3.10 Hazardous Materials and Wastes

3.10.1 Introduction

This section describes the regulatory setting and affected environment associated with hazardous materials and wastes, the potential project impacts related to hazardous materials and wastes, and the mitigation measures that would reduce these impacts. Construction and operation of the Merced to Fresno Section of the California HST System could cause ground disturbance (including disturbance of groundwater or surface water) near a known contaminated site or sites or where contamination could exist in the study area. Construction and operation of the project could also involve the use, storage, and disposal of hazardous materials and wastes in the study area.

The Program EIR/EIS documents concluded that the project would have a less than significant impact on hazardous materials and hazardous wastes when considered on a system-wide basis. However, it also acknowledged that, at the program level, it was not possible to identify specific hazardous material impacts or the nature and severity of contamination at specific sites. The Authority and FRA committed to project-level analysis that included identifying and evaluating potential sites through database searches, review of land use, site reconnaissance, and review of records and consultation with regulatory agencies. The Authority and FRA committed to design practices, such as elevating the track, that avoid and minimize potential impacts through design refinement.

Development and use of land in the study area is a key aspect in understanding the potential for contamination related to hazardous materials and wastes because particular types of land use are more prone to specific contamination concerns. Section 3.17, Cultural and Paleontological Resources, discusses historical land use, and Section 3.13, Station Planning, Land Use, and Development, discusses current land use. Additional information regarding hazardous materials and wastes is presented in Section 3.8, Hydrology and Water Resources; Section 3.9, Geology, Soils, and Seismicity; and Section 3.6, Public Utilities and Energy. Section 3.11, Safety and Security, discusses emergency response. The *Merced to Fresno Section Hazardous Materials/Wastes Technical Report* (Authority and FRA 2012) provides detailed information on hazardous materials and hazardous wastes, information about the investigation process, and a complete overview of pertinent elements of the affected environment.

3.10.2 Laws, Regulations, and Orders

This section includes the federal, state, and local laws, regulations, and orders that pertain to hazardous materials and wastes in the study area.

3.10.2.1 Federal

Resource Conservation and Recovery Act (RCRA) [42 U.S.C. Section 6901 et seq.]

Regulates the identification, generation, transportation, storage, treatment, and disposal of solid and hazardous materials and hazardous wastes.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [42 U.S.C. Section 9601 et seq.]

Regulates former and newly discovered uncontrolled waste disposal and spill sites. Established the National Priorities List of contaminated sites and the "Superfund" cleanup program.

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, EPA established National Emissions Standards for Hazardous Air Pollutants, which are emissions standards for air pollutants, including asbestos.

Clean Water Act [Section 402(p)]

Regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater.

Safe Drinking Water Act [42 U.S.C. Section 300(f) et seq.]

Regulates discharges of pollutants to underground aquifers.

Toxic Substances Control Act [15 U.S.C. Section 2601 et seq.]

Regulates the manufacturing, inventory, and disposition of industrial chemicals, including hazardous materials.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) [7 U.S.C. Section 136 and 40 CFR Parts 152 to 171]

Regulates the manufacturing, distribution, sale, and use of pesticides.

Hazardous Materials Transportation Act [49 U.S.C. Section 1801-1819 and 49 CFR Parts 101, 106, 107, and 171-180]

Regulates the transport of hazardous materials by motor vehicles, marine vessels, and aircraft.

Emergency Planning and Community Right to Know Act [40 CFR Parts 350 to 372]

Regulates facilities that use hazardous materials in quantities that require reporting to emergency response officials.

Federal Compliance with Pollution Control [Executive Order 12088]

Requires federal agencies to take necessary actions to prevent, control, and abate environmental pollution from federal facilities and activities that federal agencies control.

3.10.2.2 State

California Code of Regulations, Title 14 Section 1724.3, Well Safety Devices for Critical Wells

Governs safety devices required on "critical wells" located within 100 feet of an operating railway.

California Code of Regulations, Title 27, Division 2, Chapter 3, Subchapter 4, Gas Monitoring and Control at Active and Closed Disposal Sites

The regulations within Article 6 set 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 assure that public health and safety and the environment are protected from pollution due to the disposal of solid waste.

California Code of Regulations, Title 27, Division 2, Chapter 3, Subchapter 5, Closure and Post Closure Maintenance of Landfills

Provides post closure maintenance guidelines, including requirements for an emergency response plan and site security. 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

Requires the lead agency to consult with any school district with jurisdiction over a school within 0.25 mile of the project about potential impacts on the school if the project might reasonably be anticipated to emit hazardous air emissions, or handle an extremely hazardous substance or a mixture containing an extremely hazardous substance.

Porter-Cologne Water Quality Act [California Water Code Section 13000 et seq.]

Regulates water quality through the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB), including oversight of water monitoring and contamination cleanup and abatement.

Hazardous Materials Release Response Plans and Inventory Law [California Health and Safety Code Section 25500 et seq.]

Requires facilities using hazardous materials to prepare Hazardous Materials Business Plans.

Hazardous Waste Control Act [California Health and Safety Code Section 25100 et seq.]

Similar to RCRA the Hazardous Waste Control Act, regulates the identification, generation, transportation, storage, and disposal of materials the State of California has deemed hazardous.

Safe Drinking Water and Toxic Enforcement Act [Proposition 65]

Similar to the Safe Drinking Water Act and the Clean Water Act, regulates the discharge of contaminants to groundwater.

California Government Code Section 65962.5

Requires the California Department of Toxic Substances Control (DTSC) to compile and maintain lists of potentially contaminated sites located throughout the State of California. (This section includes the Hazardous Waste and Substances Sites [Cortese] List.)

3.10.2.3 Regional and Local

The Unified Program (California Environmental Protection Agency 2009) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. The California Environmental Protection Agency and other state agencies set the standards for their programs while local governments implement the standards. These local implementing agencies are called Certified Unified Program Agencies (CUPAs) (Fresno County 2009). For each county, the CUPA regulates/oversees:

- Hazardous materials business plans.
- California accidental release prevention plans or federal risk management plans.
- The operation of underground storage tanks (USTs) and aboveground storage tanks (ASTs).
- Universal waste and hazardous waste generators and handlers.
- Onsite hazardous waste treatment.
- Inspections, permitting, and enforcement.
- Proposition 65 reporting.
- Emergency response.

Beyond the statewide regulations the CUPAs administer, general plans and municipal codes address hazardous materials and wastes and are intended as guides for the appropriate use of potentially hazardous materials, the cleanup of contaminated sites, and the preparation of emergency response plans. Table 3.10-1 lists local plans and policies that were identified and considered for analysis. Regional plans have not been prepared for the management and disposal of hazardous waste and materials.

Table 3.10-1
Local Plans and Policies

Jurisdiction	CUPA	Policy Title	Summary
Merced County	Merced County Department of Health, Environmental Health Division	*Merced County Year 2000 General Plan* (Merced County 1990)	Figure VI-12: Merced County Hazardous Waste/Contaminated Sites lists 54 sites that require cleanup.
City of Merced		*Merced Vision 2030 General Plan* (City of Merced 2012)	Policies S-7.1 and S-7.2 are designed to prevent injuries and environmental contamination caused by hazardous material releases and to ensure that properties are cleaned before redevelopment.
		City of Merced Emergency Operations Plan Guidance Document (City of Merced 2003)	Appendix E-12, Map 11-Acutely Hazardous Materials Facilities provides a general map of such facilities. Appendix E-14, Map 13-Liquid Petroleum Pipelines notes several 6- and 12-inch pipeline alignments owned by Kinder Morgan. The *Merced City Fire Department Official Action Guide*, the city's Hazardous Materials Area Plan, is tiered to the guidance document (City of Merced 1988).
Madera County	Madera County Department of Environmental Health	*Madera County Local Hazard Mitigation Plan* (Madera County 2010)	Prepared to comply with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), this document applies to all areas of the county except the City of Chowchilla and the Picayune Rancheria, and includes a hazard analysis, vulnerability analysis, capabilities assessment, and mitigation strategy.
City of Chowchilla		*Local Hazard Mitigation Plan* (City of Chowchilla 2010)	Prepared to comply with the Disaster Mitigation Act of 2000, this document includes a hazard analysis, vulnerability analysis, capabilities assessment, and mitigation strategy.
Fresno County	Fresno County Department of Public Health, Division of Environmental Health	*Fresno County General Plan* (Fresno County 2000)	The Health and Safety Element contains the *Fresno County Operational Area Master Emergency Services Plan.* Section F, Hazardous Materials, includes policies to regulate use of hazardous materials, promote recycling, etc. General Plan policies HS-F.1 through HS-F.3, HS-F.5, HS-F.6, HS-F.7, and OS-G.12 direct the County to ensure that hazardous materials use and waste management activities are performed in compliance with applicable laws and regulations, and address the need to avoid inappropriate siting of sensitive land uses.

Jurisdiction	CUPA	Policy Title	Summary
City of Fresno		*Municipal Code and Charter of the City of Fresno California*	This document regulates certain discharges, including hazardous wastes, and presents requirements for permitting solid waste handling and recycling facilities (Chapter 10 Regulations regarding Public Nuisance and Real Property Conduct and Use, Article 4 Solid Waste and Recycling Facilities). Chapter 12 dictates CEQA compliance procedures (Article 5 Environmental Quality) and regulates abandoned service stations and the conversion of service stations to other uses (Article 3 General Conditions Applicable to Zoning).
		Fire Code	The Fire Department issues operational permits for facilities that use compressed gases, explosives, flammable and combustible liquids, hazardous materials, liquefied petroleum gas, etc. The Fire Department also has an Emergency Planning and Preparation System, and handles hazardous material incident responses.

3.10.3 Methods for Evaluating Impacts

For the purpose of this assessment, hazardous materials are defined as any materials that, because of quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety, or to the environment, if released. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering regulatory 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 (California Health and Safety Code, Section 25501 [o]). Although often treated separately from hazardous materials, petroleum products (including crude oil and refined products such as fuels and lubricants) and natural gas are considered in this analysis because they might pose a potential hazard to human health and safety if released into the environment. Hazardous wastes include residues, discards, byproducts, contaminated products, or similar substances that exceed regulatory thresholds for properties of toxicity, ignitibility, corrosivity, or reactivity. Federal and state regulations identify by name specific hazardous wastes that EPA has designated as "listed wastes."

This analysis identified sites of Potential Environmental Concern (PEC sites or PECs) using aspects of the methodology provided in ASTM Standard Practice E 1528-06 (ASTM 2006). Sites were identified as PECs where there was the possible presence of any hazardous material or waste under conditions that indicate the possibility of an existing release, a past release, or a threat of a release of the hazardous material or waste into structures on the property or into the ground, groundwater, or surface water of the property. This designation includes sites that handle and store hazardous materials or wastes in compliance with laws and regulations (ASTM 2006). This analysis considered potential effects based on proximity of the HST alignments to known hazardous material and waste sites using a combination of environmental database record searches; analyses of historical topographic maps and aerial photography; site reconnaissance; and regulatory agency files review and consultation. The *Merced to Fresno Section Hazardous Materials/Wastes Technical Report* (Authority and FRA 2012) details this analysis.

Impacts related to hazardous materials and wastes could result from the following:

- Construction and operations, such as routine hazardous materials transport, use, and disposal, in relation to the project alternatives.

- The accidental release of hazardous materials and wastes because of upsets and accidents.
- The demolition of buildings and roadways with potential asbestos-containing materials (ACM) and lead-containing materials.
- The proximity of PEC sites to the project alternatives.
- Project aspects that would emit or handle hazardous materials, substances, or waste in the proximity of schools.

The significance criteria, as incorporated from the CEQA Guidelines, Appendix G, Section VII, Hazards and Hazardous Materials, are qualitative. These criteria include terms such as "create a significant hazard," "result in a safety hazard," and "impair implementation." This methodology, combined with objective information such as locations of hazardous materials sites, qualitative hazard assessments, and professional judgment, is used to consider whether the project could result in a significant impact as defined by CEQA.

3.10.3.1 Methods for Evaluating Effects under NEPA

Pursuant to NEPA regulations (40 CFR 1500-1508), project effects are evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. Intensity refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved, location and extent of the effect, duration of the effect (short- or long-term), and other considerations. Beneficial effects are identified and described. When there is no measurable effect, an impact is found not to occur. The intensity of adverse effects is the degree or magnitude of a potential adverse effect, described as negligible, moderate, or substantial. Context and intensity are considered together when determining whether an impact is significant under NEPA. Thus, it is possible that a significant adverse effect may still exist when on balance the impact has negligible intensity or even if the impact is beneficial.

For hazardous materials and wastes, an impact with *negligible* intensity is defined as an increased risk to the public or environment related to hazardous materials or substances that is slightly greater, but very close to the existing conditions. An impact with *moderate* intensity is defined as a localized increased risk to the public or environment related to hazardous materials or substances. Effects with *substantial* intensity are defined as increased risk to the public or environment related to hazardous materials or substances on a regional scale.

3.10.3.2 CEQA Significance Criteria

Current conditions, including the hazardous material and waste sites identified in the available databases, provide the baseline against which the HST alternatives have been compared. Consistent with Appendix G of the CEQA Guidelines, a project is considered to have a significant impact on the environment if it results in one or more of the following conditions:

- Creates a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Creates a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Is located on a site that is included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5 (the Cortese List) and, as a result, would create a significant hazard to the public or the environment.
- Emits hazardous air emissions or handles extremely hazardous substances or mixtures containing extremely hazardous substances within 0.25 mile of a school and would pose a health or safety hazard to students or employees.

3.10.3.3 Study Area for Analysis

For hazardous materials and wastes, the study area consists of the construction footprint for tracks, stations, and HMFs, plus a 150-foot buffer around the construction footprint to account for hazardous material and waste issues located on adjacent properties. To be consistent with ASTM database-search standard practice, the database search included a 0.5-mile buffer area on either side of the alternative centerline. In addition, the federal National Priorities List and RCRA corrective action sites were identified within 1 mile of the study area. Within this broader area, analysts attempted to identify potential large or regionally important PEC sites where contamination could extend well beyond the mapped address and into the study area. The database searches did not identify any such sites. Therefore, Section 3.10.4, Affected Environment, and Section 3.10.5, Environmental Consequences, discuss the conditions and potential effects in the study area only (construction footprint and 150-foot buffer). To evaluate potential impacts on schools in a manner consistent with the CEQA significance criteria, the study area for school locations was increased to 0.25 mile on either side of the construction footprint. The study area was also increased to 0.25 mile on either side of the construction footprint to analyze the potential for a change in land use adjacent to a landfill, consistent with Title 27 of the CCR.

3.10.4 Affected Environment

This section describes the existing hazardous materials and wastes setting. Following a discussion of the regional context, information about general areas of concern, specific PEC sites within the study area, and the proximity of schools is presented. The *Merced to Fresno Section Hazardous Materials/Wastes Technical Report* (Authority and FRA 2012) presents additional history and detail about these topics and the regional setting, geology, hydrogeology, and water resources.

Since the installation of the rail and road corridors in the early 20th century, the study area has been completely transformed from its natural state (e.g., grasslands, woodlands, swamps, and small rural towns) into major centers of agribusiness, industry, and urbanization. Hazardous materials have been used in the study area for at least 100 years.

The study area is located in a broad basin (the San Joaquin Valley) that separates the Sierra Nevada Mountains to the east and the Coast Range to the west. The topography is relatively flat. Elevations in the study area range from approximately 170 feet to 300 feet above sea level, generally sloping to the west or southwest. The valley is composed of thousands of feet of sediment layers from several geologic periods on top of mixed rock layers, with bedrock about 6 miles below ground surface (Authority and FRA 2005).

The study area is in the San Joaquin River Hydrologic Region, which is fed by tributaries that flow west to the San Joaquin River and drain to the Sacramento-San Joaquin Delta (California Department of Water Resources 2004). The study area is located in the vast San Joaquin Valley Groundwater Basin, which is composed of the Delta Mendota Subbasin, the Merced Subbasin, the Chowchilla Subbasin, and the Madera Subbasin (Authority and FRA 2008). Groundwater flow in the San Joaquin Valley Groundwater Basin is primarily to the southwest (California Department of Water Resources 2004). Relatively uniform, unconfined aquifers and associated water tables are expected in the study area.

Groundwater is routinely withdrawn from the San Joaquin Valley Groundwater Basin for domestic and agricultural purposes. Groundwater levels in the basin fluctuate according to seasonal precipitation levels and as a result of withdrawal, surface water use, and recharge. Depth of groundwater in the various subbasins ranges from a few inches to more than 500 feet. Most of the study area in Merced County has a high groundwater table, with groundwater within 10 feet of the ground surface (Merced County 1990). At the Castle Commerce Center, the depth to groundwater is 70 to 80 feet below ground surface (AFCEE 2009). In the Chowchilla area, depth to groundwater varies from 10 to 190 feet (Reclamation 2008).

3.10.4.1 General Areas of Concern

Specific PEC sites associated with hazardous materials and wastes are discussed in Section 3.10.4.2. In addition to these sites, it is anticipated that hazardous materials and wastes are present within the study area because current and past land uses commonly involve such substances. A variety of federal, state, and local laws, regulations, and orders provide oversight for the management and cleanup of these materials and wastes to minimize risks to facility employees, public health, and the environment. Circumstances of general concern in the study area include ACM and lead-based substances common to older structures and roadway systems, and other hazardous materials and wastes typically associated with roads, railway and utility corridors, agricultural areas, and industrial facilities.

The portions of regional waterways in the study area are not known to be contaminated with mercury or other heavy metals (RWQCB 2006); therefore, this potential issue is not analyzed further. The following subsections summarize the types of substances and conditions that could be expected within each of the general areas of concern.

Potential Building Material Hazardous Substances

The study area includes industrial, commercial, and residential structures. Buildings in the study area might be contaminated with residual lead, which was used as a pigment and drying agent in oil-based paint until the Lead-Based Paint Poisoning Prevention Act of 1971 prohibited such use. In addition, weathering and routine maintenance of painted structures might have contaminated nearby soils with lead.

Prior to the 1980s, a variety of building construction materials commonly used asbestos, a mineral fiber, for insulation and as a fire-retardant. There is no health threat if ACM remains undisturbed and does not become airborne. However, if ACM is damaged or disturbed by repair, remodeling, or demolition activities, microscopic fibers become airborne and can be inhaled. When airborne asbestos is inhaled, the thin fibers irritate tissues and resist the body's natural defenses. 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 (EPA 2009a). Local, state, and federal regulations typically require preparation of, and compliance with, ACM abatement plans before disturbing ACM.

Potential Road and Railway Corridor Hazardous Substances

Specific to roadways, yellow paint and tape used for pavement marking before 1997 might exceed the hazardous waste criteria for lead under Title 22 of the California Code of Regulations. If so, such materials would need to be disposed in a Class I disposal facility authorized to accept this type of waste. In addition to lead-containing materials, ACM might be found in roadway materials, such as the material used before the 1980s for expansion joints in the pavement.

Leaded gasoline was used as a vehicle fuel in the United States from the 1920s until the late 1980s. Although lead is no longer used in gasoline formulations, lead emissions from automobiles are a recognized source of contamination in soils along roadways (i.e., aerially deposited lead). Surface and near-surface soils along heavily used roadways have the potential to contain elevated concentrations of lead (EPA 2009b).

Contaminants common in railway corridors include wood preservatives (e.g., creosote and arsenic) and heavy metals in ballast rock. ACM might also occur in ballast rock and soils associated with railroad tracks. Although the HST alignments would avoid the UPRR and BNSF tracks, these materials might occur in the area of potential disturbance. In addition, soils in and adjacent to these corridors might contain herbicide residues as a result of historical and ongoing weed-abatement practices.

Potential Utility Corridor Hazardous Substances

The study area includes several urban areas and associated public utilities. Contaminants common to utility corridors include wood preservatives, herbicide residues, and polychlorinated biphenyl (PCB)-

containing equipment. PCBs were produced domestically from 1929 until their production was banned in 1979. They belong to a broad family of manufactured organic chemicals known as chlorinated hydrocarbons. PCBs, which have a range of toxicity, vary in consistency from thin, light-colored liquids to yellow or black waxy solids. Because of their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications. Equipment in the study area that might contain PCBs includes transformers, capacitors, and other electrical equipment; oil used in motors and hydraulic systems; and thermal insulation material (e.g., fiberglass, felt, foam, or cork) (EPA 2010a). In particular, older, pole-mounted electrical transformers typically contain PCBs.

Landfills

Landfills within 0.25 mile of the study area were analyzed for their potential to present an explosion risk (Table 3.10-2). These sites include two historical burn dumps, closed landfills, and an active municipal landfill. Typically, old burn dumps pose a limited landfill gas risk, as the organic material that would normally decompose to form methane has been burned and cannot further decompose. However, the risk would vary based on the degree to which each site was burned, whether additional waste was placed (legally or illegally), and whether the waste was burned before landfill gas had the chance to be generated. Under current regulations, all operating and most closed landfills are required to have landfill gas migration control systems and monitoring programs. Additionally, most active and many closed landfills have landfill gas capture and treatment/destruction systems.

Table 3.10-2
Landfills with 0.25 Mile of the Study Area

Name	Address	Status	Potential for Landfill Gas Release?
BNSF Alternative			
Le Grand Disposal Site[a]	Near Dump Yard Road, Le Grand	Historical burn and bury site; closed and capped	None. Quarterly inspections have not indicated release. Potential for active material decomposition is low.
Ave 24 Wye			
Landfill 2[b]	Road 15 ½ and Ave 24, Chowchilla	Historical burn and bury site; closed and capped	None. Biannual inspections have not indicated release. Potential for active material decomposition is low.
Ave 21 Wye			
Fairmead Landfill[c]	21739 Road 19, Chowchilla	Active	Low. Landfill gas is monitored at 12 perimeter monitoring probes and a variety of structures. Monitoring indicates all perimeter probes are below the regulatory threshold of 5% methane.
Castle Commerce Center HMF			
Landfills 1 and 2[d]	Santa Fe Ave, Atwater	All landfills have been remediated. Landfill 2 was excavated from the fall of 1997 through summer 1998; Landfill 1 was excavated during the summer and fall of 1999.	Low. There is no known release and the site is actively monitored.

[a] Source: Wrighton (2011).
[b] Source: Hudecek (2011).
[c] Source: RMC Geoscience (2009).
[d] Source: EPA (2010b).

Potential Agricultural Operation Hazardous Substances

Within the study area, numerous agricultural enterprises have historically stored, handled, and applied pesticides and herbicides on row crops and orchards. Pesticide residues might persist in soils within the study area. However, routine application of these materials would not generally accumulate to levels sufficient to cause concern due to product testing by EPA prior to commercial use and compliance with subsequent regulation of product application by various). Areas that might be of concern include (1) pesticide-handling areas that lack concrete pads, berms, or cribs to contain spills or leaks during handling and storage, and (2) 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.

Naturally Occurring Hazards

Naturally occurring asbestos includes fibrous minerals found in certain types of rock formations. Natural weathering or human disturbance can break naturally occurring asbestos down to microscopic fibers that are suspended easily in air. When airborne asbestos is inhaled, these thin fibers irritate tissues and resist the body's natural defenses. Asbestos exposure is possible where naturally occurring asbestos minerals are present. According to the California Department of Conservation, Division of Mines and Geology (2000), naturally occurring asbestos is not common in the portions of Merced, Madera, and Fresno counties in the study area.

Potential Industrial Facility Hazardous Substances

The study area includes a number of industrial areas, which are commonly clustered along railroad rights-of-way and associated with the larger communities. Such industrial neighborhoods often represent areas where businesses have used hazardous materials over long periods of time. Often, PEC sites are associated with these areas. PEC sites also include small industrial facilities that demonstrate poor housekeeping practices and small-quantity generators of hazardous wastes that the CUPA regulates. Automobile service facilities that collect waste engine oil and health care providers that produce medical wastes are examples of such small-quantity generators. In addition to the concentrated use of hazardous materials and the generation of hazardous wastes, it is assumed that hazardous material transport and storage activity is more intense in industrial areas than in other areas.

Oil Wells

There are 10 oil wells in the study area. Hazards associated with constructing and operating the HST near established oil and gas wells include the release of hazardous gases, such as methane. The wells within 500 feet of the construction footprint are plugged and were abandoned between 1930 and 1986. There are two wells within the footprint of the UPRR/SR 99 Alternative with the Ave 24 Wye. The BNSF Alternative has two wells along the north-south alignment, three wells in the Ave 24 Wye alignment, and five wells in the Ave 21 Wye alignment. The study area for the Hybrid Alternative has the most oil wells: seven along the north-south alignment and one in the study area of the Ave 24 Wye.

Potential Release of Hazardous Materials and Wastes during Transportation

SR 99, SR 152, and the UPRR and BNSF railways within the study area serve as major transportation corridors. Hazardous materials, hazardous wastes, and petroleum products are a subset of the tremendous volume of goods routinely shipped along these transportation corridors. In addition, more intensive hazardous material transport and storage activity is assumed to occur at regional landfills and recycling facilities (e.g., Madera County's Fairmead Landfill) and a few large industrial operations (e.g., petroleum bulk plants).

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

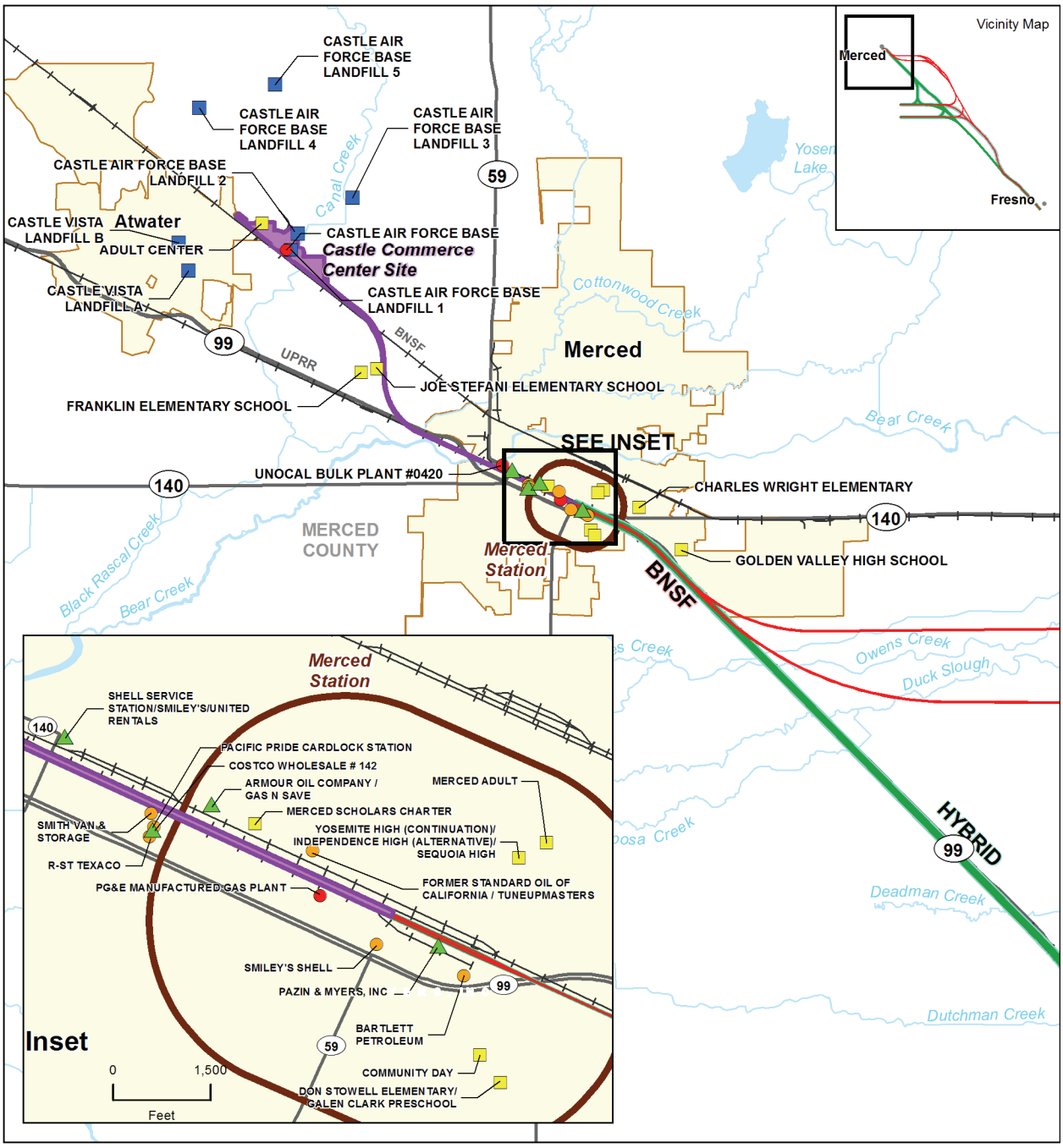
- EPA maintains the Hazardous Materials Incident Report System that contains data on hazardous material spill incidents reported to the U.S. Department of Transportation.
- California Office of Emergency Services maintains the California Hazardous Materials Incident Report System that contains information on reported hazardous material accidental releases or spills.
- SWRCB maintains the Spills, Leaks, Investigations, and Cleanup (SLIC) program that contains information on reported hazardous material accidental releases or spills.

Although most hazardous materials and wastes are transported without incident, spills and other accidental releases have been documented within the study area. Smaller hazardous materials spills and accidental releases that are cleaned up immediately are not considered PEC sites. Therefore, most of the incident reports in these databases are not classified as PEC sites, although larger releases may be considered PEC sites.

3.10.4.2 Specific Sites of Concern

The following three general types of PEC sites are located within the study area:

- **Historical PECs.** Sites where previous contamination occurred. For the purpose of this evaluation, historical PECs are closed cases or have a "no further action required" status and, as such, were determined unlikely to require further remedial actions. It should be noted, however, that such sites might still contain contaminants below state action levels. Leaking UST and DTSC EnviroStor sites closed by the RWQCB or local agencies before April 1, 2008, would not necessarily have been closed based on a risk assessment that considered volatile organic compounds (VOCs) and the vapor intrusion pathway. California Assembly Bill 422 now requires such a risk assessment. In addition, sites with closed cases and no further action status might be under deed restrictions or other institutional controls that might hinder subsequent development. These sites are not discussed further herein because of the reduced likelihood that contamination would pose a potential health risk. The *Merced to Fresno Section Hazardous Materials/Wastes Technical Report* (Authority and FRA 2012) provides a full discussion of Historical PECs.
- **Conceivable PECs.** Sites where there is a substantial amount of petroleum product or hazardous material storage or use but where no known violations or accidental releases have occurred. Examples of Conceivable PECs include dry cleaners, metal-finishing operations, petroleum bulk plants, fueling stations, and large industrial facilities. Fueling stations that use buried tanks often have leaking equipment that goes undetected for extended periods of time. In addition, fueling stations are subject to spills because of operator error. Large industrial facilities that store and use a wide variety of chemicals might require further site assessment to determine if hazardous material contamination has occurred. Conceivable PEC sites are identified in this section because of their potential as future hazards, even though they do not currently present concerns. Figures 3.10-1 through 3.10-4 depict Conceivable PEC sites in the Merced, Chowchilla, Madera, and Fresno project vicinities, respectively.
- **Current PECs.** Sites that are in punitive/regulatory phases before remediation, active remediation phases, or post-remedial monitoring phases based on information obtained from databases. Figures 3.10-1 through 3.10-4 also depict Current PEC sites in the Merced, Chowchilla, Madera, and Fresno project vicinities, respectively. Current PEC sites have been further categorized for this analysis according to the level of risk they are believed to present. High-risk sites might be substantially contaminated and typically involve contaminants that are difficult to remediate (e.g., perchloroethylene), have larger volumes of contaminants, or have long histories of industrial or commercial use. In addition, a site might be considered high risk if limited information is available about the site, which creates greater uncertainty about the extent of contamination and the costs of remediation. Sites where the nature of potential contamination is better known (based on existing investigation data), the contaminants are not as toxic or difficult to treat, and remediation approaches are straightforward or already occurring are considered medium-risk sites.



Source: CH2M HILL (2011), Parus (2011). MF_EIS_HZ_01 Dec 20, 2011

Figure 3.10-1
Locations of Conceivable and Current PECs in the Merced Project Vicinity

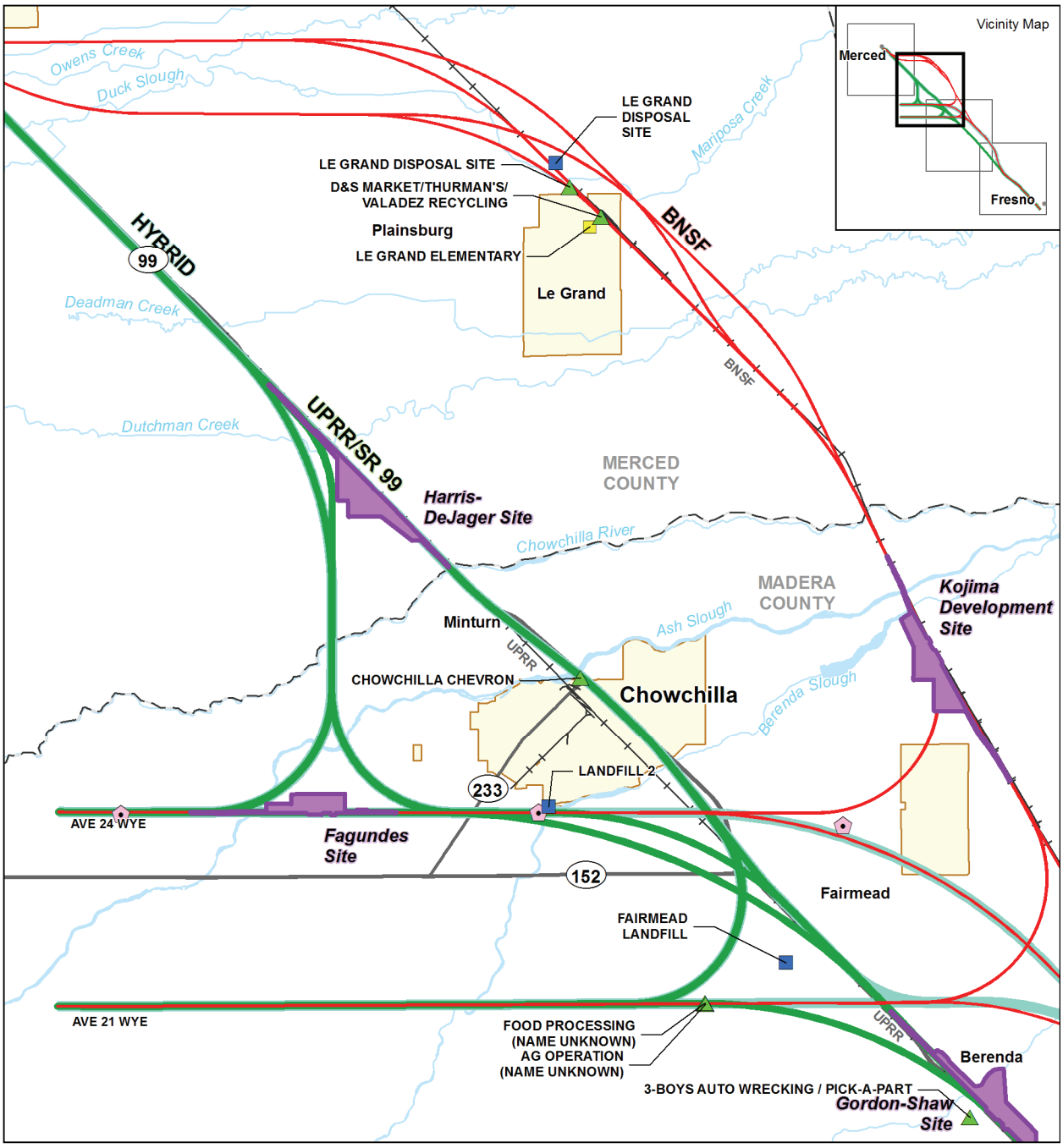
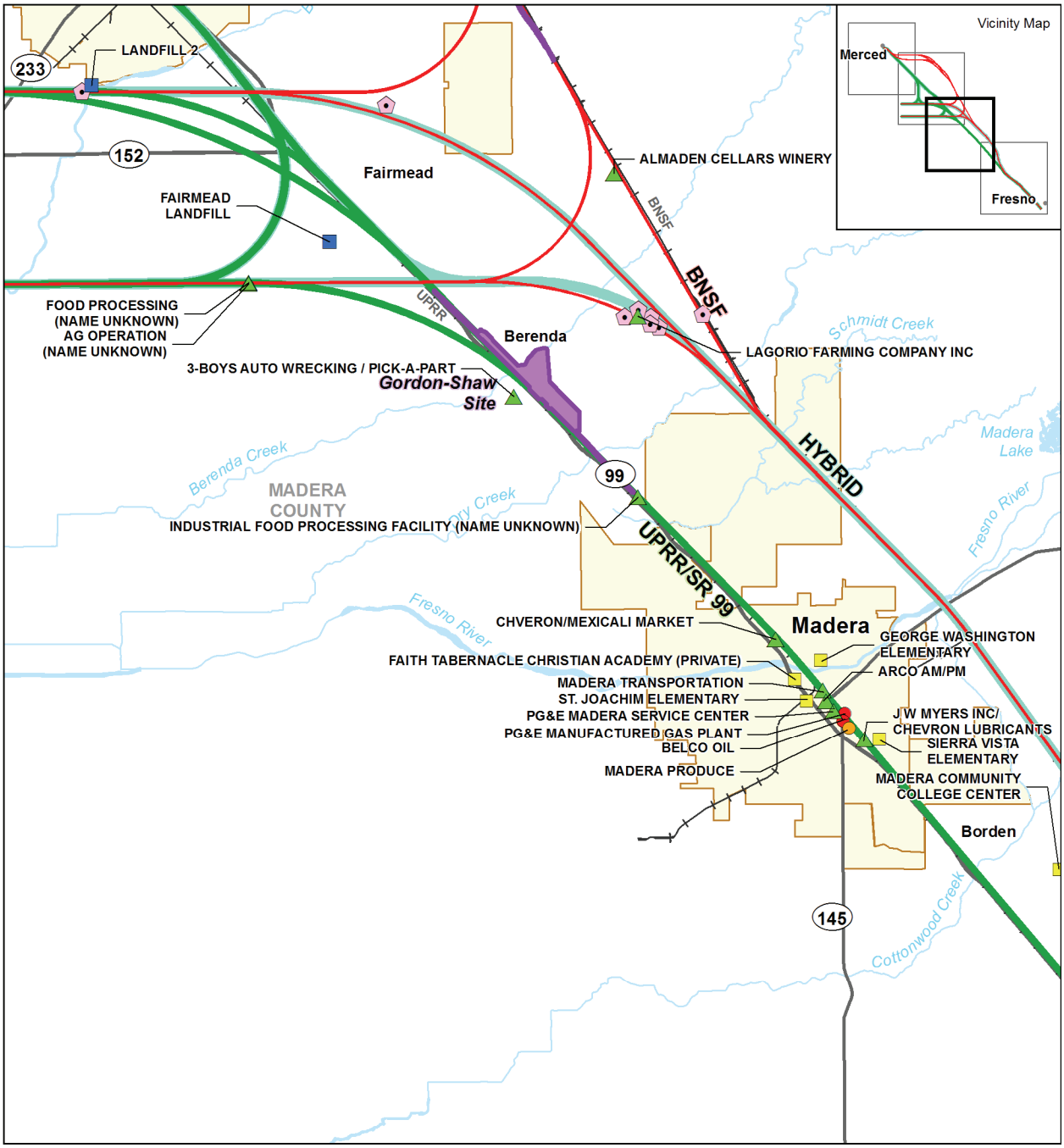


Figure 3.10-2
Locations of Conceivable and Current PECs in the Chowchilla Project Vicinity



Source: CH2M HILL (2011), Parus (2011). MF_EIS_HZ_03 Dec 20, 2011

Figure 3.10-3
Locations of Conceivable and Current PECs in the Madera Project Vicinity

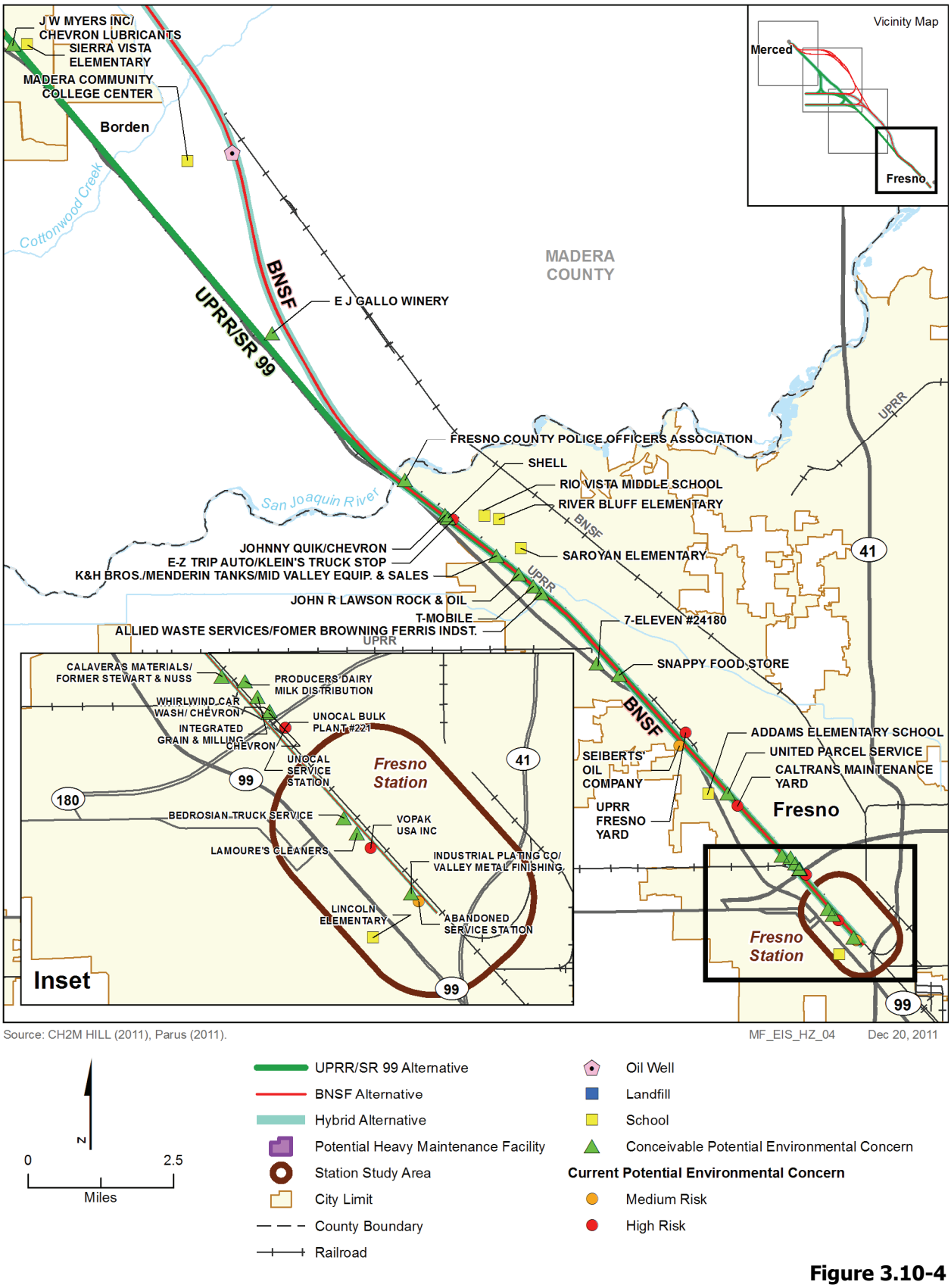


Figure 3.10-4
Locations of Conceivable and Current PECs in the Fresno Project Vicinity

A site would be considered lower risk if little or no contamination were known to be present but the potential for contamination remained. Such lower-risk sites include Historical PEC sites where cleanup was completed but residual contamination below action levels could exist and Conceivable PEC sites where no contamination has been reported but where further investigation or future upsets could result in contamination being identified. Applying these risk criteria, no Current PEC sites within the study area are considered a lower-risk site.

PECs Common to UPRR/SR 99, BNSF, and Hybrid Alternatives

Most of the documented sites of environmental concern for the proposed project are located within the portions of the study area along the alignment common to the UPRR/SR 99, BNSF, and Hybrid alternatives. The commonality in the three alternatives occurs in the cities of Merced and Fresno, where the alternative alignments diverge and converge at the HST stations. Most of the PEC sites within the study area are located within one of these two cities.

The UPRR/SR 99, BNSF, and Hybrid alternatives would all commence in a dense commercial/industrial zone of the City of Merced, at the Merced Station. The study area for the Merced Station extends beyond the physical footprint of the station to encompass adjacent sites of contamination that may have an impact on station construction (for example, through groundwater contamination plumes). Construction of tracks to the Castle Commerce Center HMF could also indirectly impact sites north of the northern extent of the Downtown Merced Station footprint at approximately Canal Street. These sites, such as the PG&E Merced Manufactured Gas Plant (560 W 15th Street/block of 14th – 15th and L – M Streets, in Merced) are discussed under the Castle Commerce Center HMF.

South of Canal Street, the study area in the City of Merced includes two medium-risk current PEC sites. Bartlett Petroleum (15 15th Street/1450 G Street, Merced) has been remediated, but confined contamination consisting of gasoline, diesel fuel, and methyl tertiary butyl ether releases to soil and groundwater remains on the property. Smiley's Shell (1405 Martin Luther King Jr Way, Merced) is being remediated for gasoline release to drinking water. There are also two sites used to dispense and store petroleum fuel products that have been identified as Conceivable PECs.

The study area within the City of Fresno is also common to all three alternatives. This area is a dense commercial/industrial zone. The study area in the City of Fresno has seven Current PEC sites with known contamination that are in various stages of investigation or remediation. Five of the sites are high risk, and two of the sites are medium risk. Six of these sites involve the release of petroleum hydrocarbons to soil and/or groundwater. One site (VOPAK USA/Univar, 1152 G Street, Fresno) has measured levels of industrial chemicals such as perchloroethylene (used in dry cleaning). The remaining sites are Conceivable PEC sites, and most are involved with storing, dispensing, and using petroleum hydrocarbons.

A former crude oil pipeline, the Tidewater Associated Oil Company pipeline, may also be present within the City of Fresno study area. Constructed in the early 1900s to carry crude oil from the southern San Joaquin Valley to the San Francisco Bay Area, it ceased operations in the 1970s. Decommissioning activities only removed portions of the pipeline. There is potential that subsurface construction near the former pipeline right-of-way could encounter residual weathered crude oil and ACM associated with the pipeline's protective coating (Chevron Environmental Management Company 2011).

The study area of the Downtown Fresno HST station alternatives extends beyond the proposed station footprints to encompass adjacent PECs that could affect the stations through contaminant migration. There are two Conceivable PECs within the area north of the stations that would also be within the study area of the HST alignment alternative guideways. There are also two sites (a Conceivable PEC and a medium-risk Current PEC) south of the Downtown Fresno station alternatives. The VOPAK USA high-risk Current PEC is both within the footprint of the Mariposa Street Station Alternative and the track leading to the Kern Street Station Alternative.

PECs Unique to the UPRR/SR 99 Alternative Study Area

In the portion of the UPRR/SR 99 Alternative that is unique to this alternative, there are two known high-risk Current PEC sites: the PG&E Manufactured Gas Plant (9th, Clinton, and E Streets, Madera) and Belco Oil (529 S Gateway Drive, Madera). The PG&E site is considered high risk because of heavy metal and polynuclear aromatic hydrocarbon (PAH) contamination of the soil. The Belco Oil site is associated with a plume of methyl tertiary butyl ether and petroleum groundwater contamination. A medium-risk Current PEC site, Madera Produce (701 S Gateway Drive, Madera), is also a site of known groundwater contamination. Nine Conceivable PEC sites, primarily associated with storing and dispensing petroleum products, are documented in this area.

Wye Design Options

The dominant land use in the study area for the Ave 24 and Ave 21 wyes is agricultural crop production. Three Conceivable PEC sites are documented along the Ave 21 Wye study area: an unnamed food processing facility and an unnamed agricultural operation near each other on Road 18, and 3-Boys Auto Wrecking/Pick-a-Part at 19494 Road 22 in Madera. No Current PEC sites are documented in the study area for the Ave 24 and Ave 21 wyes.

PECs Unique to the BNSF Alternative Study Area

In addition to the PECs described previously in the shared portions of the study area, there are three Conceivable PEC sites within the BNSF Alternative study area. One of these sites is the Le Grand Disposal Site, which is a historical landfill and debris burn site. Currently, this site, which was cleaned up and continues to be monitored, is used as an orchard.

Wye Design Options

Although the BNSF Alternative's Ave 24 and Ave 21 Wye connections are located primarily on agricultural lands, there are three Conceivable PEC sites in the study area for the Ave 21 Wye. Two of these sites are the same as those identified under the UPRR/SR 99 Alternative with the Ave 21 Wye. An additional PEC site, Lagorio Farming Inc. (23593 Avenue 20½, Madera), uses reportable quantities of hazardous materials/petroleum products. There are no Current PEC sites within the Ave 24 and Ave 21 wye study areas.

PECs Unique to the Hybrid Alternative Study Area

The Hybrid Alternative study area includes only those PECs described previously in the shared portions of the study area in Merced and Fresno.

Wye Design Options

No PEC sites were reported along the Ave 24 Wye study area. The Hybrid Alternative Ave 21 Wye study area includes the same three Conceivable PEC sites as the BNSF Alternative's Ave 21 Wye study area.

PECs within Heavy Maintenance Facility Alternative Site Study Area

Castle Commerce Center Heavy Maintenance Facility

Numerous activities and facilities at Castle Air Force Base (CAFB) generated soil and groundwater contaminants during all or a portion of active base operations during 1941 to 1995. Industrial facilities at CAFB included maintenance shops for aircraft and vehicles, wash racks, landfills, ASTs, USTs, utility pipelines, hazardous material and hazardous waste storage areas, and fire training areas. Contamination at CAFB was first identified in 1978 when trichloroethylene (TCE) was detected in groundwater samples from several on-base production wells (AFCEE 2009).

Site characterization investigations, which began in 1981 under the Department of Defense Installation Restoration Program, have included various remediation activities. The site is listed in the CERCLA

National Priorities List. DTSC is the state lead agency for cleanup at the site, and the Central Valley RWCQB is a support agency.

A portion of the CAFB, north of the proposed Castle Commerce Center HMF, is under active remediation with the DTSC. A second location, which would be located on or near the HMF, is also under active remediation; it was certified for operation and maintenance in September 2006, and EPA has issued a Finding of Suitability to Transfer. However, there are land use restrictions on the property (DTSC 2007a). For the purposes of this analysis, CAFB is considered a high-risk Current PEC.

There are additional sites identified as current and conceivable PECs in the study area for the track that would connect the Castle Commerce Center HMF to the Merced Station. This study area has six Current PEC sites with known contamination that are in various stages of investigation or remediation. Two of these sites are deemed high-risk: the PG&E Merced Manufactured Gas Plant, which has heavy metal and PAH contamination of shallow soil, and an oil bulk plant (1590 W 16th Street, Merced) that is a leaking UST cleanup site where petroleum product contamination of soil and groundwater has been confirmed and corrective action is under way. The four medium-risk Current PECs are primarily associated with the past release of petroleum hydrocarbons to soil and/or groundwater.

All Other Heavy Maintenance Facility Alternatives

The Harris-DeJager, Fagundes, Gordon-Shaw, and Kojima Development HMF site study areas are all used primarily for agricultural crop production. The Harris-DeJager study area includes portions of the SR 99 corridor, irrigation canals, pump stations, and a few rural residences and equipment barns. No Conceivable or Current PEC sites were documented within the study areas for these sites.

Proximity to Schools

School locations are important to consider because individuals particularly sensitive to hazardous materials exposure use these facilities, and 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 that 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 located within 0.25 mile of a school site consult with the school district regarding potential hazards. Figures 3.10-1 through 3.10-4 show the names and locations of schools within 0.25 miles of the alternatives in the Merced, Chowchilla, Madera, and Fresno project vicinities, respectively. The UPRR/SR 99 Alternative is in the proximity of the most schools. Four schools are located in the study area of the Castle Commerce Center HMF, which is one of the HMF alternative locations.

3.10.5 Environmental Consequences

This section describes the environmental consequences of hazardous materials and wastes for the proposed project. Mitigation measures addressing hazardous materials and waste impacts are listed in Section 3.10.6.

3.10.5.1 Overview

Under the No Project Alternative, the population in the study area would continue to grow, and changes and improvements to local infrastructure would be implemented. Construction, upgrade, and operation of area infrastructure would require types and quantities of hazardous materials that are comparable to the requirements of the HST alternatives and could encounter the existing sources of potential contamination indentified in Section 3.10.4.2, Specific Sites of Concern. Future road and railway congestion anticipated under the No Project Alternative could increase the risk of accidents during material transport that result in hazardous material/waste releases.

The anticipated routine use and disposal of hazardous materials and wastes during construction and operation of the HST Project, as well as the potential for accidental releases would be similar for all alternatives. Operational use of hazardous materials would be minimal at the stations and along the

alignment. Use would be focused at the HMFs, where various materials would be required for vehicle maintenance. Significant release of gases or explosion risk in proximity to landfill or oil well sites are not anticipated during either construction or operation.

As Table 3.10-3 shows, the number of PEC sites within the study area, including high-risk sites, differs among the alternatives. Most of the sites are in areas common to all alternatives. The UPRR/SR 99 Alternative study area overall has slightly more PEC sites compared with the Hybrid and BNSF alternatives. The Castle Commerce Center HMF site has nine Current and Conceivable PECs in its study area and lead track to the Merced Station, while the other HMFs have no PECs noted. The UPRR/SR 99 Alternative would have the most schools that could be affected, and the BNSF Alternative would have the fewest. The Castle Commerce Center HMF could affect four schools; the other HMF alternative sites would affect none.

Table 3.10-3
Range of Potentially Affected PEC Sites and Nearby Schools

HST Alternative	Number of PEC Sites			Number of Schools within 0.25 mile
	Conceivable	Current High-Risk	Current Medium-Risk	
UPRR/SR 99 Alternative – Range of Impacts	27 to 30	7	5	15
BNSF Alternative – Range of Impacts	20 to 25	5	4	12 to 13
Hybrid Alternative – Range of Impacts	19 to 23	5	4	12
Heavy Maintenance Facility Alternatives				
Castle Commerce Center	3	3	4	4
Harris-DeJager	0	0	0	0
Fagundes	0	0	0	0
Gordon-Shaw	0	0	0	0
Kojima Development	0	0	0	0

3.10.5.2 No Project Alternative

Under the No Project Alternative, as described in Chapter 2, Alternatives, and Section 3.2, Transportation, the population in the study area would continue to grow, and changes and improvements to the transportation infrastructure would be implemented. In addition, the anticipated growth requires other projects, such as residential developments and quarries, as listed in Section 3.19, Cumulative Impacts. These improvements are anticipated to require types and quantities of hazardous materials for construction and operation that would be comparable to the HST alternatives, in proportion to the magnitude of the improvements. Because many of the PEC sites identified in Section 3.10.4.2, Specific Sites of Concern, are associated with the major highway and rail transportation corridors in the project vicinity, these same sites could result in impacts on future No Project Alternative improvements involving the same corridors.

It is reasonable to assume that, by 2035, some of the existing PEC sites would be investigated further and, if necessary, remediated with appropriate regulatory agency oversight. However, it is likely that investigation and cleanup of all potentially hazardous materials in the study area, including contaminated soil or groundwater, would not occur, and the potential for impacts on transportation improvements would continue. Accidental spills or releases of hazardous materials and wastes could occur with continued operation of commercial and industrial facilities or during transportation of these goods. Such

accidents might contribute to the creation of PEC sites that could affect future No Project Alternative improvements. With the incorporation of standard BMPs, avoidance measures, and coordination with regulatory agencies, the potential effects from construction on contaminated sites would have negligible intensity under NEPA and would be less than significant under CEQA.

In the study area, schools exist in proximity to the transportation systems. These schools could be subjected to potential risks from the routine transportation and handling of hazardous materials and wastes and the construction and operation of future No Project Alternative transportation system improvements. If the Merced to Fresno Section California HST System alternatives are not implemented, it is expected that existing and future transportation systems (such as highways and conventional rail) would experience more traffic and congestion than if an HST alternative were to be implemented. Such traffic and congestion could increase the risk of accidents or incidents that might release hazardous materials or wastes to the environment. The spills or releases that result could create hazards to persons and the environment and, therefore, the routine transport, use, storage, and disposal of hazardous materials and wastes would result in an impact with moderate intensity under NEPA and a potentially significant impact under CEQA.

3.10.5.3 High-Speed Train Alternatives

This section evaluates potential impacts that would result from construction and operation of each HST alternative. Construction of the HST would temporarily use and dispose of hazardous materials and waste associated with construction, and there is potential for disturbance of contaminants at PEC sites that are within the construction footprint. BMPs and regulations designed to limit the potential for hazards associated with an accidental spill of hazardous materials would reduce the potential for negative environmental impacts. Permanent use of hazardous materials (such as those from routine use and disposal of hazardous materials and waste for HST system operation and maintenance at an HMF) would be governed by regulations that prescribe the proper use and disposal of such materials.

Construction Period Impacts

Common Hazardous Materials and Wastes Impacts

The construction of any of the three project alternatives would involve transporting, using, and disposing of construction-related hazardous materials and wastes. Potentially, such construction could result in accidents or upsets related to hazardous materials and waste, affect PEC sites, and result in temporary hazards to schools.

Temporary Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes

Construction of any of the three project alternatives and HMFs would temporarily increase the regional transportation, use, storage, and disposal of hazardous materials and petroleum products (such as diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals). These materials are commonly used at construction sites. 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. Hazardous waste, including ACM and lead-based paint, also might be generated during demolition.

Upsets and accidents associated with the temporary transport, storage, use, and disposal of hazardous materials and wastes could occur during construction. The spills or releases that result might create hazards to persons and the environment, and, therefore, the routine transport, use, storage, and disposal of hazardous materials and wastes would result in an impact with moderate intensity under NEPA and a potentially significant impact under CEQA.

Standard accident and hazardous materials recovery training and procedures are enforced by the state and followed by private state-licensed, certified, and bonded transportation companies and contractors. Further, pursuant to 40 CFR 112, a spill prevention, containment, and countermeasures (SPCC) plan or, for smaller quantities, a spill prevention and response plan, that identifies BMPs for spill and release

prevention and provides procedures and responsibilities for rapidly, effectively, and safely cleaning up and disposing of any spills or releases would be established for the project. As required under state and federal law, plans for notification and evacuation of site workers and local residents in the event of a hazardous materials release would be in place throughout construction.

The project would conform with permit and spill prevention plans prepared under SWRCB Construction General Permit (2009-0009 DWQ) to avoid spills and releases of hazardous materials and wastes. Inspections would be conducted to verify consistent implementation of general construction permit conditions and BMPs to avoid and minimize the potential for spills and releases and of the immediate cleanup and response thereto. BMPs include, for example, the designation of special storage areas and labeling, containment berms, coverage from rain, and concrete washout areas. Compliance with various federal, state, and local regulations minimizes the risk of a spill or accidental release of hazardous materials, and the impact of such a release would be largely negligible in intensity under NEPA and less than significant under CEQA.

Inadvertent Disturbance of Hazardous Materials or Wastes

Trenching and other ground-disturbing project construction activities could disturb undocumented soil or groundwater contamination, for example, at Conceivable PEC sites. Adverse impacts could result if construction activities inadvertently dispersed contaminated material into the environment. For example, dewatering activities during construction could cause contaminated groundwater to migrate farther in the groundwater table or cause contaminated groundwater to be released into streams. In addition, inadvertent disturbance of ACM could result in airborne asbestos fibers. 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. The disturbance of undocumented contamination would be an impact with moderate intensity under NEPA and a significant impact under CEQA because of the possibility for resulting hazards to the environment and human health.

The Authority will prepare a construction management plan that prescribes activities for workers to follow in areas with suspected presence of undocumented soil or groundwater contamination based on visual observation or smell. The construction management plan will include (but is not intended to be limited to) provisions for daily briefings of construction staff prior to work regarding what to look for; a list of contact persons in case of a possible encounter with undocumented contamination; provisions for immediate notification of construction management; notification of the applicable local enforcement agency of the find; consultation with that agency; and protocols for further action. In such instances, construction activities would cease until it is determined, in coordination with regulatory agencies, that work can proceed without the risk of injury to persons or the environment.

Demolition of buildings and roadways containing asbestos and lead-based materials would require specialized procedures and equipment, and appropriately certified personnel. Buildings and roadways intended for demolition that were constructed before 1980 would be surveyed for asbestos, while those constructed before 1971 would be surveyed for lead. A demolition plan would be prepared for any location with positive results for asbestos or lead. The plan would specify how to appropriately contain, remove, and dispose of the asbestos and lead-containing material while meeting all requirements and BMPs to protect human health and the environment.

With the implementation of these standard precautions, the potential effects of inadvertent disturbance to hazardous materials or wastes would have negligible intensity under NEPA and would be less than significant under CEQA.

Construction on, or in Proximity to, PEC Sites

As described for impacts associated with the inadvertent encounter of contaminated sites, there are various established procedures to reduce the potential that construction on such sites results in impacts on human health or the environment. There are no known sites included on the Cortese List within the study area and, as a result, there would be no related hazard to the public or the environment. There are other PECs in the study area, many of which are located in urban areas where the track would be

elevated. In these areas, construction would avoid effects on most known contaminated sites through placement of columns outside the PEC sites.

Where effects on PEC sites cannot be avoided, preconstruction activities would address the requirements for constructing at PEC sites in coordination with regulatory agencies. Depending on proposed project activities, such as the need for subsurface ground disturbance, and the known extent and type of contamination, requirements for constructing at contaminated sites could include further evaluation of the level of contamination and associated potential risks to human health (including risks to children in nearby schools) and the environment, as well as site remediation for all HST Alternatives. With the incorporation of standard BMPs, avoidance measures, and coordination with regulatory agencies, the potential effects from construction on, or in proximity to, contaminated sites would have negligible intensity under NEPA and would be less than significant under CEQA.

UPRR/SR 99 Alternative

Table 3.10-4 summarizes the number of Conceivable and Current (high-risk and medium-risk) PEC sites within the study area of the UPRR/SR 99 Alternative. The East Chowchilla design option and Ave 21 Wye would potentially encounter the most PEC sites of the design options for this alternative.

Table 3.10-4
PEC Sites Potentially Affected by UPRR/SR 99 Alternative and Nearby Schools

UPRR/SR 99 Alternative and Design Options	Number of PEC Sites			Number of Schools within 0.25 miles
	Conceivable	Current High-Risk	Current Medium-Risk	
Impacts by Project Combination				
UPRR/SR 99 with West Chowchilla design option and Ave 24 Wye	24	6	2	10
UPRR/SR 99 with East Chowchilla design option and Ave 24 Wye	25	6	2	10
UPRR/SR 99 with East Chowchilla design option and Ave 21 Wye	27	6	2	10
Downtown Merced Station				
Downtown Merced Station	1	0	2	4
Downtown Fresno Station Alternatives				
Mariposa Street Station Alternative	2	1	1	1
Kern Street Station Alternative	2	1	1	1
Total UPRR/ SR 99 Alternative Range of Impacts	**27 to 30**	**7**	**5**	**15**

The UPRR/SR 99 Alternative could require construction near the PG&E Manufactured Gas Plant high-risk Current PEC site located in Merced. The site has soil and groundwater contamination that is being addressed under a voluntary cleanup agreement (DTSC 2007a). The former PG&E Manufactured Gas Plant site in Madera presents similar concerns for documented soil contamination that could be encountered during construction (DTSC 2007b). In Fresno, either station could affect the VOPAK USA/Univar site, which has active vapor extraction and groundwater monitoring to address VOC contamination (Fresno County 2009). The alternative could also encounter residual weathered crude oil and ACM associated with former Tidewater Associated Oil Company pipeline right-of-way (Chevron

Environmental Management Company 2011). The remaining Current PECs associated with this alternative are primarily leaking petroleum UST sites, most with investigation and/or cleanup under way. There are no landfills or oil wells that would present a potential explosion risk within 0.25 mile of any school sites along this alignment.

BNSF Alternative

Table 3.10-5 provides the number of Conceivable and high-risk and medium-risk Current PEC sites within the study area of the BNSF Alternative. The nature of the impacts for the BNSF Alternative would be similar to those previously discussed for the UPRR/SR 99 Alternative. The manufactured gas plant site in Merced (DTSC 2007a) and the VOPAK USA/Univar site in Fresno (Fresno County 2009) discussed under the UPRR/SR 99 Alternative are also in the BNSF Alternative study area. However, the overall level of construction impact associated with the BNSF Alternative is anticipated to be less than that associated with the UPRR/SR 99 Alternative because the portion of the alignment unique to the BNSF Alternative is less industrialized. This alternative would avoid the documented PEC sites in Madera that would be encountered with the UPRR/SR 99 Alternative. There are no landfills or oil wells that would present a potential explosion risk within 0.25 mile of any school sites along this alignment.

Table 3.10-5
PEC Sites Potentially Affected by BNSF Alternative and Nearby Schools

BNSF Alternative and Design Options	Number of PEC Sites			Number of Schools within 0.25 miles
	Conceivable	Current High-Risk	Current Medium-Risk	
Impacts by Project Combination				
BNSF north–south alignment with Ave 24 Wye	17	4	1	7
BNSF north–south alignment with Ave 21 Wye	20	4	1	7
Le Grand Design Options				
Mission Ave	2	0	0	1
Mission Ave East of Le Grand	0	0	0	0
Mariposa Way	2	0	0	1
Mariposa Way East of Le Grand	0	0	0	0
Downtown Merced Station				
Downtown Merced Station	1	0	2	4
Downtown Fresno Station Alternatives				
Mariposa Street Station Alternative	2	1	1	1
Kern Street Station Alternative	2	1	1	1
Impact of Components Combined				
BNSF Alternative, Ave 24 Wye	20 to 21	5	4	12 to 13
BNSF Alternative, Ave 21 Wye	23 to 25	5	4	12 to 13
Total BNSF Alternative Range of Impact	**20 to 25**	**5**	**4**	**12 to 13**

Hybrid Alternative

Table 3.10-6 summarizes the number of Conceivable and Current (high-risk and medium-risk) PEC sites within the study area of the Hybrid Alternative. Like the BNSF Alternative, the Hybrid Alternative would avoid the documented PEC sites in Madera that the UPRR/SR 99 Alternative would encounter.

The nature of the impacts for the Hybrid Alternative would be similar to those previously discussed for the UPRR/SR 99 and BNSF alternatives. The manufactured gas plant sites in Merced (DTSC 2007a) and the VOPAK USA/Univar site discussed under the UPRR/SR 99 Alternative are also in the Hybrid Alternative study area. There are no landfills or oil wells that would present a potential explosion risk within 0.25 mile of any school sites along this alignment.

Table 3.10-6
PEC Sites Potentially Affected by the Hybrid Alternative and Nearby Schools

Hybrid Alternative and Design Options	Number of PEC Sites			Number of Schools within 0.25 miles
	Conceivable	Current High-Risk	Current Medium-Risk	
Hybrid North-South Alignment with Ave 24 Wye	16	4	1	7
Hybrid North-South Alignment with Ave 21 Wye	20	4	1	7
Downtown Merced Station				
Downtown Merced Station	1	0	2	4
Downtown Fresno Station Alternatives				
Mariposa Street Station Alternative	2	1	1	1
Kern Street Station Alternative	2	1	1	1
Total Hybrid Alternative Range of Impact	**19 to 23**	**5**	**4**	**12**

Heavy Maintenance Facility Alternatives

Only the Castle Commerce Center HMF site has reported contamination. The study area for the Castle Commerce Center HMF includes soil contamination sites and general contamination of the groundwater with TCE and other organic solvents from former CAFB activities. Groundwater remediation systems are in place, but the Main Base Plume and the Castle Vista Plume have not yet been remediated to their cleanup goal levels. Construction of the Castle Commerce Center HMF would require approval from regulatory agencies and coordination regarding the various remediation efforts currently under way.

There are several additional sites of known contamination along the tracks that would connect the Castle Commerce Center HMF to the Merced Station. The primary contaminants of concern at the PECs in this portion of the study area (including at one high-risk site under active remediation) are petroleum hydrocarbons and gasoline additives. At the PG&E Merced Manufactured Gas Plant, additional contaminants include heavy metals and PAH contamination of shallow soils.

Construction on, or in Proximity to, Landfill and Oil Well Sites

There is no indication of a significant landfill gas release potential during HST construction (Wrighton 2011, Hudecek 2011, RMC Geoscience 2009, EPA 2010b). All work within 1,000 feet of a landfill would require methane protection measures such as automatic methane gas sensors pursuant to Title 27 and would be coordinated with CalRecyle. Similarly, all work within 100 feet of an oil well site would be

coordinated with the California Department of Conservation. Prior to construction, sites would be investigated and remediated in a manner consistent with the methods discussed above for PEC sites, potentially including a review of site records and subsurface testing. During construction, the contractor would monitor for gaseous and solvent liquid wastes in accordance with the hazardous materials contingency plan and BMPs. Because of the low potential for release of gas from landfills or inactive oil wells and with current implementation of existing regulatory requirements, the explosion risk would have negligible intensity under NEPA and would be less than significant under CEQA.

Temporary Hazardous Material and Waste Activities in the Proximity of Schools

During construction, demolition, and excavation activities, the project would potentially emit hazardous air emissions or handle extremely hazardous wastes above threshold quantities. As noted in Table 3.10-3, 12 to 15 schools are located in the vicinity of potential construction activity for the project alternatives, depending on the alternative and design options selected. Two schools (Merced Union High School District's Adult Center and Joe Stefani Elementary School) are located within the construction footprint of the Castle Commerce Center HMF or the guideway connecting it to the Merced Station, while two additional schools would be located in the study area for the tracks leading to the Castle Commerce Center HMF site. Potentially hazardous materials and items containing potentially hazardous materials would be used in railway construction, and demolition of existing structures within the construction footprint could require the removal of ACM and lead-based paint from project sites. In addition, construction of the Castle Commerce Center HMF site would occur near closed landfills on the former air force base. These sites may pose a low explosion hazard.

The Authority has consulted with potentially effected school districts (see Chapter 8, Table 8-1). Prior to construction, schools within the construction footprint would be relocated; this would eliminate any further impact on these schools. As discussed above, the project would comply with all federal and state regulations that are generally anticipated to reduce the potential for the release of large quantities of hazardous materials and wastes into the environment to an acceptable level. These standard procedures would not obviate the potential for the accidental release of an extremely hazardous substance (as defined in PRC Section 21151.4) 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, however. Because of the potential for the accidental release of extremely hazardous materials, the effect of HST construction related to routine transport and handling of hazardous or acutely hazardous materials within 0.25 mile of an existing or proposed school would have moderate intensity under NEPA, and the impacts would be significant under CEQA.

Project Impacts

Common Hazardous Materials and Wastes Impacts

Operation and maintenance of any of the HST alternatives would involve the transport, use, storage, and disposal of small quantities of hazardous materials or wastes associated with the routine maintenance of stations and other facilities. The HST System would be dedicated to passenger transport and is not intended for the transport of freight or hazardous substances; therefore, no impact would result from the HST transporting hazardous materials or hazardous waste.

Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes

Stations and HMFs would store, use, manage, and dispose of hazardous materials and generate hazardous waste. Compared with operating the train and station, operation of the HMF alternative would involve a somewhat larger quantity of materials and wastes for maintaining and repairing rail vehicles. Diesel-powered trains could be used for track maintenance, but the quantities of materials used and wastes generated would nevertheless be small compared to other transportation services (such as conventional passenger automobile or air travel, which use petroleum-based vehicle fuel as the primary means of power) and commercial or industrial production facilities.

The project would also prepare and implement hazardous materials management plans, such as the following, to avoid occurrences and minimize the effects of hazardous materials spills and releases:

- California hazardous materials business plan (pursuant to California Health and Safety Code Section 25500), which specifies requirements for material inventory management, inspections, training, recordkeeping, and reporting.

- SPCC plan (pursuant to 40 CFR 112) or, for smaller quantities, a spill prevention and response plan, which identifies BMPs for spill and release prevention and provides procedures and responsibilities for rapidly, effectively, and safely cleaning up and disposing of any spills or releases.

Conformance with these established policies would reduce the potential for improper handling of materials and wastes that could result in routine and accidental releases, and effects would have negligible intensity under NEPA and would be less than significant under CEQA.

UPRR/SR 99, BNSF, and Hybrid Alternatives and HST Stations

Operation of the HST System under the UPRR/SR 99, BNSF, and Hybrid alternatives would use or store only minor amounts of hazardous materials and petroleum. Examples are the periodic use of herbicides in the right-of-way to control weeds and the use of greases to lubricate switching equipment. During operation, the HST stations would store and use various amounts of hazardous materials and petroleum products, such as landscape maintenance chemicals and janitorial supplies.

As described in Chapter 2, Alternatives, all existing transportation routes that potentially conflict with the proposed HST alternatives would be relocated to avoid such conflicts, including the use of grade separations. The HST System would be constructed on tracks separate from slow-speed passenger and freight rail, with physical separation by distance and, potentially, physical barriers if FRA standards require them. These separations, as well as design characteristics that would keep any potential derailed HST on its tracks (see Section 3.11, Safety and Security), would eliminate the potential for collisions with any transporter of hazardous materials that could result in a release to the environment.

Heavy Maintenance Facility Alternatives

Operation of the proposed HMF (regardless of the alternative site selected) would involve the use, storage, and disposal of hazardous materials and petroleum products associated with the maintenance of HST equipment. Hazardous materials and waste storage equipment could include fuel storage tanks; storage tanks for lubricants and waste oils; washracks; storage tanks for degreasing solvents and for waste solvents, paints/coatings, and associated solvents; and compressed gases and solder for welding. The project would be required to register with the State of California as a hazardous waste generator and implement the requirements for storage, labeling, contingency planning, training, shipping, reporting, and disposal (pursuant to Title 22 CCR Section 66260).

Hazardous Materials and Wastes in the Proximity of Schools

During operation of the HST, use of hazardous materials and generation of hazardous waste would be limited mostly to maintaining and repairing trains at the HMF. Hazardous materials employed at the HMF sites would be within the state threshold quantities, and accidental spills or upsets of hazardous materials within 0.25 mile of a school would be unlikely; therefore, this would be an impact with negligible intensity under NEPA and would be less than significant under CEQA. Section 3.3, Air Quality and Global Climate Change, evaluates effects from hazardous air emissions.

UPRR/SR 99, BNSF, and Hybrid Alternatives

The trains would operate on electric power. Therefore, powering the trains would have none of the emissions associated with the use of diesel fuel, natural gas, or other fuels. No acutely hazardous materials would be required to operate the passenger rail service under the UPRR/SR 99, BNSF, or Hybrid alternatives. Operation of the HST System would reduce future traffic congestion related to passenger vehicles. Reduced congestion could decrease the risk of vehicle accidents, reducing the potential for hazardous material releases from an accident. Reduced accident potential also could result in a beneficial effect to children in nearby schools because they are less likely to be exposed to hazardous materials as a result of an accidental release.

Heavy Maintenance Facility Alternatives

Four schools are currently within 0.25 mile of the Castle Commerce Center HMF site and the tracks that would connect the HMF to the Downtown Merced Station. No schools are proximate to the other four alternative HMF sites. The unregulated emission of hazardous materials or the handling of acutely hazardous materials at an HMF near sensitive receptors such as schools could adversely affect human health or safety.

The HST Project would, however, comply with all applicable federal and state regulations pertaining to hazardous materials and wastes, and schools within the construction footprint (one on the HMF site and another within the construction footprint of the connector tracks) would be relocated during property acquisition. The two remaining schools are in the vicinity of the connector track and more than 0.25 mile from the HMF. Impacts on these school sites would be as described above for the alignment alternatives. Additionally, as discussed above for construction, the project would include the preparation and implementation of hazardous materials management plans pursuant to California Health and Safety Code Section 25500 and 40 CFR 112. As a registered hazardous waste generator, the HMF would also implement storage, labeling, contingency planning, training, shipping, reporting, and disposal requirements (pursuant to Title 22 CCR Section 66260) designed to reduce the potential for an adverse effect on the environment. With the relocation of the school on the Castle Commerce Center HMF site and the implementation of hazardous materials management plans, the impact of the HMFs on schools would have negligible intensity under NEPA and would be less than significant under CEQA.

Operation in Proximity to Landfill and Oil Well Sites

There is no indication of a significant landfill gas release potential during HST operation (Wrighton 2011, Hudecek 2011, RMC Geoscience 2009, EPA 2010b). Active and closed landfills undergo periodic inspections to evaluate their condition. Active landfills, such as the Fairmead Landfill, are required to monitor the release of methane and the corresponding hazard to nearby land use. In addition, if the train would operate within 1,000 feet of a landfill, additional methane monitoring may be instituted to monitor the release of gas near this altered land use. Provided that these systems are operated as designed and permitted, active monitoring would maintain the release of methane gas within regulatory thresholds. Because of the low potential for landfill gas release and compliance with existing regulatory framework, the explosion risk would have negligible intensity under NEPA and would be less than significant under CEQA.

Oil wells in and near the study area would not be impacted by the HST. As discussed in Section 3.11, Safety and Security, the HST would have design characteristics that would keep any potential derailed HST on its tracks, eliminating the potential for collisions with oil wells that could result in a release of potentially explosive gas to the environment. Because of the low potential for release of gas from inactive oil wells and the existing regulatory framework, the explosion risk would have negligible intensity under NEPA and would be less than significant under CEQA.

3.10.6 Project Design Features

The Authority and FRA have considered avoidance and minimization measures consistent with commitments in the Program EIR/EIS documents. Materials and wastes would be handled, transported, and disposed of in accordance 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 (see Section 3.3, Air Quality, for regulations applying to hazardous air pollutants). During the property acquisition process, analysis of properties acquired for construction of the HST will be conducted, including title searches and determination of which properties require further assessment for hazardous material contamination. Where current site conditions or documented past land use practices provide a reason to believe that an unusual buildup of potentially hazardous materials has occurred, the Authority will conduct a Phase 1 environmental site assessment in accordance with standard ASTM methodologies to characterize the site. The determination of what parcels require soil testing and where testing should occur would be informed by the Phase 1 environmental site assessment and made in conjunction with state and local agency officials. Testing and appropriate remediation would be conducted prior to

construction. Remediation activities may include removal of contamination, in situ treatment, or soil capping. Nominal design variances, such as the addition of a plastic barrier beneath the ballast material to limit the potential release of volatile subsurface contaminants, may be implemented in conjunction with site investigation and remediation. All work within 1,000 feet of a landfill would require methane protection measures, including gas detection systems and personnel training, pursuant to Title 27, the hazardous materials contingency plan, and BMPs.

The Authority is aware that undocumented contamination could be encountered during construction activities and is committed to work closely with local agencies to resolve any such conflicts. A construction management plan will be developed that will include provisions for the disturbance of undocumented contamination. In addition, demolition plans will be prepared for the safe dismantling and removal of building components and debris. The demolition plans will include a plan for lead and asbestos abatement. Further, an SPCC plan or, for smaller quantities, a spill prevention and response plan, will be implemented that prescribes BMPs to follow to clean up any hazardous material release. During operation of the HST, hazardous materials monitoring plans, such as a hazardous materials business plan and an SPCC plan, will be implemented.

To the extent feasible, the Authority is committed to identifying, avoiding, and minimizing hazardous substances in the material selection process for construction, operation, and maintenance of the HST System. Moreover, the Authority will evaluate the full inventory of hazardous materials employed on an annual basis and replace hazardous substances with nonhazardous materials to the extent possible. These standards and material specifications would aid in promoting safety for passengers and employees.

Existing standards and regulations address many of the impacts identified in this analysis. Table 6-4 in the *Merced to Fresno Section Hazardous Materials/Wastes Technical Report* (Authority and FRA 2012) provides a matrix that indicates relevant standards and regulations for these impacts.

3.10.7 Mitigation Measures

During project design and construction, the HST Project could implement measures to reduce impacts resulting from the use of hazardous materials, generation of hazardous waste, and potential disturbance of hazardous waste sites, as discussed in Section 3.10.5, Environmental Consequences.

To mitigate for potential impacts on schools within 0.25 mile of the construction footprint, the following mitigation measure will be implemented:

HMW-MM#1: Limit use of extremely hazardous materials near schools. The contractor shall not handle 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. Signage would be used to delimit all work areas within 0.25 mile of a school and 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. Implementation of the mitigation measure is not expected to result in secondary impacts.

3.10.8 NEPA Impacts Summary

This section summarizes impacts identified in Section 3.10.5, Environmental Consequences, and evaluates whether they are significant according to NEPA. Under NEPA, project effects are evaluated based on the criteria of context and intensity. The following NEPA impacts were identified under the No Project Alternative and the HST Project alternatives. The context for exposure to a hazardous material is the potential for harm to an individual's health or the environment.

Under the No Project Alternative, future increases in population would require construction and operation of infrastructure and development projects, thus resulting in increased hazardous materials use and waste generation. These future improvements would use hazardous materials and generate hazardous wastes proportional to the magnitude of the improvements. Because many of the PEC sites identified in Section 3.10.4.2, Specific Sites of Concern, are associated with the major highway and rail transportation corridors in the project vicinity, they could conflict with future infrastructure and development projects. With the incorporation of standard BMPs and avoidance measures, and coordination with regulatory agencies, the potential effects from construction on contaminated sites would have negligible intensity and would not be considered significant under NEPA.

Construction of the Merced to Fresno Section of the HST System would result in increased hazardous materials use and waste generation, including ACM and lead-based materials. The potential for accidental spills and releases would be reduced to negligible intensity with implementation of regulatory requirements and the limited use of extremely hazardous materials near schools as documented in Section 3.10.6, Project Design Features, and Section 3.10.7, Mitigation Measures. Although the relative intensity of an impact can be amplified in an area where children are present due to their sensitivity, the proposed approach, which combines adherence to established regulations and additional control of substances near schools, would effectively reduce the potential significance of the impact.

Construction could inadvertently disturb sites with previously undocumented contamination or could affect known sites with contaminated soil and groundwater. To the extent feasible, project design would avoid known sites, for example, by elevating the track. Construction at contaminated sites would be contingent on coordination with regulatory agencies; therefore, potential effects are considered to have negligible intensity, even when considering the potential to disturb undocumented sites.

Construction could also disturb oil wells and landfills, or their surrounding environments. The potential for a methane gas release as a result of altered subsurface conditions that could lead to an increased explosion risk is of negligible intensity. Compliance with existing regulations would minimize the potential explosion risk. The potential effects during construction would not be considered significant under NEPA.

Operation of the Merced to Fresno Section of the HST System would result in increased hazardous materials use and waste generation. The potential for accidental spills and releases would be reduced to a negligible intensity with implementation of regulatory requirements. The HST project is a closed system, except for stations, where the buildings and cleaning would follow strict health and safety requirements; therefore, this impact would not be considered significant under NEPA.

3.10.9 CEQA Significance Conclusions

Table 3.10-7 provides a summary of impacts, associated mitigation measures, and the level of significance after mitigation.

Table 3.10-7
Summary of Significant Hazardous Materials and Wastes Impacts and Mitigation Measures

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Construction Period Impacts			
HMW#1. Handling of Extremely Hazardous Materials within 0.25 mile of a School The UPRR/SR 99 Alternative would impact 15 schools; the BNSF Alternative would impact 12 to 13 schools; and the Hybrid Alternative would impact 12 schools.	Significant	**HMW-MM#1:** No use of extremely hazardous substances or a mixture thereof in a quantity equal to or greater than the state threshold quantity (Health and Safety Code Section 25532) within 0.25 mile of a school.	Less than significant
Project Impacts			
None			