

APPENDIX I: ASSUMPTIONS AND RATIONALE USED TO EVALUATE MUN PROJECT ALTERNATIVES

Each MUN project alternative was evaluated with regard to how well it satisfies each criterion. A scale of “low”, “medium”, and “high” was used to rank how well an alternative meets a criterion. The low, medium, and high rankings are characterized as follows:

Low	Alternative largely does not satisfy criterion
Medium	Alternative satisfies criterion, in part
High	Alternative largely satisfies criterion

Criterion 1: Maintain consistency with federal and state water quality laws and policies.

No Action (MUN Alt 1): Alternative would maintain consistency. **HIGH**

De-designate to 200 ft. MSL (MUN Alt 2): No vertical boundary to de-designation area would likely result in removing the MUN beneficial use in areas where it currently may exist; i.e., at some vertical depths where groundwater EC is less than 5,000 $\mu\text{S}/\text{cm}$ and does not meet Exception 1a of the Sources of Drinking Water Policy. This is inconsistent with federal and state water quality laws and policies. **LOW**

MUN De-designation (SDWP EXC 1a MUN Alt 3): Alternative would maintain consistency. **HIGH**

MUN SSOs (MUN Alt 4): Alternative would maintain consistency. **HIGH**

Criterion 2: Meet exception(s) to Sources of Drinking Water Policy

No Action (MUN Alt 1): Existing groundwater quality within MUN de-designation boundary has EC levels greater than 5,000 $\mu\text{S}/\text{cm}$ and meets Exception 1a, but this alternative does not recognize this fact. **LOW**

De-designate to 200 ft. MSL (MUN Alt 2): No vertical boundary to de-designation area would likely result in removing the MUN beneficial use where it currently may exist; i.e., at some vertical depths where groundwater EC is less than 5,000 $\mu\text{S}/\text{cm}$ and does not meet Exception 1a of the Sources of Drinking Water Policy. **LOW**

MUN De-designation SDWP EXC 1a (MUN Alt 3): Alternative meets Exception 1a of Sources of Drinking Water Policy. **HIGH**

MUN SSOs (MUN Alt 4): All groundwater within MUN de-designation boundary has EC levels greater than 5,000 $\mu\text{S}/\text{cm}$, but this alternative does not recognize this fact and would establish SSOs. **LOW**

Criterion 3: Protect existing and future potential beneficial uses.

No Action (MUN Alt 1): Alternative would protect existing and future potential beneficial uses as currently required by the Basin Plan. **HIGH**

De-designate to 200 ft. MSL (MUN Alt 2): No vertical boundary to de-designation area would likely result in removing the MUN beneficial use where it currently may exist; i.e., at some vertical depths where groundwater EC is less than 5,000 µS/cm and does not meet Exception 1a of the Sources of Drinking Water Policy. **LOW**

MUN De-designation SDWP EXC 1a (MUN Alt 3): No existing use of groundwater is being made and no future use is anticipated within the proposed de-designation boundary. Groundwater on the fringe of the proposed de-designation boundary flows away from domestic well fields and towards the center of the proposed de-designation boundary. Furthermore, the clay layers that denote the vertical extent of the proposed de-designation boundary form an impermeable hydrologic barrier to the downward flow of groundwater from unconfined conditions above the clay to confined conditions below the clay. The low vertical conductivities of these clay layers suggests that there is very little, if any, downward flow of groundwater. This alternative would protect existing and future potential beneficial outside of the proposed de-designation boundary. **HIGH**

MUN SSOs (MUN Alt 4): Alternative would protect existing and future potential beneficial uses as currently required by the Basin Plan. **HIGH**

Criterion 4: Maintain agricultural production in the project area.

No Action (MUN Alt 1): Under this alternative, agricultural discharges would not be allowed to cause or contribute to violations of water quality objectives protective of MUN and AGR uses, or otherwise would be required to meet Basin Plan degradation requirements. Discharges producing degradation above that which is allowed would be prohibited and thus, agriculture would need to implement treatment and control to reduce its impact or would need to reduce agricultural production in the area (i.e., fallow acreage). **LOW**

De-designate to 200 ft. MSL (MUN Alt 2): There are currently no existing IND or PRO uses of groundwater in the proposed de-designation area, and the proposed Basin Plan Amendment is not seeking to change the IND or PRO beneficial use designations. Further, the Board recognizes that any utilization of groundwater for IND or PRO purposes would be significantly limited by the quality of the groundwater in the project area. If IND or PRO uses arose in the future, the Board would regulate discharges to provide reasonable protection of the IND or PRO uses, taking into consideration the quality of the underlying groundwater. Therefore, if the MUN and AGR beneficial uses are no longer designated within the proposed irrigation supply de-designation boundary, there are no applicable water quality objectives that would limit agricultural production activities in the project area. Under this alternative, agricultural production could be maintained in the project area. **HIGH**

MUN De-designation SDWP EXC 1a (MUN Alt 3): as above. **HIGH**

MUN SSOs (MUN Alt 4): Under this alternative, agricultural discharges would not be allowed to cause or contribute to ambient groundwater quality exceeding a SSO. Discharges causing or contributing to ambient conditions exceeding a SSO and/or causing or contributing to degradation above that which is allowed in the Basin Plan would be prohibited. Thus, agriculture would need to implement additional treatment and control of its discharge to reduce its impact on groundwater or would need to reduce agricultural production in the area (i.e., fallow acreage). **LOW**

Criterion 5: Support the proactive control and management of salt for application or disposal in the western portion of the Basin, toward the drainage trough of the valley.

As stated in the Basin Plan, the Central Valley Regional Board encourages the application or disposal of consolidated treated effluents in the western portion of the Basin, toward the drainage trough of the valley.

No Action (MUN Alt 1): The need to protect MUN and AGR beneficial uses and to limit degradation in the Tulare Lake Bed would preclude or significantly limit the potential, future application or disposal of salts in the project area. **LOW**

De-designate to 200 ft. MSL (MUN Alt 2): There are currently no existing IND or PRO uses of groundwater in the proposed de-designation area, and the proposed Basin Plan Amendment is not seeking to change the IND or PRO beneficial use designations. Further, the Board recognizes that any utilization of groundwater for IND or PRO purposes would be significantly limited by the quality of the groundwater in the project area. If IND or PRO uses arose in the future, the Board would regulate discharges to provide reasonable protection of the IND or PRO uses, taking into consideration the quality of the underlying groundwater. Therefore, if the MUN and AGR beneficial uses are no longer designated within the proposed irrigation supply de-designation boundary, there are no applicable water quality objectives that would limit agricultural production activities in the project area. To this end, potential, future salt loads from outside the project area could be imported to the project area without harming beneficial uses in the project area. Any potential, future project from outside of the project area that sought to discharge salt to the project area would need to undergo its own evaluation to determine if its discharge met all applicable federal and state water quality laws and policies. **MED**

MUN De-designation SDWP EXC 1a (MUN Alt 3): as above. **MED**

MUN SSOs (MUN Alt 4): MUN and AGR beneficial uses would need to be protected under this alternative, thus resulting in measures to prevent or limit groundwater degradation. The potential, future application or disposal of salts in the project area would be precluded or significantly restricted. **LOW**

Criterion 6: Technically feasible, economically viable, and reasonable action.

No Action (MUN Alt 1): Requiring agricultural discharges to protect the MUN and AGR beneficial uses which are not existing within the proposed de-designation area would impose significant drainage management costs through the implementation of additional treatment and control measures or would lead to a fallowing of land. In either case, this alternative would not be economically viable for agriculture. **LOW**

De-designate to 200 ft. MSL (MUN Alt 2): There are currently no existing IND or PRO uses of groundwater in the proposed de-designation area, and the proposed Basin Plan Amendment is not seeking to change the IND or PRO beneficial use designations. Further, the Board recognizes that any utilization of groundwater for IND or PRO purposes would be significantly limited by the quality of the groundwater in the project area. If IND or PRO uses arose in the future, the Board would regulate discharges to provide reasonable protection of the IND or PRO uses, taking into consideration the quality of the underlying groundwater. Therefore, if the MUN and AGR beneficial uses are no longer designated within the proposed irrigation supply de-designation boundary, there are no applicable water quality objectives that would limit agricultural production activities in the project area. Furthermore, due to the lack of a vertical de-designation boundary in this alternative, it only partially satisfies the criterion in that the de-designation of groundwater that currently supports the MUN beneficial use is not reasonable. **MED**

MUN De-designation SDWP EXC 1a (MUN Alt 3): There are currently no existing IND or PRO uses of groundwater in the proposed de-designation area, and the proposed Basin Plan Amendment is not seeking to change the IND or PRO beneficial use designations. Further, the Board recognizes that any utilization of groundwater for IND or PRO purposes would be significantly limited by the quality of the groundwater in the project area. If IND or PRO uses arose in the future, the Board would regulate discharges to provide reasonable protection of the IND or PRO uses, taking into consideration the quality of the underlying groundwater. Therefore, if the MUN and AGR beneficial uses are no longer designated within the proposed irrigation supply de-designation boundary, there are no applicable water quality objectives that would limit agricultural production activities in the project area. This alternative is considered to be feasible, economically viable, and reasonable. **HIGH**

MUN SSOs (MUN Alt 4): Under this alternative, agricultural discharges would not be allowed to cause or contribute to ambient groundwater quality exceeding a SSO. Discharges causing or contributing to ambient conditions exceeding a SSO and/or causing or contributing to degradation above that which is allowed in the Basin Plan would be prohibited. Thus, agriculture would need to implement additional treatment and control of its discharge to reduce its impact on groundwater or would need to reduce agricultural production in the area (i.e., fallow acreage). **LOW**

Criterion 7: Scientifically supported by existing data.

No Action (MUN Alt 1): Findings of the Beneficial Use Evaluation Report (BUER) show that groundwater quality, as measured by EC, within the proposed MUN de-designation boundary exceeds 5,000 $\mu\text{S}/\text{cm}$ and therefore, meets Exception 1a of the Sources of Drinking Water Policy. Additionally, the BUER found that groundwater within the proposed MUN de-designation boundary has not historically, is not currently, and is not anticipated to be used for municipal and domestic supply in the future. Groundwater quality within the proposed MUN de-designation boundary does not support the MUN beneficial use, and an action by the Central Valley Water Board to protect the MUN beneficial use is not scientifically supported by existing data. **LOW**

De-designation to 200 ft. MSL (MUN Alt 2): The BUER did not evaluate the groundwater quality or stratigraphy beneath the area denoted by the 200 ft. MSL contour line. Additionally, due to the lack of a vertical de-designation boundary in this alternative, there is the potential to degrade deeper groundwater quality that currently may support the MUN beneficial use. This alternative is not scientifically supported by existing data. **LOW**

MUN De-designation SDWP EXC 1a (MUN Alt 3): The findings of the BUER show that groundwater quality within the proposed MUN de-designation boundary exceeds 5,000 and therefore, meets Exception 1a of the Sources of Drinking Water Policy. Additionally, the BUER found that groundwater within the proposed MUN de-designation boundary has not historically, is not currently, and is not anticipated to be used for municipal and domestic supply. Groundwater quality within the proposed MUN de-designation boundary does not support the MUN beneficial use, and an action by the Central Valley Water Board to de-designate the MUN beneficial use within the proposed MUN de-designation boundary is scientifically supported by existing data. **HIGH**

MUN SSOs (MUN Alt 4): The findings of the BUER show that groundwater quality within the proposed MUN de-designation boundary exceeds 5,000 $\mu\text{S}/\text{cm}$ and therefore, meets Exception 1a of the Sources of Drinking Water Policy. Additionally, the BUER found that groundwater within the proposed MUN de-designation boundary has not historically, is not currently, and is

not anticipated to be used for municipal and domestic supply. Groundwater quality within the proposed MUN de-designation boundary does not support the MUN beneficial use, and an action by the Central Valley Water Board to protect the MUN beneficial use through the establishment of SSOs is not scientifically supported by existing data. **LOW**

Criterion 8. Support socioeconomic well-being of the project area.

No Action (MUN Alt 1): Same response as given for C7. **LOW**

De-designation to 200 ft. MSL (MUN Alt 2): Same response as given for C7. **MED**

MUN De-designation SDWP EXC 1a (MUN Alt 3): Same response as given for C7. **HIGH**

MUN SSOs (MUN Alt 4): Same response as given for C7. **LOW**

Criterion 9: Ease of implementation.

No Action (MUN Alt 1): Under this alternative, Central Valley Water Board staff would regulate agricultural users in the Tulare Lake Bed to protect MUN and AGR beneficial uses. This will likely lead to difficulties in the permitting process and unnecessary expenditure of resources for the protection of beneficial uses within the proposed de-designation boundary where there is no existing use of groundwater and there is no future anticipated use of groundwater. **LOW**

De-designation to 200 ft. MSL (MUN Alt 2): This alternative would likely require Central Valley Water Board staff to perform the necessary investigation to allow for the appropriate establishment of vertical boundaries beneath the 200 ft. MSL contour as a means to protect the MUN beneficial use where it currently is supported by existing groundwater quality. **LOW**

MUN De-designation SDWP EXC 1a (MUN Alt 3): This alternative would require the least amount of effort by Central Valley Water Board staff to implement. **HIGH**

MUN SSOs (MUN Alt 4): This alternative would require Central Valley Water Board staff to develop SSOs and a monitoring and surveillance program in the project area to evaluate if SSOs are being met. The involvement of Enforcement Division staff may also be necessary. **LOW**