Preliminary Screening Matrix
For The Peyton Slough
FS/RAP
Rhodia Martinez

Alt. No.	Remedial Action Alternatives	Description	Remedial Technologies	Implementation Alternatives	Preliminary Screening	Viable Alternative?
1	**No Action**	No remedial technology or associated processes are used to reduce the volume, toxicity, mobility, or exposure to the chemicals of concern (COCs). The "No Action" alternative may involve environmental monitoring of the areas of concern (AOCs) identified at the Site. The inclusion of a no action alternative is required by US EPA.	None	NA	This alternative does not address the regulatory requirement of the CARWQCB to remediate COCs in Peyton Slough, reduce risk to ecological receptors, and will not address the long term potential for ongoing adverse impacts to beneficial uses of waters of the State.	No
2	**Institutional Controls**	Establishment of access or land use restrictions are intended to reduce human and ecological exposure to the COCs.	Deed Restrictions and/or Deed Notification	NA	Deed restrictions or notifications are likely to be applied to the AOC in conjunction with other remedial actions, unless all COCs are removed to concentrations below unrestricted residential land use limits. The deed restriction or notification would be instituted to provide a mechanism to ensure that the cap would remain in place, and therefore, ensuring its long term effectiveness. It may also include provisions for agency notification, cap replacement, and disposal criteria for future activities that may disturb the cap or underlying sediments containing elevated levels of COCs.	Yes, in combination with other remedial alternatives
3	**In-Situ Capping**	Sediments would be capped with no significant change in the current slough configuration. An engineered cap would be used to isolate deeper sediments containing COCs from aquatic and other habitat. This action does not include the removal, disposal, or treatment of any sediments.	In-place engineered cap	Cap options include low permeability soil, composite, and concrete systems.	Capping would alter the hydrodynamics of the Slough, and therefore, may significantly alter the Slough functions. These changes would include habitat, water flow, sedimentation, and geomorphology. Furthermore, capping with no removal would be considered net loss under BCDC requirements and is not likely to be permitted. This alternative is not considered viable, as a stand-alone option. See alternative 7 below.	No

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4	**In-Situ Containment**	In-situ containment is the placement of impermeable, physical barriers to completely isolate the AOCs identified in the waterway from potential receptor populations. This action does not include removal, disposal, or treatment of any sediments, except for minimal excavation required for proper engineering design for the portions of the Slough that will be lined.	Lined open channel	There are a variety of liners that could be used to isolate the COCs from potential receptors, including poured in-place concrete, corrugated metal, and geosynthetics. The chosen alternative should provide a surface that will naturally silt up to replace habitat destroyed during the implementation of the long term remedial action.	Lining the Slough poses several challenges. The portion of the Slough that would be lined may change the geomorphology and hydrodynamics of the Slough. Substantial habitat would be destroyed requiring costly offsite mitigation. Due to loss of habitat and potential long term affects on the slough geomorphology, this option may be difficult to permit. Minimal removal, treatment, and disposal of sediments would be required for the lined portions of the Slough to provide a properly engineered channel. For AOCs that would not be lined, the excavation and capping alternative (Alternative 7) would be utilized. This alternative, alone, is not viable as a remedial action for the AOCs, and therefore, is not considered for the Site.	No
			Bypass AOC with Pipeline or Closed Culvert within Existing Channel	This option includes a reinforced concrete, vitrified clay, or PVC pipe or culvert. The closed culvert could be placed either in the existing Slough alignment, or immediately adjacent to the Slough, to isolate the AOCs identified in the Slough from the waterway.	A pipe will inhibit fish passage, and is not likely to be acceptable to regulatory agencies, due to the ecological impacts to the recently restored salt marsh habitat. Mitigation measures would likely be onerous. Continued and costly maintenance of the pipe and disposal of sediments containing COCs would be required to keep sedimentation from closing the waterway. This alternative is not considered viable for the Site.	No
5	**In-Situ Treatment**	In-situ treatment is the reduction of toxicity, mobility, and/or concentration of COCs using an engineered technology without permanent removal, storage, or disposal of sediments.	Chemical	Options include oxidation/reduction, chelation, and pH adjustment.	The implementation of in-situ chemical treatment is limited by the following: -lack of process control; -resulting toxicity from water quality changes; and -known low pH in the Slough. Long-term effectiveness of in-situ chemical treatment is not proven. Therefore, this alternative is not considered viable.	No
			Biological	Biological treatment would include the introduction of microbes and nutrients that would consume the COCs in the Slough.	Biological treatment is not applicable for treatment of inorganic compounds that are present in the Slough. Therefore, this alternative is not applicable ror the Site.	No
			Immobilization	Immobilization options include the use of cement, pozzolan, or thermoplastics to solidify sediments rendering COCs immobile and non-bioavailable.	While inorganic compounds are easily immobilized or stabilized using this technique, there are challenges regarding the implementation of this technology. Habitat would be degraded and/or destroyed requiring mitigation or capping with clean sediments (under the No Net Fill alternative). Due to toxicity during implementation, this alternative is not considered viable for the Site.	No
			Phytoremediation	Phytoremediation options are limited to two types of wetland vegetation (pickle weed and cord grass). Vegetation would be planted in the AOC and harvested to remove COCs from the Slough.	Certain species of plants are capable of removing contaminants from sediments or shallow groundwater and reducing the toxicity, mobility, and exposure of COCs. The plants would require periodic harvesting and disposal to remove the COCs from the Slough. The maintenance and disposal activities could be significant and the associated costs must be considered. Therefore, this alternative, though likely applicable in combination with other alternatives, is not considered for the Site.	No
6	**Removal and Capping (No Net Fill)**	**Removal.** Removal of COCs refers to the dredging or excavation of COCs from the Slough bottom and embankments that are potentially bioavailable to the benthic community. **Capping.** Capping is the placement of an engineered cap to isolate deeper sediments containing COCs from	Removal of All COCs	Sediment removal options include excavation from the slough embankments, mechanical dredging, and hydraulic dredging. Capping options include soil/sediments, bentonite, composite cap, or a combination thereof. Concrete capping would likely require soil layers to promote re-habitation of the Slough.The excavated sediment would	The removal of all COCs poses a variety of challenges. The known depth of COCs that exceed the RAOs is approximately 8 feet below the bottom of the Slough. Access for dredging from the land may require reinforcement along the slough embankments given their estimated low strength. Mechanical and land-based dredging may perform better under dry conditions, requiring engineered closures to contain water during dredging activities. Since the vertical and horizontal extent of the COCs in all portions of the Slough is unknown, it is difficult to estimate volume to be dredged. The cost of this alternative is anticipated to be high due to the large volume of material to be removed, treated, and disposed of. If all sediments containing COCs exceeding the RAOs were to be removed, capping may not be necessary.	Yes

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		sediments containing COCs from aquatic and other habitat.	Removal of sediments to 3-ft and capping to isolate COCs in deeper sediments	be treated, transported, and disposed of either at a designated on-site containment facility (OCF) or at an appropriate off-site disposal facility.	Removal of sediments to 3 feet would reduce the potential impacts to the benthic community and higher trophic level organisms. The deeper sediments containing COCs would then be isolated by the cap. Capping is considered a potentially applicable technology for the Site. The cap selection will consider restoration of habitat in the Slough after implementation.	Yes
7	**Slough Realignment / Capping and Filling of Existing Slough**	**Slough Re-Alignment.** This alternative involves placement of the slough through a new alignment in the adjacent marsh land by either bypassing portions of the Slough containing the highest concentrations of COCs or bypassing the Slough in its entirety . **Cap and Fill.** Capping the existing Slough will isolate the contaminants from potential receptors.	The potential alignments are:	Options include mechanical, hydraulic, and land-based dredging an open channel with the sufficient hydrodynamic properties to maintain habitat within the upstream salt marsh. Options for filling the existing Slough include excavated material from the new slough alignment or a composite of clean fill and low permeability materials.	This alternative would require discussions with all applicable regulatory permitting agencies. Endangered species within the existing Slough would need to be relocated. Mitigation for the habitat lost due to the filling of the existing alignment would be provided by the new partial alignment. The clean excavated material from the new slough alignment would be used to fill the current alignment. Therefore, sediments containing COCs exceeding the RAOs in the current Slough alignment would be isolated from new slough habitat. Potential for recontamination due to resuspension of deeper sediments containing COCs would be eliminated in the new slough since the slough would be constructed out of clean material. It would also reduce future maintenance and dredging costs in the new clean slough alignment by the Mosquito Abatement District. This alternative is considered potentially applicable to the Site.	
			1) Partial Re-Alignment - A new Slough channel installed from the Rhodia property boundary located at the fence approximately 800 feet south of the tide gate to the Carquinez Straight.		Implementation of option 1 addresses the majority of the AOCs but does not address some AOCs located south of the tide gate. Removal and capping of the sediments containing COCs in excess of the RAOs on the south side of the new slough alignment would be required. Several treatment and disposal options are considered viable for this alternative including disposal either at the OCF or appropriate off-site landfill facility.	Yes, in combination with partial dredging and capping in the South slough.
			2) Full Re-Alignment - A new Sloughchannel located from the rail crossing south of the tide gate to the Carquinez Straight.		Implementation of option 2 addresses all AOCs, and does not require the removal and capping of sediments within the existing Slough. This option would minimize handling, maintenance, and costs associated with future maintenance dredging by the Mosquito Abatement District. The potential for recontamination due to resuspension of deeper sediments would be eliminated. Additional mitigation may be required due to temporary loss of habitat during the implementation of remedial activities.	Yes