entire tree; and gently shaking each tree with construction equipment and waiting several minutes before felling trees or removing limbs, to allow bats time to arouse and leave the tree. The biologist will search downed vegetation for dead and injured bats. The presence of dead or injured bats that are species of special concern will be reported to CDFW. The biologist will prepare a biological monitoring report. **Human-Made Structures and Natural Structures** At least 30 days prior to structure removal or disturbance, a bat biologist by the Authority or its contractor under the direction of the Authority will conduct an initial daytime survey to assess the structure for potential bat roosting habitat and look for bat signs (e.g., guano, urine staining). The biologist will examine the entire structure (i.e., inside and outside for human-made structures; and all cracks, seams, and fissures for natural structures) for potential roosting habitat and routes of entry to the structure. If no habitat or limited habitat for roosting bats and no signs of bat use are present, biologists will conduct a pre-construction survey of the entire structure within 24 hours of demolition. If signs of bat use are found, or if all areas of the structure cannot be examined and the structure provides moderate or high potential habitat, the bat biologist will prepare a memorandum with recommended measures to exclude bats from using the structure as a roost site. The memorandum will include recommendations for excluding bats from using the structure to roost, such as sealing off entry points or using lights and other means to deter bats. The memorandum will specify when and how exclusion measures should be implemented. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-39: Protect roosting bats during maintenance activities.** [a]	BIO-39: Maintenance activities (e.g., operational tree removal and trimming, structure modification or removal) in roosting bat habitat will be conducted by the Authority or its project operator under the direction of the Authority from September 15 through October 30 to the extent feasible to avoid maternity bat roosts, roosting bats in torpor (reduced metabolic function, similar to hibernation), or nonvolant (flightless) young. If operational maintenance activities cannot be conducted between September 15 and October 30, a biologist will be retained who will examine structures to be removed or modified, and trees to be removed or trimmed for suitable bat roosting habitat no more than 2 weeks before conducting the maintenance activity. High-quality habitat features (large tree cavities, basal hollows, loose or peeling bark, large snags, palm trees with intact thatch, seams, weep holes, or crevices on sides of buildings) will be identified, and the area around these features searched for bats and bat signs (e.g., guano, culled insect parts, or urine staining). Riparian woodland, orchards, and stands of mature broadleaf trees should be considered potential habitat for solitary foliage-roosting bat species. Passive monitoring using full-spectrum bat detectors may be needed if identification of bat species is required. Survey methods will be discussed with CDFW prior to the start of surveys. Measures to avoid and minimize impacts on sensitive bats species will be determined in coordination with CDFW, and may include the following: • Tree removal, tree trimming, structure modification, or removal of trees that provide suitable habitat for bats will be avoided between April 1 and September 15 (the maternity period) to avoid effects on pregnant females and active maternity roosts (whether colonial or solitary). • Tree removal, tree trimming, structure modification, or removal of trees that provide suitable habitat for bats will be conducted between September 15 and October 30, which corresponds to a time period when bats have not yet entered torpor and are not caring for nonvolant young. • Trees that provide suitable habitat for bats will be removed in pieces rather than felling the entire tree. • Trees and tree limbs that do not provide habitat will be removed prior to removing trees and limbs that do provide roosting habitat.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		• If possible, tree trimming and removal should occur in the late afternoon or evening, when it is close to the time that bats would normally arouse. Prior to removal and trimming, each tree will be shaken gently, and several minutes will pass before felling trees or limbs to allow bats time to arouse and leave the tree. • If a maternity roost is encountered, whether solitary or colonial, that roost will remain undisturbed until September 15, or until a biologist has determined that the roost is no longer active. • If avoidance of a nonmaternity roost site is not possible, and the maintenance activity must occur between October 30 and September 15, biologists will monitor the maintenance activity that has the potential to affect roosting bat habitat. The biologists will search downed vegetation and debris for dead and injured bats. The presence of dead or injured bats that are species of special concern, or candidate threatened or endangered species, will be reported to CDFW. The biologist will prepare a biological monitoring report, which will be provided no more than 30 days following the completion of all bat surveys. • A worker environmental training program (AMM BIO-1) will be conducted to brief construction personnel on the need to avoid effects on sensitive biological resources. Responsible Party: Project operator under the direction of the Authority Timing: Project operation Actions: The Authority will include requirements for vegetation maintenance contracts in accordance with this measure. Project Operator completion of vegetation management guidelines and review by CDFW. Authority review of annual vegetation maintenance monitoring reports.
3.5 Biological Resources	**BIO-40: Protect wetlands during construction.**	BIO-40: The Authority will ensure that before site preparation, a resource specialist (i.e., wetland biologist, ecologist, or soil scientist) will clearly identify, using high-visibility construction fencing or markers (e.g., lathe or pin flags), any wetland areas to be preserved abutting construction areas and wetland areas outside of the direct construction area. Construction will not encroach on jurisdictional wetlands that the resource specialist identifies to be preserved. The resource specialist will use the Proposed Project's aquatic resources delineation and subsequent formal determination to confirm the location of wetland boundaries, based on existing conditions at the time of the avoidance marking. Exclusion fencing or markers will be installed before construction activities are initiated, and the fencing will be maintained throughout the construction period. No construction activity, traffic, equipment, or materials will be permitted in fenced wetland areas to be preserved. Exclusion fencing and markers will be removed following the completion of construction activities. All conditions imposed by the state and federal permits will be implemented. The conditions will be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a biological resources avoidance and minimization plan for Authority review prior to construction. Authority will review and approve the biological resources avoidance and minimization plan prior to construction.
3.5 Biological Resources	**BIO-41: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction.**	BIO-41: The Authority will develop an aquatic resource (wetlands and non-wetland waters of the United States) mitigation plan, subject to approval by the resource agencies, which will ensure no net loss of wetlands. The plan will detail the amount and type of wetlands that will be compensated for impacts on existing wetlands and non-wetland waters of the United States. The plan will also outline the monitoring and success criteria for the compensation wetlands and non-wetland waters of the United States. Additional enhancement options include fish barrier removal, riparian restoration, floodplain restoration, and streambank layback to improve overall ecologic function and connectivity of wetland and non-wetland waters. Enhancement sites will be as close to the impact location as possible; however, in the event that local enhancement opportunities are not available, such activities will occur in the same stream system or watershed to provide improved ecologic function and connectivity for wetlands and non-wetland waters affected by the Proposed Project. Monitoring and success criteria applicable to created or restored wetlands will require the following: • At least two surveys by a wetland biologist, botanist, or ecologist per monitoring year • At least 80 percent of the created or restored features support vegetation, consistent with reference feature conditions • At least 80 percent of the created or restored features support hydrologic regimes, similar to reference feature conditions • A minimum of 5 consecutive years of monitoring to ensure success criteria are met • Remedial actions to restore intended ecological function of created or restored features that fail to meet the success criteria for 3 consecutive years Once the plan is approved, the Authority will implement the aquatic resource compensation measures prior to the initiation of construction. The Authority will be responsible for funding compensatory mitigation, monitoring the created or restored features in accordance with the mitigation plan, and any remedial actions necessary. All conditions that are attached to the state and federal permits will be implemented. The conditions will be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance. In addition, AMM BIO-2 (Protect Sensitive Natural Communities, Including Riparian Habitat, During Construction) will be implemented. Responsible Party: Authority Timing: Pre-construction, during construction, post construction Actions: Authority will include as contract requirement. Contractor shall prepare an aquatic resource mitigation plan and obtain approval from the regulatory agencies prior to the end of construction. Contractor shall implement the aquatic resource mitigation plan at the same time as construction. Post-construction monitoring shall be performed for a minimum of 5 years, as necessary. Authority will review and approve the aquatic resource mitigation plan. Regulatory agency approval of aquatic resource mitigation plan. Authority to submit annual monitoring reports to regulatory agencies. Authority will report completion of this measure to the Authority Board.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
3.6 Cultural Resources	**CUL-1: Conduct cultural resources awareness training.**	CUL-1: This measure will apply to all construction Project-wide. Prior to any ground-disturbing activities, contractor personnel who conduct or are associated with ground disturbance will attend a pre-construction resources awareness tailboard training session provided by the contract archaeologist (see AMM CUL-2). The topics to be addressed in the training will include, at a minimum: • Types of cultural resources expected on the Project site • Types of evidence that indicates cultural resources might be present (e.g., midden soils, artifacts, chipped or worked stone, bone, bottles, or ceramic fragments) • Protocols to follow should potential cultural resources be exposed during construction • Protocols to follow should potential animal bones or human remains be exposed during construction • Penalties for removing or intentionally disturbing cultural resources. A copy of the training shall be provided before construction activities begin. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare an environmental awareness training plan for Authority review prior to construction. Authority will review and approve the environmental awareness training plan prior to construction
3.6 Cultural Resources	**CUL-2: Develop an archaeological monitoring plan.**	CUL-2: This measure will apply to the Isabel Station vicinity and any other Project location deemed sensitive to Native American tribes that was identified through consultation. Prior to construction (any ground-disturbing activities), the Authority will retain a qualified archaeologist to prepare an archaeological monitoring plan (AMP). The AMP will identify areas considered archaeologically sensitive and where monitoring will be required. The AMP will include protocols that outline archaeological monitoring best practices, anticipated resource types, and an unanticipated discovery protocol. The unanticipated discovery protocol will describe steps to follow if unanticipated archaeological discoveries are made during the construction activities, as well as the chain of contact. The lead agency will review and approve the AMP prior to ground-disturbing activities. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare an AMP for Authority review prior to construction. Authority will review and approve the archaeological monitoring plan.
3.6 Cultural Resources	**CUL-3: Conduct archaeological monitoring.**	CUL-3: This measure will apply to the Isabel Station vicinity and any other Project location deemed sensitive to Native American tribes that were identified through consultation. During construction (any ground-disturbing activity), the Authority will be responsible for providing qualified archaeological and tribal monitors to observe any ground-disturbing construction activities with potential to affect archaeological resources in areas that have been identified as archaeologically sensitive in the archaeological monitoring plan (AMP). Archaeological sensitivity is based on areas in proximity to known archaeological sites, areas identified by the tribal consulting parties as sensitive, and/or geoarchaeological analysis. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare an AMP for Authority review prior to construction. Authority will review and approve the archaeological monitoring plan.
3.6 Cultural Resources	**CUL-4: Implement procedures in case of unanticipated discoveries.**	CUL-4: This measure will apply to all construction Project-wide. If archaeological deposits are encountered during ground disturbance, work within 100 feet of the area is to stop immediately. The Authority will retain a qualified archaeologist who will be contacted to assess the discovery, along with the appropriate Native American representative for the location of the find. Archaeological deposits include, but are not limited to, flaked stone or groundstone, midden and shell deposits, historic-era refuse, and/or foundations. This unanticipated discovery protocol outlines the processes to follow in the event of an unanticipated discovery. Through consultation with the Wilton Rancheria, a federally recognized tribe, an inadvertent discovery treatment plan was provided and incorporated into this mitigation measure. The tribe "will assess the significance of the find and make recommendations for further evaluation and treatment." Wilton Rancheria asserts that "culturally appropriate treatment that preserves or restores the cultural qualities and integrity of a resource may be, but is not limited to, processing materials for reburial, minimizing handling of cultural objects, leaving objects in place within the landscape, construction monitoring of any further activities by a tribal representative, and/or returning the objects to a location within the project area where they will not be subject to future impacts." "Wilton Rancheria does not consider curation of [traditional cultural resources] to be appropriate or respectful and requests that materials not be permanently curated, unless specifically requested by the Tribe." Should the discovery include human remains, all parties will comply with federal and state regulations and guidelines regarding the treatment of human remains, including relevant sections of NAGPRA (Section 3(c)(d)), California Health & Safety Code Section 8010 et seq., and Public Res. Code Section 5097.98, and consult with NAHC, tribal groups, and the SHPO. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare an inadvertent discovery plan for Authority review prior to construction. Authority will review and approve the inadvertent discovery plan.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description

3.6 Cultural Resources	**CUL-5: Comply with state laws relating to Native American remains.**	CUL-5: If human remains of Native American origin are discovered during ground-disturbing activities, it will be necessary to comply with state laws regarding the disposition of Native American burials, which fall within the jurisdiction of the NAHC. If human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
		• The County (Alameda or San Joaquin) coroner has been informed and has determined that investigation of the cause of death is required and
		• If the remains are Native American origin:
		  ○ The descendants of the deceased Native American have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Res. Code Section 5097.98 or
		  ○ The NAHC was unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.
		According to California Health & Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation be stopped in the vicinity of the discovered human remains until the coroner can determine whether remains are those of Native Americans.
		Responsible Party: Construction contractor under the direction of the Authority
		Timing: Pre-construction and during construction
		Actions: Authority will include as contract requirement. Contractor shall prepare an inadvertent discovery plan including for human remains for Authority review prior to construction. Authority will review and approve the inadvertent discovery plan.

3.7 Environmental Justice	**None required**	None required
3.8 Geology Soils, and Paleontological Resources	**GEO-1: Monitor for discovery of paleontological resources, evaluate found resources, and prepare and follow a recovery plan for found resources.**	GEO-1: Before the start of ground-disturbing activities, the Authority will retain a qualified paleontologist, as defined by the SVP, who is experienced in identifying potential for occurrence of significant fossils at construction sites and who is experienced in teaching non-specialists. The qualified paleontologist will conduct appropriate studies of the construction site before any ground-disturbing activities occur, including on-site investigations, to determine likelihood of significant fossils at the site, in particular small fossils. Particular attention will be given to smaller vertebrate fossils in those areas where the Tassajara Formation or San Pablo Group occur (i.e., geologic units known to contain an abundance of rodent or lagomorph fossils). If vertebrate fossils are determined likely to be discovered at the construction site, the qualified paleontologist or his/her appointee will conduct on-site monitoring during construction activities. In addition, the qualified paleontologist will train all construction personnel who are involved with earthmoving activities, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils that are likely to be seen during construction, and proper notification procedures should fossils be encountered. Procedures to be conveyed to workers include halting construction within 50 feet of any potential fossil find and notifying a qualified paleontologist, who will evaluate the significance. The qualified paleontologist will also make periodic visits during earthmoving in high sensitivity sites to verify that workers are following the established procedures. If paleontological resources are discovered during earthmoving activities either by the paleontological monitor or construction personnel, the construction crew will immediately cease work near the find and notify the Authority. Construction work in the affected areas will remain stopped or be diverted to allow recovery of fossil remains in a timely manner. The Authority will retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with SVP guidelines. The recovery plan may include a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by the Authority to be necessary and feasible will be implemented before construction activities can resume at the site where the paleontological resources were discovered. The Authority will be responsible for ensuring that the paleontological monitor's recommendations regarding treatment and reporting are implemented. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall develop a paleontological resource monitoring and recovery plan for Authority review prior to construction. Authority will review and approve the paleontological resource monitoring and recovery plan.
3.9 Greenhouse Gas Emissions and Climate Change	**None required**	None required
3.10 Hazards Materials	**HAZ-1: Implement construction risk management plan**	HAZ-1: Prior to construction, the Authority will prepare a construction risk management plan (CRMP) for the Proposed Project improvements that provides a framework for proper characterization and management of contaminated soil, ballast, and groundwater that could be disturbed during construction and maintenance activities. The CRMP will describe how to meet the following key objectives. • Identify various scenarios under which large volumes of soil and railroad ballast generated during construction and maintenance can be safely reused. • Identify maximum acceptable contaminant levels to protect workers, passengers, the public, and ecological receptors for each soil and ballast reuse scenario. • Identify maximum acceptable contaminant levels to protect station workers and passengers potentially exposed to vapor intrusion, if any, from soil or groundwater contamination.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		• Identify sampling and analysis, stockpiling, transportation, health and safety, and other procedures by which soil and ballast must be managed in order to meet safety, regulatory, and other standards. • Define how the groundwater that could be encountered during construction and maintenance will be characterized, properly managed, and discharged or treated. Based on the analytical results of site investigations, maximum acceptable contaminant levels for the following soil and ballast reuse scenarios will be established: • "Unrestricted Onsite Reuse" in which soil and ballast excavated from the Proposed Project footprint can be reused in any on-site area. • "Stations Reuse" in which soil and ballast excavated from the Proposed Project footprint can be reused in station areas where there would be relatively frequent potential exposure. • "Right-of-Way Reuse" in which soil and ballast excavated from the Proposed Project footprint can be reused in areas where there would be relatively infrequent potential exposure along the right-of-way of railroad tracks. • "Encapsulation" in which soil and ballast excavated from the Proposed Project footprint can be reused under barriers or other structures (and covered on all exposed sides by clean material or asphalt paving). To protect ecological receptors, the reuse scenarios will incorporate additional limitations (as necessary) near creeks, surface waters, or other aquatic habitats based on the findings of an ecological risk assessment. Soil or ballast that contains chemical constituents at levels greater than the acceptable reuse scenarios will be disposed of in accordance with RCRA and Cal. Code Regs. at a facility permitted to accept the waste. Imported fill materials will be characterized to demonstrate they satisfy the criteria for "Unrestricted Onsite Reuse" established in the CRMP. All extracted groundwater will be considered potentially contaminated and will require characterization to determine the appropriate treatment requirements (if necessary) for discharge. The extracted groundwater will be collected and managed prior to discharge in compliance with local and state regulations and permit requirements, including the SWRCB and Regional Water Resources Control Boards. Health and safety procedures described in the CRMP will include requirements for an air quality monitoring program during excavation in areas with elevated contaminants of concern to ensure that fugitive dust emissions do not pose an unacceptable health risk to workers or the public. The air monitoring program will identify action levels for total particulates that require respiratory protection, implementation of engineering controls, and ultimately work stoppage. This monitoring program will be in addition to the fugitive dust controls required under AMM AQ-3. A licensed professional will prepare the CRMP and submit it to the appropriate oversight agency for review and approval prior to construction. The approved CRMP will be implemented during construction and maintenance of the Proposed Project improvements within each section. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a CRMP for construction and obtain RWQCB or DTSC agreement after Authority review prior to construction. Authority will modify the construction CRMP to develop maintenance controls to minimize risk and incorporate CRMP requirements in maintenance contracts. Authority will review and approve the CRMP prior to submission to RWQCB or DTSC. Authority inclusion in maintenance contracts.
3.11 Hydrology and Water Quality	**HYD-1: Perform detailed hydraulic evaluations and implement new or modify existing stormwater controls as required to prevent storm drainage system capacity exceedance and reduce pollutant transport.**	HYD-1: The Authority will ensure that detailed hydraulic evaluations will be performed and completed during the Project design phase for improvements that include alteration of drainage patterns such as alteration and construction of trackside ditches, construction of new impervious pavement and stormwater drainage systems at stations and parking lots, and construction of new connections to existing stormwater drainage systems, to ensure that the new stormwater control infrastructure is appropriately designed and that runoff from near-term improvements would not exceed the capacity of storm drainage systems or result in substantial additional pollutant transport. Limiting the rate and volume of operational discharge would also reduce the potential for flooding. The detailed hydraulic evaluations will be performed in accordance with the requirements of the latest edition of the Caltrans Highway Design Manual for track areas and station platforms, and in accordance with regulations and design requirements of local municipalities for other improvements associated with stations. A professional engineer will perform and certify the following detailed hydraulic evaluations. • Improvements comply with regulations and design requirements of local municipalities for discharges to storm drainage systems within those jurisdictions. • Improvements are designed to accommodate storm frequencies, precipitation data, and runoff calculations. • The capacity of existing or proposed storm drainage systems that would receive discharges is adequate. If improvements could result in exceedance of existing or proposed storm drainage systems and subsequent downstream pollutant transport, modification of on-site stormwater control designs or off-site storm drainage systems will be performed to reduce and control runoff and potential for flooding. These modifications may include the following measures. • Reducing impervious surfaces through use of permeable pavement surfaces for station improvements. • Increasing the size of drainage ditches, swales, retention basins, infiltration basins, trenches, and cross-drainage facilities within track and station areas. • Increasing the capacity of downstream stormwater drainage systems by increasing the size of off-site storm drains, drainage canals, and retention and infiltration basins. In general, the drainage design for Proposed Project improvements would involve the following features. • Construct trackside swales or ditches to collect runoff from the track areas. • Allow infiltration and detention on-site and off-site, if feasible. • Evaluate or improve the capacity of the existing drainage system to carry runoff from near-term improvements, if required. • Construct cross-culverts under the existing or new tracks to carry runoff across the trackway system to maintain the flow pattern.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		• Construct catch basins as required to convey excess flows from the near-term improvements to the local drainage system and install and operate appropriate BMPs to reduce and/or treat (as required by the appropriate jurisdiction) pollutants washed from new, Project-related impervious surfaces. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall conduct hydraulic evaluations for all improvements within drainage courses and flood zones to determine flood impacts and shall modify designs to reduce flooding impacts to existing conditions. The Hydraulic Study shall be submitted along with modified designs to the Authority prior to submission to any necessary regulatory agencies. Authority will review and approve the hydraulic study and modified designs prior to submission to regulatory agencies. Regulatory agency review and approval prior to construction.
3.11 Hydrology and Water Quality	**HYD-2: Perform hydrologic and hydraulic studies for project improvements to be located in floodplains.**	HYD-2: During the detailed Proposed Project design phase, the Authority will prepare site-specific detailed hydrologic and hydraulic studies for improvements that are proposed within the 100-year floodplain. The results of these studies will be used to inform the design of Proposed Project-related facilities and mitigations, such that they are specifically designed to not to significantly impact the 100-year floodplain as required by FEMA, DWR, and USACE standards so that upstream, on-site, and downstream flooding would not occur. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall conduct hydraulic evaluations for all improvements within drainage courses and flood zones to determine flood impacts and shall modify designs to reduce flooding impacts to existing conditions. The Hydraulic Study shall be submitted along with modified designs to Authority prior to submission to any necessary regulatory agencies. Authority will review and approve the hydraulic study and modified designs prior to submission to regulatory agencies. Regulatory agency review and approval prior to construction.
3.11 Hydrology and Water Quality	**HYD-3: Prevent construction materials from being exposed to storm flooding hazards.**	HYD-3: The construction contractor will ensure that construction materials (particularly soil stockpiles and hazardous materials such as fuels, lubricants, and oils) will not be stored in areas of potential storm flooding inundation (i.e., 100-year flood zones and within drainage courses) during the winter rainy season (i.e., November 1 through April 31). Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall include storm event monitoring and contingency plans in construction plans for Authority review prior to construction. Authority will review and approve the construction plan prior to construction.
3.12 Land Use and Property Acquisitions	**None required**	None required
3.13 Noise and Vibration	**NV-1: Develop and implement a construction noise reduction plan**	NV-1: Prior to the issuance of any demolition or construction permit for each phase of project construction, the Authority will develop a Construction Noise Reduction Plan to minimize daytime and nighttime construction noise at nearby noise-sensitive receptors. The plan will be developed in coordination with an acoustical consultant and the project construction contractor under the direction of the Authority and shall be approved by applicable agencies. The plan shall include the following elements: • A sound barrier plan that includes the design, implementation, and construction schedule of the temporary sound barriers for the construction phase of the Proposed Project. At a minimum, these barriers shall be designed to meet the applicable impact criteria (e.g., 80 dBA, 8-hour L_{eq}) at all noise-sensitive receptors. • Buffer distances and types of equipment selected to minimize noise impacts. • Construction contractors shall utilize equipment and trucks equipped with the best available noise control techniques, such as improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds, wherever feasible and practicable. • Impact tools (e.g., jackhammers, pavement breakers) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust and external jackets shall be used where feasible to lower noise levels. Quieter procedures shall be used, such as drills rather than impact equipment, whenever practicable. • Stationary noise sources (e.g., generators) shall be muffled and sited within distances from noise-sensitive receptors that would not result in excess of noise standards. When equipment must be sited within said distances, stationary noise sources shall be wholly or partially shielded from adjacent noise-sensitive receptors such that noise levels at all noise-sensitive properties are below guidance thresholds. Pole power shall be utilized at the earliest feasible point in time and to the maximum extent feasible in lieu of generators. • "Quiet" pile-driving technology (such as auger displacement installation) will be used where feasible in consideration of geotechnical and structural requirements and conditions. • A community affairs liaison will be designated and a telephone hotline and email address created to reach this person, with contact information conspicuously posted around the Proposed Project site, in adjacent public spaces, and in construction notifications. If the community affairs liaison hotline is not staffed 24 hours per day, the hotline shall provide an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended.

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		• The community affairs liaison shall be responsible for responding to any local complaints about construction activities associated with the Proposed Project. The community affairs liaison shall investigate, evaluate, and attempt to resolve noise complaints related to construction activities of the Proposed Project. The community affairs liaison shall coordinate with a designated construction contractor representative to implement the following: o Document and respond to each noise complaint. o Attempt to contact the person(s) making the noise complaint as soon as feasible and no later than one construction day. o Conduct a prompt investigation to attempt to determine whether construction activities related to the Proposed Project contribute a substantial amount of noise related to the complaint. If it is reasonably determined by the community affairs liaison that construction-related noise described in the complaint exceeds ambient exterior noise levels by 5 dBA or more at a noise-sensitive use, then the community affairs liaison shall identify and implement feasible reasonable measures within the Proposed Project site to address the noise complaint. Examples of reasonable measures that may be implemented within the Proposed Project site include but are not limited to: • Confirming construction equipment and related noise suppression devices are maintained per manufacturers' specifications • Ensuring construction equipment is not idled for extended periods of time • Evaluating feasible relocations of equipment, alternatives to specific types of equipment, or resequencing of construction activities, as appropriate, while maintaining the project schedule and safety Adjacent noise-sensitive residents and commercial uses (i.e., educational, religious, transient lodging) within 500 feet of demolition and pile driving activity shall be notified of the construction schedule at least two weeks ahead of construction start. This notification shall include the name and contact information of the community affairs liaison. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a construction noise reduction plan for Authority review prior to construction. Authority will review and approve the construction noise reduction plan prior to construction.
3.13 Noise and Vibration	**NV-2: Develop and implement a construction vibration reduction plan.**	NV-2: Prior to the issuance of construction permits, the Authority shall implement the following measures, or equivalent or more effective measures, which shall comply with the vibration impact thresholds for potential structural damage. The project sponsor shall submit a Construction Vibration Reduction Plan prepared by an acoustical and/or structural engineer or other appropriate qualified professional that shall be approved by appropriate agencies. This plan shall identify the scope of proposed construction activities, including equipment rosters, and a summary of impact distance thresholds for various building types using FTA vibration damage thresholds on a per-construction equipment basis. The plan shall define construction equipment operating restrictions as they relate to critical distances from existing structures and outline a vibration monitoring program to continuously monitor construction vibration levels when activities must occur within determined impact distances and alternative methods are not feasible. The vibration monitoring program shall identify vibration limits for both warning and stop-work notifications to prevent exceeding impact thresholds. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a construction vibration reduction plan for Authority review prior to construction. Authority will review and approve the construction vibration reduction plan prior to construction.
3.14 Transportation and Traffic	**TRA-1: Prepare transportation management plan for project construction.**	TRA-1: The Authority will coordinate with the California Highway Patrol, BART, Caltrans, local transit providers, and public works and transportation departments of local jurisdictions to develop a TMP that will mitigate construction impacts on transit, roadway, bicycle, and pedestrian facilities, while allowing for expeditious completion of construction. Measures that will be implemented throughout the course of construction of the Proposed Project will include, but will not be limited to, the following: • Limit number of simultaneous street closures and consequent detours of transit and automobile traffic within each immediate vicinity, with closure timeframe limited as much as feasible for each closure, unless alternative routes are available. • Implement traffic control measures to minimize traffic conflicts for all roadway users (regardless of mode) where lane closures and restricted travel speeds will be required for long periods. • Provide advance notice of all construction-related street closures, durations, and detours to local jurisdictions, emergency service providers, and motorists. • Provide safety measures for motorists, transit vehicles, bicyclists, and pedestrians to ensure safe travel through construction zones. • Limit sidewalk (and pedestrian walkway/path) and bikeway closures to one location within each vicinity at a time, with closure timeframe limited as much as feasible for each closure, unless alternative routes are available. • Provide designated areas for construction worker parking wherever feasible to minimize use of parking in residential or business areas. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction

Resource Section	Avoidance, Minimization, and Mitigation Measures	Description
		Actions: Authority will include as contract requirement. Contractor shall prepare a construction traffic control plan for Authority review and approval prior to construction. After Authority approval, the plan shall be provided to local jurisdictions and Caltrans for their review and approval, as appropriate. Authority will review and approve the traffic control plan prior to construction. Local jurisdiction and Caltrans approval of traffic control plan, as required.
3.14 Transportation and Traffic	**TRA-2: Prepare mainline railway disruption control plan for project construction.**	TRA-2: The Authority will work collaboratively with BART to contain and minimize disruption to freight (UPRR) services during project construction, while allowing for expeditious completion of construction. Measures that will be implemented throughout the course of construction of the Proposed Project will include, but will not be limited to, the following: • Provide safety measures for freight rail operation through construction zones. • Require contractors to coordinate with rail dispatch to minimize disruption of rail service in the corridor. • Where feasible, maintain acceptable service access for freight operation. • Provide advance notice of construction-related track closures to all affected parties. • Coordinate with UPRR in advance and during any potential disruption to freight operation and/or UPRR facilities and maintain emergency access for UPRR for the duration of construction. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a railway disruption control plan for Authority review and approval prior to construction. After Authority approval, the plan shall be provided to UPRR for review and approval. Authority will review and approve the railway disruption control plan prior to construction. UPRR review and approval prior to construction.
3.14 Transportation and Traffic	**TRA-3: Prepare BART railway disruption control plan for project construction.**	TRA-3: The Authority will work collaboratively with BART to contain and minimize disruption to BART service during construction of the Proposed Project, while allowing for expeditious completion of construction. Measures that will be implemented throughout the course of construction of the Proposed Project will include, but will not be limited to, the following: • Provide safety measures for BART operation through construction zones areas. • Require contractors to coordinate with BART dispatch to minimize disruption of BART service. • Where feasible, limit closure of any tracks for construction activities to periods when BART service is not scheduled or is less frequent (e.g., weekends or weekday evenings). • Where feasible, maintain acceptable service access for BART operation. • While not anticipated, where track closures result in temporary suspension or substantial disruption to BART service, work with local and regional transit providers to provide alternative transit service around the closure area (e.g., increased bus and shuttle service). • Provide advance notice to transit riders of any temporary suspension of or substantial disruption to BART service. • Coordinate with BART in advance and during any potential disruption to BART operation and/or BART facilities and maintain emergency access for BART for the duration of construction. Responsible Party: Construction contractor under the direction of the Authority Timing: Pre-construction and during construction Actions: Authority will include as contract requirement. Contractor shall prepare a railway disruption control plan for Authority review and approval prior to construction. After Authority approval, the plan shall be provided to BART for review and approval. Authority will review and approve the railway disruption control plan prior to construction. BART review and approval prior to construction.
3.15 Utilities	**None required**	None required
3.16 Indirect and Cumulative Effects	**None required**	None required

[a] Biological measures specifically for state-protected species.