4.5 HAZARDS & HAZARDOUS MATERIALS

4.5.1 ENVIRONMENTAL SETTING

IN THIS SECTION:

- Overview
- Regulatory Setting
- Project Site Setting

The following section is based on a Phase I Environmental Site Assessment (ESA) prepared for the project by Iris Environmental in October 2013, which included review of data from a Phase I and Phase II ESA prepared for the project site by Kleinfelder in 2001. All Environmental Site Assessments are included Technical Appendix C-5, which is available on the DEIR CD, on the City of Petaluma website at http://cityofpetaluma.net/cdd/riverfront.html, and on file for review at the City of Petaluma Community Development Department, Planning Division, located at 11 English Street in Petaluma between the hours of 8 AM to 12 PM and 1 PM to 5 PM Monday through Thursday.

The section also draws from analyses contained in the City of Petaluma *General Plan 2025* Environmental Impact Report (EIR) that was certified on May 19, 2008. The City's General Plan and EIR are also available for review at the Planning Division office and online at: http://cityofpetaluma.net/cdd/plan-general-plan.html.

OVERVIEW

Hazardous materials include toxic metals, chemicals and gases; flammable and/or explosive liquids and solids; corrosive materials; infectious substances; and radioactive materials. Potential hazards include disturbing contaminated soil or groundwater and potential dangers to public health and welfare related to transport, storage, handling, and disposal of these materials. Hazardous wastes are a subset of hazardous materials that pose potential hazards to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

The California Health & Safety Code (Section 15501) defines hazardous material as "any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that a

handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment." The California Code of Regulations (Title 22, Section 66260.10) defines "extremely hazardous material" as "a substance or combination of substances which, if human exposure should occur, may likely result in death, disabling personal injury or serious illness caused by the substance or combination of substances because of its quantity, concentration or chemical characteristics."

Hazardous waste is any hazardous material that is discarded or slated for disposal. The California Health & Safety Code (Sections 25517 and 25141) defines hazardous waste as a waste that because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment, due to factors including, but not limited to, carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties, or persistence in the environment, when improperly treated, stored, transported, or disposed of, or otherwise managed.

REGULATORY SETTING

Federal Regulations

The U.S. Environmental Protection Agency (EPA) is responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. The federal regulations that govern hazardous materials are codified primarily in Title 40 of the Federal Code of Regulations. The primary legislation includes the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Emergency Planning and Community Right-to-Know (SARA Title III). These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, transport, and/or dispose of hazardous materials.

The Hazardous Materials Transportation Act of 1975 (HMTA) is the major transportation-related statute regulating the transportation of hazardous cargo. The HMTA empowers the U.S. Department of Transportation (DOT) with regulatory and enforcement authority to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce. For materials that are designated as hazardous, specific requirements pertaining to the packaging, labeling, and transportation apply to any person or business transporting a hazardous material.

The U.S. Department of Labor Occupational Safety and Health Administration (OSHA) is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety. OSHA requires training for hazardous materials operators, which includes personal safety, hazardous materials storage and handling procedures, and emergency response procedures.

The U.S. EPA Region 9 (Pacific Southwest) has established "Regional Screening Levels" (RSL) for chemical contaminants at superfund sites, which include former "Preliminary Remediation Goals" (PRG). They are risk-based concentrations derived from standardized equations combining exposure information assumptions with EPA toxicity data. RSLs are considered by the Agency to be protective for humans (including sensitive groups) over a lifetime; however, RSLs are not always applicable to a particular site and do not address non-human health endpoints, such as ecological impacts. They are used for site "screening" and as initial cleanup goals, if applicable.

State Regulations

In California, the Department of Toxic Substance Control (DTSC) is authorized by the U.S. EPA and Cal/EPA to enforce and implement federal hazardous waste laws and regulations. Requirements place "cradle-to-grave" responsibility for hazardous waste disposal on the shoulders of hazardous waste generators. Generators of hazardous waste must ensure that their wastes are disposed of properly, and legal requirements dictate the disposal requirements for many waste streams (e.g., banning many types of hazardous wastes from landfills).

California regulations pertaining to hazardous materials equal or exceed federal regulations. In January 1996, Cal/EPA adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program governing (1) hazardous waste generators and hazardous waste onsite treatment, (2) underground storage, (3) above-ground storage tanks, (4) hazardous materials release response plans and inventories, (5) risk management and prevention programs, and (6) Unified Fire Code hazardous materials management plans and inventories. The program is implemented at the local level by a designated local agency—the Certified Unified Program Agency (CUPA). The CUPA is responsible for consolidating the administration of the six program elements within its jurisdiction.

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials

emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

Along with DTSC, the Regional Water Quality Control Board (RWQCB), which operates under the jurisdiction of Cal/EPA, is responsible for implementing regulations pertaining to management of soil and groundwater investigations and cleanup. RWQCB regulations applicable to hazardous materials are contained in Title 27 of the California Code of Regulations (CCR).

The RWQCB has established "Environmental Screening Levels" (ESLs) for chemicals commonly found in soil and groundwater sites where releases of hazardous chemicals have occurred. ESLs provide conservative screening levels for over 100 chemicals commonly found at sites with contaminated soil and groundwater. They are intended to help expedite the identification and evaluation of potential environmental concerns. Additional evaluation generally is necessary where a chemical is present at concentrations above the corresponding ESL. The ESLs were first established in 2008 and recently updated in May 2013. The ESLs were developed to address the environmental protection goals presented in the *Water Quality Plan for the San Francisco Bay Basin* (Basin Plan), including protection of human health (direct-exposure); protection of drinking water resources; protection of aquatic and terrestrial habitats; protection against vapor intrusion into buildings; and protection against adverse nuisance conditions.

Additional state regulations applicable to hazardous materials are contained in Title 22 of the CCR. Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials.

Transportation of hazardous materials and wastes is regulated by Title 26 of the CCR. The California Department of Transportation (Caltrans) is the primary regulatory authority for the interstate transport of hazardous materials and establishes safe handling procedures for packaging, marking, labeling, routing, etc. The California Highway Patrol and Caltrans enforce federal and State regulations and respond to hazardous materials transportation emergencies. A "Uniform Hazardous Waste Manifest" is required by DTSC and must accompany most hazardous waste before transporting any waste off site. The manifest travels with the hazardous waste from the point of generation, through transportation, to the final treatment, storage and disposal facility. If a discharge or spill of hazardous waste occurs during transportation, the transporter is required to take appropriate immediate action to protect human health and the environment (i.e., notify local authorities, dike the discharge area), and shall be responsible for the discharge/cleanup, pursuant to Title 22 of the California Code of Regulations, Sections 66263.30 and 66263.31.

With respect to worker safety regulations at the state level, the California Department of Industrial Relations, Division of Occupational Safety and Health, formerly known as Cal/OSHA, is charged with enforcement of state regulations and supervision of workplaces in California that are not under direct federal jurisdiction. State worker health and safety regulations applicable to construction workers include training requirements for hazardous waste operations and emergency response, all of which equal or exceed their federal counterparts.

Local Regulations

Hazardous waste management in Petaluma is administered by the Sonoma County Waste Management Agency (SCWMA) through the Countywide Integrated Waste Management Plan (CoIWMP), which as required by State law, includes the Source Reduction and Recycling Element (SRRE), Household Hazardous Waste Element (HHWE), Non-Disposal Facility Element (NDFE), as well as the Siting Element. As indicated above, State law also requires that communities form a Consolidated Unified Protection Agency (CUPA) to manage the acquisition, maintenance, and control of hazardous waste by industrial and commercial business. In Petaluma, the Fire Marshal's Office administers the CUPA programs. As the CUPA, the Fire Department regulates all aspects of hazardous materials storage, use, and waste disposal (City of Petaluma, September 2006).

PROJECT SITE SETTING

A Phase I and Phase II Environmental Site Assessment (ESA) were conducted for the project property in 2001 (Kleinfelder, January and May 2001). Additionally, a Phase I ESA was completed for the proposed project in 2012 (Iris Environmental, March 2012) and a subsequent Phase I ESA was prepared in October 2013 by Iris Environmental. The following section summarizes the findings and conclusions of these reports.

Site History and Existing Conditions

The project site is currently undeveloped and is generally flat. The project site is former marshland that was filled between 1914 and 1944 by hydraulic dredge spoils from the Petaluma River. The 2001 Phase II ESA indicated that the fill is primarily on the southeastern portion of the project site, and the depth of the fill increases toward the river with a maximum thickness of approximately nine feet (Ibid.). Dikes used to contain the soils were still evident along the eastern and southern edges of the site in 2012 (Iris Environmental, May 2012).

The site was purchased in the early 1950s by the Ben C. Gerwick Company, which became the Pomeroy Corporation. Pomeroy Corporation built a pre-stressed concrete fabrication yard west of the site, and the project site remained unused until the early 1980s, except that the site was used in the 1960s and 1970s as a settling pond for the former Petaluma Wastewater

Treatment Plant located to the west of the project (Iris Environmental, October 2013). Pomeroy routed a railroad spur along the western edge of the Site and used areas around the spur for the storage of materials and supplies. Pomeroy also used the former settling ponds to spread soil containing diesel compounds from an underground storage tank removal project on the property to the west of the Site.

The project site has been owned by Petaluma Riverfront, LLC since 2001. In 2005, Petaluma Riverfront gave permission to Northbay Construction, predecessor to Ghilotti Construction Company, Inc. (Ghilotti) and Barella-Geney Corporation (Barella), to use the site for the crushing and storage of roadbed materials. It is estimated that approximately 70% of the approximately 50,000 cubic yards of soil that Ghilotti plans to remove from the Site has already been removed as of October 2013 for use in an off-site project, and the remaining 30% of stockpiled soil is expected to be removed from the site by the end of 2013 or by spring of 2014 at the latest. The site has an active permit from the City of Petaluma for storage and removal of up to 75,000 cubic yards of material, which will be removed prior to commencing project improvements.

Two areas in the northern and western portions of the Site were formerly used by Ghilotti Construction Company, Inc. and Barella-Geney Corporation as construction materials storage areas. The areas used for storage at the time the 2013 Phase I ESA was conducted are shown on Figure 2. At the time of the site visit, the northern storage area was used for storage of several small stockpiles of crushed concrete and soil. The southern storage area was used for the storage of a large stockpile of dirt and rock (Iris Environmental, October 2013). Several debris piles containing non-hazardous materials were noted, and no major areas of oil or other staining were noted. There was no visible evidence that significant spills or leaks had occurred, and there was no evidence of stressed vegetation (Ibid).

Geologic and Hydrogeologic Conditions

The project site is located within the Coast Ranges Geomorphic Province, which is a geologically complex and seismically active region characterized by subparallel northwest trending faults, mountain ranges, and valleys, which are a reflection of the dominant northwest structural trend of the bedrock in this region. In the project vicinity, older bedrock deposits are overlain by younger, Pliocene age bedrock and Quaternary age marsh and alluvial fan deposits (Iris Environmental, October 2013).

The site is underlain by fill, marsh deposits, alluvium, local weathered claystone of the Petaluma Formation, and Franciscan Formation basement (Kleinfelder, January 2001). Fill is present primarily in the southern part of the Site, composed of dredge spoils from the Petaluma River. Marsh soils are exposed at the surface in the northern part of the Site, and are covered by the dredge spoils in the southeast. Alluvium deposited by the ancestral Petaluma River is present beneath the fill and marsh deposits (Ibid).

Groundwater is present beneath the Site in sandy units that are interbedded with relatively impervious clay-rich units found in the alluvial strata beneath the upper marsh soils. Depth to groundwater measured during Kleinfelder's 2001 investigation ranged from 13 to 25 feet below ground surface (Kleinfelder, January 2001). The likely general flow direction of groundwater within the local region is toward the Petaluma River (Iris Environmental, October 2013).

2001 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was conducted on the project site in July 1999, which revealed potential concerns that led to authorization to proceed to a Phase II investigation. A Phase I report was prepared in May 2001 to present the Phase I findings, which are summarized below.

The Phase I investigation included a check of databases of businesses and properties that handle hazardous materials or hazardous waste, and the project site was not listed on any of the federal and state databases reviewed (Kleinfelder, January 2001). The investigation found numerous facilities within one mile of the site listed that either used hazardous chemicals or have known releases of hazardous chemicals. The County of Sonoma Department of Environmental Health records were reviewed for listed facilities with the potential to affect soil and groundwater conditions at the project site. None of the reviewed records documented releases that were likely to affect the project site (Ibid.).

The Phase I ESA identified the following conditions and concerns:

1. Debris and waste, including partially full 55-gallon drums and 5-gallon buckets were located in a storage area used by Pomeroy in the southwest portion of the site.
2. The City of Petaluma wastewater treatment plant used an area in the northwest corner of the site for settlement ponds.
3. Diesel-impacted soils were stockpiled and spread in the north portion of the site (over the former ponds). The soils originated from an underground storage tank (UST) cleanup operation – one of three UST excavation sites on the adjacent Pomeroy operation yard.
4. Petaluma River dredge spoils were deposited over much of the site.

2001 Phase II Environmental Site Assessment

Based on the information obtained during the Phase I ESA, a "primary and supplemental soil and groundwater investigation" was conducted in 2000 to assess the concerns raised in the Phase I ESA and to assess whether past uses may have detrimentally impacted soil or

groundwater on the project site. Sampling locations, sample intervals and target constituents of concern were based on the location of potential impacts, the size of the area potentially affected, the type of hazardous materials used on the site and the contaminants suspected in fill materials derived from off-site sources (Kleinfelder, January 2001).

The Phase II ESA included soil and groundwater sampling and testing for petroleum hydrocarbons, volatile organic compounds, pesticides, polychlorinated biphenyls and metals. The Phase II investigation included excavation of three trenches measuring 10-20 feet in length and 7-12 feet deep, as well as soil sampling from 17 borings. Samples were collected throughout the project site, including the former settling pond area, a storage area in the southwestern portion of the site that was in use during the 1999 Phase I ESA, and in the southern portion of the Site, which was planned for future residential use at the time of the investigation. Figure 4.5-1 shows the location of the trenches, soils borings and former uses.[1] In addition, grab soil samples were collected from the drainage channel, and grab groundwater samples were collected from several of the boring locations.

SOIL TEST RESULTS

Metals. The 2001 Phase II report compared metal concentrations relative to two measurement standards. The first is the California Code of Regulations Title 26 that provides standards to establish if soil would be considered hazardous waste if it was excavated and removed and sets "Total Threshold Limit Concentrations" (TTLCs) and Soluble Threshold Limit Concentrations (STLCs) for metals and other constituents. If a concentration exceeds the TTLC, it is considered hazardous for the purpose of disposal. The second measures is from the U.S. Environmental Protection Agency (EPA) Region 9 that includes California, and established "Preliminary Remediation Goal" (PRG) based on human health risk assessment for residential and industrial settings. The PRGs are not a regulatory standard, but rather guidance for land use planning or remediation work if required (Ibid.). Additionally, metal concentrations in fill materials derived from the Petaluma River may be compared to ambient threshold values (TVs) published by the San Francisco Regional Water Quality Control Board (RWQCB); sediments with metals concentrations below the TVs are not considered to be contaminated (Ibid.). The San Francisco RWQCB subsequently developed Environmental Screening Levels in 2008, which were not in effect at the time of the 2000 investigation, and the U.S. EPA has developed "Regional Screening Levels" (RSL) that incorporates previous PRGs.

The Phase II investigation found that cadmium, chromium, copper, mercury, nickel and zinc in the soil trenches and borings were either not detected or present in levels well below their respective TVs and PRGs for residential sites. Arsenic concentrations exceeded the PRG, but were found to below the TV and were determined to be similar to arsenic concentrations in

[1] All EIR figures are included in Chapter 7.0 at the end of the EIR (before appendices) for ease of reference as some figures are referenced in several sections.

native soils throughout the Bay Area, and thus, were considered to reflect ambient (background) conditions (Kleinfelder, January 2001).

Elevated levels of lead were found in one sample from each of two borings. The 2001 Phase II ESA reported that lead was present at four feet in Boring K-2 in a concentration of 75 mg/kg, which was more than 10 times the numeric value of the STLC for lead and above the TV, but well below the PRG of 1,000 mg/kg. Soil collected at two feet below this sample contained 15 mg/kg of lead that was considered to be near background levels. Soil between the surface and four feet was not collected. The second location was 10 feet in Boring K-5 with a sampled lead concentration of 149 mg/kg that was also more than the STLC threshold and TV for lead, but well below the PRG, although the report noted that this concentration was slightly above the PRG of 130 mg/kg calculated using the California method (Kleinfelder, January 2001). As further described below, under the 2013 Phase I ESA subsection, the 149 mg/kg level was incorrectly transcribed. The sample value was actually a concentration of 19 mg/kg, which is well below the PRG and consistent with reported background levels.

Volatile Organic Compounds. Volatile organic compounds (VOCs) were not detected above the limit of detection, except for one condition. Carbon disulfide was present at a concentration of 8.9 ug/kg in the near surface of the former treatment pond area, which is slightly higher than the PRG of 7.5 ug/kg.

Polynuclear Aromatic Hydrocarbons (PAH), PCBs and Pesticides**.** The soils testing did not detect these constituents above the limit of detection in the trench or boring samples.

Petroleum Hydrocarbons. Testing and analysis was conducted for total petroleum hydrocarbons such as diesel (TPH-d) and motor oil (TPH-mo), which were detected in several samples at the project site with the highest concentrations found at the former wastewater treatment ponds (Kleinfelder, January 2001). TPH-mo concentrations ranged from below the limit of detection to 220 mg/kg, and TPH-d ranged from 20 to 88 mg/kg (Ibid.). Concentrations of petroleum hydrocarbons were lower throughout the remainder of the site. According to the 2001 investigation, neither the U.S. EPA nor the State of California had established standards for total petroleum hydrocarbons. It was reported that the RWQCB San Francisco region that oversees the Petaluma area, did not require remedial action on heavy petroleum hydrocarbons such as diesel or motor oil below 1,000 mg/kg in soil, and on that basis the Phase II ESA concluded that petroleum hydrocarbons detected at the project site were of relatively low concentrations and did not require further action (Ibid.). The purgeable aromatic hydrocarbons benzene, toluene, ethylbenzene, and xylenes were not detected above the limits of detection.

GROUNDWATER TEST RESULTS

Metals. According to the 2001 Phase II ESA, there were no appropriate standards to apply where groundwater is not be used a drinking water source. PRGs for metals are based on

ingestion of water as are the state of California's "Maximum Contaminant Levels" (MCLSs). The ranges of cadmium, chromium, lead, nickel and zinc concentrations were determined to be comparable to other metal concentrations at unaffected sites and did not appear to indicate that a plume containing elevated metals was present beneath the site (Kleinfelder, January 2001).

Volatile Organic Compounds. Volatile organic compounds (VOCs) were not detected above the limit of detection, except for carbon disulfide and acetone found in three wells. However, the levels were below the EPA PRG for these chemicals.

Polynuclear Aromatic Hydrocarbons (PAH), PCBs and Pesticides**.** The groundwater samples did not detect these constituents above the limit of detection in the trench or boring samples.

Petroleum Hydrocarbons. Heavy-end total petroleum hydrocarbons such as motor oil were detected in four of the 14 well samples. TPH as motor oil was detected at concentrations of 300 µg/l, 920 µg/l, and 2,000 µg/l in borings K-12, K-7, and K-9, respectively. TPH as diesel was present in all but three wells, ranging in concentration from 61 to 1,100 mg/l with the highest concentrations in wells K-7 and K-9 (Kleinfelder, January 2001).

The Phase II ESA indicated that there was not a regulatory standard for TPH in groundwater, but most of the concentrations would be considered low, except for two wells, where concentrations were elevated relative to the others on the site. However, the report indicated that regulatory cleanup for petroleum hydrocarbons in groundwater is usually driven by the concentrations of benzene, which was not detected above laboratory reporting limits in the samples analyzed. Soil samples at these locations and over the site were not found to contain significant concentrations of TPH, and the investigation indicated that this suggests that the source is not present on the site and the elevated levels are not indicative of a plume (Kleinfelder, January 2001).

PHASE II ESA CONCLUSIONS

The Phase II ESA report stated that the soil and groundwater investigation revealed that there were limited hazardous material impacts to the project site. Samples of soil collected in areas with the highest potential for contamination were not found to contain significant concentrations of petroleum hydrocarbons, VOCs, metals, PCBs, PAHs, or BTEX, suggesting that plumes of chemical contaminants are not present on the site. According to the report, the results suggest that the source of hydrocarbon contamination in groundwater is not located on the project site. The report concluded that the concentrations found in soil materials do not appear to represent a risk to human health or the environment (Kleinfelder, January 2001). However, the investigation indicated that the potential presence of contaminated soil that was undetected during the investigation could pose a hazard to workers if discovered during construction.

The report indicated that "significant contamination of groundwater beneath the site is limited to heavy-end petroleum hydrocarbons" (Kleinfelder, January 2001). The pervasive distribution of hydrocarbons throughout the site and the absence of a clear source in the onsite soil materials are similar to patterns found beneath many properties in the historic industrial areas of Petaluma and other cities. Based on the findings, the investigation concluded that there was no basis to implement remedial actions due to the presence of heavy-end petroleum hydrocarbons in subsurface groundwater. Because the groundwater is not used for drinking water and should not be encountered by persons who will be occupying the site, the report concluded that the impacted groundwater does not appear to represent a potential health risk to persons living or working on the site (Ibid.).

2013 Phase I Environmental Site Assessment

The 2013 Phase I ESA[2] investigation included an updated site visit, interviews and updated review of databases of businesses and properties that handle hazardous materials or hazardous waste; no new sampling was conducted (Iris Environmental, October 2012). The 2013 ESA reviewed the 2001 Phase I and II ESAs. Table 4.5-1 summarizes the maximum chemical concentrations detected in the soil samples taken in 2000 as summarized in the 2013 ESA; Table 4.5-2 summarizes maximum chemical concentrations detected in water samples. Analytical results from all samples taken in 2000 are included in the 2013 Phase I ESA (as Appendix D) that is included as Technical Appendix C-5 of this EIR.

To evaluate the significance of detected concentrations in soil and groundwater and determine whether the levels present may pose a risk to human health and the environment under current or potential future land uses, the 2013 ESA compared the analytical testing results against applicable screening criteria. Specifically, all detected concentrations of constituents in boring and grab soil samples and trench soil samples were compared against Environmental Screening Levels (ESLs) developed by San Francisco Region RWQCB for residential land use where groundwater is not a current or potential source of drinking water. Detected concentrations of constituents in grab groundwater samples were also compared against groundwater ESLs for groundwater that is not a current or potential drinking water resource. Although the project site is not currently used for residential purposes, residential ESLs were selected for screening purposes to evaluate site conditions under potential unrestricted future use, including uses during potential redevelopment (i.e., potential construction worker exposures). Furthermore, ESLs for residential land uses where groundwater is not a current or potential source of drinking water were selected given that groundwater will not be used as a drinking water source at this property.

[2] A Phase I ESA was prepared by Iris Environmental in May 2012, which was subsequently revised in October 2013. The 2013 ESA is the most current and is the version included in Technical Appendix C-5 and summarized in this section.

SOIL TEST RESULTS

A total of 37 soil samples, including three trench samples, one grab surface sample, and 33 samples from borings were analyzed for metals in the 2001 Phase II investigation. Of the 33 borings' samples, 11 were collected at depths of 1.5 to 2.0 feet below ground surface (bgs), 11 were collected at 3.5 to 4.0 feet bgs, eight were collected at 5.5 to 10.0 feet bgs, and three were collected below 10.0 feet bgs (at 11.0 feet bgs). A review of the laboratory data included in Appendix B of the Kleinfelder Phase II report showed that an incorrect value for the lead concentration in soil sample K-5-7 (149 mg/kg) had been entered into Table 1 of the 2001 report; the correct value (19 mg/kg) for this sample is included in Appendix D of the 2013 ESA.

Metals. Detected concentrations of metals in soil samples from the 2001 Phase II investigation are below current residential ESLs with the exception of arsenic. All detected concentrations of arsenic, ranging from 6.3 to 9 milligrams per kilogram (mg/kg) in shallow soil (less than or equal to 10 feet bgs), exceed the residential shallow soil ESL of 0.39 mg/kg; arsenic was not detected in deeper soils (greater than 10 feet bgs). However, as concluded in the 2001 Phase II report, the arsenic concentrations are similar to concentrations in native soils throughout the Bay Area, and are considered to reflect ambient (background) conditions. This conclusion is further supported by a recent evaluation of background concentrations of arsenic in urbanized flatland soils within the Bay Area, completed at San Francisco State University in coordination with RWQCB staff, which established an upper-limit background concentration of 11 mg/kg (Iris Environmental, 2013).

Petroleum Hydrocarbons. A total of 39 soil samples, including five trench samples, one grab surface sample, and 33 samples from borings were analyzed for TPH as diesel range hydrocarbons (TPH-d) and TPH as motor oil range hydrocarbons (TPH-mo). Of the 33 samples analyzed from borings, three were collected at depths of 1.5 to 2.0 bgs, seven were collected at 3.5 to 4.0 feet bgs, 18 were collected at 6.0 to 10.0 feet bgs, and five were collected below 10.0 feet bgs (11.0 to 20.0 feet bgs). While TPH-d and TPH-mo were detected in several soil samples, all detected concentrations were below residential ESLs. The 2001 investigation report indicates that the maximum concentrations of 88 mg/kg for TPH-d and 220 mg/kg for TPH-mo were detected in the treatment pond area (trench soil sample T-2 Top N 1-4) and that concentrations of petroleum hydrocarbons were lower throughout the remainder of the project site with concentrations of TPH-d ranging from below the limit of detection to 38 mg/kg and TPH-mo ranging from below the limit of detection to 120 mg/kg.

Volatile Organic Compounds. VOCs were not detected in the one trench sample from the treatment pond area analyzed for these constituents with the exception of one detection of carbon disulfide at a concentration of 0.0089 mg/kg. ESLs have not been promulgated for this compound, but a comparison of the detected concentration with the U.S. EPA Regional Screening Level (RSL) for residential soil (US EPA, 2013) as an alternative risk-based criterion shows that the detected concentration is below the RSL of 820 mg/kg.

TABLE 4.5-1
Maximum Chemical Concentrations Detected in Onsite Soil Samples

Chemical	Maximum Concentration Detected (mg/kg)[1]	Environmental Screening Level (ESL) for Residential Land Use (mg/kg)[2]
Shallow Soils (<3 m bgs)		
Inorganics		
Arsenic	**9**	0.39
Cadmium	0.84	12
Chromium	57	750
Copper	44	230
Lead	75	80
Mercury	1	6.7
Nickel	87	150
Zinc	110	600
Total Petroleum Hydrocarbons (TPH)		
TPHd (diesel)	88	100
TPHmo (motor oil)	220	500
Volatile Organic Compounds (VOCs)		
Carbon disulfide	0.0089	820[2]
Deep Soils >3 m bgs)		
Inorganics		
Arsenic	ND	0.39
Cadmium	ND	78
Chromium	47	2500
Copper	ND	2500
Lead	22	80
Mercury	ND	6.7
Nickel	56	1500
Zinc	100	2500
Total Petroleum Hydrocarbons (TPH)		
TPHd (diesel)	16	240
TPHmo (motor oil)	32	5000

[1] Soil and water samples from "Phase II Soil and Groundwater Investigation, Pomeroy Site, Petaluma, California" (Kleinfelder, 2001).

[2] ESL = Environmental Screening Level, RWQCB San Francisco region, May 2013. In the absence of ESLs for Carbon disulfide, the U.S. EPA's Regional Screening Level (RSL) for residential soil is used for screening purposes.

ND = Not Detected.

SOURCE: Iris Environmental, October 2013

GROUNDWATER TEST RESULTS

Grab groundwater samples were collected from 14 of the 17 borings at the project site during the 2000 Phase II investigation. Of the 14 samples collected, eight were analyzed for metals and VOCs, and all were analyzed for TPH-d and TPH-mo. All detected concentrations of metals, the VOC acetone, TPH-d, and TPH-mo were below their applicable ESLs. It should be noted that the laboratory reports for these groundwater samples indicate that the samples contained sediment which is extracted with the liquid in accordance with EPA methodologies and can significantly affect reported metal concentrations. Therefore, it is unlikely that metals are present in groundwater at concentrations reported in the 2001 Phase II ESA report. An additional VOC, carbon disulfide, was detected in one of the eight grab groundwater samples at a concentration of 1.5 micrograms per liter (µg/L). As discussed above, ESLs have not been promulgated for this compound. A comparison of the detected concentration with the US EPA RSL for tap water (US EPA, 2013) as an alternative risk-based criterion (which is conservative considering that groundwater is not a current or potential future drinking water resource) shows that the detected concentration is below the tap water RSL of 720 µg/L.

TABLE 4.5-2
Maximum Chemical Concentrations Detected in Onsite Groundwater Samples

Chemical	Maximum Concentration Detected (µg/L)	Environmental Screening Level [2](ESL) (µg/L)
Inorganics		
Cadmium	86	50,000
Chromium	8,500	50,000
Lead	2,800	50,000
Nickel	13,000	50,000
Zinc	13,000	50,000
Volatile Organic Compounds (VOCs)		
Acetone	26	50,000
Carbon Disulfide	1.5	720[3]
Total Petroleum Hydrocarbons (TPH)		
TPHd (diesel)	1,100	2,500
TPHmo (motor oil)	2,000	2,500

[1] Groundwater samples from "Phase II Soil and Groundwater Investigation, Pomeroy Site, Petaluma, California" (Kleinfelder, 2001).
[2] ESL = Environmental Screening Level, RWQCB San Francisco region, May 2013. ESLs were selected from Table F-1b-Groundwater Screening Levels (groundwater is not a current or potential drinking water Resource), excluding aquatic habitat goals.
[3] In the absence of ESLs for carbon disulfide, the U.S. EPA's Regional Screening Level (RSL) for tap water is used for screening purposes.

SOURCE: Iris Environmental, October 2013

2013 PHASE I CONCLUSIONS

The project site has been used for crushing and storage of roadbed materials. Several stockpiles are currently located on the site consisting of soil and concrete. The 2013 Phase I investigation found that some of the stockpiled materials had been remediated prior to storage at the project site. Some of the other stockpiled soils were tested prior to storage at the project site. The project Applicant plans to remove the stockpiled soils from the site prior to development, and the current operator has indicated that they are in the process of removing stockpiled materials from the site. Any remaining stockpiled soils will be sampled in accordance with the Clean Imported Fill Material Information Guidance prepared by DTSC, which can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material.

The 2013 ESA revealed no evidence of "Recognized Environmental Conditions" in connection with the project site. The American Society for Testing and Materials (ASTM) Standard E 1527-05 defines a Recognized Environmental Condition as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products onto structures on the property or into the ground, groundwater or surface water of the property. The project Applicant currently plans to remove stockpiled soils from the site prior to the development, but if reuse of stockpiled soils on the site for future residential development, the 2013 ESA recommends that the quality of the soil be reaffirmed prior to being used in a residential setting (Iris Environmental, October 2013).

4.5.2 IMPACTS AND MITIGATION MEASURES

CRITERIA FOR DETERMINING SIGNIFICANCE ANALYSIS

In accordance with the California Environmental Quality Act (CEQA), State CEQA Guidelines (including Appendix G), City of Petaluma plans, policies and/or guidelines, and agency and professional standards, a project impact would be considered significant if the project would:

- 5a Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- 5b Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- 5c Emit hazardous emissions or handle hazardous materials, substances or waste within one-quarter mile of an existing or proposed school;
- 5d Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment; or

5e Be located within an airport land use plan, within two miles of a public airport or within the vicinity of a private airstrip;

5f Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

5g Expose people or structures to a significant risk of loss, injury or death involving wildland fires.

IMPACT ANALYSIS

Based on the significance criteria identified above and on the analyses in the Revised Initial Study (Appendix A of this DEIR), the project would not result in hazardous emissions (5c), is not located on a state list of hazardous sites (5d), would not be exposed to airport hazards (5e), would not interfere with implementation of an emergency access or evacuation plan (5f) and would not be exposed to wildland fire hazards (5g). The following impact analyses address potential creation of hazards (5a) and potential exposure to a hazard (5b).

Creation of Hazards

Impact 4.5-1 – *Creation of Hazards*: The proposed project does not include industrial or other uses expected to use hazardous materials or generate hazardous waste, other than standard cleaning and household products. Thus, this is considered a *less-than-significant* impact.

The proposed project does not include industrial or other uses that typically would be expected to use hazardous materials or generate hazardous wastes. None of the planned residential or commercial uses is expected to involve hazardous materials, except for common household hazardous waste and typical janitorial and cleaning supplies, which would not create a substantial hazard. Future development of the planned site uses would not include development that would store or use hazardous materials.

During construction, equipment may be used requiring various types of fuel. The applicant will comply with all existing federal and state safety regulations related to the transport, use, handling, storage, and/or disposal of fuels or other potentially hazardous substances during all phases of construction. A Stormwater Pollution Prevention Plan (SWPPP) that will include specific Best Management Practices (BMPs) related to hazardous materials used during construction will be implemented during construction. As discussed in the Hydrology and Water Quality (Chapter 4.6) section of this EIR, pursuant to provisions of the federal Clean Water Act as implemented by the RWQCB, construction activity on projects that disturb one or more acres of soil must obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ), which requires the development and implementation of a SWPPP. The SWPPP should shall identify stormwater collection and discharge points, drainage patterns across the project, and best

management practices (BMPs[3]) that the discharger will use to protect stormwater runoff and the placement of those BMPs. Should any construction activities occur that involve the storage of chemicals or hazardous materials onsite, the applicant must file a declaration form with the Fire Marshal's office and shall obtain a hazardous materials storage permit, pursuant to city fire code ordinance.

Mitigation Measures

None are required as a significant impact has not been identified.

Exposure to Hazards

Impact 4.5-2 – *Exposure to Soil-Water Contamination*: The potential reuse of onsite stockpiled soils or discovery of unknown hazardous materials during construction could pose a hazard to workers during construction. This is considered a *potentially significant* impact.

As discussed in the preceding section, the soil and groundwater testing conducted in 2000 and reviewed in 2013 indicates that soil and groundwater samples do not contain contaminants that exceed the RWQCB's Environmental Screening Levels (ESLs) or the U.S. EPA's Regional Screening Level (RSL) for carbon disulfide, a volatile organic compound, which did not have a published ESL. Arsenic levels detected in the soil samples exceed the ESL for residential use, but were found to be within the range of background levels found naturally in soils throughout the Bay Area. The Phase I Environmental Site Assessment conducted in 2013 did not recommend further testing or remedial action based on review of soils and groundwater sampling results.

The 2013 ESA revealed no evidence of "Recognized Environmental Conditions" in connection with the project site. The American Society for Testing and Materials (ASTM) Standard E 1527-05 defines a Recognized Environmental Condition as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products onto structures on the property or into the ground, groundwater or surface water of the property (Iris Environmental, October 2013).

The project site has been used for crushing and storage of roadbed materials, and several stockpiles are currently located on the site consisting of soil and concrete. The 2013 Phase I investigation found that some of the stockpiled materials had been remediated prior to storage at the project site and others were tested prior to storage at the project site. The project

[3] BMPs are either pollution prevention practices or structural controls designed to reduce or eliminate pollutant discharges. BMPs typically emphasize "good housekeeping methods," chemical handling procedures, spill prevention, and proper waste storage and disposal.

Applicant plans to remove the stockpiled soils from the site prior to development, and the current operator has indicated that stockpiled materials are currently being removed from the site. However, should any soil stockpiles remain at the time project construction is initiated, the 2013 ESA recommends that the quality of the soil be reaffirmed prior to being used as fill in a residential setting (Iris Environmental, October 2013). Soils would be sampled in accordance with the Clean Imported Fill Material Information Guidance prepared by the California DTSC, which can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material. The sampling results will be compared with residential ESLs. If the stockpiled soil contains chemical concentrations above the ESLs, it will be removed from the site in accordance with state and federal regulations regarding transportation and disposal of hazardous materials.

The 2001 ESA concluded that the concentrations found in soil materials do not appear to represent a risk to human health or the environment, but also indicated that the potential presence of contaminated soil that was undetected during the investigation could pose a hazard to workers if discovered during construction (Kleinfelder, January 2001). The 2013 Phase I ESA indicates that a "Risk Management Plan" (RMP) will be prepared and implemented to mitigate potential risks associated with construction. The RMP will provide a framework in which to properly manage site groundwater that may be encountered during construction activities and will address procedures for discovery of any unknown features or environmental conditions that may be encountered during activities that will disturb site soils. An outline of the components of the RMP are included in the 2013 Phase I report.

Mitigation Measures

Implementation of Mitigation Measures HAZMAT-1 and HAZMAT-2 below, in accordance with recommendations of environmental site assessments, will ensure no exposure to hazardous materials will occur during construction, and mitigate potential impacts to a less-than-significant level.

> HAZMAT-1: Require that the quality of the stockpiled soils be reaffirmed / tested prior to use for onsite fill, which shall be done following the Clean Imported Fill Material Information Advisory prepared by the DTSC (DTSC 2001) in accordance with the recommendation set forth in the 2013 Iris Environmental Phase I Environmental Site Assessment.
>
> HAZMAT-2: Prepare and implement a Risk Management Plan (RMP) that provides the procedures to properly manage site groundwater that may be encountered during construction activities. The plan shall address procedures for discovery of any unknown features or environmental conditions that may be encountered during activities that will disturb site soils.

The RMP shall include, but not be limited to the following components as set forth in the 2013 Phase I Environmental Site Assessment report:

- Soil management: Provide guidelines for identification and analysis of unknown environmental conditions and define responsibilities for management of discovery of unknown features or site conditions.
- Groundwater management: Prohibit use of groundwater encountered during construction activities for dust control and allow discharge of groundwater to surface waters only pursuant to a permit issued from applicable regulatory agencies. All permit conditions must be satisfied prior to discharge.
- Preparation and implementation of a site-specific Environmental Health and Safety Plan by the general contractor to ensure that appropriate worker health and safety measures are in place during redevelopment activities. Elements of the plan must include all practices and procedures necessary to comply with all new and existing Federal, California, and local statutes, ordinances, or regulations regarding health and safety. Specific components of the EHASP must include the following: identification of site hazards; assignment of specific health and safety responsibilities for site work; establishment of appropriate general work practices; establishment of control zones and decontamination procedures; job hazard analysis / hazard mitigation procedures; air monitoring; required personal protective and related safety equipment; and contingency and emergency information.