

**Table 4.0  
Detailed Evaluation of Remedial Alternatives – Surface and Near-Surface Soil Remediation Zone (0 to 3 feet bgs)  
Pemaco Superfund Site, Maywood, California**

Criterion	REMEDIAL ALTERNATIVES		
	N1 - No Action	N2 - Soil Cover/Revegetation	N3 - Excavation and Offsite Disposal
<b>1. Overall Protection of Human Health and the Environment.</b>	<ul style="list-style-type: none"> <li>The no action alternative provides a baseline for comparing other alternatives.</li> <li>Surface and near surface soil contains metals and SVOCs, COCs at concentrations above the U.S. EPA Region IX PRGs. Under this alternative, pathways for human exposure via inhalation, ingestion, or dermal contact, and pathways for migration via wind and surface water runoff exist.</li> <li>Because no remedial activities would be implemented, human health and environmental risks would remain the same as those identified in Section 1.8 – Baseline Risk Assessment.</li> <li>The COCs are characteristically stable in the environment and are not expected to migrate to groundwater.</li> </ul>	<ul style="list-style-type: none"> <li>The soil cover does not treat or destroy the COCs but acts as containment and eliminates the pathways to human exposure.</li> <li>Through monitoring and maintenance of the soil cover, and associated vegetative cover, environmental and ecological exposure pathways are eliminated.</li> <li>The soil cover allows for percolation of precipitation and irrigation water into the subsurface.</li> <li>Over the long term, the organic COCs (SVOCs) would slowly naturally attenuate. The metals COCs would persist.</li> <li>Migration of the COCs to groundwater as a result of percolation poses a minor concern since the COCs are not mobile in the environment and tend to adhere tightly to their soil matrix.</li> <li>The completed soil and vegetative cover is consistent with the planned future use as a recreational area.</li> </ul>	<ul style="list-style-type: none"> <li>Soil excavation and offsite disposal would eliminate the pathways to human and ecological exposure, and the potential for migration of the COCs to groundwater.</li> <li>The contaminated soil would have to be transferred to an environmentally secure and permitted landfill for treatment and/or disposal.</li> <li>The removed soil would be replaced by clean backfill and vegetative cover and no additional monitoring for COCs would be required.</li> </ul>

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<b>2. Compliance With ARARs and TBCs</b>	<ul style="list-style-type: none"> <li>• Would not meet health-based (direct contact, inhalation, and ingestion) ARARs and TBCs because exposure pathways would exist.</li> <li>• Does not comply with the U.S. EPA Region IX PRGs for residential soil for SVOCs and metals and Site Specific RGs (SSRGs) that were derived specifically for the Maywood Riverfront Park project using U.S. EPA and California EPA (CalEPA) guidance for health risk assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• The soil cover would eliminate exposure pathways, thereby complying with health based ARARs and TBCs.</li> <li>• Monitoring and maintenance of the vegetative cover would be performed to assure exposure pathways remain closed and compliance with health-based ARARs and TBCs is maintained.</li> </ul>	<ul style="list-style-type: none"> <li>• Soil excavation and offsite disposal would comply with ARARs and TBCs by meeting contaminant limits, health based guidance, and eliminating exposure pathways.</li> <li>• No monitoring of the backfilled area would be required since all surface and near surface COCs would be removed.</li> <li>• Disposal of the contaminated soil would be manifested in accordance with waste management and landfill regulations.</li> </ul>

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<b>3. Long-Term Effectiveness And Permanence</b>	<ul style="list-style-type: none"> <li>Because no remedial activities would be implemented, there would be no reduction in risk. The pathways for human exposure via inhalation, ingestion, or dermal contact, and pathways for migration via wind and surface water runoff would remain.</li> </ul>	<ul style="list-style-type: none"> <li>Once the soil cover is in place all risks related to surface and near surface soil would be eliminated.</li> <li>Requires reliance on continued maintenance of soil cover. The reliance will be reduced once vegetation is allowed to grow and sustain the soil cover.</li> <li>Deed restrictions or institutional controls are necessary to assure that potential future development does not disturb the integrity of the soil cover.</li> <li>Erosional processes associated with future planned use as a recreational area would be counteracted by regular maintenance.</li> <li>Ecological receptors that burrow to depths greater than one-foot in the areas of contamination could contact contaminants and would have to be controlled via the maintenance plan.</li> </ul>	<ul style="list-style-type: none"> <li>Soil excavation and offsite disposal would eliminate all risks related to surface and near surface soil.</li> <li>No monitoring of the backfilled area would be required since all surface and near surface COCs would be removed.</li> <li>All risk to ecological receptors would be eliminated.</li> <li>No deed restrictions or institutional controls required to reduce risk with respect to future soil contact.</li> <li>Erosional concerns would be eliminated.</li> </ul>

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<b>4. Reduction of Toxicity, Mobility or Volume (TMV) through Treatment</b>	<ul style="list-style-type: none"> <li>There would be no treatment and thus no reduction in TMV.</li> </ul>	<ul style="list-style-type: none"> <li>No reduction in TMV of metals; however, they are not considered mobile in the environment, particularly after placement of a soil cover.</li> <li>Natural attenuation of SVOCs would take many years, eventually reducing TMV. The SVOCs are not considered very mobile, particularly after placement of a soil cover.</li> <li>Soil cover does not address statutory preference for remedies that employ treatment as a principal element.</li> </ul>	<ul style="list-style-type: none"> <li>Relative to the contaminated site, TMV would be reduced.</li> <li>Relative to the disposal site, toxicity and volume would remain the same until treated.</li> <li>Mobility would remain the same until treated at the offsite disposal facility. Any disposal would be performed at an environmentally secure and permitted landfill for treatment and/or disposal.</li> <li>Soil excavation and offsite disposal meets the statutory preference for remedies since it is directed at the contaminants posing the principal threat.</li> </ul>

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<b>5. Short-term Effectiveness</b>	<ul style="list-style-type: none"> <li>• There would be no treatment and thus no short-term effectiveness.</li> <li>• Since there would be no remedial activities, there would be no resulting short-term risks to remedial construction workers, the community, or the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Although a soil cover would not treat the COCs it would eliminate the risk of exposure; thus demonstrating good short term effectiveness.</li> <li>• Potential short-term impacts to remedial construction workers, the community, or the environment would be from dust emissions. These impacts would be minimal since the contaminated soil would be left in place.</li> <li>• Dust emissions would be mitigated through engineering controls (dust suppression), air monitoring, and PPE.</li> </ul>	<ul style="list-style-type: none"> <li>• Soil excavation and offsite disposal would eliminate all risk once the soil is removed from the site.</li> <li>• Soil excavation and hauling could potentially generate significant quantities of dust that could pose short-term impacts to remedial construction workers, the community, or the environment. These impacts would be mitigated through engineering controls (dust suppression), air monitoring, and PPE.</li> <li>• Additional engineering controls would be required to mitigate traffic, noise, and dust from the trucks hauling soil off site.</li> </ul>

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<b>6. Implementability</b>	<ul style="list-style-type: none"> <li>There would be technical, administrative, or other impediments to implementability.</li> </ul>	<ul style="list-style-type: none"> <li>No technical constraints.</li> <li>May require regulatory waivers for leaving soil in place that exceeds PRGs and PSSRGs.</li> <li>Action would require administration of institutional controls to prevent future development.</li> <li>Action would require administration of long-term soil cover monitoring and maintenance program.</li> <li>The engineering services and materials would be readily available for constructing a soil cover.</li> </ul>	<ul style="list-style-type: none"> <li>No technical constraints.</li> <li>Action will require administration of an excavation and endpoint sampling plan.</li> <li>Action will require administrative documentation of waste profiling, classification, and disposal.</li> <li>The engineering services and materials would be readily available for excavation and offsite disposal.</li> </ul>
<b>7. Estimated Cost<sup>1</sup></b>			
Direct Capital Cost	\$0	\$358,000	\$1,305,000
Annual O&M Cost	\$0	\$25,000	No O&M would be required.
O&M Present Worth	\$0	\$415,000 (30 yr term at 4.25% interest)	No O&M would be required.
Total Present Worth	\$0	\$773,000	\$1,305,000

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<b>8. State Acceptance</b>	<ul style="list-style-type: none"> <li>U.S. EPA representatives have indicated that remedial action is favored and No Action would not meet state acceptance.</li> </ul>	<ul style="list-style-type: none"> <li>A soil cover would meet state acceptance because it is protective of human health and the environment and there are no administrative or technical limitations to implementation.</li> </ul>	<ul style="list-style-type: none"> <li>State acceptance of excavation and offsite disposal would be necessary since transferring the contamination to another location may not demonstrate the best available remedy.</li> </ul>
<b>9. Community Acceptance</b>	<ul style="list-style-type: none"> <li>The City of Maywood representatives have indicated that remedial action is favored and No Action would not meet community acceptance.</li> </ul>	<ul style="list-style-type: none"> <li>A soil cover would meet community acceptance because it is protective of human health and the environment and is complimentary to planned use of the land for the City of Maywood Riverfront Park.</li> </ul>	<ul style="list-style-type: none"> <li>Community acceptance would be relatively low based on estimated impacts from truck traffic, noise, fugitive dusts, and perception of spreading contamination - to be disposed of elsewhere.</li> </ul>

1. Cost estimates and present worth values are rounded to three significant figures. Refer to Appendix G for a detailed analysis of capital estimates, operation and maintenance cost estimates, and present worth assumptions. Cost estimates are considered order-of-magnitude with an expected accuracy of plus 50 to minus 30 percent.