

APPENDIX J: ASSUMPTIONS AND RATIONALE USED TO EVALUATE AGR PROJECT ALTERNATIVES

Each AGR 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 (AGR Alt 1): Alternative would maintain consistency. **HIGH**

AGR SSOs (AGR Alt 2): Alternative would maintain consistency. **HIGH**

AGR De-designation – Separate Irrigation & Livestock Boundaries (AGR Alt 3): Alternative would maintain consistency. **HIGH**

Classes of AGR Uses (AGR Alt 4): Alternative would maintain consistency. **HIGH**

AGR De-designation – Single 5,000 μ S/cm EC Boundary (AGR Alt 5): Alternative would maintain consistency. **HIGH**

AGR De-designation – Single 7,500 μ S/cm EC Boundary (AGR Alt 6): Alternative would maintain consistency. **HIGH**

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

No Action (AGR Alt 1): Not applicable.

AGR SSOs (AGR Alt 2): Not applicable.

AGR De-designation – Separate Irrigation & Livestock Boundaries (AGR Alt 3): Not applicable.

Classes of AGR Uses (AGR Alt 4): Not applicable.

AGR De-designation – Single 5,000 μ S/cm EC Boundary (AGR Alt 5): Not applicable.

AGR De-designation – Single 7,500 μ S/cm EC Boundary (AGR Alt 6): Not applicable.

Criterion 3: Protect existing and future potential beneficial uses.

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

AGR SSOs (AGR Alt 2): Alternative would protect existing and future potential beneficial uses as currently required by the Basin Plan. **HIGH**

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.

The smaller horizontal surface area of the AGR livestock watering de-designation boundary, as compared to the AGR irrigation supply de-designation boundary, would result in approximately 4,680 fewer acres in the project area that are de-designated for all AGR beneficial uses. These 4,680 acres are located in the East Subarea and are situated on higher ground that would be able to support the construction and operation of new drainage facilities because these areas are less susceptible to flooding. If this acreage is not de-designated for AGR beneficial uses, then agriculture would need to implement additional treatment and control of its discharge to reduce its impact on groundwater on these 4,680 acres or would need to reduce agricultural production on this land (i.e., fallow acreage). To this end, under this alternative, agricultural production in the project area would be somewhat reduced as compared to production within the proposed AGR irrigation supply de-designation boundary that would use a single EC groundwater quality threshold of 5,000 $\mu\text{S}/\text{cm}$ to de-designate all AGR beneficial uses. **MED**

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 (AGR 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 in the project area. **LOW**

AGR SSOs (AGR Alt 2): 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**

AGR De-designation – Separate Irrigation & Livestock Boundaries (AGR 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. 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**

Classes of AGR Uses (AGR 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**

AGR De-designation – Single 5,000 µS/cm EC Boundary (AGR Alt 5): 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 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**

AGR De-designation – Single 7,500 µS/cm EC Boundary (AGR Alt 6): 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 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**

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

No Action (AGR 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**

AGR SSOs (AGR Alt 2): 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**

AGR De-designation – Separate Irrigation & Livestock Boundaries (AGR 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. The implementation of separate irrigation supply and livestock watering boundaries would result in approximately 4,680 acres de-designated for the AGR irrigation supply beneficial use that are not de-designated for the AGR livestock watering beneficial use (see **Figure 12**). These 4,680 acres are located in the East Subarea and are situated on higher ground that would be able to support the construction and operation of new drainage facilities because these areas are less susceptible to flooding. If this acreage is not de-designated for the AGR livestock watering beneficial use, then agriculture would need to implement additional treatment and control of its discharge to reduce its impact on groundwater on these 4,680 acres or would need to reduce agricultural production on this land (i.e., fallow acreage). To this end, this alternative is considered to be somewhat less economically viable as compared to the alternative that would implement the proposed AGR irrigation supply de-designation boundary using single EC groundwater quality threshold of 5,000 $\mu\text{S}/\text{cm}$ to de-designate all AGR beneficial uses. **MED**

Classes of AGR Uses (AGR Alt 4): Under this alternative, agricultural discharges would not be allowed to cause or contribute to ambient groundwater quality exceeding a particular class of AGR use. Discharges causing or contributing to ambient conditions exceeding an AGR class 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**

AGR De-designation – Single 5,000 $\mu\text{S}/\text{cm}$ EC Boundary (AGR Alt 5): 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**

AGR De-designation – Single 7,500 $\mu\text{S}/\text{cm}$ EC Boundary (AGR Alt 6): 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.

The smaller horizontal surface area of the AGR livestock watering de-designation boundary, as compared to the AGR irrigation supply de-designation boundary, would result in approximately 4,680 fewer acres in the project area that are de-designated for AGR beneficial uses. These 4,680 acres are located in the East Subarea and are situated on higher ground that would be able to support the construction and operation of new drainage facilities because these areas are less susceptible to flooding. If this acreage is not de-designated for AGR beneficial uses,

then agriculture would need to implement additional treatment and control of its discharge to reduce its impact on groundwater on these 4,680 acres or would need to reduce agricultural production on this land (i.e., fallow acreage). To this end, this alternative is considered to be somewhat less economically viable as compared to the alternative that would implement the proposed AGR irrigation supply de-designation boundary using a single EC groundwater quality threshold of 5,000 $\mu\text{S}/\text{cm}$ to de-designate all AGR beneficial uses. **MED**

Criterion 7: Scientifically supported by existing data.

No Action (AGR Alt 1): Findings of the Beneficial Use Evaluation Report (BUER) show that groundwater quality, as measured by EC, within the proposed AGR irrigation supply and livestock watering de-designation boundaries exceeds 5,000 $\mu\text{S}/\text{cm}$ and therefore, exceeds the maximum EC limit of 5,000 $\mu\text{S}/\text{cm}$ for all classes of livestock recommended by the Canadian Council of Ministers for the Environment (CCME). Ambient EC levels greatly exceed 3,000 $\mu\text{S}/\text{cm}$, which is generally considered the EC threshold for use of water as an irrigation supply. Additionally, the BUER found that groundwater within the proposed AGR de-designation boundaries has not historically, is not currently, and is not anticipated to be used for irrigation supply or livestock watering in the future. Groundwater quality within the proposed AGR de-designation boundaries does not support AGR beneficial uses, and an action by the Central Valley Water Board to protect AGR beneficial uses is not scientifically supported by existing data. **LOW**

AGR SSOs (AGR Alt 2): The findings of the BUER show that groundwater quality, as measured by EC, within the proposed AGR irrigation supply and livestock watering de-designation boundaries exceeds 5,000 $\mu\text{S}/\text{cm}$ and therefore, exceeds the maximum EC limit of 5,000 $\mu\text{S}/\text{cm}$ for all classes of livestock watering recommended by the Canadian Council of Ministers for the Environment (CCME). Ambient EC levels greatly exceed 3,000 $\mu\text{S}/\text{cm}$, which is generally considered the EC threshold for use of water as an irrigation supply. Additionally, the BUER found that groundwater within the proposed AGR de-designation boundaries has not historically, is not currently, and is not anticipated to be used for irrigation supply or livestock watering in the future. Groundwater quality within the proposed AGR de-designation boundaries does not support AGR beneficial uses, and an action by the Central Valley Water Board to protect AGR beneficial uses through the establishment of SSOs is not scientifically supported by existing data. **LOW**

AGR De-designation – Separate Irrigation & Livestock Boundaries (AGR Alt 3): The findings of the BUER show that groundwater quality within the proposed AGR irrigation supply boundary exceeds 5,000 $\mu\text{S}/\text{cm}$ and groundwater quality within the proposed AGR livestock watering boundary exceeds 7,500 $\mu\text{S}/\text{cm}$, both of which exceed the maximum EC limit of 5,000 $\mu\text{S}/\text{cm}$ for all classes of livestock watering recommended by the Canadian Council of Ministers for the Environment (CCME). Additionally, the BUER found that groundwater within both proposed AGR de-designation boundaries has not historically, is not currently, and is not anticipated to be used for irrigation supply or livestock watering in the future. Groundwater quality within both proposed AGR de-designation boundaries does not support AGR beneficial uses, and an action by the Central Valley Water Board to de-designate AGR beneficial uses within both proposed AGR de-designation boundaries is scientifically supported by existing data. **HIGH**

Classes of AGR Uses (AGR Alt 4): The findings of the BUER show that groundwater quality, as measured by EC, within the proposed AGR irrigation supply and livestock watering de-designation boundaries exceeds 5,000 $\mu\text{S}/\text{cm}$ and therefore, exceeds the maximum EC limit of 5,000 $\mu\text{S}/\text{cm}$ for all classes of livestock watering recommended by the Canadian Council of Ministers for the Environment (CCME). Ambient EC levels greatly exceed 3,000 $\mu\text{S}/\text{cm}$, which is generally considered the EC threshold for use of water as an irrigation supply. Additionally, the BUER found that groundwater within the proposed AGR de-designation boundaries has not historically, is not currently, and is not anticipated to be used for irrigation supply or livestock

watering in the future. Groundwater quality within the proposed AGR de-designation boundaries does not support AGR beneficial uses, and an action by the Central Valley Water Board to protect AGR beneficial uses through the establishment of classes of AGR use is not scientifically supported by existing data. **LOW**

AGR De-designation – Single 5,000 µS/cm EC Boundary (AGR Alt 5): The findings of the BUER show that groundwater quality within the proposed AGR irrigation supply de-designation boundary exceeds 5,000 µS/cm and therefore, exceeds the maximum EC limit of 5,000 µS/cm for all classes of livestock watering recommended by the Canadian Council of Ministers for the Environment (CCME). Additionally, the BUER found that groundwater within the proposed AGR irrigation supply de-designation boundary has not historically, is not currently, and is not anticipated to be used for irrigation supply or livestock watering in the future. Groundwater quality within the proposed AGR irrigation supply de-designation boundary does not support AGR beneficial uses, and an action by the Central Valley Water Board to de-designate AGR beneficial uses within the proposed AGR irrigation supply de-designation boundary is scientifically supported by existing data. **HIGH**

AGR De-designation – Single 7,500 µS/cm EC Boundary (AGR Alt 6): The findings of the BUER show that groundwater quality within the proposed AGR livestock watering de-designation boundary exceeds 7,500 µS/cm and therefore, exceeds the maximum EC limit of 5,000 µS/cm for all classes of livestock watering recommended by the Canadian Council of Ministers for the Environment (CCME). Additionally, the BUER found that groundwater within the proposed AGR livestock watering de-designation boundary has not historically, is not currently, and is not anticipated to be used for irrigation supply or livestock watering in the future. Groundwater quality within the proposed AGR livestock watering de-designation boundary does not support AGR beneficial uses, and an action by the Central Valley Water Board to de-designate AGR beneficial uses within the proposed AGR livestock watering de-designation boundary is scientifically supported by existing data. **HIGH**

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

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

AGR SSOs (AGR Alt 2): Same response as given for C7. **LOW**

AGR De-designation – Separate Irrigation & Livestock Boundaries (AGR Alt 3): Same response as given for C7. **MED**

Classes of AGR Uses (AGR Alt 4): Same response as given for C7. **LOW**

AGR De-designation – Single 5,000 µS/cm EC Boundary (AGR Alt 5): Same response as given for C7. **HIGH**

AGR De-designation – Single 7,500 µS/cm EC Boundary (AGR Alt 6): Same response as given for C7. **MED**

Criterion 9: Ease of implementation.

No Action (AGR 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**

AGR SSOs (AGR Alt 2): 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**

AGR De-designation – Separate Irrigation & Livestock Boundaries (AGR Alt 3): Because this alternative would require the de-designation of two separate areas with distinct horizontal and vertical boundaries, it would require more effort by Central Valley Water Board staff than the de-designation of a single area. **MED**

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

AGR De-designation – Single 5,000 μ S/cm EC Boundary (AGR Alt 5): This alternative would require the least amount of effort by Central Valley Water Board staff to implement. **HIGH**

AGR De-designation – Single 7,500 μ S/cm EC Boundary (AGR Alt 6): This alternative would require the least amount of effort by Central Valley Water Board staff to implement. **HIGH**