Evaluation Approach. The extent of potential effects to water quality and beneficial uses of surface waters by the proposed alternatives cannot be completely quantified at the program level of detail. However, tabulation and comparison of the number of designated beneficial uses potentially affected by each alternative provide a quantitative comparison of the potential for these types of impacts. The alternative crossings may affect the designated uses of stream segments in the alternative crossing and downstream; the evaluation seeks to identify the alternative with the minimum number of beneficial uses potentially affected.

Impacts of Alternatives. Figure 4.10.5 presents the potential impacts of the HCLE alternatives on designated beneficial uses in each HSA crossed by these alternatives (Table 4.10.Q). In general, the physical structure of the streams in the project area, the seasonal intermittent nature of most of the streamflows, and scattered water quality problems associated with development have resulted in a relatively low number of designated uses for most of the stream segments. In general, the number of stream crossings by each alternative is in direct proportion to the overall length of the alternative, and is reflected in the number of HSAs crossed. Alternatives 1a, 1b, and H1 are expected to have the greatest potential to affect the potential beneficial uses of the stream system in the project area. Alternatives affecting fewer uses would have the least potential to affect these parameters.

4.10.2.18 Summary of Potential Impacts of CETAP Alternatives – Hemet-to-Corona/Lake Elsinore Corridor

In general, the magnitude of the data for each parameter is determined primarily by the overall length of each alternative, the relative upstream/downstream position of the alternative within the watersheds crossed, and the extent of existing and projected land development within the watersheds crossed.

Surface Water Hydrology. The number of crossings and absolute length of blue line streams crossed by each alternative are generally in direct proportion to the overall length of the alternative, and are reflected in the number of HSAs crossed. However, the percentage of blue line stream length upstream and downstream of the alternative is less directly related to overall alternative length (since it reflects a value in the fixed range of zero through 100 percent), and is an indicator of the relative position of the alternative within the HSAs crossed. The percentages of blue line stream length upstream for the HCLE alternatives (reflecting the relative position within the watersheds affected by each of the various alternatives) range from a low of 45.5 percent to a high of 70.3 percent (Table 4.10.G).

The absolute length of channel improvements crossed by each alternative is generally in direct proportion to the overall length of the alternative, and is reflected in the number of HSAs and blue line streams crossed. However, the percentage of channel improvements in blue line streams upstream and downstream of the alternative is less directly related to overall alternative length (since it reflects a value in the fixed range of zero through 100 percent), and is an indicator of the relative level of developed land use within the HSAs crossed. The percentages of the existing length of stream channel improvements occurring within the HCLE alternatives range from a low of 1.12 percent to a high of 6.12 percent (Table 4.10.J). The percentages of the existing length of stream channel improvements occurring upstream for the HCLE alternatives

(reflecting the relative level of "developed" land uses above the alternative, within the watersheds affected by each of the various alternatives) range from a low of 20.5 percent to a high of 56.7 percent.

The absolute area of "undeveloped" land use in HSAs crossed by each alternative is generally in direct proportion to the overall length of the alternative, and is reflected in the number of HSAs crossed. However, the percentage of "undeveloped" land use area upstream and downstream of the alternative is less directly related to overall alternative length (since it reflects a value in the fixed range of zero through 100 percent), and is an indicator of the relative position in the watershed of the undeveloped land use within the HSAs crossed. The percentages of "undeveloped" land use area occurring upstream of the HCLE alternatives (reflecting the relative level of "developed" land uses within the watersheds affected by each of the various alternatives) range from a low of 69.0 percent to a high of 85.3 percent (Table 4.10.K). The percentages of the existing "undeveloped" land use area occurring within the HCLE bandwidths range from a low of 70.8 percent to a high of 86.1 percent (Table 4.10.K).

Floodplain Encroachment. The absolute area of floodplain crossed by each alternative is generally in direct proportion to the overall length of the alternative, and is reflected in the number of HSAs crossed (Table 4.10.L). However, the percentage of floodplain area upstream and downstream of the alternative is less directly related to overall alternative length (since it reflects a value in the fixed range of zero through 100 percent), and is an indicator of the relative position of the alternative within the HSAs crossed. The percentages of existing designated floodplain area upstream for the HCLE alternatives (reflecting the relative position within the watersheds affected by each of the various alternatives) range from a low of 28.3 percent to a high of 73.3 percent (Table 4.10.M).

The degree of longitudinal impact of the alternative crossings on the existing floodplain is defined by the angle at which the alternative crosses the floodplain area. The angle is estimated from the intersection angle of the alternative and the blue line stream segment that bisects the floodplain within the alternative. This angle (in the range of zero degrees to 90 degrees) defines the magnitude of potential impact to the floodplain area. A perpendicular crossing (i.e., at 90 degrees) represents the scenario with the least potential impact. As the angle of crossing approaches zero degrees, the crossing approaches the maximum potential longitudinal impact to beneficial floodplain values. The values of observed crossing angles for the HCLE alternatives range from a low of 54 degrees to a high of 82 degrees.

Water Quality. The number of crossings and absolute length of impaired segments affected by each alternative are generally in direct proportion to the overall length of the alternative, and are reflected in the number of HSAs crossed. However, the percentage of impaired segment length upstream and downstream of the alternative is less directly related to overall alternative length (since it reflects a value in the fixed range of zero through 100 percent), and is an indicator of the relative position of the alternative within the HSAs crossed. No impaired segments occur within the HSAs crossed by the HCLE alternatives.

The absolute area of significant slope crossed by each alternative is generally in direct proportion to the magnitude of the existing area of significant slope and the overall

length of the alternative, and is reflected in the number of HSAs crossed. The areas of significant slope >15 percent occurring within the HCLE alternatives range from a low of 19 ha (47 ac) to a high of 299 ha (738 ac) (Table 4.10.P).

The absolute number of beneficial uses affected by each alternative is generally in direct proportion to the overall length of the alternative, and is reflected in the number of HSAs and stream segments crossed (Table 4.10.F). The number of affected designated beneficial uses for the HCLE alternatives ranges from a low of 6 to a high of 25 (Table 4.10.Q).

Table 4.10.R presents a summary listing of the quantitative data developed for the impact evaluation of proposed alternatives on surface water hydrology, floodplain encroachment, and water quality. The table aggregates all of the categories for which parameters are evaluated and discussed for each alternative. The table presentation allows a quantitative comparison of the overall potential impact of each alternative, with values for each parameter presented, with the range of values in each category for the various alternatives evident.

The evaluation criteria are generally of two types: magnitude criteria that indicate an absolute measurement of the potential impacts; and relative criteria (the "percent" criteria), which take into account the potential impact on a watershed basis. Different HCLE alternatives perform better (display values that better minimize potential impacts to hydrology, floodplain encroachment, and water quality) for different criteria. As stated above, the primary factors influencing the potential impact of each alternative are length and position in the watersheds affected. Taking into account only the magnitude criteria, Alternatives 6a, 6b, 5c, and 4a, in that order, best minimize the overall potential impact to these resources. Alternatives H1, 5b, and H3, displayed the greatest potential to affect these resources.

Consideration of all of the evaluation criteria culminates in a similar result. Alternatives 4a, 6a, 4c, and 6b display the best overall potential to minimize impacts to the resources of concern; Alternatives H1, 5b, and H3 are considered to have the greatest potential impact to these resources.

4.10.3 Potential Mitigation Measures to be Considered in Tier 2

In considering potential mitigation measures for adverse impacts caused by the proposed CETAP alternatives, the specificity of information currently available for analysis must be considered. The alternatives evaluated range from 150 to 300 m (500 to 1,000 ft) in width, and include right-of-way preservation for potential interchange