

3 Summary of Potential Environmental Hazards

Table 3-1: Environmental Hazards

COC	Media			Hazard					Potential Receptors				
	Soil	Water	Vapor	Direct Exposure	Leaching	Gross Contamination	Ecotoxicity	Vapor Intrusion	Construction Workers	Site Visitors	Site Occupants	General Public	Future Site Users
Lead	X			X		X			X				

COC=Chemical of Concern

A detailed description of the effects of lead exposure is provided below.

Lead is persistent in the environment and accumulates in soil and sediments through deposition. Once absorbed into the body, lead may be stored in mineralizing tissue (e.g., teeth, bones, etc.) for long periods. The stored lead may be released again into the bloodstream, especially in times of calcium stress (e.g., pregnancy, lactation, osteoporosis, etc.) or calcium deficiency.

Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproduction and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood and can have cardiovascular effects (e.g., high blood pressure, heart disease, etc.) in adults. Lead impacts on children include neurological effects, however, no children are or will be present at the site.

Ecosystems near point sources of lead demonstrate a wide range of adverse effects including losses in biodiversity, changes in community composition, decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates.

The following are identified as potential receptors:

- On-site construction workers – including personnel involved in repair or construction during planned and future site activities; and
- On-site landscapers/site workers – personnel who may maintain and remove trees and shrubs from the bridge and surrounding right of way.
- Ecological Receptors – including native and non-native birds, and mammals that may nest, loaf, hunt, or transit across the site (AECOS 2019).

Direct exposure to lead-impacted soil is a potential exposure pathway to receptors at the site via the following pathways:

- Direct Contact: Incidental ingestion or dermal contact with soil;
- Air: Inhalation of fugitive dust;
- Surface Runoff and Sediment Exposure: Contaminants carried by water or revealed by erosion; and
- Groundwater Exposure: Not identified as a direct exposure due to site conditions. SPLP analysis (Appendix B1), confirmed that the lead is strongly bound to the soil and considered immobile. There is a low likelihood that the lead concentrations are leaching from the soil into rainwater or impacting the groundwater below the site.

Table 3-2: Chronic and Acute Direct Exposure Hazards

COC	Direct Exposure Hazard				Acute Exposure	Chronic Exposure
	Ingestion	Inhalation	Absorption	Injection		
Lead	X	X			<ul style="list-style-type: none"> • Pain • Muscle weakness • Numbness • Abdominal Pain • Nausea • Vomiting • Diarrhea • Constipation 	<ul style="list-style-type: none"> • Abdominal Pain • Constipation • Depressed • Distracted • Forgetful • Irritable • Nausea/Sick <p>People with prolonged exposure to lead may also be at risk for high blood pressure, heart disease, kidney disease, and reduced fertility.</p>

COC=Chemical of Concern

The Remedial Action Contractor will be responsible for updating this C-EHMP or preparing a C-EHMP Addendum describing their specific means and methods to perform the scope of work, including a Site-Specific Health and Safety Plan (HASP).

No work involving the C-EHMP, or C-EHMP Addendum shall be performed until the updated C-EHMP, or C-EHMP Addendum is approved by the HDOH HEER Office.

Environmental Hazard Maps

A detailed Environmental Hazard Map is included as Figure 5 in the Figures Section of this C-EHMP. At the site, the known COCs are found below the Nanue Bridge deck and are presumed to exist in the ROW and un-tested areas around the bridge footings.

The Environmental Hazard Map delineates the location of known or presumed contamination at the Site and what type of hazard the contamination presents. All known and suspected contaminated media will be properly handled and disposed of in accordance with the guidance in this C-EHMP. Mishandling of contaminated media could result in spreading the contamination to uncontaminated areas of the Site or to off-site locations, which could result in fines and other penalties.