**Priority 14: Provide water to enhance seasonal wetlands, permanent wetlands, and riparian habitat for aquatic and terrestrial species on State and Federal wildlife refuges and on other public and private lands**

**REV 2: Magnitude of ecosystem improvements**

What is the expected magnitude of the ecosystem improvement that will address this priority? Magnitude should be expressed as: a) the change from current conditions without the project to current conditions with the project, and b) the change from 2030 conditions without the project to 2030 conditions with the project. How did you estimate this value?

In 2030 conditions over a 50 year operating period, it is expected that the project would provide temporary wetland habitat to migratory birds for an average duration of approximately 1.5 months during years in which recharge activity occurs. This incidental benefit occurs whenever water is being recharged onto the project sites. The availability of temporary habitat was then determined by the availability of water supply for the project.

Additional locations in the application, supporting documentation or attachments (document name, page number, table number, other) where the magnitude of the ecosystem improvement is described and quantified.

See ‘IRWD_Priority14’ file under the Physical Public Benefits Tab, Ecosystem Benefits Section, Attachment 2.

**REV 3: Spatial and temporal scale of ecosystem improvements.**

What is the geographical extent (e.g. river miles, acres) of the ecosystem improvement that will address this priority?

The project would provide water to approximately 1,200 acres of recharge ponds located on two separate project sites. The temporary wetland area would be the area of the recharge ponds.

Additional locations in the application, supporting documentation or attachments (document name, page number, figure name or number, other) where the geographical extent of the ecosystem improvement is documented or mapped.

Location of the proposed project facilities that demonstrates the extent of the temporary wetland area is located in Feasibility and Implementation Risk Tab, Attachment 1 – Appendix A (Dee Jaspar & Associates Draft Concept Study, 2017).

When during the year will water be provided for seasonal wetlands, permanent wetlands, and riparian habitat? How are seasonal wetlands, permanent wetlands, and riparian habitat likely to vary with hydrologic conditions (i.e. among water year types) a) under current conditions with and without the project, and b) in 2030 with and without the project?

Water is estimated to be recharged on the project sites and will provide temporary wetland habitat during the winter months of wet, above normal and below normal water years when recharge activity occurs. Under 2030 conditions during wet years when recharge activity occurs, the project can be expected to provide approximately 1.44 months of temporary wetland habitat. Under these conditions during above normal years approximately 2 months of temporary habitat can be expected and during below normal years approximately 1 month of temporary habitat can be expected.

Additional locations in the application, supporting documentation or attachments (document name, page number, table number, other) where the timing of water releases for seasonal wetlands, permanent wetlands, or riparian habitat improvements are described and quantified.

See ‘IRWD_Priority14’ file under the Physical Public Benefits Tab, Ecosystem Benefits Section, Attachment 2.

**REV 4: Inclusion of an adaptive management and monitoring program that includes measurable objectives, performance measures, thresholds, and triggers to achieve ecosystem benefits.**

Provide additional information on how this ecosystem improvement will be incorporated into the adaptive management and monitoring program. If available, provide examples of objectives, performance measures, thresholds, or triggers that could be used to manage benefits associated with this priority.

IRWD and Rosedale will work with the CDFW to develop an adaptive management and monitoring program that meets the requirements of the program regulations. In order to measure performance of the public benefit provided by the project, IRWD and Rosedale intend to conduct bird surveys during the years in which recharge activity occurs. In addition, IRWD and Rosedale may coordinate monitoring programs with other local agencies near the project site that currently manage wetland habitats.

**REV 5: Immediacy of ecosystem improvement actions and realization of benefits**

Immediacy of ecosystem improvement: Number of months from grant encumbrance until the proposed ecosystem improvement is completed (i.e. the expected timeframe until the improvement is implemented or construction is completed).

The project will require approximately 3 years and 6 months for construction to be completed and is expected to be able to begin to store water by the year 2025. The year in which the unallocated Article 21 water is first delivered to the recharge ponds is dependent upon future hydrologies and cannot be predicted in advance.
Ecosystem Priorities Application Worksheet (August 2016)

<table>
<thead>
<tr>
<th>Additional locations in the application, supporting documentation or attachments (document name, page number, table number, other) where the immediacy timeframe is described and quantified.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project schedule is located in the Feasibility and Implementation Tab, Attachment 3.</td>
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<thead>
<tr>
<th>Realization of ecosystem improvement: Number of months from the time the ecosystem improvement is completed (i.e. project is implemented or construction is complete), until the benefit associated with this priority can be observed (i.e. when measurable improvements can be observed and quantified)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of the project is expected to be completed in 2025. Water will be recharged into the ponds as soon as unallocated Article 21 water supply becomes available for the project. The temporary wetland habitat will be available for migratory birds and other water fowl when water is recharged into the ponds.</td>
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<th>Additional locations in the application, supporting documentation or attachments (document name, page number, table number, other) where the realization timeframe is described and quantified.</th>
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</table>

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<tr>
<th>REV 6: Duration of ecosystem improvements</th>
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<tr>
<td>How long (number of years) after realization (as calculated under REV 5 above) is the ecosystem improvement expected to address this priority? Maximum is 100 years. Explain how this value was determined and whether the magnitude of the ecosystem improvement is anticipated to change over time.</td>
</tr>
<tr>
<td>After realization of this improvement, the project is expected to provide temporary wetland habitat to migratory birds whenever recharge activity occurs on the project sites. Over an 82 year simulation period using historical hydrology, the project was expected to have a total of 23 months of recharge under 2030 conditions. Using historical hydrology, it was determined that the project would have 1 to 3 months of temporary habitat during years in which recharge activity occurs depending on the year type. Duration of recharge was determined using the approximate area of recharge basins (1,200 acres), recharge rate of land (0.7 ft/day), and amount of water recharged per event.</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Additional locations in the application, supporting documentation or attachments (document name, page number, table number, other) where the duration of the ecosystem improvement is described and quantified.</th>
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<tbody>
<tr>
<td>See ‘IRWD_Priority14’ file under the Physical Public Benefits Tab, Ecosystem Benefits Section, Attachment 2.</td>
</tr>
</tbody>
</table>

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<tr>
<th>REV 7: Consistency with species recovery plans and strategies, initiatives, and conservation plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the ecosystem improvement meet any goals or objectives established in existing species recovery plans, initiatives, or conservation plans including but not limited to the NOAA Fisheries Recovery Plan for Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and Central Valley steelhead; State Wildlife Action Plan; Central Valley Joint Venture Implementation Plan, San Joaquin County Multi-Species Habitat Conservation Plan and Open Space Plan, Draft Solano Multi-Species Habitat Conservation Plan, East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan, Draft Recovery Plan for the Giant Garter Snake, and California Water Action Plan? If so which goals, objectives, or actions will be met? Why?</td>
</tr>
<tr>
<td>As identified in the Stockdale Integrated Banking Project Final EIR, the tricolored blackbird is considered to have a high potential to occur near the project site. The open water canals and agricultural fields on and near the proposed project sites can support the species. The tricolored blackbird is not a focal species in the Central Valley Joint Venture Implementation Plan however the Central Valley Joint Venture Implementation Plan states that it is a partner in the conservation of the tricolored blackbird species. In addition, the tricolored blackbirds are the focus of conservation efforts supported by partners of the Central Valley Joint Venture.</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Additional locations in the application, supporting documentation or attachments (page number, table number, other) where the consistency with goals, objectives, or actions from recovery plans, initiative, or conservation plans are discussed.</th>
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<tbody>
<tr>
<td>Further information can be found in the Environmental Setting section of the Stockdale Integrated Banking Project Final EIR. See link to Final EIR located in the Feasibility and Implementation Risk Tab, Attachment 4.</td>
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<tr>
<th>REV 8: Location of ecosystem improvements and connectivity to areas already being protected or managed for conservation values</th>
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<tbody>
<tr>
<td>Provide a map that shows the extent of the ecosystem improvement that will address this priority (e.g. river miles that meet the temperature benefits). Provide additional instructions or clarification to reviewers who will be viewing this map (i.e. describe the color and/or label that identifies the spatial extent of the ecosystem improvement). If available, also submit supporting electronic files such as a .kmz file or ArcGIS layer associated with the maps provided.</td>
</tr>
</tbody>
</table>
The temporary wetland habitat expected to be made available from the project will be within the recharge basins that will be constructed on two project sites, totally approximately 1,200 acres. A map showing the location of the proposed project sites is located in the *Feasibility and Implementation Risk Tab, Attachment 1* – Appendix A (Dee Jaspar & Associates Draft Concept Study, 2017).

**Rev 10: Resilience of ecosystem improvements to the effects of changing environmental conditions, including hydrologic variability and climate change.**

Which environmental uncertainties associated with this priority were considered in the project siting, design, and operation? How were these uncertainties incorporated into project siting, design, or operation? Examples of environmental uncertainties include, but are not limited to: sea level rise, temperature changes, changes in precipitation, landslides, erosion, earthquakes, wildfires, drought events, and flooding events.

The availability of temporary wetland habitat provided by the project is directly related to the amount of water recharged onto the project site. Therefore any uncertainty associated with providing this ecosystem improvement is a result of decrease in the project’s overall water supply. MBK Engineers performed uncertainty analyses related to potential climate change, the California Water Fix, and the project’s performance during drought. MBK Engineers determined that under 2070 climate change conditions the project’s average annual recharge is reduced by 400 AF. The availability of temporary habitat over fifty years of...
project operations then decreases by approximately 1 month. However with the California Water Fix, MBK determined the project’s average annual recharge increases by 5,500 AF thereby significantly increasing the availability of temporary habitat. See Feasibility and Implementation Risk Tab, Attachment 1 - Technical Feasibility (MBK Engineers, 2017 report).

<table>
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<tr>
<th>Additional locations in the application, supporting documentation or attachments (document name, page number, figure name or number, other) that describe and quantify the environmental uncertainties considered in the project siting, design, and operation.</th>
</tr>
</thead>
</table>

More information on uncertainty analyses performed for the project can be found in the Feasibility and Implementation Risk Tab, Attachment 1 - Technical Feasibility (MBK Engineers, 2017 report).