Soils that contain clay particles are subject to expansion and shrinkage and are known as expansive soils. If located on mountainous terrain, expansive soils increase the risk for slope failure and landslide, and if on level terrain, expansive soils are associated with subsidence. Figure 4.3 of the Biological Resources Technical Report (LSA, 2002) maps clay soils in relation to the HCLE Corridor alternatives. Overall, very little clay soil is present within the study area but some clay soils underlie each build alternative bandwidth on level to slightly sloped topography. The Tier 2 analysis of the selected alternative will identify any specific location of expansive soils, and applicable conditions and mitigation measures will be prescribed. Therefore, slope failure associated with clay soils and steep terrain is not anticipated to be significant after mitigation.

6.8.5 Result in the Loss of Availability of a Known Mineral Resource that Would be of Value to the Region and the Residents of the State?

The HCLE Corridor study area is located entirely in MRZ-3a; areas where the available geologic information indicates that mineral deposits are likely to exist, however, the significance of the deposit is undetermined. Implementation of Alternatives 1a, 1b, 4d. 5d, 5e, H1, and H3 could result in an impact to mineral extraction land uses, which exist within or adjacent to these alternatives. The new Riverside County General Plan Policies OS 14.1 through OS 14.6 relate to the protection of mineral resources. These policies will be used to guide the planning and design of the preferred alternative. Mitigation measures and standard conditions for reduction of any direct impacts to mineral resources will be prescribed as part of the Tier 2 environmental document.

6.8.6 Result in the Loss of Availability of a Locally Important Mineral Resource Recovery Site Delineated on a Local General Plan, Specific Plan, or Other Land Use Plan?

See 6.8.5, above.

6.8.7 Have Soils Incapable of Adequately Supporting the Use of Septic Tanks or Alternative Waste Water Disposal Systems Where Sewers Are Not Available for the Disposal of Waste Water?

The proposed project is a regional transportation corridor and will not generate the need for additional waste water systems. Therefore, there are no impacts related to soils and wastewater systems.

6.9 Surface Hydrology, Floodplains, and Water Quality

The description of the Environmental Setting for the surface water hydrology, floodplain encroachment, and water quality aspects for the proposed project alternatives is presented in Section 3.10. Discussion of environmental impacts for the surface water hydrology, floodplain encroachment, and water quality aspects for the proposed project alternatives is presented in Section 4.10.

The potential environmental impacts of the proposed project alternatives to surface water hydrology, floodplain encroachment, and water quality parameters are evaluated for significance using criteria as defined in the CEQA Guidelines. For purposes of this analysis, the project may be deemed to have a significant hydrologic impact if it would:

1) Violate any water quality standards or waste discharge requirements (Water Quality).
2) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted (Surface Hydrology).
3) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site (Surface Hydrology).
4) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site (Surface Hydrology).
5) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Surface Hydrology).
6) Otherwise substantially degrade water quality (Water Quality).
7) Place housing within a 100 year flood hazard area as mapped on a federal Flood Hazard boundary or Flood Insurance Rate Map or other flood hazard delineation map (Floodplain Encroachment).
8) Place within a 100 year flood hazard area structures that would impede or redirect flood flows (Floodplain Encroachment).
9) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam (Floodplain Encroachment).
10) [Cause] Inundation by seiche, tsunami, or mudflow (Surface Hydrology).

Standard Conditions (SCs) and Project Design Features (PDFs), which act to avoid potential impacts or reduce impacts to a less than significant level, have also been identified. SCs include regulatory requirements from local, State, and/or federal mandates that must be implemented. PDFs are those measures or physical features which, although not specifically required, can be incorporated into the design of the proposed project to avoid, minimize, or reduce potential environmental impacts. The manner in which PDFs and SCs avoid potential significant impacts (as defined in CEQA) or reduce them to a less than significant level will be thoroughly discussed in the Tier 2 environmental documentation.

Where a potential significant environmental effect cannot be avoided or reduced to a less than significant level through the incorporation of a PDF or SC, mitigation measures that ". . . *minimize significant adverse impacts . . . for each significant environmental effect identified in the EIR*" should be identified and included in this section of the document, as prescribed in Section 15126 of the CEQA Guidelines. The

manner in which the proposed specific mitigation measures reduce potential impacts to a less than significant level will be thoroughly discussed in the Tier 2 environmental documentation for the selected alternative.

For this Tier 1 analysis, potential mitigation approaches are identified when a potentially significant impact is identified. With implementation of a specific HCLE alternative, detailed SCs, PDFs, and mitigation measures will be prescribed that address the potential impacts of that proposed action.

6.9.1 Less than Significant Impacts

The following impacts from implementation of the proposed project are considered less than significant.

6.9.1.1 The Proposed Project Would Not Substantially Deplete Groundwater Supplies or Interfere Substantially with Groundwater Recharge (Criterion #2)

The total area of the bandwidth of any of the alternatives being considered is very small compared to the overall watershed area that the alternatives traverse (Figure 4.10.2). The area within the alternative bandwidth ranges from 0.7 to 2.4 percent of the total area of the HSAs crossed by the alternative (Table 4.10.E), and much of the bandwidth would not be covered with paving or other features that would alter existing infiltration rates. Any change in impervious surface area as a result of implementing one of the alternatives would not be significant in changing the regional rate of recharge to groundwater. The construction and operation of the project would not use groundwater and would not directly affect groundwater volumes or levels.

6.9.1.2 The Proposed Project Would Not Violate any Water Quality Standards or Waste Discharge Requirements (Criterion #1)

The proposed bandwidths for the HCLE alternatives do not cross any stream segments or water bodies designated by the SWRCB as impaired for water quality (Table 4.10.O).

6.9.1.3 The Proposed Project Would Not Create or Contribute Runoff Water Which Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff (Criterion #5)

The total area of the bandwidth of any of the alternatives being considered is small compared to the overall watershed area that the alternatives traverse (Figure 4.10.2). The area within the alternative bandwidth ranges from 0.7 to 2.4 percent of the total area of the HSAs crossed by the alternative (Table 4.10.E), and much of the bandwidth would not be covered with the proposed future project structures or features that would alter existing infiltration rates. Any change in impervious surface area as a result of implementing one of the alternatives would not be significant in changing the regional rate of runoff to blue line streams and into constructed flood control facilities.

Placement of a future transportation corridor across stream drainages and areas served by drainage facilities and structures would alter drainage patterns in the local area to some extent. These localized effects, and potential subsequent downstream and more

regional effects to drainage facilities, can be minimized through implementation of design features and standard conditions for placement of transportation facilities across streams and to address drainage patterns and storm drain capacities (Table 4.10.AA). With inclusion of these standards and conditions, the impact to existing drainage systems would be less than significant.

6.9.1.4 The Proposed Project Would Not Place Housing Within a 100 Year Flood Hazard Area as Mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or Other Flood Hazard Delineation Map (Criterion #7)

The proposed project includes no provision of housing. The proposed HCLE Corridor alternatives would cross existing designated floodplain areas. Routing, design, and construction approaches for the future transportation facilities would comply with FHWA, USACOE, and FEMA requirements for highways located in or near floodplains (Table 4.10.AA).

6.9.1.5 The Proposed Project Would Not Place Within a 100 Year Flood Hazard Area Structures Which Would Impede or Redirect Flood Flows (Criterion #8)

The proposed HCLE Corridor Build Alternatives would cross existing designated floodplain areas. The floodplain area within the alternative bandwidth ranges from 1.0 to 3.1 percent of the total area of the HSAs crossed by the alternative (Table 4.10.M), and up to 3.3 percent of the total area of the HSAs crossed by the alternative for the build out case is area that is existing floodplain or is projected to be developed (Table 4.10.W), and much of the bandwidth would not be covered by future project structures or features that would alter existing flood flows. Routing, design, and construction approaches for the transportation facilities would comply with FHWA, USACOE, and FEMA requirements for highways located in floodplains to minimize potential impedance or restriction of flood flows (Table 4.10.AA).

6.9.1.6 The Proposed Project Would Not Expose People or Structures to a Significant Risk of Loss, Injury or Death, Involving Flooding, Including Flooding as a Result of the Failure of a Levee or Dam (Criterion #9)

The proposed HCLE Corridor Build Alternatives would cross existing designated floodplain areas. The floodplain area within the alternative bandwidth ranges from 1.0 to 3.1 percent of the total area of the HSAs crossed by the alternative (Table 4.10.M), and up to 3.3 percent of the total area of the HSAs crossed by the alternative for the build out case is area that is existing floodplain or is projected to be developed (Table 4.10.W), and much of the bandwidth would not be covered with future project structures that would alter existing flood flows. Routing, design, and construction approaches for the transportation facilities would comply with FHWA, USACOE, and FEMA requirements for highways located in floodplains to minimize potential impedance or restriction of flood flows and potential impacts to levee or dam structures (Table 4.10.AA).

6.9.1.7 The Proposed Project Would Not [Cause] Inundation by Seiche, Tsunami, or Mudflow (Criterion #10)

The proposed HCLE Corridor Build Alternatives are located in areas at elevations between 227 and 701 meters (745 and 2,300 ft) above mean sea level, and at least 38 km (23 mi) from the Pacific ocean. This area is not at risk for impact by seiche, tsunami, or mudflow.

6.9.2 Potentially Significant Impacts

The following impacts from implementation of the proposed project are considered potentially significant.

6.9.2.1 The Proposed Project Would Substantially Alter the Existing Drainage Pattern of the Site or Area, Including Through the Alteration of the Course of a Stream or River, in a Manner Which Would Result in Substantial Erosion or Siltation On or Off Site (Criterion #3)

Impact – More than Five Percent of the Total Area of the Proposed Project that May Be Developed Crosses Areas with Slope >15 Percent (All Alternatives Except 5a). For these alternatives, 6.4 to 27.1 percent of the total bandwidth area has a slope exceeding 15 percent (Table 4.10.P). Areas of significant slope are directly associated with potential erosion control and subsequent water quality problems during alternative implementation activities.

Implementation of Mitigation Measure 9-1 (Table 4.10.AA) will reduce the potential impacts of construction and operation of a future transportation facility to the greatest extent possible. With these design features in place, the impact to water quality by this alternative will be reduced to a less than significant level.

6.9.2.2 The Proposed Project Would Substantially Alter the Existing Drainage Pattern of the Site or Area, Including Through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Manner Which Would Result in Flooding On- or Off-site (Criterion #4)

Impact – More than Five Percent of the Total Length of Blue Line Streams in the Watersheds Crossed Falls Within the Area of the Proposed Project (Alternatives 6a and 6b Only). Implementation of Mitigation Measure 9-2 (Table 4.10.AA) will reduce the potential impacts of construction and operation of a future transportation facility to the greatest extent possible. With these design features in place, the impact to surface water hydrology by these alternatives will be reduced for a less than significant level.

The total length of blue line streams within the bandwidth of any of the alternatives being considered is small compared to the overall length in the watershed area that the alternatives traverse (Figure 4.10.2). The length of blue line streams within the alternative bandwidth ranges from 0.5 to 5.1 percent of the total length in the HSAs crossed by the alternative (Table 4.10.G), and much of the bandwidth would not be covered with future project structures that would alter existing streams.

6.9.2.3 The Proposed Project Would Otherwise Substantially Degrade Water Quality (Criterion #6)

Impact – Impact to Stream Segments with Designated Beneficial Uses (Alternatives 5b, 6a, 6b, and H only). The proposed bandwidths for the identified alternatives cross stream segments with designated beneficial uses including groundwater recharge and cold freshwater habitat, as designated by the SDRWQCB (1998) (Table 4.10.Q). Any degradation of these designated beneficial uses in these stream segments would potentially impact water quality and beneficial uses of the stream.

Implementation of Mitigation Measure 10-3 (Table 4.10.AA) will reduce the potential impacts of construction and operation of a future transportation facility to the greatest extent possible. However, since the designated beneficial uses for these stream segments are unique in the watershed for the stream segments affected by the proposed alternatives (Table 4.10.Q) and valuable for human and aquatic resource use, mitigation activities related strictly to the implementation of the transportation alternatives cannot reduce this impact to less than significant levels. Even with these design features in place, the impact to water quality by these transportation alternatives on the designated stream segments will remain at a significant level.

A summary of the determination of potentially significant impacts to surface water hydrology, floodplain encroachment, and water quality parameters is presented in Table 6.9.A.

Table 6.9.A - Potential Impacts to Hydrology, Floodplain, and Water Quality CEQA Parameters - (Hemet to Corona/Lake Elsinore) Alternatives

This slip sheet is for WP use only, please disregard.

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