3.10 Hazardous Materials and Wastes

3.10.1 Introduction

This section describes the use and prevalence of hazardous materials and wastes in the San Francisco to San Jose Project Section (Project Section, or project) of the California High-Speed Rail (HSR) System, and potential impacts associated with construction and operation of the project. Short-term issues concerning hazardous materials and wastes along the Project Section include disturbance of and exposure to hazardous materials during construction. Hazardous materials include materials used and transported during project construction as well as materials already in place within the project footprint (such as diesel fuel, lubricants, paints, solvents, and cement products containing strong basic or acidic chemicals); materials related to building demolition (such as lead-based paint [LBP] and asbestos-containing materials [ACM]); minerals, such as naturally occurring asbestos (NOA); materials associated with existing infrastructure (such as polychlorinated biphenyl [PCB]–containing transformers); contaminants from sites with known subsurface contamination (such as petroleum-based products and chlorinated solvents); activities associated with airports, airstrips, and heliports involving the use and disposal of hazardous materials; and undocumented contaminated surface soils from routine activities (such as lead adjacent to roadways and pesticides from historical agricultural activities). Critical hazardous materials and wastes issues along the Project Section and in some cases within 0.25 miles of schools include the short-term management of materials used, transported, and potentially disturbed during construction. Long-term issues consist of maintaining standards for the types, quantities, and containment of materials used in project operations and maintenance.

Primary Hazardous Materials and Waste Concerns

- Disturbance of and exposure to hazardous materials and wastes during construction, particularly at the sites of the Brisbane Light Maintenance Facility.
- Potential release of hazardous materials used and transported during construction and operations

The *San Francisco to San Jose Project Section Hazardous Materials and Wastes Technical Report* (San Francisco to San Jose Hazardous Materials and Wastes Technical Report) (California High-Speed Rail Authority [Authority] 2019a) and *San Jose to Merced Project Section Hazardous Materials and Wastes Technical Report* (San Jose to Merced Hazardous Materials and Wastes Technical Report) (Authority 2019b) provides additional technical details on hazardous materials and wastes.[1] The following appendices in Volume 2 of this Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) provide additional details on hazardous materials and waste:

- Appendix 2-D, Applicable Design Standards, describes the relevant design standards for the project.
- Appendix 2-E, Project Impact Avoidance and Minimization Features, provides the list of all impact avoidance and minimization features (IAMF) incorporated into the project.
- Appendix 2-I, Regional and Local Plans and Policies, provides a list by resource of applicable regional or local plans and policies.

[1] Technical reports for the San Francisco to San Jose Project Section evaluate the portions of the HSR alignment between 4th and King Street Station in San Francisco and Scott Boulevard in Santa Clara, while technical reports for the adjacent San Jose to Merced Project Section evaluate the portions of the HSR alignment south of Scott Boulevard to the Project Section terminus at West Alma Avenue south of the San Jose Diridon Station.

Hazardous materials and wastes, including the storage, use, transportation, and disposal of hazardous materials and wastes, in the resource study area (RSA) are important considerations for human health and environmental quality. Six other resource sections in this EIR/EIS also provide additional information related to hazardous materials and wastes:

- Section 3.5, Electromagnetic Fields and Electromagnetic Interference, evaluates impacts related to the potential for electromagnetic fields and interference or of corrosion of underground pipelines and cables to the adjoining rail.
- Section 3.6, Public Utilities and Energy, evaluates impacts related to construction and operations of the project on existing pipelines.
- Section 3.8, Hydrology and Water Resources, evaluates surface water hydrology, surface water quality, groundwater, and floodplains.
- Section 3.9, Geology, Soils, Seismicity, and Paleontological Resources, evaluates impacts of building the project on sites with soil erosion and stability issues that could affect hazardous materials and waste sites, including issues related to landfill gas exposure.
- Section 3.11, Safety and Security, evaluates impacts of building the project on emergency response preparedness in the event of leaks, spills, or accidents involving hazardous materials and wastes. The potential exposure of people or structures to wildfire hazards is also evaluated in Section 3.11.
- Section 3.13, Station Planning, Land Use, and Development, evaluates impacts of building the project on current land use, including airport land use plans.

3.10.1.1 Definition of Resources

Hazardous materials, hazardous waste, hazardous substances, and extremely hazardous substances are defined as follows:

- **Hazardous materials**—Hazardous materials include hazardous waste, hazardous substances, and extremely hazardous substances as defined in the following text, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment because of its quantity, concentration, or physical or chemical characteristics. This term includes petroleum products.
- **Hazardous waste**—In general, a solid waste is defined as a hazardous waste when it qualifies as a "waste" (i.e., is no longer of use and will be disposed of) and when it exhibits a hazardous waste characteristic (e.g., toxicity, ignitability, reactivity, corrosivity), or when it has been specifically listed as hazardous in a federal or state law or regulation. Hazardous waste is regulated by the U.S. Environmental Protection Agency (USEPA) under the Resource Conservation and Recovery Act (RCRA). Federal hazardous wastes are often referred to as *RCRA wastes*. California hazardous waste law and regulation is in some cases more stringent than the federal law and, as a result, wastes may be defined as California hazardous wastes but not be RCRA wastes; as such, they may be identified as *non-RCRA hazardous wastes*. Hazardous wastes discussed in this document are classified as such based on the California definition.
- **Hazardous substance**—The term *hazardous substance* refers to any substance or mixture of substances that (1) is toxic, (2) is corrosive, (3) is an irritant, (4) is a strong sensitizer, (5) is flammable or combustible, or (6) generates pressure through decomposition, heat, or other means. Hazardous substances may cause substantial personal injury or substantial illness during, or as a proximate result of any customary or reasonably foreseeable handling or use, including reasonably foreseeable ingestion by children, as defined in the California Health and Safety Code (Cal. Health and Safety Code § 108125). Hazardous substances include petroleum products, certain radioactive substances, and certain substances that present an

electrical, mechanical, or thermal hazard. There is no single list of hazardous substances that can be referenced.

- **Extremely hazardous substance**—Extremely hazardous substances are subject to additional regulation if they exceed thresholds specified in the regulations. The extremely hazardous substances analyzed in this document are listed in Section 302 of the U.S. Emergency Planning and Community Right-to-Know Act (42 United States Code [U.S.C.] § 11002). The list is provided as an appendix to 40 Code of Federal Regulations (C.F.R.) Part 355, or in the California Code of Regulations (Cal. Code Regs.) Title 8, Appendix A to Section 5189.

3.10.2 Laws, Regulations, and Orders

This section presents federal and state laws, regulations, orders, and plans applicable to hazardous materials and waste management. The Authority would implement the HSR project, including the Project Section, in compliance with all federal and state regulations. Regional and local laws, regulations, orders, and plans considered in the preparation of this analysis are provided in Volume 2, Appendix 2-I.

3.10.2.1 Federal

Resource Conservation and Recovery Act (42 U.S.C. § 6901 et seq.)

The RCRA regulates the identification, generation, transportation, storage, treatment, and disposal of solid and hazardous materials and hazardous wastes.

Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. § 9601 et seq.)

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulates former and newly discovered uncontrolled waste disposal and spill sites. CERCLA established the National Priorities List of contaminated sites, and the “Superfund” cleanup program.

Clean Air Act (42 U.S.C. § 7401 et seq.)

The Clean Air Act protects the general public from exposure to airborne contaminants that are known to be hazardous to human health. Under the Clean Air Act, the USEPA established National Emissions Standards for Hazardous Air Pollutants, which are emissions standards for air pollutants, including asbestos.

Clean Water Act, Section 402(p) (33 U.S.C. § 1342(p))

The Clean Water Act regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.

Safe Drinking Water Act (42 U.S.C. § 300(f) et seq.)

The Safe Drinking Water Act regulates discharges of pollutants to underground aquifers and establishes standards for drinking water quality.

Toxic Substances Control Act (15 U.S.C. § 2601 et seq.)

The Toxic Substances Control Act regulates manufacturing, inventory, and disposal of industrial chemicals including hazardous materials.

Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. § 136 et seq., 40 C.F.R. §§ 152.1–171)

The Federal Insecticide, Fungicide and Rodenticide Act regulates the manufacturing, distribution, sale, and use of pesticides.

Hazardous Materials Transportation Act (49 U.S.C. § 5101 et seq., 49 C.F.R. Parts 101, 106, 107, and 171–180)

The Hazardous Materials Transportation Act regulates the transport of hazardous materials by motor vehicles, marine vessels, and aircraft.

Hazardous Materials Transportation Uniform Safety Act of 1990 (Public Law 101-615)

The Hazardous Materials Transportation Uniform Safety Act regulates the safe transport of hazardous material in intrastate, interstate, and foreign commerce. The statute includes provisions to encourage uniformity among different state and local highway routing regulations, to develop criteria for the issuance of federal permits to motor carriers of hazardous materials, and to regulate the transport of radioactive materials.

Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 11001 et seq., 40 C.F.R. § 350.1 et seq.)

The Emergency Planning and Community Right-to-Know Act regulates facilities that use hazardous materials in quantities that require reporting to emergency response officials.

Federal Compliance with Pollution Control (U.S. Presidential Executive Order 12088)

U.S. Presidential Executive Order 12088 requires federal agencies to take necessary actions to prevent, control, and abate environmental pollution from federal facilities and activities under control by federal agencies.

Pollution Prevention Act (42 U.S.C. § 13101)

The Office of Pollution Prevention and Toxics manages programs under the Pollution Prevent Act of 1990. Under these laws, the USEPA evaluates new and existing chemicals and their risks to find ways to prevent or reduce pollution before it gets into the environment.

3.10.2.2 State

Well Safety Devices for Critical Wells (14 Cal. Code Regs. § 1724.3)

This regulation governs safety devices required on critical wells within 100 feet of an operating railway.

Gas Monitoring and Control at Active and Closed Disposal Sites (27 Cal. Code Regs. § 20917 et seq.)

This regulation sets forth the performance standards and the minimum substantive requirements for landfill gas monitoring and control as it relates to active solid waste disposal sites and to proper closure, post-closure maintenance, and ultimate reuse of solid waste disposal sites to protect public health and safety and the environment from pollution as a result of the disposal of solid waste.

Closure and Post-Closure Maintenance of Landfills (27 Cal. Code Regs., Subchapter 5)

This regulation provides post-closure maintenance guidelines, including requirements for an emergency response plan and site security. This regulation also regulates post-closure land use, requiring protection of public health and safety and the built environment, as well as the prevention of gas explosions. Construction on the site must maintain the integrity of the final cover, drainage, and erosion control systems, and gas monitoring and control systems. All post-closure land use within 1,000 feet of a landfill site must be approved by the local enforcement agency.

California Public Resources Code Section 21151.4

This code requires the lead agency to consult any school district with jurisdiction over a school within 0.25 mile of the project about potential effects on the school if the project might be reasonably anticipated to emit hazardous air emissions or handle an extremely hazardous substance or a mixture containing an extremely hazardous substance, above certain designated quantities, that may pose a health or safety hazard.

Porter-Cologne Water Quality Control Act (Cal. Water Code, § 13000 et seq.)

The Porter-Cologne Water Quality Control Act regulates water quality through the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards, including oversight of water monitoring and contamination cleanup and abatement.

Hazardous Materials Release Response Plans and Inventory Law (Cal. Health and Safety Code, § 25500 et seq.)

This section of the California Health and Safety Code requires facilities using hazardous materials to prepare hazardous materials business plans (HMBP).

Hazardous Waste Control Act (Cal. Health and Safety Code, § 25100 et seq.)

This act is similar to the federal RCRA in that it regulates the identification, generation, transportation, storage, and disposal of materials deemed hazardous by the State of California.

Safe Drinking Water and Toxic Enforcement Act (Proposition 65, Cal. Health and Safety Code, § 25249.5 et seq.)

The Safe Drinking Water and Toxic Enforcement Act is similar to the Safe Drinking Water Act and Clean Water Act on the federal level in that it regulates the discharge of contaminants to groundwater.

Cortese List Statute (Cal. Gov. Code, § 65962.5)

This regulation requires the California Department of Toxic Substances Control (DTSC) to compile and maintain lists of potentially contaminated sites throughout California (the Hazardous Waste and Substances Sites List or Cortese List).

3.10.2.3 Regional and Local

Regional and local policies that are applicable to the project are listed in Volume 2, Appendix 2-I. In addition to those regional and local policies, Californians are protected from hazardous waste and hazardous materials by a Unified Program to create consistent administrative requirements, permits, inspections, and enforcement throughout the state. The California Environmental Protection Agency (Cal-EPA) oversees the statewide implementation of the Unified Program and its 81 certified local government agencies, known as Certified Unified Program Agencies (CUPA), which apply regulatory standards established by five different state agencies. The Unified Program consolidates the administration, permit, inspection, and enforcement activities of the following environmental and emergency management programs:

- Aboveground Petroleum Storage Act Program
- Area Plans for Hazardous Materials Emergencies
- California Accidental Release Prevention Program
- Hazardous Materials Business Plans (HMBP)
- Hazardous Materials Management Plan and Hazardous Material Inventory Statements
- Hazardous Waste Generator and On-Site Hazardous Waste Treatment (tiered permitting) Programs
- Underground Storage Tank Program

State agency partners involved in the implementation of the Unified Program are responsible for setting program element standards, working with Cal-EPA for program consistency, and providing technical assistance to CUPAs and other Program Agencies. The following state agencies are involved with the Unified Program:

- Cal-EPA
- DTSC
- Governor’s Office of Emergency Services

- California Department of Forestry and Fire Protection—Office of the State Fire Marshall
- SWRCB

3.10.3 Consistency with Plans and Laws

As indicated in Section 3.1.5.3, Consistency with Plans and Laws, California Environmental Quality Act (CEQA) and Council on Environmental Quality (CEQ) regulations require a discussion of inconsistencies or conflicts between a proposed undertaking and federal, state, regional, or local plans and laws. As such, this Draft EIR/EIS describes the inconsistency of the project alternatives with federal, state, regional, and local plans and laws to provide planning context.

There are several federal and state laws and implementing regulations, listed in Section 3.10.2.1, Federal, and Section 3.10.2.2, State, that govern the use, treatment, and disposal of hazardous wastes and materials; outline management and cleanup procedures for contaminated sites; regulate the use of hazardous materials near sensitive receptors and potential environmental concern (PEC) sites, and outline regulatory procedures in the event of a release or spill. A summary of the federal and state requirements considered in this analysis follows:

- Federal and state acts and laws that regulate the contamination or release of hazardous substances into water and air resources
- Federal and state acts and laws that provide for the cleanup and management of contaminated sites
- Federal and state acts and laws that provide for the proper transport, management, and disposal of hazardous wastes and materials
- Federal and state acts and laws that outline proper procedures in the event of a hazardous materials-related emergency such as a hazardous materials spill or release
- Federal and state acts and laws that regulate the use of hazardous materials within 0.25 mile of a school
- Federal and state acts and laws that regulate activities related to disposal sites and landfills
- Federal and state acts and laws that regulate pesticide application

The Authority, as the lead agency proposing to construct and operate the HSR system, is required to comply with all federal and state laws and regulations and to secure all applicable federal and state permits prior to initiating construction on the selected alternative. Therefore, there would be no inconsistencies between the project and these federal and state laws and regulations.

The Authority is a state agency and therefore is not required to comply with local land use and zoning regulations; however, it has endeavored to design and build the HSR project so that it is compatible with land use and zoning regulations. For example, the project incorporates IAMFs that would include effective measures to protect the health and safety of the public and environment through compliance with regulations that control the transport, use, and storage of hazardous materials; proper permitting; and the implementation of a written hazard communication plan and spill prevention plan. Additionally, impacts from inadvertent disturbance of hazardous wastes and materials from undocumented sites would be minimized through such measures as the development of a construction management plan (CMP), conformance to hazardous materials and wastes regulations, and the establishment of a HMBP. A total of 27 plans, programs, and ordinances, and 84 goals, policies, and objectives were reviewed as listed in Volume 2, Appendix 2-J, Policy Consistency Analysis. The project would be consistent with all reviewed plans and policies.

3.10.4 Methods for Evaluating Impacts

The evaluation of impacts associated with hazardous materials and wastes is a requirement of the National Environmental Policy Act (NEPA) and CEQA. The following sections define the RSA and describe the methods used to analyze impacts of project construction and operation on hazardous materials and wastes.

3.10.4.1 Definition of Resource Study Areas

As defined in Section 3.1, Introduction, RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. The RSA for hazardous materials and wastes encompasses the areas directly or indirectly affected by construction of and operations along the Project Section. These areas include the project footprint for each project alternative plus a 150-foot buffer to account for hazardous material and waste issues on adjacent properties.

For the analysis of PEC sites, the database search used a 0.25-mile buffer on either side of the project footprint. PEC sites within the hazardous materials and wastes RSA were evaluated, as were large or regionally important PEC sites within the 0.25-mile buffer where the extent of the site or contamination could affect the RSA. Although these distances do not conform to the American Society for Testing and Materials (ASTM) Standard Practice E1528-06 (Transaction Screening Process) for a parcel-level due diligence, they are sufficient for identifying PEC sites along the potential alignment for the following reasons:

- Soil and soil vapor impacts are generally confined to immediately adjacent properties and would be located well within a 0.25-mile buffer.
- Typical groundwater plumes are less than 1,000 feet in extent; therefore, properties with groundwater impacts more than 0.25 mile from the project footprint would not be expected to affect the project.

The RSA for landfills extends to 0.25 mile on either side of the project footprint including the vertical construction profile. This distance allows for an analysis of the potential for a change in land use adjacent to landfills, consistent with Cal. Code Regs., Title 27, Subchapter 5, to assess landfill potential to release methane gas, which may present an explosion risk. To evaluate potential impacts on schools in a manner consistent with the CEQA significance criteria, the RSA near school locations included 0.25 mile on either side of the project footprint. The RSA for oil and gas wells extends 200 feet from the project footprint including the vertical construction profile. The RSA for airports extends 2 miles on either side of the project footprint. The overall Project Section is illustrated on Figure 3.10-1, while the RSAs and their associated database search distances are shown in Table 3.10-1.

Table 3.10-1 Definition of Hazardous Materials and Wastes Resource Study Areas

Type	General Definition
Alignment	Project footprint for tracks, stations, light maintenance facility, and staging area, plus a 150-foot buffer from the project footprint to account for hazardous materials and wastes on adjoining parcels. Includes the vertical construction profile: areas that could potentially require excavation or trenching where potential subsurface contamination could be encountered.
Schools	0.25 mile on either side of the project footprint
Potential environmental concern sites	0.25 mile on either side of the project footprint
Landfills	0.25 mile on either side of the project footprint and the vertical construction profile
Oil and gas wells	200 feet on either side of the project footprint and the vertical construction profile
Airports	2 miles on either side of the project footprint

Source: Authority 2019a, 2019b JULY 2019

Figure 3.10-1 Adjacent Land Use along the Project Section

3.10.4.2 Impact Avoidance and Minimization Features

IAMFs are project features that are considered to be part of the project and are included as applicable in each of the alternatives for purposes of the environmental impact analysis. The full text of the IAMFs that are applicable to the project is provided in Volume 2, Appendix 2-E. The following IAMFs are applicable to the hazardous materials and wastes analysis:

- HMW-IAMF#1: Property Acquisition Phase I and Phase 2 Environmental Site Assessments
- HMW-IAMF#2: Landfill
- HMW-IAMF#3: Work Barriers
- HMW-IAMF#4: Undocumented Contamination
- HMW-IAMF#5: Demolition Plans
- HMW-IAMF#6: Spill Prevention
- HMW-IAMF#7: Transport of Materials
- HMW-IAMF#8: Permit Conditions
- HMW-IAMF#9: Environmental Management System
- HMW-IAMF#10: Hazardous Materials Plans
- GEO-IAMF#3: Gas Monitoring
- GEO-IAMF#5: Hazardous Minerals

This environmental impact analysis considers these IAMFs as part of the project design. In Section 3.10.6, Environmental Consequences, each impact narrative describes how these project features are applicable and, where appropriate, effective at avoiding or minimizing potential impacts to less than significant under CEQA.

3.10.4.3 Methods of Impact Analysis

This section describes the sources and methods that the Authority used to analyze potential impacts on the public and the environment that currently occur from existing contaminated sites, landfills, oil and gas wells, and similar infrastructure within the RSA, as well as from the potential for release of hazardous wastes and materials that could occur with implementation of the project alternatives. These methods apply to both NEPA and CEQA analyses unless otherwise indicated. Refer to Section 3.1.5.4, Methods for Evaluating Impacts, for a description of the general framework for evaluating impacts under NEPA and CEQA. The Authority collected data from local and regional general plans, municipal codes, hazardous waste programs, and other relevant planning documents, from which local jurisdictions establish the requirements for hazardous materials use and transport along the Project Section and around HSR station sites. Laws, regulations, and orders (Section 3.10.2, Laws, Regulations, and Orders) that regulate hazardous materials and wastes were also considered in the evaluation of impacts. Table 3.10-2 shows the methodology used to evaluate the risk of impacts associated with project construction and operations for items of general environmental concern. Refer to the Hazardous Materials and Wastes Technical Reports (Authority 2019a, 2019b) for more information regarding the methods and data sources used in this analysis.

Three agencies maintain searchable databases that track hazardous material releases in reportable quantities:

- The USEPA maintains the Hazardous Materials Incident Report System, which contains hazardous material spill incidents reported to the U.S. Department of Transportation.
- The California Office of Emergency Services maintains the California Hazardous Materials Incident Report System, which contains information on reported hazardous material accidental releases or spills.
- The SWRCB maintains the Spills, Leaks, Investigations, and Cleanup Program, which contains information on reported hazardous material accidental releases or spills.

This analysis focuses on both the direct and indirect impacts of hazardous materials and wastes during the construction and operations of the project alternatives.

Table 3.10-2 Methodology for Risk Level Evaluation for Items of General Environmental Concern

Item of General Environmental Concern	Risk Level Evaluation Criteria		
	Low	Medium	High
Lead-based paint	No pre-1978 structures in alignment RSA, or no structures in RSA	1950–1977 structures in alignment RSA	Pre-1950 structures in alignment RSA
Asbestos-containing materials	No pre-1981 structures or railway in alignment RSA	Railway in alignment RSA	Pre-1981 structures and railway in alignment RSA
Pesticides	No agricultural land use in or adjacent to alignment RSA	Pre-1980 agricultural land use adjacent to alignment RSA	Pre-1980 agricultural land use in alignment RSA
Polychlorinated biphenyls	No transformers in or adjacent to alignment RSA	Pre-1979 transformers adjacent to RSA	Pre-1979 transformers in RSA
Aerially deposited lead	Light traffic or no roadways in project footprint	Moderate-traffic roadways in or adjacent to project footprint	Heavy-traffic roadway in or adjacent to project footprint
Naturally occurring asbestos	No ultramafics mapped in or adjacent to alignment RSA	Ultramafics mapped adjacent to alignment RSA	Ultramafics mapped in alignment RSA
Landfills	No landfills within 0.25 mile of project footprint	Landfills within 0.25 mile of project footprint	Landfills within 0.15 mile of project footprint
Oil and gas wells	No oil/gas wells within 200 feet of project footprint	Oil/gas wells within 200 feet of project footprint	Oil/gas wells in project footprint
Airports	No airports within 2 miles of project footprint	Airports within 2 miles of project footprint	Airports within 0.25 mile of project footprint

Source: USEPA 1996
RSA = resource study area

3.10.4.4 Method for Evaluating Impacts under NEPA

The CEQ NEPA regulations (40 C.F.R. Parts 1500–1508) provide the basis for evaluating project effects (as described in Section 3.1.5.4). As described in Section 1508.27 of these regulations, the criteria of context and intensity are considered together when determining whether a project action would have an effect on a resource.

- **Context**—For the disturbance of existing hazardous waste sites or the introduction of hazardous materials during construction and operations of the project, the *context* would consider the presence of documented contaminated sites, the distance of such sites from the project footprint, the presence of sensitive receptors within the RSA, the soil properties within which a hazardous materials release has occurred or could occur, the expected depth to and flow direction of groundwater, and the presence of nearby surface waterbodies. For example, the use and transport of hazardous materials and wastes would be subject to more stringent regulations within 0.25 mile of a school than if schools were not present.
- **Intensity**—For this analysis, *intensity* is determined by the severity of the effect. An evaluation of intensity would consider the amount of hazardous materials present, the characteristics of the material, and whether engineering or administrative controls are in effect to mitigate the potential exposure of humans or the environment to the material. For example, PEC sites that have large, mobile subsurface plumes of persistent contaminants would be considered higher risk in the project footprint than PEC sites that have localized, immobile sources of hazardous materials.

Context, intensity, and duration of an effect are used to determine the impacts under NEPA. Standard IAMFs have been applied to the project design to avoid or minimize project impacts; however, if project impacts would occur, mitigation measures are proposed to reduce the magnitude of the effect.

3.10.4.5 Method for Determining Significance under CEQA

For the CEQA analysis, the project would result in a significant hazardous materials and waste impact if it would:

- Create a significant hazard to the public or the environment because of the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment because of the reasonably foreseeable upset and accident conditions that involve the release of hazardous materials into the environment;
- Be located on or in proximity to a site that is on the Cortese List and the project activities that take place on that site have the potential to create a significant hazard to the public or the environment because of the release of hazardous materials or wastes associated with the listed site; or
- Emit hazardous air emissions or handle substances or mixtures containing extremely hazardous substances within 0.25 mile of a school that would pose a health and safety hazard to students or employees.

3.10.5 Affected Environment

This section describes the affected environment for hazardous materials and wastes in the RSA. The description of the affected environment provides the context for the environmental analysis and the evaluation of impacts.

The Project Section extends approximately 49 miles from the 4th and King Street Station in San Francisco to West Alma Avenue in San Jose, along the existing Caltrain railway corridor, which has been in operation by Southern Pacific Railroad (SPRR) and other rail agencies since 1861. Consequently, the rail corridor currently includes railway facilities such as terminals, stations, maintenance facilities, and storage areas at various locations along the Project Section. Electrical substations, power stations, and transformers that could potentially contain PCBs are also located along the railway and at stations. The Bayshore freight yard in Brisbane, which assembled trains and maintained steam locomotives, operated between 1907 and the 1980s. This site has remained largely vacant since the facility was dismantled in the 1980s.

The Project Section passes through a variety of urban land use types, ranging from industrial uses adjacent to the corridor in the San Francisco, Brisbane, and San Jose areas, to a mixture of commercial and residential between South San Francisco and Redwood City, to predominantly residential uses between Atherton and Santa Clara. The Authority used U.S. Geological Survey topographic maps, aerial photographs, Sanborn fire insurance maps, and information from environmental databases to identify land uses in the RSA. These resources are included as appendices in the Hazardous Materials and Wastes Technical Reports (Authority 2019a, 2019b). The distribution of land uses along the Project Section is illustrated on Figure 3.10-1.

Existing railway operations and associated maintenance activities have used or generated hazardous materials in the RSA. Soil contamination from rail operations results from heavy metals associated with ballast, petroleum hydrocarbons (e.g., diesel, creosote) associated with railroad ties and operations, and herbicides associated with maintenance. Prior unpublished site assessments conducted for the Authority in May 2010 determined that the most prevalent contaminants in soils in the RSA include arsenic, lead, total petroleum hydrocarbons as gasoline, total petroleum hydrocarbons as motor oil, and polycyclic aromatic hydrocarbons. Concentrations of these soil contaminants throughout the corridor were found to be in excess of off-site reuse screening levels, indicating an environmental concern that would need to be managed as hazardous materials. Available groundwater investigation data reviewed for the RSA indicated that groundwater along the Caltrain corridor is contaminated with petroleum hydrocarbons.

3.10.5.1 Hazardous Materials Transport, Use, Storage, and Disposal

Hazardous materials, depending on the use or user, may need to be transported and stored during, before, and after use. The transportation and storage devices or mechanisms for these materials, during, before and after use, will depend on a variety of factors including the type, amount, location, and storage time of the hazardous material. Disposal of hazardous materials requires specific procedures to reduce potential exposure. Project construction and operations could entail the transport, use, storage, and disposal of hazardous materials.

3.10.5.2 Sites with Potential Environmental Concerns

The Authority reviewed historical sources, previous environmental reports, public records, and a reconnaissance of the alignment to determine PEC sites. Sites were categorized into three general types of PECs: low risk, medium risk, and high risk. The PECs are identified by number on Figure 3.10-2 through Figure 3.10-6, and correspond to the PEC tables in Appendix A, Sites of Potential Environmental Concern, of the Hazardous Materials and Wastes Technical Reports (Authority 2019a, 2019b).

- **Low-Risk**—Sites that have been previously contaminated. Low-risk PEC sites have been fully remediated, granted case closure, have a “no further action” status, or are located a sufficient distance from the alignment RSA such that they are not believed to present a reasonable environmental concern. It should be noted that sites that have received case closure may still contain concentrations of contaminants above current screening levels; however, the size, properties of contaminants, local subsurface conditions, and distance from the alignment RSA may still result in a low risk to the project.
- **Medium-Risk**—Sites that are currently contaminated and under the oversight of a regulatory agency. These sites can be in the characterization, remediation, or post-remediation monitoring phase. The extent of the contamination is well defined, and the nature of the contaminants is less difficult to treat. Treatment may already be underway, or the treatment approach would be straightforward. Finally, certain closed sites may have been closed subject to continued implementation of engineering controls, which might impede development of those sites. Such sites could require the use of site-specific handling and disposal procedures for known areas of impact.
- **High-Risk**—Sites that are currently contaminated and under the oversight of a regulatory agency. These sites can be in the characterization, remediation, or post-remediation monitoring phase. The extent of the contamination is not well defined, or the nature of the contaminants is more difficult to treat. The sites may be heavily contaminated or have a long history of industrial use.

Sources: Authority 2019a; SWRCB 2018; DTSC 2018

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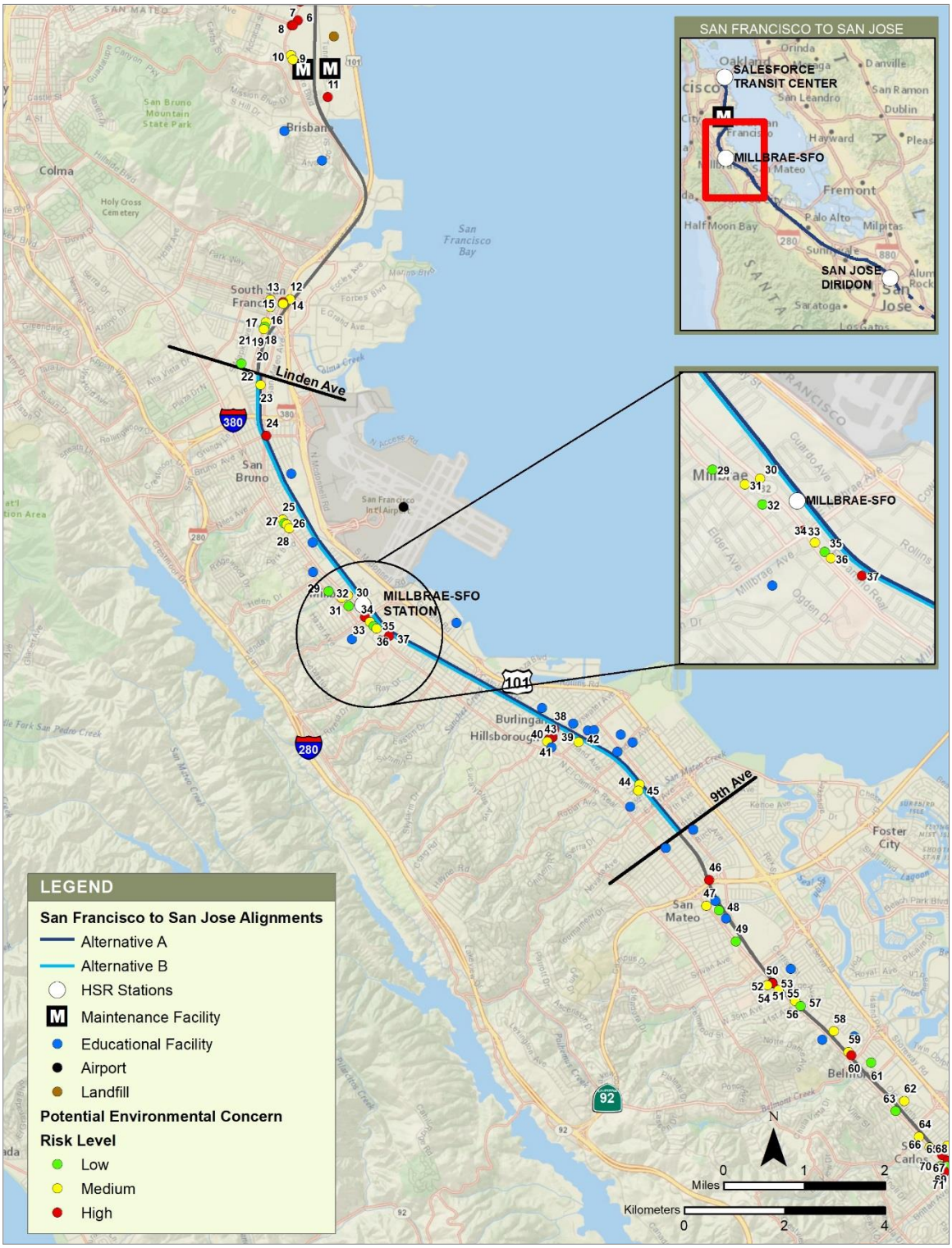
Figure 3.10-2 Potential Environmental Concern Sites and Schools—San Francisco to South San Francisco Subsection



Sources: Authority 2019a; SWRCB 2018; DTSC 2018

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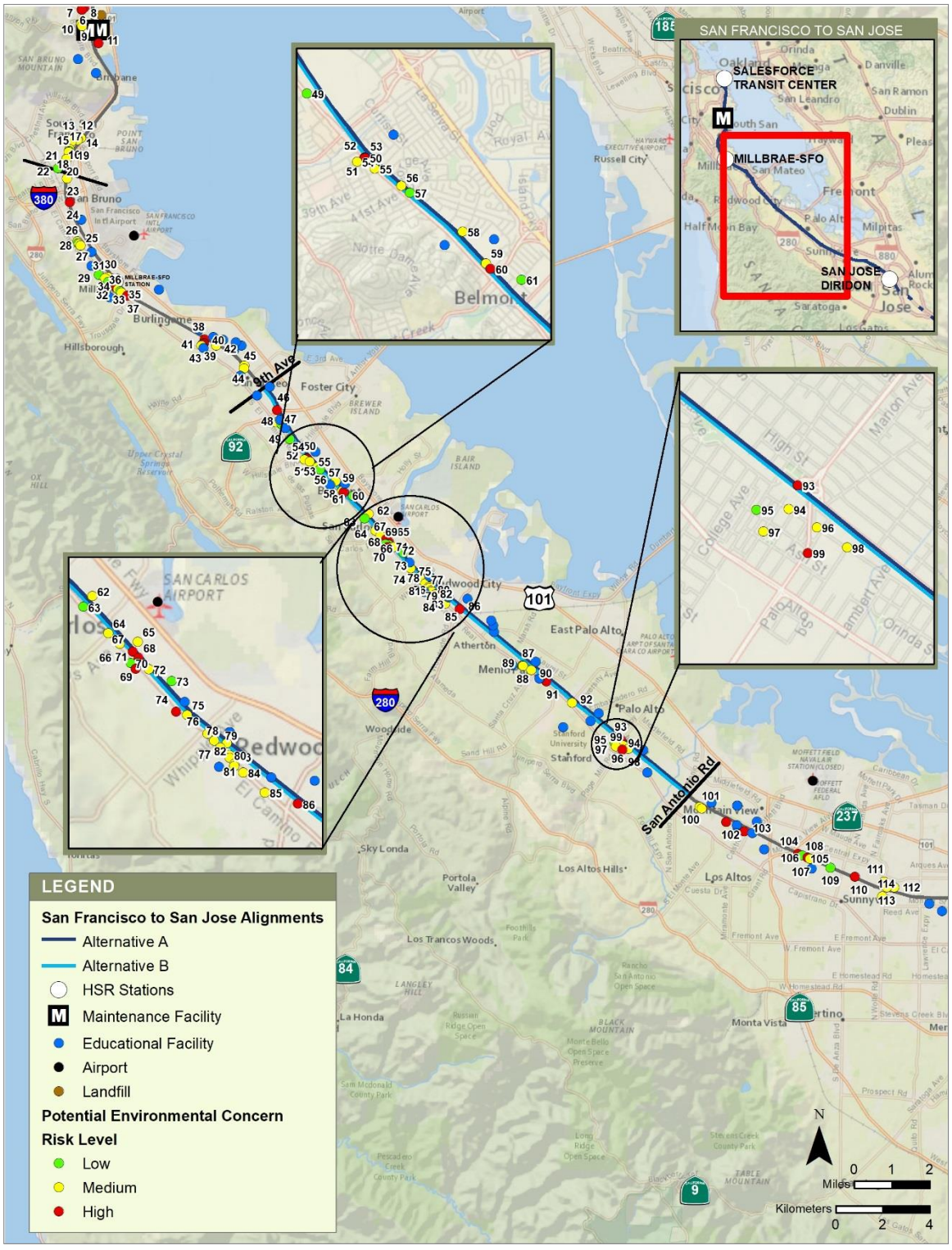
Figure 3.10-3 Potential Environmental Concern Sites and Schools—San Bruno to San Mateo Subsection



Sources: Authority 2019a; SWRCB 2018; DTSC 2018

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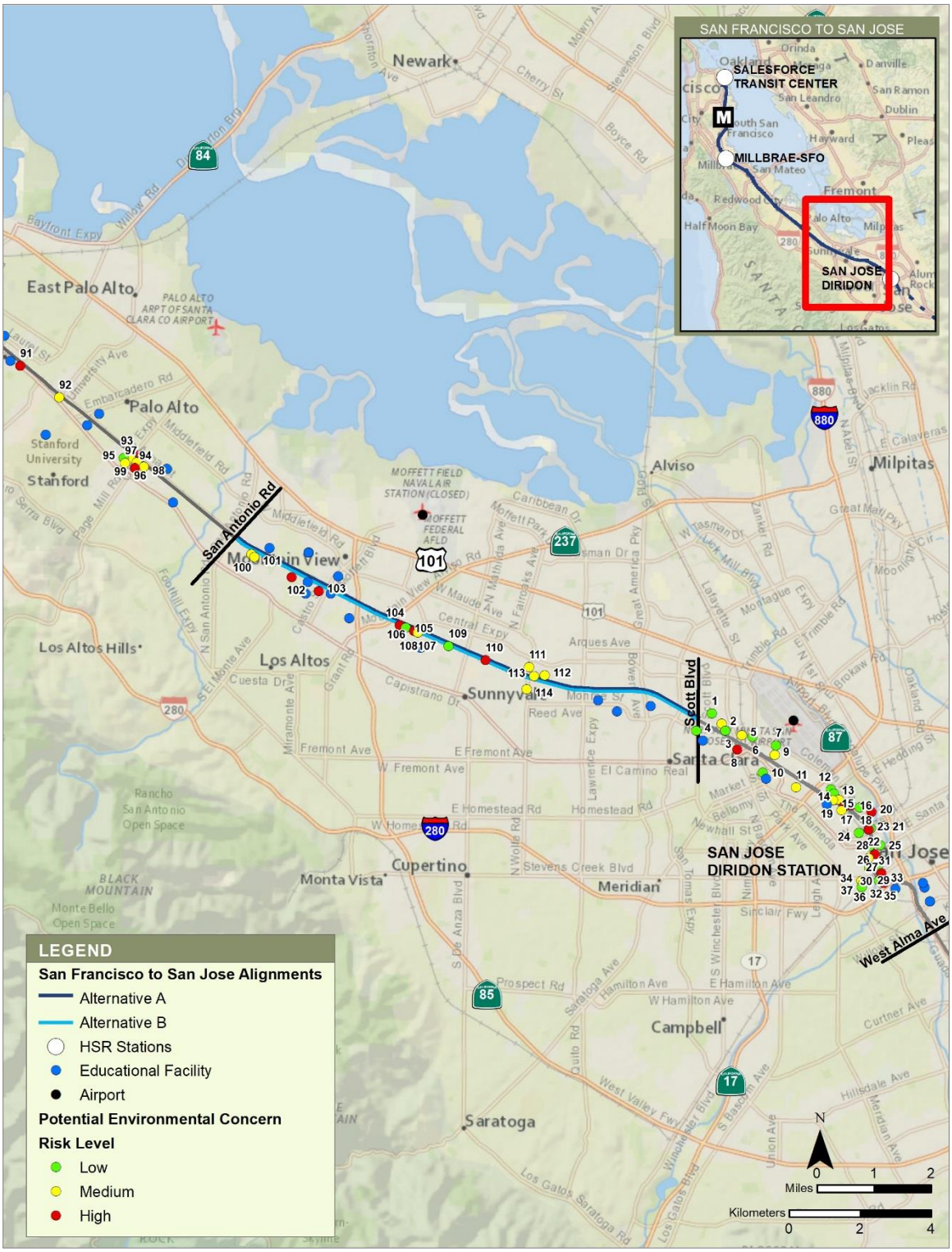
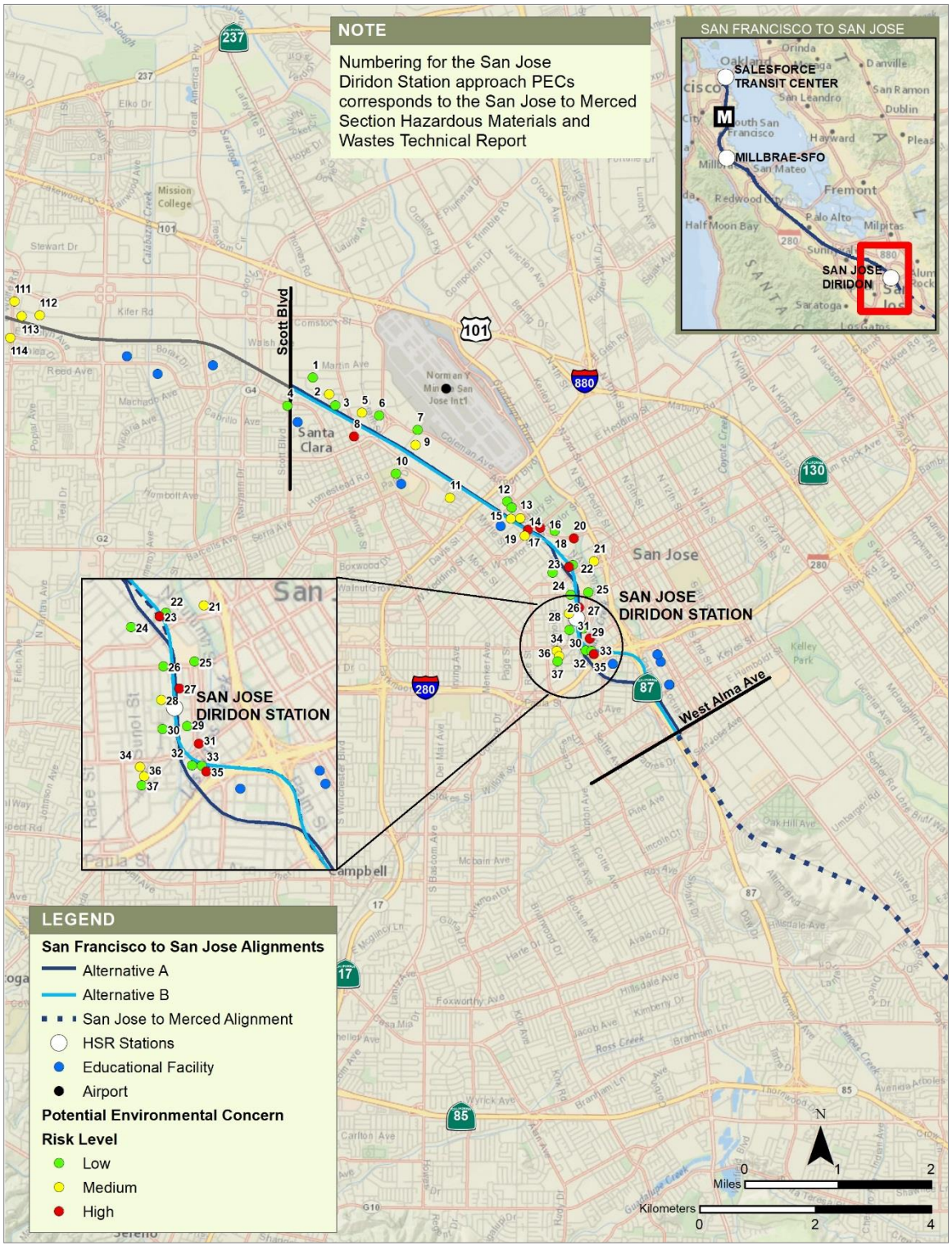
Figure 3.10-4 Potential Environmental Concern Sites and Schools—San Mateo to Palo Alto Subsection



Sources: Authority 2019a; SWRCB 2018; DTSC 2018 MARCH 2020

Figure 3.10-5 Potential Environmental Concern Sites and Schools—Mountain View to Santa Clara Subsection



Sources: Authority 2019b; SWRCB 2018; DTSC 2018

MARCH 2020

Figure 3.10-6 Potential Environmental Concern Sites and Schools—San Jose Diridon Station Approach Subsection

Table 3.10-3 shows the total numbers of medium- and high-risk PEC sites in the RSA by subsection. Low-risk sites are omitted from this table because, by definition, they would not pose a substantial risk to the project. The most common PEC sites were sites with contaminants of concern including arsenic, benzene, toluene, ethylbenzene, and xylene compounds; chlorinated solvents; metals; volatile organic compounds (VOC); and petroleum hydrocarbons with most media impacts on groundwater. Details of the medium- and high-risk sites are presented in the Hazardous Materials and Wastes Technical Reports (Authority 2019a, 2019b).

Table 3.10-3 Summary by Subsection of Medium- and High-Risk Potential Environmental Concern Sites in the Resource Study Area

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach[1]
Medium risk	10 sites	12 sites	31 sites	8 sites	11 sites
High risk	10 sites	7 sites	14 sites	5 sites	8 sites

Sources: SWRCB 2018; DTSC 2018; Authority 2019a, 2019b

I- = Interstate

[1] The number of medium- and high-risk PEC sites within the PEC RSA are the same for Alternative B (Viaduct to I-880) and Alternative B (Viaduct to Scott Boulevard).

At the site of the proposed West Brisbane LMF, investigations at the former Bayshore freight yard revealed that the groundwater is contaminated with halogenated organic solvents and the soil is contaminated with chromium, copper, zinc, lead, arsenic, and petroleum hydrocarbons. On the site of the proposed East Brisbane LMF, groundwater at the SFPP Kinder Morgan Brisbane Terminal facility is contaminated with aviation fuel, diesel, gasoline, benzene, and fuel oxygenates. The East Brisbane LMF also overlies the former Brisbane Class II Landfill, as discussed in more detail in Section 3.10.5.10, Leaching or Off-Gas from Landfills.

3.10.5.3 Railway-Related Contaminants

The Project Section is within an existing transportation corridor that has been used historically as a railway by SPRR and other rail agencies since 1861. Available Sanborn Fire Insurance Maps for this subsection showed that the SPRR tracks were present in 1884 at the location of the Diridon Caltrain Station in the San Jose Diridon Station Approach Subsection. The railway is currently known as Caltrain and is operated by the Peninsula Corridor Joint Powers Board. Throughout its more than 150-year history, the railway operators constructed associated facilities such as terminals, stations, maintenance facilities, and storage areas at various locations along the Project Section. Electrical substations, power stations, and transformers have also been built at locations along the railway and at stations. Railway operation generates contaminants including heavy metals from truck ballasts, lead and arsenic from herbicide use in vegetation suppression, ACM in train disc brakes, creosote and other hydrocarbon compounds in treated wood ties, oils and petroleum products from dust suppression activities, and dumping or rinsing from hazardous materials-carrying railcars on side tracks. These substances can cause short- or long-term effects on the immediate or general area of the railway alignment and a range of health risks including cancer, nervous system damage, hormone or endocrine disruption, eye or skin irritation, and reproductive health hazards. Table 3.10-4 shows the potential risk of rail contamination effects by subsection.

Table 3.10-4 Risk of Railway Effects by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Rail Corridor	High	High	High	High	High

Sources: Authority 2019a, 2019b

3.10.5.4 Lead-Based Paint

LBP is recognized as a potential health risk because of its known toxic effects on the central nervous system, kidneys, and blood stream. Lead exposure occurs primarily through the ingestion of LBP. Concern for LBP is primarily related to residential structures, although the concern may also apply to commercial structures. The risk of lead toxicity in LBP varies according to the condition of the paint and the year of its application. The U.S. Department of Housing and Urban Development has defined LBP as any paint that contains more than 0.5 percent lead by weight and has identified the following risk factors:

- Age of the paint on a residential structure
  - The maximum risk is from paint applied before 1950
  - There is severe risk from paint applied before 1960
  - There is medium risk from deteriorated paint applied before 1970
  - There is a slight risk from paint that is intact but applied before 1977
  - Paint applied in 1978 or later is not expected to contain lead
- The condition of the painted surfaces
- The presence of children and certain types of household goods in the building
- Previously reported cases of lead poisoning in the building or surrounding areas

The RSA contains structures that were built prior to 1978, when LBP was in common use; consequently, the extent of LBP presence in these structures is likely. The presence of pre-1978 structures, where LBP may be present, does not appear to affect most of the alignment. The main areas of concern are near the Millbrae Station in the San Bruno to San Mateo Subsection, along Railroad Avenue and El Camino Real in the San Mateo to Palo Alto Subsection, and the San Jose Diridon Station Approach Subsection, where there are several structures that were built at a time when LBP was in use. Table 3.10-5 summarizes the risk of LBP by subsection.

Table 3.10-5 Risk of Lead-Based Paint by Subsection[1]

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Lead-based paint	Low	Medium	Medium	Low	Medium

Sources: Authority 2019a, 2019b

[1] Level of risk is determined by age of paint, as established by the U.S. Department of Housing and Urban Development: Moderate risk pertains to paint applied after 1960 but before 1970; low risk pertains to paint applied between 1970 and 1977. Moreover, level of risk is associated with abundance of structures in proximity to project components.

3.10.5.5 Asbestos-Containing Materials

Asbestos is a mineral fiber. Prior to the 1980s, a variety of building construction materials commonly used asbestos for insulation and as a fire retardant. Some types of nonfriable building materials may still contain asbestos. These products include roofing felt, vinyl asbestos floor tile, ceiling tiles, transite flat sheet, transite shingles, roofing coatings, and transite pipe.

There is no health threat if an ACM remains undisturbed. However, if an ACM is damaged or disturbed by repair, remodeling, or demolition activities, microscopic fibers become airborne and can be inhaled. Asbestos is linked to cancers of the lung and the lining of internal organs, as well as to asbestosis and other diseases that inhibit lung function (USEPA 2018).

The alignment RSA has historically been used as a railway and contains structures that were built prior to 1981. ACM used in the manufacture of train disc brakes and ACM in pre-1981 building materials may have resulted in asbestos-contaminated soil along the alignment. Since the alignment has been used as a railway since the 19th century, ACM from disc brakes could potentially affect the entire project footprint. The main area of concern for ACM from building

materials is near the Millbrae Station, where several structures exist that were built at a time when ACM was in use. Table 3.10-6 shows the risk of ACM by subsection.

Table 3.10-6 Risk of Asbestos-Containing Materials by Subsection[1]

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Asbestos-containing materials	Medium	High	Medium	Medium	High

Sources: Authority 2019a, 2019b

[1] Level of risk is a qualitative characterization based on presence of historic railroad tracks and abundance of structures—particularly older structures—that may be demolished for project construction.

3.10.5.6 Pesticides in Soil from Historical Agricultural Uses

A pesticide is any substance or mixture of substances intended to prevent the presence of, destroy, repel, or mitigate any pest. The term *pesticide* as used in this analysis, applies to insecticides and various other substances used to control pests, including herbicides. Examples of the health risks posed by pesticides include cancer, nervous system damage, hormone or endocrine disruption, eye or skin irritation, and reproductive health hazards. Any current or former agricultural lands or landscapes adjacent to or within the alignment RSA may have been subject to regular applications of fertilizers, pesticides, or other chemicals for maintenance. Organochlorine pesticides (OCP) typically were used in agricultural settings from the 1940s through the 1970s. The manufacturing of OCPs in the United States was discontinued in the 1970s; however, some sources of residual OCPs may still exist in the alignment RSA.

Most of the Project Section passes through or is adjacent to urbanized residential, commercial, or industrial land, which has been present since at least the early 20th century, with the exception of the San Francisco to South San Francisco Subsection, which has been developed similarly since the late 19th century, and the San Jose Diridon Station Approach Subsection, which has been developed since at least the 1880s.

The likelihood of widespread use of pesticides within the San Francisco to South San Francisco, San Bruno to San Mateo, and the San Jose Diridon Station Approach Subsections is considered low, because agricultural use was not present or prominent based on a review of historic topographic maps. However, there are orchards shown on the historical topographic maps that cover the San Mateo to Palo Alto and the Mountain View to Santa Clara Subsections. In both of these subsections, agricultural production decreased between the 1960s and 1990s. Given these historic observations, there is the potential for historic use of pesticides in these subsections, resulting in medium risks. Table 3.10-7 shows the risk of pesticides by subsection.

Table 3.10-7 Risk of Pesticides by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Pesticides	Low	Low	Medium	Medium	Low

Sources: Authority 2019a, 2019b

3.10.5.7 Polychlorinated Biphenyls

PCBs can cause a variety of adverse health effects. PCBs were typically used as a coolant source for older transformers and heavy industrial machinery such as hydraulic systems and electrical processes. The manufacturing of PCBs in the United States was banned in 1979; however, some sources of PCBs may still exist within the project footprint. PCB effects are typically limited to the immediate vicinity of a transformer.

Pole-mounted transformers were observed within the alignment RSA during the windshield survey site reconnaissance; however, no pole-mounted transformers were observed within the existing Caltrain right-of-way. Aerial photographs and a review of Google Earth street imagery were used as supplemental sources (Google, Inc. 2018). Some potential PCB sources may not be identified using these sources. Additionally, not all pole-mounted transformers necessarily use PCB-containing material. Because of a limited investigation, it could not be determined whether the observed pole-mounted transformers include PCB-containing materials. Table 3.10-8 shows the risk of PCBs by subsection.

Table 3.10-8 Risk of Polychlorinated Biphenyls by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Polychlorinated biphenyls	Medium	Medium	Medium	Medium	Medium

Sources: Authority 2019a, 2019b

3.10.5.8 Aerially Deposited Lead

Exposure to lead can cause a variety of adverse health effects. Aerially deposited lead (ADL) from leaded fuel vehicle exhaust emissions from soil adjacent to roadways is a PEC. Leaded gasoline began to be phased out in California in the late 1970s through the early 1980s; therefore, heavily traveled roadways built prior to that timeframe are more likely to have ADL contamination. Exposure to lead can result in a variety of adverse health effects, which can include symptoms such as abdominal pain, fatigue, irritability, memory loss, and depression.

Along portions of the Project Section, the alignment is adjacent to regionally significant roadways that are moderately or heavily traveled and were built prior to 1980s. The alignment travels beneath Interstate (I-) 280 in the northern portion of San Francisco and adjacent to U.S. Highway (US) 101 in South San Francisco. The alignment parallels El Camino Real through portions of San Mateo, Belmont, San Carlos, and San Jose, and it parallels Central Expressway through Mountain View. In the San Jose Diridon Station Approach Subsection, the alignment RSA crosses I-280 and travels along the east side of State Route (SR) 87. These highways are heavily traveled and were built prior to 1980. All subsections are at risk of exposure to ADL because of the proximity of regionally significant roadways. Table 3.10-9 shows the risk of ADL by subsection.

Table 3.10-9 Risk of Aerially Deposited Lead by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Aerially deposited lead	Medium	Medium	Medium	Medium	Medium

Sources: Authority 2019a, 2019b

3.10.5.9 Naturally Occurring Asbestos

Ultramafic and metavolcanic bedrock can contain NOA. Serpentinite is an ultramafic rock that has been known to contain the mineral chrysotile, considered a common form of NOA. NOA is a health risk when it becomes airborne, which can happen when the rock is crushed or pulverized (CGS 2002).

Based on regional geologic maps, no ultramafic or metavolcanic bedrock is mapped in the San Bruno to San Mateo, San Mateo to Palo Alto, or Mountain View to Santa Clara Subsections;

therefore, the presence of NOA is unlikely. Potrero Hill, in the San Francisco to South San Francisco Subsection, is mapped as serpentinite (USGS 2000). NOA could be encountered if excavation is planned in this area. Regional geologic maps (Dibblee and Minch 2005a, 2005b), show no ultramafic or metavolcanic bedrock in the San Jose Diridon Station Approach Subsection; therefore, the presence of NOA is unlikely. Table 3.10-10 shows the risk of NOA by subsection.

Table 3.10-10 Risk of Naturally Occurring Asbestos by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Naturally occurring asbestos	Medium	Low	Low	Low	Low

Sources: Authority 2019a, 2019b

3.10.5.10 Leaching or Off-Gas from Landfills

Several environmental issues are associated with current and historic landfill sites, including odor, dust, landfill gas, and the potential for groundwater contamination. Landfill gas is generated by decomposing material in landfills and includes methane. If not properly controlled, the gas can travel underground and present an explosion and asphyxiation hazard at neighboring properties. Landfill gas presents a risk only when it accumulates in structures. The extent of the risk depends on the size and age of the landfill, the type of waste deposited there, the presence of water, and geological conditions.

The former Brisbane Class II Landfill is within the project footprint of Alternative A east of Tunnel Avenue, between Beatty Avenue and Lagoon Road in Brisbane, within the San Francisco to South San Francisco Subsection. The project footprint for Alternative B is west of the former landfill. The landfill actively received waste from 1932 to 1967. Some methane gas is still being generated from decomposing material within the landfill and is periodically treated through pumping and flaring (City of Brisbane 2013). The San Francisco Bay Regional Water Quality Control Board has been performing semiannual groundwater, surface water, seep, and leachate monitoring for the landfill since 2005 as required by Cal. Code Regs., Title 27. The groundwater monitoring well network for the Brisbane Landfill consists of 22 monitoring stations with 13 shallow monitoring wells, 7 deep monitoring wells, and 2 shallow interior leachate wells. The most recent monitoring has shown low concentrations of VOCs detected above reporting limits. This landfill is considered a PEC site. More information about the site is available in Appendix B, EDR Environmental Database Report, of the San Francisco to San Jose Hazardous Materials and Wastes Technical Report (Authority 2019a). No other landfills are within 0.25 mile of the project footprint. Table 3.10-11 shows the risk of landfills by subsection.

Table 3.10-11 Risk of Landfills by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Landfills	High	Low	Low	Low	Low

Sources: Authority 2019a, 2019b

3.10.5.11 Petroleum Products Leaking from Oil and Gas Wells

Leaking petroleum projects can cause environmental impacts associated with soils and groundwater. The Authority reviewed oil, gas, and geothermal resources maps to identify oil, gas, and geothermal wells located in the oil and gas well RSA. Oil, gas, and geothermal resources maps were reviewed from California Department of Conservation, Division of Oil, Gas, and

Geothermal Resources Online Mapping System (DOGGR n.d.). The online mapping system shows the location of new, active producer, active injector, dual completion (production and injection), and plugged wells. Based on the review of the Online Mapping System, there are no oil, gas, or geothermal wells in the oil and gas well RSA. Table 3.10-12 shows the risk of oil and gas wells by subsection.

Table 3.10-12 Risk of Oil and Gas Wells by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Oil and gas wells	Low	Low	Low	Low	Low

Sources: Authority 2019a, 2019b

3.10.5.12 Particulate Matter or Volatile Organic Compound Deposits Adjacent to Airports, Airstrips, and Heliports

Activities associated with airports, airstrips, and heliports can involve the use and disposal of hazardous materials that have the potential for release to the environment. Aircraft and airfield maintenance can also release VOCs and particulates. Soil and groundwater pollution can be generated by activities including fuel storage and refueling, aircraft and vehicle cleaning and maintenance, and construction.

Airports, airstrips, or heliports in the airport RSA are listed in Table 3.10-13 with the approximate distance to the project footprint for both alternatives. Airports and the effects associated with these facilities are described in more detail in Section 3.11. As shown in Table 3.10-14, the risk associated with airports would be medium in all subsections except the San Bruno to San Mateo Subsection, which has a high risk as a result of its proximity to the San Francisco International Airport with respect to aircraft takeoff and landing. Based on comprehensive database research documented in Appendix B of the Hazardous Materials and Wastes Technical Reports (Authority 2019a, 2019b), no contamination requiring remediation was identified at any of the airports within the airport RSA.

Table 3.10-13 Summary of Airport Occurrence by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Airports	San Francisco International Airport (within 1.25 miles)	San Francisco International Airport (within 0.25 mile)	San Carlos Airport (within 0.5 mile) and Moffett Federal Airfield (within 1.25 miles)	Norman Y. Mineta San Jose International Airport (within 0.5 mile)	Norman Y. Mineta San Jose International Airport (within 1.5 miles)

Sources: Authority 2019a, 2019b

Table 3.10-14 Risk of Airports by Subsection

Hazard	San Francisco to South San Francisco	San Bruno to San Mateo	San Mateo to Palo Alto	Mountain View to Santa Clara	San Jose Diridon Station Approach
Airports	Medium	High	Medium	Medium	Medium

Sources: Authority 2019a, 2019b

3.10.5.13 Schools

School locations are important to consider because individuals particularly sensitive to hazardous materials exposure use these facilities; thus, additional protective regulations apply to projects that could emit hazardous air emissions or handle extremely hazardous substances near schools.

The California Public Resources Code requires projects that might reasonably be expected to emit hazardous air emissions or handle extremely hazardous substances or mixtures containing extremely hazardous substances and would be within 0.25 mile of a school site to consult with the school district regarding potential hazards. Many schools are within 0.25 mile of the alternatives' project footprints. Table 3.10-15 lists these schools and their proximity to the project footprint of each alternative.

Table 3.10-15 Schools within the Schools Resource Study Area

Facility	Distance from Alternative A Project Footprint (miles)	Distance from Alternative B Project Footprint (miles)[1]	Direction from Alternatives	City
San Francisco to South San Francisco Subsection				
RISE Institute	0.06	0.06	West	San Francisco
Enchantment Institute	0.19	0.19	West	San Francisco
City College of San Francisco—Southeast Center	0.01	0.01	East	San Francisco
Webster (Daniel) Elementary	0.14	0.14	West	San Francisco
Dr. Charles Drew College Preparatory Academy	0.06	0.06	East	San Francisco
KIPP Bayview Academy	0.07	0.07	East	San Francisco
Five Keys Independence High School (SF Sheriff's)	0.23	0.23	West	San Francisco
Five Keys Independence Adult Charter School (SF Sheriff's)	0.23	0.23	West	San Francisco
Brown Jr. (Willie L.) Middle School	0.18	0.18	West	San Francisco
Brisbane Elementary	0.22	0.22	West	Brisbane
Lipman Middle	0.20	0.20	West	Brisbane
San Bruno to San Mateo Subsection				
Belle Air Elementary School	0.07	0.07	East	San Bruno
Lomita Park Elementary	0.01	0.01	West	San Bruno
Mills High	0.11	0.11	West	Millbrae
St. Dustan's Elementary	0.22	0.22	West	Millbrae
Burlingame High School	0.01	0.01	East	Burlingame
Washington Elementary	0.08	0.08	East	Burlingame
St. Catherine of Siena Elementary	0.21	0.21	West	Burlingame
Genius Learning	0.11	0.11	East	Burlingame

Facility	Distance from Alternative A Project Footprint (miles)	Distance from Alternative B Project Footprint (miles)[1]	Direction from Alternatives	City
Pacific Rim International School	0.16	0.16	East	San Mateo
San Mateo High School	0.14	0.14	East	San Mateo
Stanbridge Academy	0.06	0.06	East	San Mateo
College Park Elementary	0.18	0.18	East	San Mateo
St. Matthew's Episcopal Day School at Baldwin	0.18	0.18	West	San Mateo
San Mateo to Palo Alto Subsection				
Sunnybrae Elementary	0.11	0.11	East	San Mateo
George Hall Elementary School	0.22	0.21	East	San Mateo
La Escuelita Christian Academy	0	0	West	San Mateo
The Burkard School	0	0	West	San Mateo
Centennial Montessori	0.22	0.22	West	San Mateo
Central Elementary	0.04	0.04	West	Belmont
Nesbit Elementary	0.13	0.13	East	Belmont
Redwood High School	0.01	0.01	East	Redwood City
Orion Alternative	0.10	0.10	East	Redwood City
Creative Learning Center	0.10	0.10	East	Redwood City
Sequoia High	0.04	0.04	West	Redwood City
Wings Learning Center	0	0	West	Redwood City
Everest Public High	0.23	0.23	East	Redwood City
Hoover Elementary	0.21	0.21	East	Redwood City
Menlo College	0.15	0.15	West	Atherton
Sequoia District Adult Education	0.18	0.18	East	Menlo Park
Nativity Catholic School	0.12	0.12	East	Menlo Park
Lydian Academy	0.07	0.07	West	Menlo Park
Garfield Elementary	0	0	East	Menlo Park
Castilleja School	0.12	0.12	East	Palo Alto
Stanford University	0.07	0.07	West	Palo Alto
Palo Alto High (includes Palo Alto Special Education and Adult Education)	0	0	East	Palo Alto
El Carmelo Elementary	0.14	0.14	East	Palo Alto
Keys School, Middle Campus	0.16	0.16	West	Palo Alto

Facility	Distance from Alternative A Project Footprint (miles)	Distance from Alternative B Project Footprint (miles)[1]	Direction from Alternatives	City
Mountain View to Santa Clara Subsection				
Edith Landels Elementary	0.22	0.22	West	Mountain View
Mountain View Academy	0.21	0.21	South	Mountain View
Waldorf School of the Peninsula - Mountain View Campus	0.09	0.09	East	Mountain View
Khan Lab School	0	0	West	Mountain View
View High School	0.01	0.01	West	Mountain View
Mountain View Los Altos Adult Education	0.24	0.24	East	Mountain View
Vargas Elementary	0.15	0.15	West	Sunnyvale
Adrian Wilcox High	0.24	0.24	West	Santa Clara
Bracher Elementary	0.08	0.08	West	Santa Clara
Santa Clara Christian	0.09	0.09	West	Santa Clara
San Jose Diridon Station Approach Subsection				
Santa Clara University	0.09	0.09	East	Santa Clara
Scott Lane Elementary	0.18	0.18	South	Santa Clara
Center for Employment Training - San Jose	0.18	0.09	East	San Jose
Gardner Elementary School	0.06	0.01	West/East	San Jose
Rocketship Mateo Sheedy Elementary School	0.22	0.12	South/East	San Jose
Bellarmine College Preparatory	0	0	West	San Jose
Sacred Heart Nativity School	0.17	0.12	East	San Jose
Our Lady of Grace	0.17	0.12	East	San Jose

Sources: Authority 2019a, 2019b
I- = Interstate
[1] The number of schools are the same for Alternative B (Viaduct to I-880) and Alternative B (Viaduct to Scott Boulevard).

3.10.6 Environmental Consequences

3.10.6.1 Overview

This section evaluates how the No Project Alternative and the project alternatives could affect the public and environment from the use, storage, transport, and disposal of hazardous materials and wastes during construction and operation. The impacts of the project alternatives are described and organized according to the following topics: temporary impacts from the transport, use, storage, and disposal of hazardous materials; construction on or near PEC sites; disturbance of LBP, ACMs, pesticides, PCBs, and ADL; soil-disturbing activities in areas of NOA and near landfills; and the inadvertent disturbance of hazardous materials or waste. This section also discusses potential impacts associated with the transport, use, storage and disposal of hazardous materials and wastes in proximity to schools during construction.

No oil or gas wells are within the oil and gas well RSA; therefore, no impacts from oil and gas wells are expected, and potential oil and gas well impacts are not discussed in this section.

Additionally, no contamination was discovered at any of the airports within the airport RSA, and the airports within the RSA are located a sufficient distance from the project footprint that no impacts from particulates from aircraft engine combustion are expected to affect the project. Impacts from nearby airports are not discussed further in this section.

Project construction would temporarily increase the regional transport, use, storage, and disposal of hazardous materials (e.g., diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals) commonly used at construction sites. Construction activities such as excavation and demolition would also increase hazardous waste generation in the form of contaminated soil or groundwater and demolition materials containing LBP or ACMs. Construction activities in the vicinity of PEC sites would be conducted with the proper due diligence, including Phase I, Phase II, and Phase III Environmental Site Assessments (ESA) as necessary, and coordination with site remediation activities, to minimize impacts on human health and safety or the environment from the disturbance of in-situ hazardous materials.

The Authority has incorporated IAMFs into the design of the project alternatives that would avoid or minimize impacts on the public and environment associated with hazardous materials and wastes (see Volume 2, Appendix 2-E). These features include adherence to federal laws that outline procedures on proper handling and preparation for handling hazardous materials; implementation of material designations and labeling, packaging requirements, and operational rules; and compliance with permit conditions and implementation of a spill prevention, control, and countermeasure plan. Where impacts on PEC sites or sites with general environmental concerns cannot be avoided through careful design and placement of project elements, the Authority would require contractors to complete pre-construction activities, including Phase I, Phase II, and Phase III ESAs, and coordinate with site remediation activities. These measures would minimize potential safety impacts on workers and the general population from the transport, use, storage, and disposal of hazardous materials and wastes and from the disturbance of in-situ hazardous materials.

The IAMFs differ from mitigation measures in that they are part of the project and would be implemented by the Authority as a binding commitment included in the project approval. In contrast, mitigation measures may be available to further reduce, compensate for, or offset project impacts that the analysis identifies under NEPA or concludes are significant under CEQA.

3.10.6.2 Hazardous Material and Waste Sources

Construction and operations of the project alternatives could result in temporary and intermittent direct and indirect impacts from hazardous materials and wastes. Hazardous materials and wastes sources refer to materials used in project construction and operations, such as oils, solvents, and fuels; hazardous building materials that may be encountered during demolition; and in-situ hazardous conditions that may be encountered during earthworks.

No Project Impacts

The population in the San Francisco Bay Area is expected to grow through 2040 (see Section 2.6.1.1, Projections Used in Planning). Development in the region to accommodate the population increase would continue under the No Project Alternative and result in direct and indirect impacts from hazardous materials and waste. The analysis of impacts under the No Project Alternative considers the impacts of conditions forecast by current plans for land use and transportation in the vicinity of the Project Section, including planned improvements to the highway, aviation, conventional passenger rail, freight rail, and port systems through the 2040 planning horizon for the environmental analysis if the proposed project is not built. With no project, there would be more vehicles miles traveled, resulting in increased pressure to improve capacity for all transportation modes throughout the area. The Authority estimates that additional highway and airport capacity (up to 4,300 highway lane miles, 115 airport gates, and 4 airport runways) would need to be planned and constructed to achieve equivalent capacity and relieve this increased pressure (Authority 2012). Planned and other reasonably foreseeable projects anticipated to be built by 2040 include residential, commercial, industrial, recreational, and transportation projects that could require the transport and use of hazardous materials and could encounter the same

existing sources of potential contamination identified in Appendix A of the Hazardous Materials and Wastes Technical Reports (Authority 2019a, 2019b). Future road and railway congestion anticipated under the No Project Alternative could increase the risk of accidents during hazardous material transport that result in hazardous materials or hazardous waste releases.

It is reasonable to assume, based on remediation liability standards for property owners, that in the project timeframe, some of the existing PEC sites within the RSA would be investigated further and, if necessary, remediated with appropriate regulatory agency oversight. However, it is unlikely that investigation and cleanup of all potentially hazardous materials in the alignment RSA, including contaminated soil or groundwater, would occur, and the potential for impacts on transportation improvements or other development would continue to exist. Accidental spills or releases of hazardous materials and wastes could occur with continued operation of commercial and industrial facilities or during transportation of hazardous materials to or from these facilities. These accidents might contribute to the creation of PEC sites that could affect future improvements under the No Project Alternative. A full list of anticipated future development projects is provided in Volume 2 in Appendix 3.18-A, Cumulative Nontransportation Plans and Projects List, and Appendix 3.18-B, Cumulative Transportation Plans and Projects List.

Project Impacts

Construction Impacts

Construction of the project would entail track modifications, relocation of overhead contact system poles, and installation of communication radio towers, four-quadrant gates at at-grade crossings, and perimeter fencing along the right-of-way throughout the corridor. Roadway modifications, station modifications, modifications to or construction of new structures, and construction of the Brisbane LMF would take place at specific locations along the corridor. Additional passing tracks and aerial viaduct structures would be built under Alternative B. Activities associated with building HSR track and systems include establishing equipment and materials storage areas close to construction sites; demolishing existing structures to expand the existing Millbrae Station; clearing and grubbing; handling, storing, hauling, excavating, and placing fill; possible pile driving; roadway and structure modifications; and utility relocations. Construction activities are described in more detail in Chapter 2, Alternatives.

Impact HMW#1: Temporary and Intermittent Direct and Indirect Impacts from the Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes during Construction

Construction of the project alternatives would temporarily increase the regional transport, use, storage, and disposal of hazardous materials (e.g., diesel fuel, lubricants, paints and solvents, cement products containing strong basic or acidic chemicals). These materials are commonly used at construction sites for transport and equipment, and they could present health and safety risks to the public and construction workers if improperly used or spilled. A hazardous material spill or release could pose a risk to life, health, or property. An incident could result in the evacuation of a few people, a section of a construction site, or an entire construction site.

Hazardous waste generated during construction might consist of welding materials, fuel and lubricant containers, paint and solvent containers, and cement products containing strong basic or acidic chemicals. Waste generation may also include soil or groundwater contaminated by petroleum hydrocarbons, pesticides, herbicides, asbestos, heavy metals or other hazardous materials, and demolition materials that contain asbestos or lead.

Construction at the East Brisbane LMF under Alternative A would require significant earthwork cut and fill to create a level surface for the workshop, yard, tracks, and supporting systems and utilities on the site of the former Brisbane Landfill. An estimated 2.2 million cubic yards of cut would be required, with excavation depths of 60 feet below ground surface (Authority 2019c). Construction of the West Brisbane LMF under Alternative B would require similar construction activities to create a level surface for the workshop, yard, tracks, and supporting systems and utilities; however, construction would occur approximately 450 feet west of the former Brisbane Landfill, on the site of the former Bayshore freight yard.

Under both project alternatives, construction of the Brisbane LMF would require excavation and earthwork on the site of a former class II landfill or the former Bayshore freight yard operations that may require remediation. Potential contaminants that could be disturbed by excavation in the former landfill under Alternative A include heavy metals, VOCs (including methane), semi-VOCs, petroleum hydrocarbons, PCBs, pesticides, and asbestos products. Potential contaminants that could be disturbed by excavation on the site of the former Bayshore freight yard under Alternative B include metals, petroleum, and VOCs. Excavation and earthwork would entail on-site management, transport, and disposal of hazardous materials during construction.

In addition to accidents possibly occurring on job sites involving workers or observers, off-site accidents during hazardous materials and waste transport to or from the job sites could expose individuals and the environment to risks within the alignment RSA. Accidents could occur during shipment of hazardous commodities (e.g., gasoline, diesel, compressed gases) for construction. Accidents could also occur during the transportation of hazardous waste materials generated during construction or during the cleanup of existing contaminated sites before construction prior to the property acquisition phases.

In the event of an on-site or off-site accident, collision, or derailment, hazardous materials and wastes may be released into the environment. In the case of some chemicals, toxic fumes may be carried away from the accident site. There may also be risk of fire and explosion. Although the state enforces standard accident and hazardous materials recovery training and procedures, which are followed by private state-licensed, certified, and bonded transportation companies and contractors, the project's location along interstate rail and highway corridors creates a risk of exposure.

As part of the project design (HMW-IAMF#7, HMW-IAMF#8), the contractor would comply with regulations that control the transport, use, and storage of hazardous materials and minimize the potential for an accidental release of hazardous materials during construction and transport of these hazardous wastes. The transport of hazardous materials and wastes is regulated by federal agencies through the 1975 Hazardous Materials Transportation Act (49 U.S.C. § 5101 et seq., 49 C.F.R. Parts 101, 106, 107, and 171–180). This act regulates the transport of hazardous materials by establishing procedures and policies on the proper handling of hazardous materials, requiring material designations and labeling during transport, establishing packaging requirements, and establishing operational rules that govern the transportation process from pickup to delivery. The California Department of Transportation (Caltrans) and other state agencies impose regulation through the Hazardous Waste Control Act (Cal. Health and Safety Code § 25100 et seq.), which regulates the identification, generation, transportation, storage, and disposal of materials deemed hazardous by the State of California. These regulations minimize the potential for accidental releases during transport of hazardous materials and wastes. Pursuant to Occupational Safety and Health Administration (OSHA) regulations (29 C.F.R. § 1910.120), standard accident training for cleaning up small spills would be provided to all individuals prior to their work with hazardous substances, and the appropriate types and amounts of spill cleanup materials and personal protective equipment would be immediately available. Additional requirements regarding hazardous materials labeling, containment, and covering set forth by the SWRCB Construction General Permit (2009-009-DWQ) would be implemented during construction.

Enforcement of these federal and state hazardous materials transportation regulations and response to hazardous materials transportation emergencies would be conducted by the California Highway Patrol (CHP) and Caltrans. CHP enforces hazardous material and hazardous waste labeling and packing regulations. These regulations prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are the responsibility of CHP, which conducts regular inspections of licensed transporters. Caltrans oversees emergency chemical spill identification teams at as many as 72 locations throughout the state that can respond quickly in the event of a spill. Additionally, the various CUPAs with jurisdiction in the alignment RSA provide for the proper management of all hazardous waste in their respective counties. Facilities and construction sites that use, store,

generate, or dispose of hazardous materials or wastes and hazardous material and waste transporters would be required to maintain plans for warning, notification, evacuation, and site security under regulations as described in Section 3.10.2. Furthermore, the project would comply with the SWRCB Construction General Permit conditions and requirements for labeling, containment, and covering, and other best management practices (BMP) designed to minimize release of contaminants from construction sites (HMW-IAMF#6). Complying with these permit conditions that require the proper handling, use, and disposal of hazardous materials and wastes would minimize or avoid the release of contaminants from construction sites to the maximum extent feasible.

Waste management strategies that seek to prevent pollution by both reducing waste generation and avoiding spills at their source are considered the most desirable approach by regulatory agencies. The Pollution Prevention Act of 1990 established pollution prevention as a national objective. This priority would be reflected in the goals of waste minimization for construction of the HSR system, thereby reducing the quantity of hazardous wastes to be transported (HMW-IAMF#7).

Additionally, the Authority would require construction contractors to comply with BMPs established as part of a spill prevention, control, and countermeasure plan (HMW-IAMF#6), to make certain that any release of hazardous materials would be cleaned up; containers used to store hazardous materials would be in good condition and not leaking; containers would be kept closed except when adding or removing hazardous materials; hazardous materials storage and handling areas would be away from natural watercourses, storm drains, and other sensitive receptors; and policies for cleaning up accidental spills would be in place and enforced. Following these BMPs would effectively minimize direct risk to workers and the public as well as indirect risk to off-site resources because these BMPs prevent or require quick response to any spills or accidental releases of hazardous materials during construction. The Authority would prepare and implement a written hazard communication program, make certain that all containers are labeled, and provide employees with access to material safety data sheets (HMW-IAMF#10). Hazardous material users would consult the safety data sheet for the specific material they plan to work with and consider response options beforehand in case of a spill or release.

Finally, the Authority would require contractors to apply standard BMPs, which are set forth in a CMP (HMW-IAMF#4), to handle contaminated groundwater and soil extracted or excavated from the project area. A CMP is a detailed, comprehensive document that outlines procedures for screening soils, soil vapor, and groundwater; details excavation methodology and sampling protocols; and lists required personal protective equipment and engineering controls to minimize human exposure to potential contaminants. All construction workers would receive training regarding the CMP. The material would be characterized prior to disposal, if necessary, and stored and labeled in compliance with federal and state standards if it cannot be transported directly to the disposal location.

CEQA Conclusion

The impact from the transport, use, storage, and disposal of hazardous materials and wastes during construction would be less than significant under CEQA for both project alternatives because the implementation of project features would avoid or minimize impacts associated with the release of hazardous materials and wastes transported, used, or stored during project construction that could result in contamination of air, soil, surface water, or groundwater; temporary dermal, oral, or inhalation exposure of construction workers or the public to either hazardous materials used in construction or in-situ contaminants; and fire or explosion. The project would comply with regulations that control the transport, use, and storage of hazardous materials; proper permitting; and the implementation of a written hazard communication plan and spill prevention plan (HMW-IAMF#6, HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#10). Regulations regarding hazardous materials transport methods, labeling, inventories, and storage conditions (HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#10) include robust BMPs to minimize the potential for the release of hazardous materials, and the amount of hazardous materials potentially released. Site workers would be trained on response to and minimization of hazards from a hazardous materials spill, and would be equipped with appropriate response equipment, should a

release occur (HMW-IAMF#6). These project features would limit the potential receptors of a spill to the environment immediately adjacent to the spill and the site workers. Altogether, there would not be a significant hazard to the public or the environment. Therefore, CEQA does not require any mitigation.

Impact HMW#2: Temporary Direct Impacts from Construction on or near Potential Environmental Concern Sites

Construction of the project could occur on or near PEC sites, some of which may have ongoing remediation activities, including sites identified pursuant to Government Code Section 65962.5 (Cortese List). Construction activities could encounter contaminants or interfere with ongoing remediation efforts. Unless construction activities are coordinated with site remediation activities, there could be a temporary increased risk of damaging or interfering with remediation site controls such as soil containment areas. Construction could also temporarily increase the risk of damaging or interfering with groundwater remediation facilities (e.g., extraction and monitoring wells, pumps, pipelines). Construction at sites with existing contamination could also result in the temporary generation of additional waste materials. Temporary effects could include potential localized spread of contamination; exposure of construction workers or the public to chemical compounds in soils, soil gases, and groundwater; exposure of workers, the public, and the environment to airborne chemical compounds migrating from the demolition or construction areas; potential accidents during transportation of contaminated soils or groundwater; potential accidents during remediation as a result of operational failure of treatment systems; and potential interference with ongoing remediation activities.

For both alternatives, the greatest potential to encounter environmental effects from construction in proximity to PEC sites would occur in the San Bruno to San Mateo and the San Mateo to Palo Alto Subsections, which have the most PEC sites (see Table 3.10-3). As shown in Table 3.10-16, construction of each project alternative could occur near a total of 114 medium- and high-risk PEC sites for Alternative A and 114 medium- and high-risk PEC sites for Alternative B (both viaduct options). The primary difference between the project alternatives is the presence of high-risk PEC sites within the project footprint of the Brisbane LMF and near the San Jose Diridon Station Approach Subsection that may be disturbed during construction.

Table 3.10-16 Summary by Alternative of Medium- and High-Risk Potential Environmental Concern Sites in the Resource Study Area

Alternative	Medium Risk	High Risk	Total
Alternative A	71 sites	43 sites	114 sites
Alternative B	70 sites	44 sites	114 sites

Sources: Authority 2019a, 2019b; SWRCB 2018; DTSC 2018

The East Brisbane LMF under Alternative A overlies two PEC sites (the SFPP Kinder Morgan Brisbane Terminal and the former Brisbane Class II Landfill) and is adjacent to three other PEC sites (Tuntex Properties, SPRR Brisbane, and Kessler and Kessler); whereas the West Brisbane LMF site under Alternative B overlies three PEC sites (Tuntex Properties, SPRR Brisbane, and Kessler and Kessler) and is adjacent to the remaining two sites (the SFPP Kinder Morgan Brisbane Terminal and the former Brisbane Class II Landfill). Due to the potential for subsurface contaminant migration, all five sites are a PEC for both alternatives.

While the number of PEC sites in the San Jose Diridon Station Approach Subsection are the same for both viaduct options, Alternative B (Viaduct to Scott Boulevard) has the potential for additional impacts due to the additional ground disturbance for the construction of the longer viaduct that may disturb higher risk sites during construction. A complete list and description of PEC sites within the RSA is provided in Appendix A of the Hazardous Materials and Wastes Technical Reports (Authority 2019a, 2019b).

The effects of hazardous waste-containing chemical compounds generally would be limited to the immediate areas where the materials would be excavated, handled, and stored because exposure would most likely occur in these areas. For this reason, the individuals most at risk would be construction workers, operations personnel, or others in the immediate vicinity during excavation, transportation, or storage of hazardous waste, or during construction. The primary routes through which these individuals could be exposed include inhalation, ingestion, or skin contact.

Interference with any ongoing remediation activities at a given site could increase the risk of a release of contaminants or result in an interruption in cleanup; thus, construction at known PEC sites would require coordination with regulatory agencies before advancing. Pre-construction activities**,** such as Phase I and II ESAs, would be conducted during the right-of-way acquisition phase, and appropriate remediation, including removal of contamination, in-situ treatment, or soil capping, would be conducted prior to acquisition (HMW-IAMF#1). Testing and appropriately remediating acquired properties would minimize potential effects from construction on or near PEC sites. Depending on proposed activities, such as subsurface ground disturbance, and the known extent and type of contamination, requirements for building at contaminated sites could include further evaluation of the level of contamination and associated potential risks to human health and the environment, as well as site remediation.

Federal and state regulations and policies, including CERCLA and the Certified Unified Hazardous Waste and Hazardous Materials Management Regulatory Program administered by city and county agencies, would require ESA procedures (due diligence) for future development for parcels to be acquired or future development on or near a PEC site. There are three phases of ESAs that could be conducted:

- **Phase I ESA**—Parcel-level Phase I ESA would be conducted on all parcels. The parcel-level ESA would include all standards for an All Appropriate Inquiry put forth by the USEPA (40 C.F.R. Part 312) and performed at ASTM standards (ASTM E 1527-13). A written report would present results, conclusions, and recommendations.
- **Phase II ESA**—If the Phase I ESA uncovers potential contaminated site conditions, a Phase II ESA sampling study would be required. Sampling may include soil, groundwater, or other media potentially containing hazardous materials. A written report would be prepared to describe the sampling work conducted, results, applicable regulations, and screening levels and recommendations.
- **Phase III ESA**—If the Phase II ESA concludes that the site is contaminated, a Phase III ESA would be conducted. A Phase III ESA would generally describe the design and implementation of any required mitigation or remediation measures. Remediation could include excavation, bioremediation, or other measures required to clean up the site to comply with regulatory requirements. Appropriate environmental regulations would be complied with during the Phase III ESA process.

Potential hazards would be minimized through the careful design and placement of project structures and systems, avoiding contaminated sites where possible. If necessary, regulatory approval for construction at contaminated sites would be sought and planned for.

There is a risk that construction on or near PEC sites could encounter undocumented contamination. In the event that construction workers encounter undocumented contamination, the Authority would work closely with local agencies to resolve any such encounters (HMW-IAMF#4). In lieu of remediating the identified sites, design and engineering controls would be implemented to avoid contaminated sites if the extent of the contamination and the components or logistics of remediation are prohibitive (HMW-IAMF#3). Engineering controls to redesign structural features of the HSR system, such as aboveground spans that avoid contaminated locations, could be installed and would reduce the potential for exposure to undocumented contamination.

CEQA Conclusion

The impact from construction on or near PEC sites would be less than significant under CEQA for both project alternatives because potential exposure to contaminants from known PEC sites

would be avoided or minimized through application of the IAMFs that include effective measures to characterize contamination before it is disturbed and manage it if disturbance is deemed necessary for project construction (HMW-IAMF#1). Provisions in the site CMP, to which all construction workers would be inducted, would call for immediate cessation of construction activities upon visual or olfactory identification of undocumented contamination or fill material (HMW-IAMF#4). By limiting soil disturbance, migration of and exposure to contaminants would be reduced to the immediate vicinity of the exposed surface. Engineering controls (HMW-IAMF#3) would be put in place to minimize the migration of and exposure to the contaminants. Construction activities would not resume until local agencies have been contacted and a plan for further assessment and remediation put in place. These project features would minimize the potential exposure to contaminants from known and undocumented PEC sites, so as to avoid the potential for significant hazards to the public or environment. Therefore, CEQA does not require any mitigation.

Impact HMW#3: Temporary Direct Impacts from Inadvertent Disturbance of Railways during Construction

Development of the project would result in the demolition or disturbance of old rail ties, potentially causing the release of creosote on treated wood ties, heavy metals in railroad ballast, ACM, petroleum products in underlying surface soils, and lead and arsenic in herbicides that may have been historically used on the railway. The primary construction activity affecting old rail ties under both project alternatives would be track modifications, which would occur along approximately 36 to 44 percent of the project corridor depending on the alternative and include curve straightening, track center modifications, and superelevation of existing Caltrain tracks. Alternative A would require approximately 17.4 miles of track modifications, whereas Alternative B would require 19.8 miles (Viaduct to I-880) or 21.6 miles (Viaduct to Scott Boulevard) of track modifications. These track modifications would occur in all five subsections although the greatest modifications would occur at the Brisbane LMF, the approach to the Millbrae Station, the San Jose Diridon Station Approach Subsection, and through San Mateo, Belmont, San Carlos and Redwood City where the passing track would be built under Alternative B.

Track modifications under both project alternatives could release asbestos fibers and other rail-related contaminants into the environment, posing potential health effects on workers and community members. The potential for temporary human exposure to contaminants as a result of demolition or disruption of the railway would be greatest under the Alternative B (Viaduct to Scott Boulevard), which would require more extensive modifications to existing railway.

Prior to construction, the contractor would prepare a CMP addressing provisions for the disturbance of undocumented contamination (HMW-IAMF#4) to minimize potential health effects on workers and the public. The CMP would include implementation of a hazardous waste plan for handling, transport, containment, and storage of hazardous materials. The CMP would specify that shallow soil from areas known to have been used as former railways be analyzed for heavy metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and asbestos prior to subsurface work to make sure that concentrations do not exceed relevant guidance values. Additionally, workers would be required to wear chemical protective gloves when working around soil believed to be contaminated, and to decontaminate equipment following use in contaminated soils (HMW-IAMF#8).

CEQA Conclusion

The impact from possible disturbance of railways during construction would be less than significant under CEQA because project features would avoid or minimize potential exposure to railway contaminants. Project features include effective measures to characterize contamination before it is disturbed and manage it if disturbance is deemed necessary for project construction. Provisions in the site CMP would call for immediate cessation of construction activities upon visual or olfactory identification of undocumented contamination or fill material. By limiting soil disturbance, engineering controls would limit the migration of and exposure to contaminants to the immediate vicinity of the exposed surface. Construction activities would not resume until local agencies have been contacted and a plan for further assessment and remediation put in place.

Accordingly, with these project features, railway contaminant exposure during project construction would not result in a significant hazard to the public, workers, or the environment. Therefore, CEQA does not require any mitigation.

Impact HMW#4: Temporary Direct Impacts from Inadvertent Disturbance of Lead-Based Paint during Construction

Construction of the project alternatives would result in the demolition of roadways and structures, which could cause the release of lead. Lead could be released from the soils along roadways or from paint on buildings during demolition activities. Effects from exposure to lead during demolition would be temporary with the greatest risk occurring along the San Bruno to San Mateo, San Mateo to Palo Alto, and San Jose Diridon Station Approach Subsections (Table 3.10-5). Alternative A would demolish approximately 817,000 square feet of buildings, primarily commercial and residential buildings in the San Bruno to San Mateo Subsection, and industrial and residential facilities in the San Jose Diridon Station Approach Subsection. Alternative B (Viaduct to I-880) would demolish approximately 1,678,000 square feet of buildings while Alternative B (Viaduct to Scott Boulevard) would demolish approximately 1,866,000 square feet of buildings, primarily within the San Bruno to San Mateo, San Mateo to Palo Alto, and San Jose Diridon Station Approach Subsections. Building demolitions are proposed for both alternatives around the Brisbane LMF, the Millbrae Station along El Camino Real, near the Belmont Caltrain Station, and the San Jose Diridon Station Approach Subsection. Under Alternative B, additional building demolitions would occur in San Mateo, Belmont, and San Carlos due to construction of the passing track and in San Jose due to construction of the aerial viaduct. The greater amount of building demolition under Alternative B would pose a greater risk for LBP exposure than Alternative A.

The Authority would require construction contractors to prepare demolition plans with specific provisions for lead abatement for all commercial and industrial buildings or roadways slated for demolition or renovation (HMW-IAMF#5), which would minimize the potential exposure of the public and construction workers to lead during demolition. Prior to demolition, the contractor would evaluate whether the structures proposed for demolition contain asbestos or lead, in accordance with 15 U.S.C. Section 2601 et seq.; 40 C.F.R. Part 763, Subpart G; and 40 C.F.R. Part 745. Determining the existence of lead and removing it safely is important to preserving the long-term health of construction workers working near or at potentially contaminated structures or sites. General personal protection practices would also be implemented.

Increased exposure to lead as a result of demolition would be temporary during construction. Implementation of a hazardous materials and waste plan, including procedures for hazardous waste transport, containment, and storage (HMW-IAMF#10), would minimize potential health effects on workers and community members. Measures would include personal protective equipment for workers and dust reduction measures to control potential lead emissions during demolition activities, with an emphasis on containment of particulate contaminants. Hazardous material plans would include procedures for proper transfer and disposal of lead-contaminated materials.

CEQA Conclusion

The impact from lead exposure would be less than significant under CEQA for both project alternatives because project features would require construction contractors to prepare demolition plans with specific provisions for lead abatement (HMW-IAMF#5) for all commercial and industrial buildings or roadways slated for demolition or renovation. Prior to demolition, the contractor would evaluate whether the structures proposed for demolition contain asbestos or lead, in accordance with 15 U.S.C. Section 2601 et seq.; 40 C.F.R. Part 763, Subpart G; and 40 C.F.R. Part 745. Additionally, waste-containing lead would be managed in a manner to reduce the potential impacts on the waste handlers and environment through use of protective clothing and emission reduction measures (HMW-IAMF#10), which would minimize the potential exposure of the public and construction workers to lead during construction. Lead exposure during project construction would not result in a significant hazard to the public, workers, or the environment. Therefore, CEQA does not require any mitigation.

Impact HMW#5: Temporary Direct Impacts from Inadvertent Disturbance of Asbestos-Containing Materials during Construction

Direct and temporary impacts from asbestos exposure as a result of building demolition and soil disturbance would have the potential to occur during construction. Construction of the project would require demolition of structures and the disturbance of former railway as a result of track modifications, which could cause the release of asbestos fibers into the environment and potential health impacts on workers and community members. As described under Impact HMW#4, construction of the project alternatives would demolish approximately 817,000 square feet of buildings under Alternative A, 1,678,000 square feet of buildings under Alternative B (Viaduct to I-880) and 1,866,000 square feet Alternative B (Viaduct to Scott Boulevard). Alternative B would require a greater amount of building demolition than Alternative A, with additional building demolitions in San Mateo, Belmont, and San Carlos due to construction of the passing track and in San Jose due to construction of the aerial viaduct. Similarly, track modifications would occur in all five subsections under both alternatives. Alternative A would require approximately 17.4 miles of track modifications, whereas Alternative B would require 19.8 miles (Viaduct to I-880) or 21.6 miles (Viaduct to Scott Boulevard) of track modifications. Track modifications would primarily occur at the Brisbane LMF, the approach to the Millbrae Station, through San Mateo, Belmont, San Carlos, and Redwood City where the passing track would be built under Alternative B, and in the San Jose Diridon Station Approach Subsection.

The potential for health impacts associated with the inadvertent release of asbestos fibers into the environment during construction would be greatest under Alternative B, which would require more building demolition and railway disturbance for construction of the passing track and the longer viaduct options. Impacts would be similar for Alternative B (Viaduct to I-880) and Alternative B (Viaduct to Scott Boulevard); however, Alternative B (Viaduct to Scott Boulevard) has the potential for slightly greater impacts due to the additional ground disturbance and track modifications for the construction of the longer viaduct.

The Authority would require construction contractors to prepare demolition plans with specific provisions for asbestos abatement for structures slated for demolition or renovation (HMW-IAMF#5), which would minimize the potential exposure of the public and construction workers to asbestos during demolition. Prior to demolition activities, the contractor would evaluate whether the structures proposed for demolition contain asbestos, in accordance with 15 U.S.C. Section 2601 et seq. and 40 C.F.R. Part 763, Subpart G. If the structure contains friable asbestos, a state-certified asbestos-removal contractor would be hired and would comply with the OSHA standards in 29 C.F.R. Section 1926.1101, acquire the appropriate permits, and remove the asbestos. Depending upon the amount and type of asbestos to be removed, advanced notification to the appropriate air quality management agency (i.e., the Bay Area Air Quality Management District) and DTSC may be required before asbestos is disturbed or removed. Notification requirements may also include notifying local residents and construction workers close to where asbestos work is being done. Determining the existence of ACMs and removing them safely is important to preserving the long-term health of construction personnel working near or with potentially contaminated structures or sites. General personal protection practices would also be implemented, such as appropriate overalls, gloves, footwear, and protective respiratory equipment. Provisions would further include dust mitigation measures to prevent inhalation by workers or exposure of the surrounding public and environment.

Hazardous wastes and materials may need to be contained, stored, and transported for off-site disposal following structure demolition. Implementation of a hazardous materials and waste plan, including procedures for hazardous waste transport, containment, and storage (HMW-IAMF#10), would minimize potential health impacts on workers and community members. Provisions would include personal protective equipment for workers and dust reduction measures to control potential asbestos emissions during demolition activities, with an emphasis on containment of particulate contaminants. Hazardous materials plans would include procedures for proper transfer and disposal of ACM.

CEQA Conclusion

The impact from potential ACM exposure during construction would be less than significant under CEQA for both alternatives because pre-construction and construction procedures for demolition, transport, and storage would minimize potential health impacts on workers or community members. Prior to demolition activities, the contractor would evaluate whether the structures proposed for demolition contain asbestos, in accordance with 15 U.S.C. Section 2601 et seq. and 40 C.F.R. Part 763, Subpart G. Asbestos-containing materials will be handled in accordance with OSHA standards in 29 C.F.R. Section 1926.1101. Project features also include requirements for construction contractors to prepare demolition plans with specific provisions for ACM abatement (HMW-IAMF#5) for all structures slated for demolition or renovation. Licensed asbestos contractors would be required to handle any ACM as well as implement standard control measures, such as screened fencing, water application for dust minimization, and asbestos air monitoring, during demolition so that demolition would not present a safety risk to construction workers, the public, or the environment. Additionally, waste containing asbestos would be managed in a manner to reduce the potential impacts on the waste handlers and environment (HMW-IAMF#10). As a result, ACM exposure during project construction would not result in a significant hazard to the public, workers, or the environment. Therefore, CEQA does not require any mitigation.

Impact HMW#6: Temporary Direct Impacts from Inadvertent Disturbance of Pesticides in Soil from Historical Agricultural Use during Construction

Areas that might be of concern for inadvertent disturbance of pesticides include former orchard or row crop areas near the Caltrain corridor in Belmont, Redwood City, Atherton, Menlo Park, and Palo Alto in the San Mateo to Palo Alto Subsection and in Mountain View, Sunnyvale, and Santa Clara in the Mountain View to Santa Clara Subsection. These areas were previously used for agricultural purposes (farmland and orchards) in the 1940s, with vegetable and fruit canning facilities adjacent to the railroad tracks. Other areas of concern include pesticide-handling areas associated with former agricultural use that lacked concrete pads, berms, or cribs to contain spills or leaks during handling and storage; and rinse water from washout facilities for pesticide application equipment that has not been properly collected and treated before discharge. Equipment repair and petroleum storage areas might also be of concern. Soil found to contain potentially high concentrations of pesticides, such as soil underneath and around pesticide-mixing bins, would be sampled and removed if necessary.

In the San Mateo to Palo Alto and Mountain View to Santa Clara Subsections, both project alternatives pass through similar areas of former agricultural land. Both alternatives within these subsections would have a medium risk of disturbance to potentially pesticide-contaminated soils based on the minor historic orchards surrounding the subsections. The inadvertent disturbance of pesticides during construction would not be anticipated to increase the risk of significant hazards to the public or environment because pesticides are a relatively confined contaminant with a low likelihood of mobilization, and because the project includes features to avoid and minimize the effects of undocumented contaminants encountered during ground-disturbing activities. It is unlikely that pesticide-contaminated soil would be encountered in the San Francisco to South San Francisco, San Bruno to San Mateo, and San Jose Diridon Station Approach Subsections because of the absence of historical agricultural operations.

Prior to construction, Phase I and II ESAs would be performed to identify potential contaminants present in the project footprint (HMW-IAMF#1), which may include pesticides from historical agricultural uses. The contractor would prepare a CMP addressing provisions for the disturbance of undocumented contamination (HMW-IAMF#4) to minimize potential health effects on workers and community members. The CMP would specify that shallow soil from areas known to have been used as orchards or for growing row crops be analyzed for pesticides prior to subsurface work to make sure that concentrations do not exceed relevant guidance values. Soil found to contain potentially high concentrations of pesticides, such as soil underneath and around pesticide-mixing bins, would be sampled and removed if necessary. Additionally, workers would be required to wear chemical protective gloves when working around soil believed to be

contaminated with pesticides, and to decontaminate equipment following use in pesticide-contaminated soils.

CEQA Conclusion

The impact from pesticide exposure would be less than significant under CEQA for both project alternatives because potential exposure to contaminated soils would be low, areas of potential contamination would be tested prior to resuming work, and impacted soils requiring remediation would be excavated and disposed of prior to resuming work. A CMP would be prepared to address undocumented pesticide contamination. Should areas of potential concentrated pesticide use be encountered during project construction, work would be stopped and the area would be tested for pesticides prior to resuming work. Additionally, the presence of pesticides would likely be limited to shallow soil, and such contaminants would likely be immobile; therefore, impacts on deeper soils or groundwater would be unlikely. Any shallow soils in areas of planned project earthworks with pesticide contamination levels above commercial/industrial exposure concentrations would be excavated and disposed of prior to construction. Workers would also be required to wear chemical protective gloves when working around soil believed to be contaminated with pesticides, and to decontaminate equipment following use in pesticide-contaminated soils. With these actions, concentrated pesticide use during project construction would not result in a significant hazard to workers, the public, or the environment. Therefore, CEQA does not require any mitigation.

Impact HMW#7: Temporary Direct Impacts from Inadvertent Disturbance of Polychlorinated Biphenyls during Construction

Construction activities such as trenching, excavation, and other ground-disturbing activities have the potential to disturb soil or groundwater contaminated with PCBs. Areas that might be of concern include soil at the base of pole-mounted transformers and around concrete surfaces supporting pad-mounted or vaulted transformers. Soil found to contain potentially high concentrations of PCBs, such as that underneath and around transformers, should be sampled and removed if necessary. Pole-mounted transformers were observed throughout the hazardous materials and wastes alignment RSA for both alternatives. Construction-related impacts of exposure to PCBs would be temporary, with a moderate risk occurring in each section based on reconnaissance observations. If an unexpected PCB source is identified, similar procedures would be used to address potential impacts.

Prior to construction, Phase I and II ESAs would be performed to identify potential contaminants present in the project footprint (HMW-IAMF#1). The contractor would prepare a CMP addressing provisions for the disturbance of undocumented contamination (HMW-IAMF#4) to minimize potential health impacts on workers and community members. The CMP would specify that transformers observed to have staining around the base may require soil sampling prior to commencing nearby subsurface works. If soils are found to contain PCBs above relevant guideline values, they would be required to be remediated or contained prior to soil disturbance in the area. Work would stop until the potential contamination is characterized and appropriate controls for workers, the public, and the environment are put in place. During construction, the contractor would comply with all regulatory requirements pertaining to hazardous materials (HMW-IAMF#7, HMW-IAMF#8).

CEQA Conclusion

The impact from PCBs would be less than significant under CEQA for both project alternatives because PCB leaks from pole-mounted transformers, if present, would be confined to a small area and would be managed using the procedures for undocumented contamination in the CMP (HMW-IAMF#4). Because transformers are pole-mounted, they are easily visible, and would likely not be subjected to additional disturbance during construction. Additionally, project features would require documentation of the appropriate procedures for transporting contaminated material that might be encountered. Consequently, project construction would not present a hazard to the public, construction workers, or the environment through the inadvertent disturbance of PCBs. Therefore, CEQA does not require any mitigation.

Impact HMW#8: Temporary Direct Impacts from Inadvertent Disturbance of Aerially Deposited Lead during Construction

During construction, ground-disturbing activities have the potential to disturb soil or groundwater contaminated with ADL. Areas of concern include shoulders, medians, or landscaped areas along heavily traveled roadways. Soil found to contain potentially high concentrations of lead should be sampled and removed if necessary. Impacts related to exposure to lead from the construction of the project would be temporary. All subsections include the risk of exposure to potential ADL due to the proximity of moderately or heavily traveled roadways including I-280, I-880, US 101, SR 87, El Camino Real, and the Central Expressway. Disturbance of soils for construction of passing tracks may have residual impacts from ADL given its adjacent location to these heavily traveled roadways. The only major roadway demolitions would occur in Brisbane, where both project alternatives would realign the Tunnel Avenue overpass to connect with Valley Drive at Bayshore Boulevard, and in Santa Clara and San Jose where Alternative B would demolish and reconstruct existing roadway undercrossings and overcrossings. The risk of ADL exposure during demolition of the current Tunnel Avenue overpass would be the same under both project alternatives, and would be slightly greater under Alternative B (either viaduct option) in Santa Clara and San Jose.

Overall, the risk of ADL exposure would be similar between the project alternatives but slightly greater under Alternative B, which would require more ground-disturbing activities such as construction of the passing track adjacent to El Camino Real, construction of aerial viaducts near I-280 and SR 87, and railway disturbance. While impacts are similar for both viaduct options, Alternative B (Viaduct to Scott Boulevard) has the potential for slightly greater impacts due to the greater level of ground disturbance, track modifications, and roadway modifications for the construction of the longer viaduct.

Prior to construction, the contractor would prepare a CMP addressing provisions for the disturbance of undocumented contamination (HMW-IAMF#4) to minimize potential health impacts on workers and community members. The CMP would specify that shallow soil from areas adjacent to heavily traveled roadways be analyzed for lead prior to subsurface work to make sure that concentrations do not exceed relevant guidance values. Additionally, workers would be required to wear chemical protective gloves and dust masks when working around soil believed to be contaminated with ADL, and to wet down potentially contaminated soils prior to disturbance to minimize dust generation. Prior to construction, the contractor would provide the Authority with a hazardous materials and waste plan describing responsible parties and procedures for transport and containment of contaminated materials, as well as storage BMPs that would be implemented during construction (HMW-IAMF#7, HMW-IAMF#8).

CEQA Conclusion

The impact from ADL would be less than significant under CEQA for both project alternatives because the project would require preparation of demolition plans with specific provisions for lead abatement for all roadways slated for demolition or renovation. In areas potentially contaminated with ADL, such as areas adjacent to or underlying heavily traveled roadways, soil would be tested for ADL prior to soil disturbance, and controls for workers, the public, and the environment would be put in place in accordance with the CMP. Workers would be required to wear chemical protective gloves and dust masks when working around soil believed to be contaminated with lead, and to wet down potentially contaminated soils prior to disturbance to minimize dust generation. ADL-contaminated soils would potentially affect only construction workers and the environment in the immediate vicinity of the disturbed soil, and controls would minimize exposure. In addition, ADL is usually confined to surface soils and has a low likelihood of mobilization through disturbance; this combined with the standard construction practice of wetting soils during earthworks means the spread of ADL through soil, groundwater, or air to the larger environment would be unlikely. The temporary disturbance of ADL during construction would, therefore, not result in a significant hazard to the public, construction workers, or the environment. Therefore, CEQA does not require any mitigation.

Impact HMW#9: Temporary Direct Impacts from Soil-Disturbing Activities in Areas of Naturally Occurring Asbestos during Construction

Direct and temporary effects from asbestos exposure has the potential to occur in the San Francisco to South San Francisco Subsection, specifically in the vicinity of Potrero Hill in San Francisco. Construction activities in this area under both project alternatives would entail only minor excavations for the installation of a radio communication tower co-located with a Caltrain paralleling station. The shallow depths of excavations required near Potrero Hill would result in a limited risk of exposure to NOA because the excavation would be unlikely to disturb asbestos-containing bedrock. No other construction activities under either project alternative would require excavation in asbestos-containing bedrock. As a result, construction of both project alternatives would be unlikely to result in the release of asbestos fibers into the environment and potential health impacts on workers and community members.

The design-build contractor would prepare a CMP addressing how hazardous minerals, including NOA, would be avoided or minimized during construction (GEO-IAMF#5, HMW-IAMF#4). GEO-IAMF#5 recommends the contractor prepare a CMP, which would address how to minimize or avoid impacts related to hazardous minerals such as NOA. The CMP would include dust control, control of soil erosion and water runoff, and testing and proper disposal of excavated and stockpiled material to reduce the potential for NOA to become airborne and to plan for proper handling and removal of NOA-containing material. These project features would reduce the potential for NOA to cause personal injury or loss of life during construction. Prior to construction, the contractor would provide the Authority with a hazardous materials and waste plan describing responsible parties and procedures for transport and containment of contaminated materials, as well as storage BMPs that would be implemented during construction (HMW-IAMF#7, HMW-IAMF#8). The project features apply to both alternatives; there would be no difference in construction impacts between alternatives.

CEQA Conclusion

The impact from NOA would be less than significant under CEQA for both project alternatives because project construction would not involve major excavation in asbestos-containing bedrock; therefore, airborne NOA would not pose a significant hazard to the public or environment. Project features would reduce the risks related to NOA by controlling for dust, testing for NOA, and other measures designed to minimize impacts of hazardous materials. A geologist or other professional trained in the identification of NOA-containing formations would be present during excavation in areas identified as having potential NOA. Should NOA be identified, work would be stopped until an asbestos management plan has been prepared and control measures (e.g., placement of screened fencing around areas of discovered NOA to limit any airborne asbestos fibers from leaving the site area) have been implemented. Therefore, the project features would minimize the potential impacts from NOA during construction, and construction activities would not result in a significant hazard to the public, workers, or the environment from inhalation of NOA. Therefore, CEQA does not require any mitigation.

Impact HMW#10: Temporary Direct Impacts from Soil-Disturbing Activities near Landfills during Construction

Landfills pose hazards for construction associated with the release of flammable gases (e.g., methane) and the potential to encounter contaminated materials, which may require remediation and on-site management, transport, and disposal of hazardous materials. Construction of the East Brisbane LMF under Alternative A would require significant earthwork cut and fill to create a level surface for the workshop, yard, tracks, and supporting systems and utilities on the site of the former Brisbane Landfill. An estimated 2.2 million cubic yards of cut would be required, with excavation depths of 60 feet below ground surface. Construction of the West Brisbane LMF at the site of the former Bayshore freight yard under Alternative B would require similar construction activities; however, construction would occur approximately 450 feet west of the former Brisbane Landfill.

Construction of the East Brisbane LMF under Alternative A would have increased safety risks in the form of explosion and asphyxiation hazards due to the potential to encounter flammable

methane gas during construction. Prior to construction, the Authority's contractor would verify through preparation of a technical memorandum that methane protection measures would be implemented for all work within 1,000 feet of a landfill, including gas detection systems and personnel training. These measures would be undertaken pursuant to State of California Title 27, Environmental Protection—Division 2, Solid Waste, and the hazardous materials BMPs plan (HMW-IAMF#2). The contractor would follow the OSHA, USEPA, and DTSC regulatory requirements for construction on landfills, thereby reducing risks associated with landfill gas. These methane protection measures would include implementing a continued gas control system, a gas monitoring system, proper ventilation and respiratory equipment, and the management of ignition sources. In addition, the project would include the use of safe and explosion-proof equipment as well as testing for gases regularly and installing gas monitoring and venting systems (GEO-IAMF#3).

Construction of the East Brisbane LMF under Alternative A would require excavation on the site of the former landfill, in areas with contaminated soils that may require remediation. Potential contaminants that could be disturbed by excavation in the former landfill include heavy metals, VOCs (including methane), semi-VOCs, petroleum hydrocarbons, PCBs, pesticides, and asbestos products. Excavation would require on-site management, transport, and disposal of hazardous materials during construction. Prior to construction, the Authority's design-build contractor would be required to prepare a removal action plan (RAP) that would determine the requirements for removal, transportation and disposal of excavated materials, air monitoring, regulatory concerns, and worker health and safety. The RAP would detail air monitoring, methane controls, and requirements for the characterization and disposal of excavated materials. Construction on the site would maintain the integrity of the final cover, drainage, and erosion control systems, and gas monitoring and control systems. Any on-site management, transport, and disposal of hazardous materials associated with construction on the former landfill would comply with applicable state and federal regulations, such as RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act, as well as permit conditions (HMW-IAMF#7, HMW-IAMF#8).

Construction of the West Brisbane LMF under Alternative B would require similar construction activities, but the risk of exposure to landfill hazards during construction would be less than that of Alternative A due to the greater distance from the former landfill. However, because the West Brisbane LMF would be built within 1,000 feet of a former landfill, the project features and provisions described for Alternative A would also pertain to the West Brisbane LMF. Areas within 1,000 feet of landfills pose hazards for construction due to the potential release of flammable gases (e.g., methane) and the potential to encounter contaminated materials, which may require remediation and on-site management, transport, and disposal of hazardous materials.

CEQA Conclusion

The impact from soil-disturbing activities near landfills would be less than significant under CEQA for both project alternatives because project features would minimize disturbance and temporary localized spreading of undocumented contamination during construction; temporary dermal, oral, or inhalation exposure of construction workers or the public to contaminants; and disturbance of active remediation activities. The contractors would implement methane protection measures during construction, use safe and explosion-proof equipment, regularly test for gases, and install gas monitoring and venting systems for all construction within 1,000 feet of landfills. Under Alternative A, the contractors would be required to prepare an RAP that would determine the requirements for removal, transportation, and disposal of excavated materials; air monitoring; regulatory concerns; and worker health and safety. The RAP would detail air monitoring, methane controls, and requirements for the characterization and disposal of excavated materials. These project features would avoid or minimize risks associated with construction on or near a former landfill, such that construction of either project alternative would not pose a significant hazard to the public or environment associated with the handling or release of hazardous materials into the environment associated with the landfill. Therefore, CEQA does not require any mitigation.

Impact HMW#11: Temporary Direct and Indirect Impacts from Inadvertent Disturbance of Undocumented Hazardous Materials or Waste during Construction

Ground-disturbing construction activities could disturb undocumented soil or groundwater contamination. Impacts could result if construction activities inadvertently disperse contaminated material into the environment. For example, dewatering activities during project construction could accelerate the migration of contaminated groundwater or could discharge contaminated groundwater to surface waters. Removal of existing railway track and systems within all subsections could expose workers to creosote on treated wood ties, heavy metals in railroad ballast, or lead and arsenic in herbicides that may have been historically used on the railway. Potential hazards to human health include ignition of flammable liquids or vapors, inhalation of toxic vapors in confined spaces such as trenches, and skin contact with contaminated soil or water. These risks would be greatest for construction workers; however, is it possible that the nearby public could be affected if the contaminated materials are of a sufficient volume.

Prior to construction, a Phase I ESA would be performed to identify potential contaminants present in the project footprint (HMW-IAMF#1). Should the Phase I ESA uncover potential contaminated site conditions, a Phase II ESA sampling study would be required. The contractor would prepare hazardous materials plans (HMW-IAMF#10) as well as a CMP addressing provisions for the disturbance of undocumented contamination (HMW-IAMF#4) to minimize potential health impacts on workers and community members. The CMP would provide procedures and methodology for managing undocumented contamination to minimize the exposure of workers and the public, and to minimize spread of contaminants in the environment (HMW-IAMF#4). Work barriers would be placed prior to construction in areas of suspected potential contamination and during construction in areas where undocumented contamination is encountered. For example, plastic sheeting would be placed underneath railroad ballast to limit the volatilization of potential subsurface contaminants, and screened fencing would be placed around areas of discovered NOA during excavation to limit any airborne asbestos fibers from leaving the work area.

Although the amount of ground disturbance varies by alternative, both alternatives would have a similar amount of risk for potential impacts from undocumented hazardous materials and waste.

CEQA Conclusion

The impact from undocumented hazardous materials or waste would be less than significant under CEQA for both project alternatives because project features would minimize disturbance and temporary localized spreading of undocumented contamination during construction through development of a CMP establishing procedures for addressing discovery of undocumented substances and implementation of work barriers in areas of contamination identified after construction has already begun. The CMP would require immediate work stoppage if contamination is identified and subsequent characterization and removal prior to resuming construction. As a result of these features, project construction would not result in a significant hazard to the public, workers, or the environment as a result of potential exposure to undocumented hazardous materials or wastes. Therefore, CEQA does not require any mitigation.

Operations Impacts

Impact HMW#12: Temporary and Intermittent Direct and Indirect Impacts from the Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes during Operations

Operations of the project alternatives would require the use of hazardous materials. Along most of the corridor, the use of hazardous materials would be limited to the periodic use of herbicides in the right-of-way to control weeds and the use of greases to lubricate switching equipment along the trackway. However, under both alternatives at the Brisbane LMF, maintenance of trains would use materials and chemicals during operations. These materials and chemicals include lubricants, fuels, metal filings, hydraulic fluids, cleaning products, refuse, landscaping supplies, and other potentially toxic materials such as pesticides. Most of the mechanical maintenance on

trains would be performed inside a building designated for mechanical maintenance activities, where these materials and chemicals would be used and stored.

The quantities of hazardous materials used and wastes generated by project operations would be small compared to wastes generated by other transportation services (e.g., automobiles or air travel, which use petroleum-based vehicle fuel as the primary means of power) and commercial or industrial facilities. However, the potential exists for improper handling of hazardous materials and wastes to result in routine and accidental releases during the transport, use, storage, or disposal of hazardous materials and wastes during HSR operations. Such potential risk would occur intermittently as hazardous materials or wastes are used or generated.

Prior to operations, the Authority would require hazardous materials plans (HMW-IAMF#10). Preparation of and compliance with these plans would minimize the potential for impacts from hazardous materials and wastes used during HSR operations.

During operations, contractors and HSR personnel would comply with applicable state and federal regulations, such as the RCRA, the CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act (HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#9). These regulations would apply throughout the Project Section to avoid and prevent accidental release of hazardous materials or wastes during transport, use, or disposal.

Risks related to routine transport, use, or disposal of hazardous materials and waste during project operations would be intermittent. The impacts from routine transport, use, or disposal of hazardous materials and hazardous waste related to HSR operations would be the same under both alternatives.

CEQA Conclusion

The impact from hazardous materials and wastes during operation would be less than significant under CEQA for both project alternatives. HSR operations would include administrative controls on the transport, use, storage, and disposal of hazardous materials and wastes (HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#9, HMW-IAMF#10) to avoid or minimize potential public impacts of temporary exposure via skin contact or inhalation and potential impacts on small areas of the local environment. Because HSR is a passenger train system, it is anticipated that only small quantities of hazardous materials would be used and small quantities of hazardous wastes would be generated during operations. Accordingly, the storage, usage, and generation of hazardous materials and wastes would occur primarily at the Brisbane LMF, which would have relevant BMPs in place to contain all hazardous materials and wastes within the LMF. Because the HSR trains would be electrically powered, no diesel or other fuel sources would be used during operations. The potential impacts from hazardous materials and waste used, stored, or generated during operations would not be a significant hazard to the public. Therefore, CEQA does not require any mitigation.

3.10.6.3 Hazardous Material and Waste Impacts on Sensitive Receptors

No Project Impacts

Schools are present in the vicinity of the existing transportation systems within the schools RSA. Under the No Project Alternative, these schools could be subjected to potential risks from the routine transport and handling of hazardous materials and wastes and the construction and operation of future transportation system improvements. As stated in Section 3.10.6.2, Hazardous Material and Waste Sources, analysis of the No Project Alternative considers the impacts of conditions forecast by current plans for land use and transportation in the vicinity of the Project Section, including planned improvements to the highway, aviation, conventional passenger rail, freight rail, and port systems through the 2040 planning horizon without the project. With no project, there would be more vehicles miles traveled, resulting in increased pressure to improve capacity of all transportation modes throughout the area. Moreover, if the HSR system is not developed, it is expected that existing and future transportation systems (e.g., highways, conventional rail) would experience more traffic and congestion than if an HSR system were implemented, specifically during high-traffic times for school and work transportation. Such traffic

and congestion could increase the risk of accidents or incidents associated with vehicles transporting hazardous materials as well as the potential release of materials to the environment.

Project Impacts

Construction Impacts

Construction of the project would entail the use, transport, storage, and generation of hazardous materials typical on a construction site (e.g., diesel fuel, lubricants, paints, solvents, cement products containing strong basic or acidic chemicals). Further, hazardous materials related to building demolition (potential LBP and ACM), asbestos-containing products, PCB-contaminated materials, contaminants from PEC sites with known contamination (e.g., hydrocarbons and chlorinated solvents), and undocumented surface soils from routine activities (lead-contaminated materials adjacent to roadways and pesticide-contaminated material from agricultural properties) may be encountered at construction sites that are in the vicinity of schools. Chapter 2 describes the HSR construction activities in greater detail.

Impact HMW#13: Intermittent Direct Impacts from Hazardous Material and Waste Activities near Schools during Construction

Potentially hazardous materials and items containing potentially hazardous materials commonly used in railway construction (e.g., compressed gases, oils and lubricants, fuels and additives, paints and varnishes, adhesives and glues) could be used or stored in the Caltrain right-of-way, in some cases within 0.25 mile of schools. Additionally, demolition of the structures and the disturbance of former railway as a result of track modification could release asbestos fiber, lead, and other rail-related contaminants into the environment. Although the same number of schools are within 0.25 mile of the project footprint under Alternatives A and B (Table 3.10-17), the potential for temporary exposure of schools to hazardous materials and wastes associated with the inadvertent release of hazardous materials into the environment during construction would be greater under Alternative B than Alternative A. This is because Alternative B would require greater building demolition, railway disturbance, and roadway modifications due to construction. Schools near areas that require building demolition, substantial excavation, and soil disturbance—in proximity to the Brisbane LMF, Millbrae Station, San Jose Diridon Station Approach Subsection, and in San Mateo, Belmont, San Carlos, and Redwood City where the passing track would be constructed—would be considered to have the highest risks of exposure to hazardous materials.

Table 3.10-17 Summary by Alternative of Schools in the Resource Study Area

Alternative	Number of Schools
Alternative A	66 sites
Alternative B[1]	66 sites

Sources: Authority 2019a, 2019b
I- = Interstate
[1] Impacts are the same for Alternative B (Viaduct to I-880) and Alternative B (Viaduct to Scott Boulevard).

During project construction and operations, hazardous materials would be transported in accordance with regulations regarding the transport, use, and storage of hazardous materials (HMW-IAMF#7) with the goal of minimizing the potential for a release of hazardous materials (HMW-IAMF#6) to minimize potential impacts on schools. Any hazardous material use within the project footprint would be subject to federal, state, and local regulations, such as RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act. These regulations would apply equally near school sites and require monitoring the generation, transportation, treatment, storage, and disposal of hazardous waste. Prior to construction that involves demolition, the contractor would prepare demolition plans for the safe dismantling and removal of building components and debris. The demolition plans would include a plan for lead and asbestos abatement (HMW-IAMF#5). Prior to

construction, the contractor would provide the Authority with a hazardous materials and waste plan describing responsible parties and procedures for hazardous materials transport, containment, and storage BMPs that would be implemented during construction (HMW-IAMF#8).

Hazardous materials would be stored during project construction primarily at construction staging areas, and during project operations primarily at the Brisbane LMF. HMBPs (HMW-IAMF#10) and spill prevention and response plans (HMW-IAMF#6) would be prepared for safe storage of hazardous materials and to manage any spill of stored materials. Proper implementation of the materials storage procedures, as outlined in the HMBP, should limit the extent of any spilled material within a storage area to that storage facility. Further, the contractor would develop environmental management plans to identify, track, and document the locations of hazardous materials and to promote proper handling, storage, and transport of hazardous materials (HMW-IAMF#9).

California Public Resources Code Section 21151.4 states that the Authority must consult the school districts associated with the schools within 0.25 mile of the project prior to EIR certification and notify them of the proposed certification in writing at least 30 days prior. Accordingly, the Authority would give the affected schools opportunity to comment on the project and express any related concerns that may result in potential prescriptive actions, such as limits on the materials used, or restrictions on the transport and storage of such materials. The selection of materials would be aided by the implementation of an environmental management system (HMW-IAMF#9), which would inventory and evaluate proposed materials, in order to minimize the amount of hazardous materials and to make substitutions for less hazardous materials where possible. The Authority has coordinated with potentially affected school districts during the course of the preparation of the environmental document.

The California Air Resources Board (CARB) and other agencies specify air monitoring for large- and small-scale construction projects, contaminated soil and groundwater remediation projects, and demolition projects. On-site monitoring regulations are summarized at the CARB website for the following components of airborne contamination, among others:

- Visible emissions
- Fugitive dust
- Particulate matter
- Vehicle and equipment emissions
- Odor
- Organic solvents
- Storage of organic liquids
- Transfer of gasoline and diesel fuel to vehicles
- Transfer of gasoline and diesel fuel to fuel storage tanks

Examples of engineering controls that would be applied to contain any off-site emissions that might affect an adjacent school include emission control for diesel off-road equipment and diesel generators; dust control through wetting or covering; short- and long-term ambient air quality monitoring in neighborhoods near and downwind from the construction or maintenance sites; and field olfactometry measuring and quantifying odor strength in the ambient air.

All heavy-duty off-road construction diesel equipment used during project construction would meet the USEPA Tier IV emissions requirements (40 C.F.R. § 1039.101). Details of the mitigation measures proposed for potential effects on air quality are described further in Section 3.3.7, Mitigation Measures. Section 3.3 also states that toxic air contaminants from diesel emissions, as identified by the CARB, would increase at certain locations and decrease at others because of redistributed freight traffic. They would increase at the 4th and King Street Station, Brisbane LMF, San Jose Diridon Station Approach Subsection, and Millbrae Station because of emergency testing and routine generator maintenance. However, an analysis of sensitive receptors at these locations indicated that neither of these activities would result in an increased long-term risk to potential receptors.

Toxic air contaminants from products typically used in railway construction (e.g., compressed gases, oils and lubricants, fuels and additives, paints and varnishes, adhesives and glues) are expected to be minimal and to have no impact on potential sensitive environmental receptors. Analysis of the potential impact of toxic air contaminants on sensitive receptors is presented in Section 3.3.

The impact on schools of hazardous materials released to the environment in the unlikely event of a leak or spill as the result of an accident or collision during construction would be minimal because of the relatively small quantities of materials transported or used at any given time and because of the precautions required by regulations. Amounts of extremely hazardous materials used during project construction, if any, would be less than the threshold quantities specified in Cal. Health and Safety Code Section 25532. Additionally, because of the required input of the school districts during the planning phase, it is unlikely that types or quantities of materials transported or used during project construction, in conjunction with engineering and monitoring controls, would result in impacts on nearby schools.

CEQA Conclusion

The impact from the use of hazardous materials and wastes in proximity to schools would be significant under CEQA for both project alternatives because hazardous materials could be released in quantities greater than the state threshold. Potential impacts include exposure of students and school faculty to hazardous materials or wastes through skin contact, ingestion, or inhalation, and environmental impacts on school grounds through contact with released hazardous materials or wastes. Materials would be used in a manner consistent with typical construction site procedures and would not be anticipated to leave the project footprint. Project features also include management plans to transport and prevent spills of hazardous materials associated with construction (HMW-IAMF#6, HMW-IAMF#7). However, although project features would require materials to be selected to minimize potential impacts on the public and the environment, and HMBPs and environmental management plans would be used to track and document the location and types of hazardous materials used so they are properly stored and transported, these requirements would not eliminate the possibility of a release of hazardous materials in quantities greater than the state threshold quantity given in subdivision (l) of Section 25532 of the Health and Safety Code near schools within 0.25 mile of the project footprint. A mitigation measure to address this impact is included in Section 3.10.9, CEQA Significance Conclusions. Section 3.10.7, Mitigation Measures, describes the measure in detail.

Operations Impacts

Impact HMW#14: Intermittent Direct Impacts from Hazardous Materials and Wastes Activities near Schools during Operations

Operations of the project alternatives would require the use of small quantities of hazardous materials. Along most of the corridor, the use of hazardous materials would be limited to the periodic use of herbicides in the right-of-way to control weeds and the use of greases to lubricate switching equipment along the trackway. However, under both alternatives at the Brisbane LMF, maintenance of trains would use materials and chemicals during operations. The nearest school to the LMF is Brisbane Elementary, approximately 0.24 miles west of the proposed facility. The materials and chemicals used for maintenance of trains include lubricants, fuels, metal filings, hydraulic fluids, cleaning products, refuse, landscaping supplies, and other potentially toxic materials such as pesticides. Most of the mechanical maintenance on trains would be performed inside of a building designated for mechanical maintenance activities, where these materials and chemicals would be used and stored. As such, potential school receptors would not be exposed to the mentioned materials and chemicals.

Risks related to routine transport, use, or disposal of hazardous materials and waste during project operations would be intermittent. During operations, contractors and HSR personnel would comply with applicable state and federal regulations, such as the RCRA, the CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act (HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#9). These regulations would apply throughout the Project Section to avoid and prevent accidental release of hazardous materials or

wastes during transport, use, or disposal. The impacts from routine transport, use, or disposal of hazardous materials and hazardous waste related to HSR operations would be the same under both alternatives.

Additionally, because the trains would be electrically powered, no diesel or other fuel sources would be used directly for train operations. School receptors within the RSA would therefore not be exposed to diesel or fuel emissions from the passenger train operations.

CEQA Conclusion

The impact from hazardous materials and wastes on schools would be less than significant under CEQA because the routine transport, use, or disposal of hazardous materials would be intermittent and limited to herbicides and greases along the trackway and inside the Brisbane LMF maintenance building. Because the trains would be electrically powered, minimal, if any, diesel or other fuel sources would be used directly for train operations. During operations, contractors and HSR personnel would comply with applicable state and federal regulations, such as the RCRA, the CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act (HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#9). School receptors would not be exposed to hazardous air emissions or substances or mixtures containing extremely hazardous substances. Therefore, CEQA does not require any mitigation.

3.10.7 Mitigation Measures

To mitigate potential impacts on schools within 0.25 mile of the project footprint the following mitigation measure would be implemented for both project alternatives:

HMW-MM#1: Limit Use of Extremely Hazardous Materials near Schools during Construction

Prior to construction, the contractor would prepare a memorandum regarding hazardous materials best management practices related to construction activity for approval by the Authority. The memorandum would confirm that the contractor would not handle or store an extremely hazardous substance (as defined in California Public Resources Code Section 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code within 0.25 mile of a school, unless within the designated staging area with appropriate procedures and protocols in place. The memorandum would acknowledge that prior to construction activities, signage would be installed to delimit all work areas within 0.25 mile of a school, informing the contractor not to bring extremely hazardous substances into the area. The contractor would be required to monitor all use of extremely hazardous substances. The above construction mitigation measure for hazardous materials and wastes is consistent with California Public Resources Code Section 21151.4, and would be effective in reducing the impact to a less-than-significant level. The memorandum would be submitted to the Authority prior to any construction involving an extremely hazardous substance. No secondary impacts are assumed with implementation of this mitigation measure.

3.10.8 Impact Summary for NEPA Comparison of Alternatives

As described in Section 3.1.5.4, the effect of project actions under NEPA are compared to the No Project condition. The determination of effect was based on the context and intensity of the change that would be generated by project construction and operations. Table 3.10-18 shows a summary of hazardous material and waste impacts associated with implementation of the project alternatives.

The Authority evaluated the impacts associated with potential exposure to hazardous materials or wastes from oil and gas wells and airports, airstrips, and heliports in proximity to the project. Because no oil and gas wells are within their respective RSAs, no impacts are anticipated from either source. Additionally, no significant contamination was discovered at any of the airports within the airport RSA (2 miles from the project footprint), and the airports within the RSA are at a distance from the project footprint such that no impacts from particulates from aircraft engine

combustion are expected to affect the project. These resources are not discussed further in this section.

Table 3.10-18 Comparison of Project Alternative Impacts for Hazardous Materials and Wastes

Impacts	Alternative A	Alternative B[1]
Hazardous Material and Waste Sources		
Impact HMW#1: Temporary and Intermittent Direct and Indirect Impacts from the Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes during Construction	The project would not increase the risk of injury or death to the public, workers, or the environment during construction, because project features would require compliance with regulations that control the transport, use, and storage of hazardous materials; proper permitting; and the implementation of written hazard communication and spill prevention plans to avoid worker and public exposure to hazardous materials.	Same as Alternative A
Impact HMW#2: Temporary Direct Impacts from Construction on or near Potential Environmental Concern Sites	Construction of the project could affect 114 medium- and high-risk PEC sites within 0.25 mile of the project footprint. Project features would include characterizing contamination before it is disturbed, managing required disturbances, stopping work if undocumented contamination is discovered, and implementing engineering controls to limit spread and exposure to hazardous materials.	Construction of the project could affect 114 medium- and high-risk PEC sites within 0.25 mile of the project footprint. While the number of medium and high-risk PEC sites is the same for both viaduct options, Alternative B (Viaduct to Scott Boulevard) has the potential for greater impacts due to the additional ground disturbance for the construction of the longer viaduct which could disturb high-risk PEC sites. Project features would be the same as Alternative A.
Impact HMW#3: Temporary Direct Impacts from Inadvertent Disturbance of Railways during Construction	Alternative A would require approximately 17.4 miles of track modifications. The inadvertent disturbance of soils adjacent and underlying to former or current railways during construction is not anticipated to increase the risk of significant hazards to the public or environment because potential effects would likely be surficial and localized because project features include methods for managing undocumented contamination.	The potential for inadvertent disturbance of railway-related contamination would be slightly greater under Alternative B, which would require additional track modifications and ground disturbance. Alternative B would require 19.8 miles (Viaduct to I-880) or 21.6 miles (Viaduct to Scott Boulevard) of track modifications. As with Alternative A, potential effects would likely be surficial and localized because project features would apply to reduce risks associated with disturbance of undocumented contamination.

Impacts	Alternative A	Alternative B[1]
Impact HMW#4: Temporary Direct Impacts from Inadvertent Disturbance of Lead-Based Paint during Construction	Construction of Alternative A would demolish approximately 817,000 square feet of buildings. Demolition of buildings and roadways would be conducted in accordance with a hazardous materials and waste plan and demolition plan with specific provisions for lead abatement. As a result, the potential exposure of the public and construction workers to lead during construction would be minimized.	Construction of Alternative B (Viaduct to I-880) would demolish 1,678,000 square feet of buildings and Alternative B (Viaduct to Scott Boulevard) would demolish 1,866,000 square feet of buildings. Alternative B (Viaduct to Scott Boulevard) has the potential for slightly greater impacts due to the additional ground disturbance for the construction of the longer viaduct. Project features would be the same as Alternative A and would minimize exposure of the public and construction workers to lead during construction.
Impact HMW#5: Temporary Direct Impacts from Inadvertent Disturbance of Asbestos-Containing Materials during Construction	Construction of Alternative A would demolish approximately 817,000 square feet of buildings and require 17.4 miles of track modification. Building demolition would take place in accordance with a hazardous materials and waste plan and demolition plan with specific provisions for asbestos abatement. Plans would require handling of materials be done by licensed asbestos contractors. As a result, the potential exposure of the public and construction workers to asbestos during construction would be minimized.	Construction of Alternative B (Viaduct to I-880) would demolish 1,678,000 square feet of buildings and Alternative B (Viaduct to Scott Boulevard) would demolish 1,866,000 square feet of buildings and would require 19.8 miles (Viaduct to I-880) or 21.6 miles (Viaduct to Scott Boulevard) of track modifications. Alternative B (Viaduct to Scott Boulevard) has the potential for slightly greater impacts due to the additional ground disturbance for the construction of the longer viaduct. Project features would be the same as Alternative A and would minimize exposure of the public and construction workers to asbestos during construction.
Impact HMW#6: Temporary Direct Impacts from Inadvertent Disturbance of Pesticides in Soil from Historical Agricultural Use during Construction	The risk assessment determined that the risk of encountering pesticides is medium in the San Mateo to Palo Alto and Mountain View to Santa Clara Subsections and low in the remaining subsections. The inadvertent disturbance of pesticides during construction is not anticipated to increase the risk of significant hazards to the public or environment because pesticides are a relatively confined contaminant with a low likelihood of mobilization, and because the project includes features to minimize impacts of undocumented contaminants encountered during ground-disturbing activities.	Same as Alternative A

Impacts	Alternative A	Alternative B[1]
Impact HMW#7: Temporary Direct Impacts from Inadvertent Disturbance of Polychlorinated Biphenyls during Construction	The inadvertent disturbance of pole-mounted transformers within the project footprint would not present a hazard to the public or the environment because potential impacts would likely be surficial and localized, and because project features include methods for managing undocumented contamination. These features include preparation of a CMP for disturbances of undocumented contamination, stopping of work until a contaminant can be characterized, and implementation of appropriate controls to limit exposure to PCBs and development of a hazardous materials and waste plan describing responsible parties and procedures for transport, containment, and storage of contaminated materials.	Same as Alternative A
Impact HMW#8: Temporary Direct Impacts from Inadvertent Disturbance of Aerially Deposited Lead during Construction	Temporary disturbance of ADL during construction would not result in a significant hazard to the public or environment because ADL is usually confined to surface soils with low likelihood of mobilization, and because the project includes features to address undocumented contaminants encountered during earth-disturbing activities. These project features include identification and characterization of areas potentially contaminated with ADL prior to construction, restricting handling of contaminated soils to those personnel trained in their management, and wetting of soils during construction and the provision of a hazardous materials and waste plan describing responsible parties and procedures for transport, containment, and storage of contaminated materials.	The risk of ADL exposure would be slightly greater under Alternative B, which would require greater ground-disturbing activities for construction of the passing track and the aerial viaduct. Alternative B (Viaduct to Scott Boulevard) has the potential for slightly greater impacts due to the additional ground disturbance for the construction of the longer viaduct. Project features would be the same as Alternative A and would address undocumented contaminants encountered during earth-disturbing activities.
Impact HMW#9: Temporary Direct Impacts from Soil-Disturbing Activities in Areas of Naturally Occurring Asbestos during Construction	Project construction would not involve major excavation in asbestos-containing bedrock; therefore, airborne NOA would not pose a significant hazard to the public or environment. Further, project features would include testing for NOA, controlling for dust, having a geologist or other trained professional on-site when working in areas with potential for NOA, and stopping work when an NOA deposit is encountered until a management plan has been prepared and implemented.	Same as Alternative A

Impacts	Alternative A	Alternative B[1]
Impact HMW#10: Temporary Direct Impacts from Soil-Disturbing Activities near Landfills during Construction	The East Brisbane LMF under Alternative A would be built on the former Brisbane Landfill. Proposed excavations would require the preparation of a removal action plan to determine appropriate methods for removal, transportation, and disposal of excavated materials. Regular testing for gases and the installation of gas monitoring and venting systems would be required. These project features would minimize risks associated with construction on a former landfill under Alternative A.	Construction of the West Brisbane LMF under Alternative B would occur within 1,000 feet west of the former landfill. Therefore, the risk of exposure to landfill hazards during construction would be less than that of Alternative A. Project features such as methane monitoring would also apply to construction of Alternative B because of its location within 1,000 feet of the former landfill.
Impact HMW#11: Temporary Direct and Indirect Impacts from Inadvertent Disturbance of Undocumented Hazardous Materials or Waste during Construction	Construction of the project could inadvertently disturb undocumented subsurface contamination, such as groundwater plumes, contaminated soils, and underground tanks. However, project features that call for a stop to work upon discovery of undocumented contamination and implementation of a CMP, as well as barriers and hazard controls, would limit the spread of contamination to the immediate vicinity of its area of discovery, thereby minimizing potential impacts on workers, the public, and the environment.	Same as Alternative A. Impacts could potentially differ between the viaduct options, as Alternative B (Viaduct to Scott Boulevard) has greater potential to inadvertently disturb undocumented hazardous materials or waste during construction due to the additional ground disturbance associated with the construction of the longer viaduct. However, since the material is undocumented, there is difficulty predicting if a particular option or alternative is more at risk than another.
Impact HMW#12: Temporary and Intermittent Direct and Indirect Impacts from the Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes during Operations	Because HSR is a passenger train system, it is anticipated that only small quantities of hazardous materials would be used and small quantities of hazardous wastes would be generated during operations. Accordingly, the storage, usage, and generation of hazardous materials and wastes would occur primarily at maintenance facilities, which would have relevant BMPs in place to contain all hazardous materials and wastes within the Brisbane LMF.	Same as Alternative A
Hazardous Material and Waste Impacts on Sensitive Receptors		
Impact HMW#13: Intermittent Direct Impacts from Hazardous Material and Waste Activities near Schools during Construction	Project construction would occur within 0.25 mile of 66 schools under Alternative A. The impact on schools of hazardous materials released to the environment in the unlikely event of a leak or spill as the result of an accident or collision during construction would be minimal because of the relatively small quantities of materials transported or used at any given time and because of the precautions required by regulations.	A greater level of construction activity, including additional building demolition and railway disturbance, would occur within 0.25 mile of 66 schools under Alternative B.

Impacts	Alternative A	Alternative B[1]
Impact HMW#14: Intermittent Direct Impacts from Hazardous Material and Wastes Activities near Schools during Operations	Because HSR is a passenger train system, it is anticipated that only small quantities of hazardous materials would be used and small quantities of hazardous wastes would be generated during operations. The 66 school receptors within the RSA would not be exposed to diesel or fuel emissions from the passenger train operations itself. Accordingly, the storage, usage, and generation of hazardous materials and wastes would occur primarily at Brisbane LMF, which would have relevant BMPs in place to contain all hazardous materials and wastes within the LMF.	Same as Alternative A

ACM = asbestos-containing materials
ADL = aerially deposited lead
BMP = best management practices
CMP = construction management plan
HMBP = hazardous materials business plan
HSR = high-speed rail
I- = Interstate
LMF = light maintenance facility
NOA = naturally occurring asbestos
PCB = polychlorinated biphenyls
PEC = potential environmental concern
RSA = resource study area

Construction activities have the potential to result in temporary and intermittent impacts related to the transport, use, storage, and disposal of hazardous materials. These impacts could occur as a result of the use of hazardous materials in the construction process or inadvertent disturbance of known or undocumented hazardous materials during construction.

Construction of the project alternatives would temporarily increase the regional transport, use, storage, and disposal of hazardous materials. The project includes IAMFs that would minimize contamination of air, soil, surface water, or groundwater; temporary dermal, oral, or inhalation exposure of construction workers or the public to either hazardous materials used in construction or in-situ contaminants; or fire or explosion. IAMFs associated with the transport, use, storage, and disposal of hazardous materials and wastes during project construction (HMW-IAMF#6, HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#10) include measures to minimize or avoid impacts from inadvertent spills resulting from improper use through consistent compliance with regulations that control the transport, use, and storage of hazardous materials; proper permitting; and the implementation of a written hazard communication plan and spill prevention plan (HMW-IAMF#6). Regulations regarding hazardous materials transport methods, labeling, inventories, and storage conditions (HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#10) include robust BMPs to minimize the potential for the release of hazardous materials, and the amount of hazardous materials potentially released. Site workers would be trained on response to and minimization of hazards from a hazardous materials spill, and would be equipped with appropriate response equipment, should a release occur (HMW-IAMF#6).

Ground-disturbing activities during project construction have the potential to disturb in-situ contamination on or near a total of 114 medium- and high-risk PEC sites for both Alternative A and Alternative B (both viaduct options). While the number of medium and high risk PEC sites is the same for both viaduct options, Alternative B (Viaduct to Scott Boulevard) has the potential for additional impacts due to the additional ground disturbance for the construction of the longer viaduct, which could disturb high-risk PEC sites. Phase I and Phase II ESAs would be conducted during the right-of-way acquisition phase (HMW-IAMF#1) to assess the potential for disturbance of contaminated sites. Provisions in the site CMP would call for stopping construction activities if

undocumented contamination or fill material is encountered (HMW-IAMF#4). By limiting soil disturbance, migration of and exposure to contaminants would be reduced to the immediate vicinity of the exposed surface. Engineering controls (HMW-IAMF#3) would minimize the migration and exposure to the contaminants until local agencies have been contacted and a plan for further assessment and remediation put in place before construction activities would resume. These project features would minimize the potential exposure to contaminants from known and undocumented PEC sites.

Development of the project would entail the demolition or disturbance of old rail ties, potentially causing the release of creosote on treated wood ties, heavy metals in railroad ballast, ACM, LBP, petroleum products in underlying surface soils, and lead and arsenic in herbicides that may have been historically used on the railway. While both alternatives would require track modifications along approximately 36 to 44 percent of the project corridor depending on the alternative, the potential for temporary human exposure to contaminants as a result of demolition or disruption of the railway would be greater under Alternative B, when compared to Alternative A, which would require more extensive modifications to existing railway to construct the passing track. A CMP would be prepared to address provisions for the disturbance of undocumented contamination (HMW-IAMF#4) to minimize potential health impacts on workers and the public. Additionally, workers would be required to wear chemical protective gloves when working around soil believed to be contaminated, and to decontaminate equipment following use in contaminated soils (HMW-IAMF#8).

During project construction, demolition of roadways and structures containing LBP or ACM could occur. Alternative A would demolish approximately 817,000 square feet of buildings, whereas Alternative B (Viaduct to I-880) would demolish approximately 1,678,000 square feet of buildings, and Alternative B (Viaduct to Scott Boulevard) would demolish approximately 1,866,000 square feet of buildings. Therefore, risks associated with exposure to LBP or ACM during demolition activities would be greater under Alternative B, specifically Alternative B (Viaduct to Scott Boulevard). The only major roadway demolitions would occur in Brisbane under both project alternatives and in Santa Clara and San Jose under Alternative B. The impacts associated with the release of LBP or ACM during roadway demolition would be similar between the project alternatives but slightly greater under Alternative B. The project would include requirements for construction contractors to prepare demolition plans with specific provisions for lead and ACM abatement (HMW-IAMF#5) for all commercial and industrial buildings or roadways/roadway structures slated for demolition or renovation. IAMFs would also require licensed asbestos contractors to handle any ACM as well as the implementation of standard control measures during demolition, such as screened fencing, water application for dust minimization, and asbestos air monitoring. These project features would minimize the potential exposure of the public and construction workers to lead and ACM during construction.

Construction activities may occur in areas containing pesticide residue from historical agricultural use. The project requires development of a CMP to address undocumented contamination (HMW-IAMF#4). If areas of potential concentrated pesticide use are encountered during project construction, work would stop and the area characterized for pesticides prior to resuming work. Although pesticides can be persistent, their presence would likely be immobile and limited to shallow soil; therefore, impacts on deeper soils or groundwater are unlikely. Any shallow soils in areas of planned project earthworks contaminated with pesticides above commercial/industrial exposure concentrations would be excavated and disposed of prior to the start of soil disturbance. These project features would minimize potential impacts from pesticides on construction workers, the public, and the environment.

Construction trenching and other ground-disturbing activities have the potential to disturb soil or groundwater contaminated with PCB. This may occur at the base of pole-mounted transformers and around concrete surfaces supporting pad-mounted or vaulted transformers. The project would require the contractor to prepare a plan to minimize potential health impacts such as oral, dermal, and inhalation exposure of workers and the public resulting from the disturbance of undocumented PCB contamination (HMW-IAMF#4). Upon discovery of staining at the base of a pole-mounted transformer within the construction area, work would stop until the potential

contamination has been characterized, and appropriate controls for workers, the public, and the environment are put in place. Because transformers are pole-mounted, they are easily visible, and would likely not be subjected to additional disturbance during construction. These project features would minimize potential impacts on the public or the environment resulting from the inadvertent disturbance of PCBs.

Construction ground-disturbing activities have the potential to disturb soils or groundwater contaminated with ADL. The risk of ADL exposure would be similar between the project alternatives but slightly greater under Alternative B, which would require more ground-disturbing activities. Alternative B (Viaduct to Scott Boulevard) has the potential for slightly greater impacts due to the greater level of ground disturbance, track modifications, and roadway modifications for the construction of the longer viaduct. The project would require construction contractors to prepare demolition plans with specific provisions for lead abatement (HMW-IAMF#4) for all roadways slated for demolition or renovation to minimize impacts associated with the temporary dermal, oral, or inhalation exposure of construction workers or the public to in-situ or airborne lead. In areas potentially contaminated with ADL, such as areas adjacent to heavily traveled roadways, soil would be characterized for ADL prior to soil disturbance (HMW-IAMF#1), and controls for workers, the public, and the environment would be put in place in accordance with a CMP. Workers would be required to wear chemical protective gloves and dust masks when working around soil believed to be contaminated with lead, and to wet down potentially contaminated soils prior to disturbance to minimize dust generation. Potential receptors of ADL-contaminated soils would be limited to construction workers and the environment in the immediate vicinity.

Project construction activities in areas of asbestos-containing bedrock, could cause the release of NOA, with the greatest potential for encountering NOA in the San Francisco to South San Francisco Subsection. Proposed excavations are minor within these areas, specifically near Potrero Hill in San Francisco, and are unlikely to reach bedrock; however, the following measures should be taken if NOA is encountered. The project would minimize potential impacts from NOA disturbance, including inhalation exposure of construction workers and the public, localized spread of asbestos fibers in soil, and off-site conveyance of airborne fibers by controlling for dust, testing for NOA, and other measures designed to minimize impacts of hazardous materials (HMW-IAMF#5, HMW-IAMF#10). A geologist or other professional trained in the identification of NOA-containing formations would be present during excavation in identified areas of potential NOA. If NOA is identified, work would stop until an asbestos management plan has been prepared and control measures have been implemented.

Construction of the East Brisbane LMF under Alternative A would require significant earthwork cut and fill to create a level surface for the workshop, yard, tracks, and supporting systems and utilities on the site of the former Brisbane Landfill, whereas construction of the West Brisbane LMF under Alternative B would require similar construction activities approximately 450 feet west of the former Brisbane Landfill. Construction of both project alternatives would require the implementation of methane protection measures during construction, use of safe and explosion-proof equipment, regular testing for gases, and installation of gas monitoring and venting systems. These measures would minimize safety risks in the form of explosion and asphyxiation hazards associated with encountering flammable methane gas during construction. Additionally, under Alternative A, which would require substantial excavation on the site of the former landfill, the Authority's design-build contractor would be required to prepare an RAP that would determine the requirements for removal, transportation, and disposal of excavated materials; air monitoring; regulatory concerns; and worker health and safety. The RAP would detail air monitoring, methane controls, and requirements for the characterization and disposal of excavated materials. Further, the Authority's contractor would verify through preparation of a technical memorandum that methane protection measures would be implemented for all work within 1,000 feet of a landfill, including gas detection systems and personnel training. These project features would avoid or minimize risks associated with construction on or near a former landfill, such that construction of either project alternative would not pose a significant hazard to the public or environment

associated with the handling or release of hazardous materials into the environment associated with the landfill.

Excavation and other ground-disturbing construction activities could disturb undocumented soil or groundwater contamination. Each alternative carries a similar amount of risk for potential impacts from undocumented hazardous materials and waste. The project includes requirements for creation of a CMP (HMW-IAMF#4) to contain temporary localized spreading of contamination; temporary dermal, oral, or inhalation exposure of construction workers or the public to contaminants; and disturbance of active remediation activities. Work barriers would be erected in both areas of identified potential contamination before construction and in areas of contamination identified after construction has begun (HMW-IAMF#3). The CMP would call for an immediate stopping of work once contamination is discovered to minimize the potential for exposure to and spread of unidentified in-situ contaminants, and subsequent characterization and removal prior to resuming construction. The project features would minimize the potential impacts from the inadvertent disturbance of hazardous materials or wastes during construction. Operation of the HSR passenger rail system would involve intermittent use of small amounts of hazardous materials and generation of some hazardous wastes. HSR operations would include administrative controls on the transport, use, storage, and disposal of hazardous materials and wastes (HMW-IAMF#7, HMW-IAMF#8, HMW-IAMF#9, HMW-IAMF#10). The storage, use, and generation of hazardous materials and wastes would occur primarily at the Brisbane LMF, which would have relevant BMPs in place to contain all hazardous materials and wastes within the LMF. Because the HSR trains would be electrically powered, no diesel or other fuel sources would be used during operations. Therefore, project features would minimize the potential impacts from hazardous materials and waste used, stored, or generated during operations.

During project construction, there is a potential for impacts associated with the exposure of students and school faculty to hazardous materials or wastes through skin contact, ingestion, or inhalation, and environmental impacts on school grounds through contact with released hazardous materials or wastes. Although the same number of schools are within 0.25 mile of the project footprint under Alternatives A and B, Alternative B would require a greater amount of building demolition and track modifications than Alternative A. Therefore, the potential for temporary exposure of schools to hazardous materials and wastes associated with the inadvertent release of hazardous materials into the environment during construction would be greater under Alternative B. IAMFs would require materials to be selected and managed during transport and use (HMW-IAMF#6, HMW-IAMF#7) to minimize potential impacts on the public and the environment. HMBPs and environmental management plans would be used to track and document the transport, storage and location, and types of hazardous materials. A mitigation measure (HMW-MM#1) would reduce temporary construction impacts by requiring that amounts of extremely hazardous materials used during project construction, if any, be less than the threshold quantities specified in subdivision (l) of the Cal. Health and Safety Code Section 25532. Materials are anticipated to be used in a manner consistent with typical construction site procedures and are not anticipated to leave the project footprint. The combination of project features and the mitigation measure would minimize the potential impacts on schools from hazardous materials used during construction of the project.

3.10.9 CEQA Significance Conclusions

As described in Section 3.1.5.4, the impacts of project actions under CEQA are evaluated against thresholds to determine whether a project action would result in no impact, a less-than-significant impact, or a significant impact. Based on the analysis, the Authority determined the CEQA significance of the impacts from hazardous materials and wastes that would result from the project alternatives. Table 3.10-19 identifies the CEQA significance conclusions for each impact identified in Section 3.10.6. A summary of the significant impact, mitigation measure, and factors supporting the significance conclusion after mitigation follows the table.

Table 3.10-19 CEQA Significance Conclusions and Mitigation Measures for Hazardous Materials and Wastes

Impacts	Impact Descriptions and CEQA Level of Significance before Mitigation	Mitigation Measures	CEQA Level of Significance after Mitigation
Hazardous Material and Waste Sources			
Impact HMW#1: Temporary and Intermittent Direct and Indirect Impacts from the Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes during Construction	Less than significant for both alternatives: BMPs and project features include compliance with regulations that control the transport, use, and storage of hazardous materials.	No mitigation measures are required.	N/A
Impact HMW#2: Temporary Direct Impacts from Construction on or near Potential Environmental Concern Sites	Less than significant for both alternatives: Project features include characterizing contamination before its disturbance, a CMP that would call for immediate cessation of construction activities upon visual or olfactory identification of undocumented contamination or fill material, and engineering controls to minimize the migration of and exposure to the contaminants.	No mitigation measures are required.	N/A
Impact HMW#3: Temporary Direct Effects from Inadvertent Disturbance of Railways during Construction	Less than significant for both alternatives: Railway contaminants are a relatively confined contaminant with low likelihood of mobilization; project features include characterizing contamination before its disturbance and a CMP to address undocumented contaminants encountered during ground-disturbing activities.	No mitigation measures are required.	N/A
Impact HMW#4: Temporary Direct Impacts from Inadvertent Disturbance of Lead-Based Paint during Construction	Less than significant for both alternatives: Project features include plans for transport, containment, and storage of hazardous materials and provisions for lead abatement.	No mitigation measures are required.	N/A
Impact HMW#5: Temporary Direct Impacts from Inadvertent Disturbance of Asbestos-Containing Materials during Construction	Less than significant for both alternatives: Project features include demolition plans; plans for transport, containment, and storage of hazardous materials; and provisions for ACM abatement.	No mitigation measures are required.	N/A
Impact HMW#6: Temporary Direct Impacts from Inadvertent Disturbance of Pesticides in Soil from Historical Agriculture during Construction	Less than significant for both alternatives: Pesticides are a relatively confined contaminant with low likelihood of mobilization and project features include a CMP to address undocumented contaminants encountered during ground-disturbing activities.	No mitigation measures are required.	N/A

Impacts	Impact Descriptions and CEQA Level of Significance before Mitigation	Mitigation Measures	CEQA Level of Significance after Mitigation
Impact HMW#7: Temporary Direct Impacts from Inadvertent Disturbance of Polychlorinated Biphenyls during Construction	Less than significant for both alternatives: Project features include a CMP for managing undocumented contamination.	No mitigation measures are required.	N/A
Impact HMW#8: Temporary Direct Impacts from Inadvertent Disturbance of Aerially Deposited Lead during Construction	Less than significant for both alternatives: Project features include pre-construction characterization of potential ADL areas, a demolition plan and hazardous materials and waste plan, and handling of contaminated soils by trained personnel.	No mitigation measures are required.	N/A
Impact HMW#9: Temporary Direct Impacts from Soil-Disturbing Activities in Areas of Naturally Occurring Asbestos during Construction	Less than significant for both alternatives: Project features include testing for NOA, dust controls, and trained professional on-site when working in potential NOA areas.	No mitigation measures are required.	N/A
Impact HMW#10: Temporary Direct Impacts from Soil-Disturbing Activities near Landfills during Construction	Less than significant for both alternatives: The East Brisbane LMF under Alternative A would be built on the former Brisbane Landfill, whereas construction of the West Brisbane LMF under Alternative B would occur west of the former landfill. Regular testing for gases and the installation of gas monitoring and venting systems would be required for proposed excavation under both alternatives. Methane has the potential to be released during excavation. Additionally, proposed excavations on the site of the landfill under Alternative A would require the preparation of a removal action plan to determine appropriate methods for removal, transportation and disposal of excavated materials. These project features would minimize risks associated with construction on or near a former landfill for both project alternatives.	No mitigation measures are required.	N/A
Impact HMW#11: Temporary Direct and Indirect Impacts from Inadvertent Disturbance of Undocumented Hazardous Materials or Wastes during Construction	Less than significant for both alternatives: Project features include a CMP, work barriers prior to construction, and removal of identified undocumented hazardous materials prior to resuming work.	No mitigation measures are required.	N/A

Impacts	Impact Descriptions and CEQA Level of Significance before Mitigation	Mitigation Measures	CEQA Level of Significance after Mitigation
Impact HMW#12: Temporary and Intermittent Direct and Indirect Impacts from the Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes during Operations	Less than significant for both alternatives: Project features include administrative controls on transport, use, storage, and disposal of hazardous materials and wastes; moreover, because HSR is a passenger train system, minimal quantities of hazardous materials would be used and generated.	No mitigation measures are required.	N/A
Hazardous Material and Waste Impacts on Sensitive Receptors			
Impact HMW#13: Intermittent Direct Impacts from Hazardous Material and Waste Activities near Schools during Construction	Significant for both alternatives: The potential exists for a release of hazardous materials within 0.25 mile of a school. Project features would require selection of materials to minimize potential for exposure and use of HMBPs and environmental management plans to identify, track, and document the locations of hazardous materials and to promote proper handling, storage, and transport of hazardous materials. However, these features do not eliminate the possibility of a hazardous materials release near a school.	HMW-MM#1: Limit use of extremely hazardous materials near schools during construction.	Less than Significant
Impact HMW#14: Intermittent Direct Impacts from Hazardous Material and Waste Activities near Schools during Operations	Less than significant for both alternatives: Only small quantities of hazardous materials would be transported during operations, and most use of such materials would take place at maintenance facilities. Additionally, because the trains would be electrically powered, no diesel or other fuel sources would be used during operations. School receptors within the RSA would not be exposed to diesel or fuel emissions from the passenger train operations itself.	No mitigation measures are required.	N/A

ACM = asbestos-containing materials
ADL = aerially deposited lead
BMP = best management practices
CEQA = California Environmental Quality Act
CMP = construction management plan
HMBP = hazardous materials business plan
HSR = high-speed rail
LMF = light maintenance facility
N/A = not applicable
NOA = naturally occurring asbestos
RSA = resource study area

Impacts under CEQA would be the same for Alternatives A and B. Although the project alternatives differ in the location of the Brisbane LMF and the presence of passing tracks, the impacts would be the same across both alternatives because of their proximity in the context of hazardous materials and waste sources. With one exception, the CEQA impacts of construction and operation of both project alternatives would be less than significant and therefore do not require mitigation.

Impact HMW#13: Intermittent Direct Impacts from Hazardous Materials and Wastes Activities in Proximity to Schools during Construction

The impact from the use of hazardous materials and wastes in proximity to 66 schools, within 0.25 mile of the project footprint, would be potentially significant under CEQA before mitigation. Potential impacts include exposure of students and school faculty to hazardous materials or wastes through skin contact, ingestion, or inhalation and environmental impacts on school grounds through contact with released hazardous materials or wastes. Materials are anticipated to be used in a manner consistent with typical construction site procedures and are not anticipated to leave the project footprint. Project features also include management plans to transport and prevent spills of hazardous materials associated with project construction (HMW-IAMF#6, HMW-IAMF#7). However, even though project features would require materials to be selected to minimize potential impacts on the public and the environment and would require HMBPs and environmental management plans to be used to track and document the location and types of hazardous materials used so they are properly stored and transported, these measures would not eliminate the possibility of a release of hazardous materials in quantities greater than the state threshold quantity given in subdivision (l) of Section 25532 of the Cal. Health and Safety Code near schools within 0.25 mile of the project footprint.

Implementation of HMW-MM#1 would reduce the quantities of extremely hazardous materials used near schools during project construction to below the state threshold quantity given in subdivision (l) of Section 25532 of the Cal. Health and Safety Code. This measure prevents the contractor from handling extremely hazardous wastes and relies on the oversight of Cal-EPA and the applicable CUPA to remediate and provide oversight. These agencies are trained to handle extremely hazardous materials, and can expedite remediation if a release occurs. Therefore, the impact would be less than significant under CEQA following implementation of HMW-MM#1.