United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:

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MAY 08 2012

MEMORANDUM

To: Assistant Field Supervisor, Endangered Species
U.S. Fish and Wildlife Service

From: Alicia Forsythe
Program Manager
San Joaquin River Restoration Program

Alicia C Forsythe

Subject: Biological Assessment Addendum and Request for Consultation and Concurrence for Species Affected by the Implementation of the Stipulation of Settlement (Settlement) in *NRDC, et al. v. Rodgers, et al.*

We are submitting the attached Biological Assessment (BA) Addendum for the San Joaquin River Restoration Program (SJRRP) to provide additional information in response to your January 10, 2012, Interagency Memorandum requesting additional information related to the SJRRP BA, which was submitted to U.S. Fish and Wildlife Service (Service) on November 30, 2011. The Addendum was prepared pursuant to Section 7 of the Endangered Species Act (ESA) (16 U.S.C. §1536(c)). Authorization is provided in the San Joaquin River Restoration Settlement Act, included in Public Law 111-11.

The November 30, 2011, request for consultation provided to the Service included information on two levels of action: the program level and project level. The program-level (or first-tier) analysis included all actions identified in the Settlement including future actions. The project-level analysis included all flow-related actions including releases up to 4,500 cfs from Friant Dam. After discussions with the Service staff, it was determined that we would take a phased approach to the BA, asking only for concurrence and consultation on actions associated with flow releases at or below 1,660 cfs from Friant Dam. The remainder of the SJRRP actions, including site-specific channel improvement including construction projects and increases in flows from Friant Dam up to 4,500 cfs, would be included programmatically. Specific take coverage for these actions would be requested from the Service once additional information on these activities is known.

We are requesting concurrence with our determination that flow releases up to 1,660 cfs from Friant Dam, in association with the implementation of the SJRRP, would not likely have an adverse affect on the following species and habitats:

Species	Effects Determination	Critical Habitat Determination
Vernal pool plant species (succulent owl's clover, Hoover's spurge, hairy orcutt grass, Colusa grass)	Not likely to adversely affect	Will not destroy or adversely modify
Palmate-bracted bird's beak	Not likely to adversely affect	None designated or does not occur within Action Area
Vernal pool invertebrates (conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp)	Not likely to adversely affect	Will not destroy or adversely modify
Valley elderberry longhorn beetle	Not likely to adversely affect	None designated or does not occur within Action Area
California tiger salamander	Not likely to adversely affect	Will not destroy or adversely modify
Giant garter snake	Not likely to adversely affect	None designated or does not occur within Action Area
Western yellow-billed cuckoo	Not likely to adversely affect	None designated or does not occur within Action Area
Least Bell's vireo	Not likely to adversely affect	None designated or does not occur within Action Area
Fresno kangaroo rat	Not likely to adversely affect	Will not destroy or adversely modify
Riparian (San Joaquin Valley) woodrat	Not likely to adversely affect	None designated or does not occur within Action Area
Riparian brush rabbit	Not likely to adversely affect	None designated or does not occur within Action Area
San Joaquin kit fox	Not likely to adversely affect	None designated or does not occur within Action Area
Delta smelt	Not likely to adversely affect	None designated or does not occur within Action Area

We are also requesting consultation for potential adverse effects to the blunt-nosed leopard lizard. The Eastside and Mariposa bypasses provide low-quality and isolated patches of habitat, with few contemporary recorded occurrences of the species. We were unable to survey the entire Eastside and Mariposa bypasses for the species because of limited access to private property. At the request of the Service, we assumed the presence of blunt-nosed leopard lizard, because of the potential for suitable habitat (though limited) within the flood control system. In the BA for the Water Year 2012 Interim Flows Project and
in the Biological Opinion issued by the Service, it was determined that flows at or below 1,660 cfs from Friant Dam may effect and are likely to have an impact on the blunt-nosed leopard lizard. Because flows requested under this phased approach to consultation will occur at or below 1,660 cfs (until such time as channel capacities and subsequent flows can be increased), we are requesting a determination that the Proposed Action may effect and is likely to adversely affect the blunt-nosed leopard lizard in the Eastside and Mariposa bypasses.

Additionally, the Proposed Action includes implementing the Conservation Strategy for sensitive species and habitats that was developed in coordination with the Service, the National Marine Fisheries Service, and the California Department of Fish and Game. This strategy tool is built into the project description to minimize and avoid potential impacts on sensitive species and habitats.

Future consultation or concurrence will be requested, as appropriate, for future site-specific channel improvements and for flow increases above 1,660 cfs. When future habitat and species surveys occur, per direction provided in the Conservation Strategy, and sufficient data is provided to make adequate effects determinations, Reclamation will initiate consultation for these actions. We will continue to coordinate with the Service to determine effects to, avoidance or minimization of, and compensation for, listed species throughout implementation of the SJRRP.

Thank you for your continued assistance and feedback. If you have any questions, please contact Ms. Michelle Banonis, Natural Resources Specialist, at 916-978-5457 or mbanonis@usbr.gov.

Attachment

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RESPONSE AND ERRATA IN RESPONSE TO THE U.S. FISH AND WILDLIFE SERVICE'S (USFWS) JANUARY 10, 2012 INTERAGENCY MEMORANDUM REGARDING THE SAN JOAQUIN RIVER RESTORATION PROGRAM (SJRRP) PROGRAMMATIC BIOLOGICAL ASSESSMENT (BA)

In their January 10, 2012 Interagency Memorandum, USFWS provided comments and requested additional information related to the SJRRP BA. The comments are provided below along with Reclamation's response. In response to the USFWS concerns, Reclamation will be making additions and revisions to the SJRRP BA. These additions and revisions are included below in the form of a series or errata. These errata are intended to be utilized as a part of, and in conjunction with, the existing SJRRP BA distributed to USFWS in November 2011.

Critical habitat for listed species was not specifically identified as an issue by USFWS. Upon further review of the SJRRP BA by Reclamation, it appears that, where applicable and when habitats are located within the Action Area, all effects to critical habitat would result in no adverse modification. Therefore, no changes are proposed to the text.

On February 22, 2012, additional questions beyond those presented in the January 10, 2012 Interagency Memorandum were proposed to Reclamation related to Delta operations and potential effects to Delta smelt. This addendum addresses these comments at its conclusion.

USFWS Comment:
In Table 7-2, page 7-3 through 7-4, in Chapter 7 of the PBA, under the headings of Project Level Actions – Conclusions and Program-Level Actions – Conclusion, the determination of effects for all listed species is 'not likely to adversely affect'. This appears to contradict many of the effects for the Project and Program Level Actions given in Chapter 6 Effects, for these same species; e.g., California tiger salamander, blunt nosed-leopard lizard, valley elderberry longhorn beetle, etc.

The Service requests that you provide a clear, unambiguous effects determination for each of the listed species that the Program may affect, including ensuring consistency between Table 7-2 and the effects analysis presented in Chapter 6. If you determine that the Program, at both the Project and Program level of action, will have no effect on a listed species, then there is no need to include that species for effects analysis in the PBA. If you determine that the Program at either the Project and/or Program level may effect, but through implementation of avoidance and minimization measures will not adversely affect the species, and you predict that no take under the definition of the Act will likely occur, then you may request concurrence from the Service with that determination. If you determine that the Program at either the Project and/or Program level will likely result in take as defined by the Act, then a determination of many effect, likely to adversely affect is warranted.

Reclamation Response:
To assist in providing clarity to the effects determinations provided in the BA, the following analysis considers the effects of the project- and program-level actions. Based on conversations between Reclamation and USFWS in response to the January 10, 2012 letter, Reclamation

requests that Interim and Restoration flow release for Friant Dam of up to 1,660 cubic feet per second (cfs) and conveyance of these flows through the Restoration Area be consulted through a project-level analysis by USFWS. Until channel capacity is improved, flows within the Restoration Area cannot be increased beyond then-existing channel capacity. As channel capacity improvements are made, Interim and Restoration flow releases from Friant Dam may be increased, which would increase the overall flows within the Restoration Area. As improvements are made to increase channel capacity and as project-level Conservation Plan actions are implemented, Reclamation will re-consult to increase flows up to the full flow releases called for in the Settlement. The Program Implementation Plan, which is currently being coordinated through the Settling Parties, will assist in guiding the appropriate time for re-consultation related to increases in flows.

Channel capacity improvement projects and the specific projects called for in Paragraph 11(a) and 11(b) of the Settlement, which include improvements to Reach 2B, Reach 4B, the Eastside Bypass, and the Mariposa Bypass would each have their own specific site-specific or project-level Endangered Species Act (ESA) consultation in a future BA. This future consultation will address the construction-related actions of these improvement projects on the landscape. These construction actions would increase the channel capacities to 4,500 cfs.

The SJRRP's changes in inflows in the Delta and the recapture of the Interim and Restoration flows in the Delta will continue to be consulted on through a project-level analysis because SJRRP flows entering and recaptured in the Delta are known at this time and thus, the effects on species can be determined at this time.

The following discussion provides a list of USFWS ESA listed species and their effects. Table 1 provides a summary of the species and critical habitat determinations:

Table 1: Summary of Effects to Species from Implementation of the SJRRP

Species	SJRRP Releases up to 1,660 cfs from Friant Dam	SJRRP Releases up to 4,500 cfs from Friant Dam	Critical Habitat
Vernal Pool Plant Species (succulent owl's clover, Hoover's spurge, hairy orcutt grass, Colusa grass)	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Palmate-bracted bird's-beak	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Vernal pool invertebrates (conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp)	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Valley elderberry longhorn beetle	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text

Table 1: Summary of Effects to Species from Implementation of the SJRRP

Species	SJRRP Releases up to 1,660 cfs from Friant Dam	SJRRP Releases up to 4,500 cfs from Friant Dam	Critical Habitat
California Tiger Salamander	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Blunt-nosed leopard lizard	Likely to adversely affect	Future analysis required	Unknown effects related to modification of critical habitat – future analysis required
Giant garter snake	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Western yellow-billed cuckoo	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Least Bell's vireo	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Fresno kangaroo rat	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Riparian (San Joaquin Valley) Woodrat	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
Riparian brush rabbit	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text
San Joaquin kit fox	Not likely to adversely affect	Future analysis required	N/A – No change proposed from SJRRP BA text

Vernal Pool Plant Species

The BA assesses the following vernal pool plant species: Succulent owl's clover, Hoover's spurge, Colusa grass, San Joaquin Valley Orcutt grass, and Hairy Orcutt grass. These vernal pool plant species are adapted to ephemeral wetland habitats and require the specific type of hydrologic regime found in vernal pools to successfully complete their life cycles. Vernal pool hydrology is characterized by unique patterns of filling and drying that do not occur in riverine wetlands or wetlands that are permanently inundated or saturated. Vernal pools are filled primarily through direct precipitation during winter and dry as a result of evaporation during spring and early summer. These hydrologic requirements do not occur in river channels that are typically flooded longer than vernal pools and convey high-velocity flows for a portion of the season. Flows in the San Joaquin River downstream from Friant Dam have historically been managed to convey flows much later into spring and summer than ephemeral wetland habitats that support vernal pool plant species. Because plants endemic to vernal pools are not adapted to riverine habitats that are periodically flooded in summer and convey high-velocity flows, vernal pool plant species are not expected to be present within areas with perennial, or summer flows.

Therefore, ***SJRRP flow releases from Friant Dam at or below 1,660 cfs are not likely to adversely affect vernal pool plant species.***

Interim and Restoration flow releases in excess of 1,660 cfs from Friant Dam would require channel capacity improvements in order to route increased flow amounts through the Restoration Area. Therefore, in association with these and other future site specific actions, such as the Mendota Pool Bypass and Reach 2B Channel Improvements Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvements Project, additional biological and environmental effects would be considered through the preparation and distribution of site-specific BAs. These BAs would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested from USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate the avoidance of vernal pool habitats. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until surveys can be conducted in locations where construction activities would occur, ***potential effects to vernal pool plant species related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to vernal pool species and provide minimization or compensation as appropriate.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid vernal pool habitats. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on vernal pool species and habitats, ***potential effects to vernal pool species and habitats related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to vernal pool species and provide minimization or compensation as appropriate

Palmate-Bracted Bird's-Beak

The species account of palmate-bracted bird's-beak listed in the BA states that the species is typically found in alkaline soils in chenopod scrub and valley and foothill grassland habitat, primarily at the edges of channels, with individuals scattered in seasonally wet depressions, alkali scalds, and grassy areas (USFWS 1998a, cited in McBain and Trush 2002). Further,

palmate-bracted bird's-beak has been documented near but not within the Restoration Area, including the Alkali Sink Ecological Area and Mendota Wildlife Area approximately 4 miles sourth of Reach 2A, and between the San Joaquin River and the Chowchilla Bypass near Reach 3.

SJRRP Interim and Restoration Flow releases over 1,660 cfs out of Friant Dam could affect the species if it was discovered to be present. However, flows under 1,660 cfs would be conveyed within existing channels or in areas that are currently subject to periodic flooding. Additionally, the species is unlikely to be present on alluvial soils in areas that are seasonally inundated or periodically inundated by flood flows along the San Joaquin River. Some suitable habitat could be present along the Eastside Bypass. However, through active management to reduce impacts from potential groundwater increases to adjacent property, the SJRRP would continue to monitor and adapt flows in real-time to avoid seepage impacts that could effect neighboring properties and, as a result, palmate-bracted bird's-beak. Therefore, ***for SJRRP flow releases at or below 1,660 cfs from Friant Dam, the project is not likely to adversely affect palmate-bracted bird's beak***. As stated in the Conservation Strategy (Table 3-4), as construction projects to increase channel capacity are implemented, the SJRRP will undertake appropriate measures to avoid, minimize, or compensate for potential impacts. However, until appropriate surveys are completed as called for in the Conservation Strategy prior to construction actions, the presence of, absence of, or effects to palmate-bracted bird's-beak are generally unknown. Therefore, the ***potential effects to palmate-bracted bird's beak related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to facilitate the avoid palmate-bracted bird's beak. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on vernal pool species and habitats, ***potential effects to palmate-bracted bird's beak related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to palmate-bracted bird's beak and provide minimization or compensation as appropriate.

Vernal Pool Invertebrates (Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, and Vernal Pool Tadpole Shrimp)

Four Federally listed vernal pool invertebrates, Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp, could be present within the Restoration Area, outside existing banks and levees. Vernal pools are unlikely to be within the bypasses or the channels because these areas do not have the seasonal wetland components needed for their subsistence. SJRRP flow releases from Friant Dam at or below 1,660 cfs would be conveyed within the existing river and bypass channels and would not extend to lands outside existing levees. The Proposed Action also includes seepage monitoring and management that would also prevent potential seepage-related effects on vernal pools and listed invertebrates outside of the channels or bypass levees. Therefore, ***SJRRP flows at or below 1,660 cfs out of Friant Dam are not likely to adversely affect Federally-listed vernal pool invertebrates.***

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate the avoidance of vernal pool habitats. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until appropriate surveys are completed as called for in the Conservation Strategy prior to construction actions, the presence of, absence of, or effects to vernal pool invertebrates are generally unknown. Therefore, the ***potential effects to vernal pool invertebrates related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid vernal pool invertebrates. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the

impacts of increased flows on vernal pool species and habitats, ***potential effects to vernal pool invertebrates related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to vernal pool invertebrates and provide minimization or compensation as appropriate.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle is endemic to the Central Valley and is found only in association with its sole host plant, the elderberry shrub (*Sambucus* spp.), which is found primarily in riparian vegetation. These plants are typically located on the higher portions of levees and streambanks, which are not subject to inundation or scouring. For flow releases of 1,660 cfs or less from Friant Dam, elderberry shrubs are not expected to be affected. It is anticipated that there will be no effect on valley elderberry longhorn beetle because (1) most habitat for the species is outside the area that would be inundated by these low flows; and, (2) the proposed flows would not be of sufficient magnitude to result in scouring or deposition of sediment that could damage elderberry shrubs potentially containing valley elderberry longhorn beetle larvae or pupae. Therefore, ***for SJRRP flow releases at or below 1,660 cfs from Friant Dam, the proposed action is not likely to adversely affect valley elderberry longhorn beetle.***

In order to achieve adequate channel capacity of 4,500 cfs in the Restoration Area in order to accommodate higher flows, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate the avoidance of valley elderberry longhorn beetle. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. Elderberry surveys have been conducted on accessible properties within Reach 2B. Access for surveys will continue to be sought for site-specific actions and data will be collected in order to make more accurate effect determinations. While elderberry shrubs may be impacted through potential localized inundation from flow releases up to 4,500 cfs from Friant Dam or from construction activities, it is also assumed that elderberry shrubs and as a result, valley elderberry longhorn beetle, will be beneficially effected by the SJRRP in the long-term. SJRRP flows would provide flow reliability in and around the river channel and would also promote riparian growth and recruitment. Therefore, this would likely increase habitat for valley elderberry longhorn beetle and improve overall conditions for the species along the San Joaquin River. However, until species specific surveys can be conducted, it is assumed that the ***potential effects to valley elderberry longhorn beetle related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to implement the Conservation Strategy

and work with USFWS on these future actions in order to consult for potential effects to vernal pool species and provide minimization or compensation as appropriate.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid valley elderberry longhorn beetle. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on vernal pool species and habitats, ***potential effects to valley elderberry longhorn beetle related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to valley elderberry longhorn beetle and provide minimization or compensation as appropriate.

California Tiger Salamander

California tiger salamanders require vernal pools, ponds, or semipermanent calm waters (where ponded water is present for a minimum of 3-4 months) for breeding and larval maturation. It also requires adjacent upland areas that contain small mammal burrows or other suitable refugia for aestivation. Portions of the areas alongside the Eastside and Mariposa bypasses within the Action Area were created in uplands that contain vernal pool habitat. Today, the areas surrounding the bypasses still contain many vernal pool areas, but vernal pools are not part of the bypass channels. California tiger salamander is not expected to be present within existing riparian areas or stream corridors. The release of flows from Friant Dam at or below 1,660 cfs would avoid inundating any potential existing vernal pools and other floodplain habitat that could contain seasonal wetlands (i.e., the upland areas surrounding the bypasses). As such, flows would not have an effect on aquatic habitat for California tiger salamander. These flows would also not have an adverse effect on upland habitat for California tiger salamander. Therefore, ***SJRRP for flow releases at or below 1,660 cfs from Friant Dam, the proposed action not likely to adversely effect California tiger salamander.***

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would again be

requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate the avoidance of effects to California tiger salamander. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until appropriate surveys are completed as called for in the Conservation Strategy prior to construction actions, the presence of, absence of, or effects to California tiger salamander are generally unknown. Therefore, the ***potential effects to California tiger salamander related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid California tiger salamander. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on valley elderberry longhorn beetle, ***potential effects to California tiger salamander related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to California tiger salamander and provide minimization or compensation as appropriate.

Blunt-Nosed Leopard Lizard

Blunt-nosed leopard lizards are typically associated with alkali scrub or sparsely vegetated habitats with sandy soils. They typically use the burrows of small rodents for shelter, predator avoidance, and behavioral thermoregulation. They are not expected to be found in typical riparian or riverine habitats, but could be found in portions of the Eastside and Mariposa bypasses. These bypasses cut through habitat that could provide suitable habitat for blunt-nosed leopard lizard.

USFWS prepared a Biological Opinion (BO) for Water Year 2012 Interim Flows (see attached September 30, 2011 Memorandum from Susan Moore to Alicia Forsythe), which was part of a consultation requested by Reclamation for flow releases up to 1,660 cfs from Friant Dam. The BO was specific to effects related to blunt-nosed leopard lizard. The conclusions of the BA state that the Eastside and Mariposa bypasses provide low-quality and isolated patches of habitat, with few contemporary recorded occurrences of the species. Therefore, USFWS made the determination that for flows at or below 1,660 cfs from Friant Dam, the proposed action would

not jeopardize the continued existence of blunt-nosed leopard lizard. Additionally, USFWS provided an incidental take allowance for the species, with specific terms and conditions including the continued implementation of the SJRRP's monitoring of seepage, control of invasive plant species, and post-water year reporting requirements. For actions associated with the implementation of actions proposed in the Program BA for the SJRRP, Reclamation anticipates similar effects to blunt-nosed leopard lizard for flows at or below a 1,660 cfs release from Friant Dam in the Eastside and Mariposa bypasses. Therefore, the implementation of ***SJRRP flow releases up to 1,660 cfs from Friant Dam may effect and are likely to adversely affect blunt-nosed leopard lizard***.

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate surveys and subsequent avoidance of blunt-nosed leopard lizards. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until appropriate surveys are completed as called for in the Conservation Strategy prior to construction actions, the presence or absence of blunt-nosed leopard lizard is generally unknown on upland areas adjacent to the bypasses. Therefore, the ***potential effects to blunt-nosed leopard lizard related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid blunt-nosed leopard lizard. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on blunt-nosed leopard lizard, ***potential effects to blunt-nosed leopard lizard related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will

continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to blunt-nosed leopard lizard and provide minimization or compensation as appropriate.

Giant Garter Snake

Giant garter snakes inhabit sloughs, low-gradient streams, marshes, ponds, agricultural wetlands (e.g., rice fields), irrigation canals, drainage ditches, and adjacent upland areas. The SJRRP Restoration Area is located within the San Joaquin Valley Recovery Unit, as described in the draft recovery plan for the species. It is possible that the giant garter snake may occur in suitable habitat within the Action Area, especially in slow water habitats, such as Mendota Pool. While it generally avoids large, wide stretches of rivers, it may occur in portions of the San Joaquin River that could be inundated by flow releases. For flow releases at or below 1,660 cfs from Friant Dam, there is a potential for an increase of volume and availability of water in the river channel between early spring and midsummer, which is the active period for giant garter snake. Because the giant garter snake requires aquatic habitat for breeding and foraging during spring and summer, the presence of additional flows during these seasons may have a beneficial effect on this species by increasing the availability and reliability of aquatic habitats. Flows up to 1,660 cfs would be restricted to the existing river channel and immediate low floodplain habitat. Therefore, these flows would not inundate the giant garter snake's upland habitat. Overall, for flows releases at or below 1,660 cfs from Friant Dam, the proposed action is likely to have a net beneficial effect to giant garter snake by increasing the availability of aquatic habitat and flows will not inundate the snake's upland territory. As a result, ***SJRRP flows up to 1,660 cfs from Friant Dam are not likely to adversely affect giant garter snake***.

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate surveys, where beneficial, and subsequent avoidance of giant garter snake. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until appropriate surveys are completed or presence/absence determinations are made as called for in the Conservation Strategy prior to construction actions, the presence of, absence of, or effects to the giant garter snake are generally unknown. Therefore, the ***potential effects to giant garter snake related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid giant garter snake. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on giant garter snake, ***potential effects to giant garter snake related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to giant garter snake and provide minimization or compensation as appropriate.

Western Yellow-Billed Cuckoo

Western yellow-billed cuckoo nest sites are typically associated with large and wide patches of riparian habitat, composed primarily of mature cottonwoods and willows. Some birds have been observed nesting in orchards adjacent to riparian habitat. Because western yellow-billed cuckoo prefer nest sites with low total ground cover, moderately high canopy closure, and near water, there are some locations adjacent to the Restoration Area where they have the potential to occur. The nests of the species would be expected to be above the waterline of flow releases at or below 1,660 cfs from Friant Dam during the breeding season, from mid-June through mid-August, but the highest flows from the SJRRP will be from February through May. This would mean that flows would be increased prior to the nesting season for cuckoo and would not result in an effect to the species. The potential could exist for increased flows to inundate nest sites if they are established before releases, however, this is unlikely based on the normal flow hydrographs from the program. These areas currently experience periodic flooding during spring, and flows releases at or below 1,660 cfs would generally be their highest by March 16th, based on the Settlement hydrographs, before the nesting season of the western yellow-billed cuckoo. Therefore, ***SJRRP flow releases at or below 1,660 cfs from Friant Dam are not likely to adversely affect western yellow-billed cuckoo.***

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), an effort will be made in project planning to avoid and

minimize loss of riparian habitat that could be utilized by western yellow-billed cuckoo as well as implementing avoidance and minimization measures for birds protected by the Migratory Bird Treaty Act. Further, an additional section has been added to the Conservation Strategy, as indicated below, that includes separate protection measures for western yellow-billed cuckoo. Additionally, Reclamation will include specific survey and monitoring methodology in the Conservation Strategy for western yellow-billed cuckoo in the Final SJRRP PEIS/R, which will be included as part of the project description. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for the loss of potential habitat. However, until appropriate riparian surveys are completed as called for in the Conservation Strategy prior to construction actions, effects to the western yellow-billed cuckoo are generally unknown. Therefore, the ***potential effects to western yellow-billed cuckoo related to construction projects will be unknown until riparian habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid western yellow-billed cuckoo. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on western yellow-billed cuckoo, ***potential effects to western yellow-billed cuckoo related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to western yellow-billed cuckoo and provide minimization or compensation as appropriate.

	Table 3-4. Conservation Measures for Biological Resources that may be affected by SJRRP Actions		
Conservation Measure and Identifier	**Description**	**Program or Project-Level Action**	**Regulatory Agency**
RNB	Riparian Nesting Birds: Western Yellow-Billed Cuckoo and Least Bell's Vireo		
RNB-1. Avoid effects to species for implementation of the SJRRP	a. If western yellow-billed cuckoo or least Bell's vireo are anticipated within a project area, a qualified biologist shall make an initial site visit to determine if suitable habitat for the species may exist within the project footprint. b. Where suitable habitat may be present, reconnaissance-level surveys would be conducted by biologists adhering to guidance offered in Haltermann et al, May 2009, Wester Yellow-billed Cuckoo Natural History Summary and Survey Methodology; and Least Bell's Vireo Survey Guidelines, USFWS, January 19, 2001.	Project & Program	USFWS DFG
RNB-2. Avoid, minimize and compensate for effects to species for implementation of the SJRRP	a. If western yellow-billed cuckoo or least Bell's vireo are detected or suspected to be present in the project footprint, information would be collected according to the guidelines stated in RNB-1(b). USFWS and DFG would be contacted to determine the approach for avoidance, minimization, or compensation.	Project & Program	Lead Agency

Least Bell's Vireo

Least Bell's vireo is a neotropical migrant species that nests from mid- to late-March through September in dense, low, shrubby vegetation (generally early successional stages in riparian areas), particularly cottonwood-willow forest but also brushy fields, young second-growth forest or woodland, scrub, oak, coastal chaparral, and mesquite brushlands, and often near water in arid regions. Their nests are typically built as low as 1 foot from ground level. In 1980, the species was determined to be extirpated from the entire Central Valley. In 2005 and 2006, least Bell's vireo successfully nested at the San Joaquin River National Wildlife Refuge and the species' range is currently expanding northward. SJRRP flow releases of up to 1,660 cfs from Friant Dam down the San Joaquin River would have negligible effects on water levels downstream of the Merced River confluence, and thus, a negligible effect on riparian habitat that could be utilized by least Bell's vireo. The nests of the species would be expected to be above the waterline of flow releases at or below 1,660 cfs from Friant Dam during the breeding season, from early April through late September, but the highest flows from the SJRRP will be from February through May. This would mean that flows would be increased prior to the nesting season for cuckoo and would not result in an effect to the species. The potential could exist for increased flows to inundate nest sites if they are established before releases, however, this is unlikely based on the normal flow hydrographs from the program. These areas currently experience periodic flooding during spring, and flows releases at or below 1,660 cfs would generally be their highest by March 16th, based on the Settlement hydrographs, before the nesting season of the least Bell's vireo. Therefore***, SJRRP flow releases at or below 1,660 cfs from Friant Dam are not likely to adversely affect least Bell's vireo.***

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to avoid and minimize loss of riparian habitat that could be utilized by least Bell's vireo as well as implementing avoidance and minimization measures for birds protected by the Migratory Bird Treaty Act. Further, an additional section has been added to the Conservation Strategy, as indicated above for western yellow-billed cuckoo, that includes separate protection measures for least Bell's vireo. Additionally, Reclamation will include specific survey and monitoring methodology in the Conservation Strategy for western yellow-billed cuckoo in the Final SJRRP PEIS/R, which will be included as part of the project description. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for the loss of potential habitat. However, until appropriate riparian surveys are completed as called for in the Conservation Strategy prior to construction actions, effects to the least Bell's vireo are generally unknown. Therefore, the ***potential effects to least Bell's vireo related to construction projects will be unknown until riparian habitat surveys are performed in the site-specific project areas,***

as defined in the Conservation Strategy. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid least Bell's vireo. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on least Bell's vireo, ***potential effects to least Bell's vireo related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to least Bell's vireo and provide minimization or compensation as appropriate.

Fresno Kangaroo Rat

Fresno kangaroo rat specifically occupies alkali desert scrub vegetation at elevations of 200-300 feet. The species is believed to exist in a small area in western Fresno County at the Alkali Sink Ecological Reserve and Mendota Wildlife Area however, some experts have considered the species to be extirpated from along the San Joaquin River (McBain and Trush 2002). Extensive trapping since 1993 in Fresno and Merced counties have not found any evidence of live Fresno kangaroo rats. Additionally, Fresno kangaroo rats do not occupy riparian areas and would not be expected to regularly disperse across a river channel, mainly due to the small size of their home range. Suitable upland habitat and occupied burrows may be located adjacent to San Joaquin River; however, Fresno kangaroo rats would not be affected by any SJRRP flows released from Friant Dam up to 1,660 cfs because these flows would be confined to the existing river channel and the lower floodplain surfaces. Therefore, ***SJRRP flow releases at or below 1,660 cfs from Friant Dam are not likely to adversely affect Fresno kangaroo rat.***

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to

facilitate surveys and subsequent avoidance of the Fresno kangaroo rat. While there is only a remote possibility that the species may be present within site-specific project areas and take of the species or its habitat is not anticipated, if avoidance is not feasible, Reclamation will work with USFWS to develop appropriate measures to work through this issue. Until appropriate surveys are completed as called for in the Conservation Strategy prior to construction actions, the presence or absence of Fresno kangaroo rat is generally unknown on upland areas adjacent to the SJRRP. Therefore, the ***potential effects to Fresno kangaroo rat related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid Fresno kangaroo rat. Until the appropriate analysis can occur in order to assess the impacts of increased flows on Fresno kangaroo rat, ***potential effects to Fresno kangaroo rat related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to Fresno kangaroo rat.

Riparian (San Joaquin Valley) Woodrat

The San Joaquin Valley Woodrat is most abundant in areas with deciduous valley oaks, some live oaks, and dense shrub cover. In riparian areas, the highest densities of woodrats and their houses are typically in willow thickets with an oak overstory. The species builds stick houses in dense riparian vegetation at the base of trees or in tree cavities and canopies. There are no documented California Natural Diversity Database occurrences of the San Joaquin Valley woodrat in or near the Restoration Area, but could be located downstream. The only verified extant population of this species is located on the Stanislaus River at Caswell Memorial State Park. Implementing SJRRP Interim and Restoration flow releases, up to 4,500 cfs, from Friant Dam would have negligible effects on water surface elevations below the confluence of the Merced River. Further, because the timing of increased flows would be similar to historical flood flows and confined to the existing river channel, existing vegetation would not be affected below the confluence of the Merced River. Therefore, ***for project level actions, including SJRRP flow releases from Friant Dam of up to 4,500 cfs, the Proposed Action is not likely to adversely affect San Joaquin Valley woodrat***.

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside

Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate the avoidance of effects to San Joaquin Valley woodrat. While it is unlikely to occur within the Restoration Area, if presence of the species is determined and avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until appropriate surveys are completed as called for in the Conservation Strategy prior to construction actions, the presence of, absence of, or effects to San Joaquin Valley woodrat are generally unknown. Therefore, the ***potential effects to San Joaquin Valley woodrat related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

Riparian Brush Rabbit

Habitat for riparian brush rabbit consists of riparian forests with a dense understory shrub layer. The species is currently restricted to several populations at Caswell Memorial State Park, along Paradise Cut in the southern part of the Delta, and a recent reintroduction on private lands adjacent to the San Joaquin River National Wildlife Refuge. Riparian brush rabbits are not expected to occur upstream from the confluence of the Merced River. Implementing SJRRP Interim and Restoration flow releases, up to 4,500 cfs, from Friant Dam would have negligible effects on water surface elevations below the confluence of the Merced River. Further, because the timing of increased flows would be similar to historical flood flows and confined to the existing river channel, existing vegetation would not be affected below the confluence of the Merced River. Therefore, ***for project-level actions, including SJRRP flow releases from Friant Dam of up to 4,500 cfs, the Proposed Action is not likely to adversely affect riparian brush rabbit***. Additionally, because riparian brush rabbit is known only to occur in limited areas downstream near the San Joaquin River National Wildlife Refuge and is unlikely to occur in the Restoration Area, ***program-level actions are not likely to adversely affect riparian brush rabbit.***

San Joaquin Kit Fox

The San Joaquin kit fox occurs in seasonal wetland, alkali desert scrub, grassland, and valley-foothill hardwood vegetation. Optimum habitat for kit fox consists of a variety of open, level areas with loose-textured soil, scattered shrubby vegetation, and little human disturbance. The species is likely to be present within the Restoration Area. Because the species prefers open scrub habitats, it would not be typically associated with riverine habitats such as the San Joaquin River and would not be expected to occur within the confines of the river channel. Occupied kit fox dens may be located near the river, but they would not be affected by the release of flows up to 1,660 cfs from Friant Dam as they would be confined to the river channel and the associated low floodplain. Floodplain and riverine areas are not suitable for San Joaquin kit fox denning.

Additionally, kit fox would not be inclined to traverse aquatic features except by existing road crossings. ***SJRRP flow releases from Friant Dam up to 1,660 cfs would not inundate San Joaquin kit fox dens or restrict their movement, and therefore, are not likely to adversely affect the species.***

In order to increase channel capacities to allow flows up to 4,500 cfs down the entire length of the San Joaquin River, significant construction projects need to occur associated with the Mendota Pool Bypass and Reach 2B Channel Improvement Project and the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvement Project. Therefore, in association with these and other future site specific actions, additional biological and environmental effects would be considered through the preparation and distribution of a site-specific BA. This BA would include necessary information related to modifications made within the site-specific project area, including amount of grading, timing of construction, amount of habitat affected, mitigation measures, and other critical components. For these activities, consultation would be again be requested of USFWS. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in project planning to facilitate surveys and subsequent avoidance of San Joaquin kit fox habitat and dens. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential denning habitat. However, until appropriate surveys are completed as called for in the Conservation Strategy prior to construction actions, the presence or absence of San Joaquin kit fox dens or is generally unknown. Therefore, the ***potential effects to San Joaquin kit fox related to construction projects will be unknown until species and habitat surveys are performed in the site-specific project areas, as defined in the Conservation Strategy***. Reclamation will continue to coordinate with USFWS accordingly to determine effects to, avoidance or minimization of, and compensation for listed species as site-specific channel improvement projects are planned and implemented.

The intent of the site-specific channel capacity improvements is to be able to route flows up to the amounts presented in the Settlement hydrographs. This includes flows up to 4,500 cfs from Friant Dam. At this time, the parties to the Settlement are developing a revised program schedule in order to assess, among other Settlement schedule items, under what conditions and in what quantities Reclamation will increase flows. In order to properly address these flow increases, Reclamation would need to present the effects to species under USFWS jurisdiction related to those flow increases and request consultation. As stated in the Conservation Strategy, located within the Project Description in the SJRRP BA (Table 3-4), a reasonable effort will be made in the release of flows over 1,660 cfs to avoid San Joaquin kit fox. If avoidance is not feasible, Reclamation would work to minimize and then provide compensation for any loss of potential habitat. However, until the appropriate analysis can occur in order to assess the impacts of increased flows on San Joaquin kit fox, ***potential effects to San Joaquin kit fox related to full SJRRP Restoration Flows will be unknown until species and habitat surveys are performed, as defined in the Conservation Strategy.*** Reclamation will continue to implement the Conservation Strategy and work with USFWS on these future actions in order to consult for potential effects to San Joaquin kit fox and provide minimization or compensation as appropriate.

Delta Smelt
The following questions and comments were received from USFWS's Bay Delta Office via e-mail communication on February 22, 2012:

USFWS Comment (Delta Smelt – 1):
P. 3.7 to 3-9/ (sic) Please clarify which water year types the 500T (sic) AF amount water transfer would occur, our office would have assumed that the 500T (sic) AF water transfer may have taken place during a 'dry' water year.

Reclamation Response:
When performing analysis on the potential effects of the Proposed Action, Reclamation proceeded with calculating the maximum SJRRP flows that could be available in a Wet water year type. A Wet water year type, as defined in the BA in *Figure 3-3. Restoration Flows Schedules Specified in Exhibit B of Settlement*, has occurred in approximately 20 percent of years for the hydrologic record from 1922 to 2005. *Table 3-1. Estimated Maximum Water Available for Transfer Under the Proposed Action* estimates that the total amount eligible for recapture and subsequently the total volume available for recirculation would be 623 thousand acre-feet (TAF) in a Wet year type. In other year types with less forecasted inflow to Friant Dam, the amount available for recapture and recirculation would be proportionately reduced. Table 2 outlines the maximum amounts of SJRRP flows available for recapture and recirculation in the various year types, as defined in the Settlement.

Table 2: Maximum SJRRP Flows Recaptured for Non-Wet Year Types

Restoration Year Type	Maximum Total Volume Recaptured and Available for Recirculation (TAF)[1]
Wet	623
Normal-Wet	404
Normal-Dry	285
Dry	214
Critical-High	90
Critical-Low	12

1. Includes potential releases for buffer flows and for additional releases pursuant to Paragraph 13(c) of the Settlement, minus seepage.

USFWS Comment (Delta Smelt – 2):
P. 3-62: Avoid/Minimize table: Delta smelt work window Aug 1 – Nov 30 is an avoidance and minimization measure. However the measure regarding 'avoid areas with established aquatic vegetation' is outdated information from the USACE-FWS delta smelt programmatic BO. Can BOR provide avoidance/minimization measures for other possible effects to delta smelt, particularly regarding possible entrainment as stated throughout the document (i.e. pages. (sic) 6-15 South Delta paragraph, 7-1 Conclusion) (sic)

Reclamation Response:
Table 3-4. Conservation Measures for Biological Resources That May Be Affected by Settlement Actions is a conservation strategy that was developed in coordination with regulatory SJRRP Implementing Agencies, including USFWS, National Marine Fisheries Service (NMFS), California Department of Fish and Game (DFG), and the California Department of Water

Resources. The approach for the document is to provide measures to be part of the project description associated with the implementation of all Settlement actions in order to avoid and minimize effects prior to discussing potential options for unavoidable effects or compensation. Reclamation recognizes that science will progress as the program moves forward and that new information could lead to revisions in strategy. Therefore, the language stated "avoid areas with established aquatic vegetation" is stricken from Table 3-4 in the BA and will also be stricken from Table 3-5 in the upcoming Final Program Environmental Impact Statement/Report.

Page 6-15 of the BA relates to a discussion on Central Valley steelhead. Effects to delta smelt are discussed on pages 6-25 through 6-30. This analysis states that delta smelt that currently spawn in the vicinity of the lower San Joaquin River are most at risk of being drawn into the south Delta by reverse flows. During their larval and juvenile periods, they are at risk of entrainment at the export pumps. Under the Proposed Action, increased San Joaquin River flows would more rapidly transport copepods produced in the south and central Delta downstream to delta smelt foraging areas in Suisun Bay and the lower Delta. Additionally, this would also have the potential to reduce the turbidity in the south Delta. Because delta smelt are visual feeders, this may reduce the feeding rate of the species and cause them to move to more appropriate habitat. In combination with the flow regime into the south Delta as a result of the Proposed Action, this would lower the occurrence of delta smelt in the location near the pumps, which is generally considered poor habitat due to the risk of entrainment, high water temperatures, and increased predation. The reduction in the occurrence of delta smelt in the south Delta and their migration to more suitable foraging areas in Suisun Bay and the lower Delta may serve as a beneficial effect to the species. Further, their reduction in the area around the export pumps may serve to reduce their overall risk of entrainment. Because of this reduction in risk and potential benefit to delta smelt, additional measures beyond adherence to existing biological opinions for operations of the Central Valley Project and State Water Project are not proposed.

USFWS Comment (Delta Smelt – 3):
P. 6-15: South Delta paragraph; mentions 'smolts' would experience increase in predation and entrainment. Can BOR include an analysis for whether there would be a similar effect to delta smelt?

Reclamation Response:
See response to USFWS Comment (Delta Smelt-2) above. Because SJRRP flows are expected to reduce turbidity, it is anticipated that delta smelt will move out of the south Delta to more suitable foraging habitat in Suisun Bay and the lower Delta, thus reducing their risk of entrainment at the export facilities.

USFWS Comment (Delta Smelt – 4):
P. 6-16 to 6-17: The document mentions the NMFS BO frequently but on these pages in particular, it does not mention USFWS OCAP BO/RPA requirements. In particular to OMR flows, please inform the reader that the USFWS OCAP BO/RPA requirements were included in the Effects analysis presented in Chapter 6.

Reclamation Response:
Appendix B of the BA provides a sensitivity analysis utilizing information from the reasonable and prudent alternatives (RPAs) in both the USFWS 2008 Biological Opinion (BO) on the Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP) (2008 USFWS CVP/SWP Operations BO) and the NMFS 2009 Final Biological and Conference Opinion on the Long-Term Operations of the CVP and SWP (2009 NMFS CVP/SWP Operations BO) at a 2005 level of development (LOD). Appendix B further states "The CalSim simulations conducted in support of the BA and Draft Program Environmental Impact Statement/Report (PEIS/R) were performed in advance of the release of the 2008 USFWS CVP/SWP Operations BO and 2009 NMFS CVP/SWP Operations BO. These BOs contain a number or RPAs that have the potential to significantly impact both CVP and SWP project operations and operations of other, non-CVP or non-SWP facilities. Reclamation identified the need to reevaluate the Proposed Action with the inclusion of these BOs to evaluate the potential for the RPAs to significantly change the San Joaquin River tributary and Delta fisheries effects determination presented in the BA…" Thus, the sensitivity analysis developed for the purposes of determining effects to Delta species utilized both the 2008 USFWS CVP/SWP Operations BO and the 2009 NMFS CVP/SWP Operations BO at a 2005 LOD. Additionally, Appendix B provides on page 3-4 that "increased San Joaquin River inflow and reverse OMR flows generally have counteracting effects on the distribution of fish." Additionally, page 4-10 through 4-17 of Appendix B also provides modeling results for the six RPA scenarios as well as the No RPA scenario for OMR flows.

USFWS Comment (Delta Smelt – 5):
P. 6-28, South Delta Effects, last paragraph: 'Delta smelt that spawn in the vicinity of the lower San Joaquin River are most at risk of being drawn into the south Delta by reverse flows. (sic) Will the BOR include methods to minimize or reduce this risk of Delta smelt entrainment due to project-level actions, including recirculation of water in the South (sic) Delta?

Reclamation Response:
See response to USFWS Comment (Delta Smelt-2) above. Additionally, Reclamation will continue to operate to all applicable and current biological opinions related to Delta exports.

USFWS Comment (Delta Smelt – 6):
On P. 6-30 (sic), Effects of Program-Level Actions is not consistent with what is said on P. 6-28 (sic). P. 6-28 states that there is an effect (entrainment risk increase), but P. 6-30 states there are no program-level effects anticipated for delta smelt or its designated habitat because of their presence in the Restoration Area… Please clarify: Isn't the South (sic) Delta where water would be recirculated considered part of the "program-level actions" or "project-level actions" and "restoration area"?

Reclamation Response:
The Proposed Action for the SJRRP includes a combination of actions analyzed at both a project- and program-level. This is further described in the BA in Chapter 3.0: Description of the Proposed Action. However, Table 3 is provided to further separate and explain the differences between the two:

Table 3: Summary of SJRRP Project- and Program-Level Actions

Project-Level Actions	Program-Level Actions
Reoperation of Friant Dam and downstream flow control structures to release and convey SJRRP flows (includes releases of flows according to the Settlement hydrograph, minimization of flood risk, and operation of flood control structures on the river and bypasses)	Recirculation of recaptured SJRRP flows (includes circulating flows back to the Friant Division to minimize water supply impacts)
Recapture of SJRRP flows in the Delta at CVP/SWP facilities and within the Restoration Area at Mendota Pool and the East Bear Creek Unit of the San Luis National Wildlife Refuge (includes the establishment of a Recovered Water Account)	Common Restoration Actions (includes site-specific project implementation such as modifications to facilities and channel capacity improvements in the Restoration Area, and reintroduction of salmon)
Implementation of the Conservation Strategy (this will be implemented for both project- and program-level actions, where appropriate)	

The summary provided on page 6-30 of the BA is specific to program-level actions. Using Table 3 above, program-level actions would not occur in the Delta. Project-level actions include Delta exports associated with the recapture of SJRRP flows. Program-level actions include actions such as modifications to the San Joaquin River channel within the Restoration Area (the San Joaquin River between Friant Dam and the confluence of the Merced River), such as the construction of the Mendota Pool Bypass and the Reach 2B Improvements; the Reach 4B, Eastside Bypass, and Mariposa Bypass Improvements; and the Arroyo Canal Fish Screen and Sack Dam Fish Passage Project. Regardless of the implementation of the program-level actions within the Restoration Area, flows into the Delta from the implementation of the project-level actions associated with the SJRRP, and their associated recapture, will be what was analyzed in the modeling results for effects to delta smelt. While program-level actions will occur over time and will subsequently improve channel capacity and allow full SJRRP flows to pass between Friant Dam and the confluence of the Merced River, the modeled results for the Delta effects will remain unchanged as these results analyze the range of possible releases from Friant Dam according to the Settlement hydrographs. Further, delta smelt would not occur within the Restoration Area in order to result in effects to the species associated with future program-level actions.

USFWS Comment (Delta Smelt – 7):
P. 6-69: Proposed Action will result in generally higher Banks and Jones pumping diversions. Same in Conclusion paragraph P. 71 (sic) – if there is an increase in pumping from 2% to 10%,

then there must be an increase in releases by 2% to 10% -- how would BOR ensure there are no changes to the USFWS OMR criteria?

Reclamation Response:
While not specifically stated in the BA, the SJRRP Draft Program EIS/R states in Chapter 13: Hydrology - Surface Water Supplies and Facilities Operations that, "The additional restoration inflows to the Delta are treated the same as any other Delta inflow within CalSim. This results in a reoperation of the CVP and SWP system under the physical and regulatory limits within the model." This means the SJRRP would increase the amount of water entering the Delta, and the system would react under current constraints (including operational BOs) by exporting more water. The additional SJRRP inflows to the Delta are treated the same as any other Delta inflow within CalSim. This results in a reoperation of the CVP and SWP system under the physical and regulatory limits within the model.

Increased exports can entrain delta smelt or their food sources, and attract delta smelt to the south Delta where predation rates are higher and food resources are lower (due in part to lower turbidity and to high concentrations of predators in the south Delta. See response to USFWS Comment Delta Smelt-2). Quantitative factors used to describe the likelihood of these effects to occur are export quantities, OMR flows, and San Joaquin River inflows. The effects of increased exports (and increased OMR flows) are generally offset by increased San Joaquin River inflows to the Delta, which are anticipated to move less delta smelt towards the south Delta. Less smelt in the south Delta may result in reduced entrainment of, and predation on, delta smelt and their food sources. The net effect to delta smelt, resulting from increased inflows causing less fish to move towards the south Delta despite increased exports, is that no adverse effects to delta smelt would occur.

The Proposed Action would increase San Joaquin River inflows to the Delta, and therefore would also increase the ratio of inflows to reverse flows in OMR, which would help to keep delta smelt away from the south Delta and encourage delta smelt to use areas for foraging located within Suisun March and the lower Delta; see response to USFWS Comment (Delta Smelt-2). This effect of increased inflows and ratios is may serve to offset the increased entrainment risk of delta smelt from increased exports. Because of this reduction in risk and potential benefit to delta smelt, additional measures beyond adherence to existing biological opinions for operations of the Central Valley Project and Statement Water Project is not proposed.

USFWS Comment (Delta Smelt – 8):
1) (sic) Appendix B; Chapter 4, Results and Conclusions section, shows analysis (figures) regarding RPAs, however (sic) those assumptions are from the NMFS OCAP RPAs only? (sic)

Reclamation Response:
Attachment 1 to Appendix B of the BA is the *Representation of U.S. Fish and Wildlife Service Biological Opinion Reasonable and Prudent Alternative Actions for CALSIM II Planning Studies – DRAFT*. This technical memorandum included a meeting of fisheries agencies, including USFWS, NMFS, and DFG and their conclusions on the approach for implementing the 2008 USFWS CVP/SWP Operations BO in order to represent the RPAs in existing and future CalSim simulations for future planning studies. This memorandum describes multiple assumptions that

were developed for CalSim modeling purposes and that were directly applied to the results presented in Appendix B. The RPAs presented in the USFWS BO do not lend themselves to simulations using a monthly time step. Therefore, the model was adapted and modified using the assumptions from the technical memorandum and are what are presented in Appendix B and to determine the effects to species, in combination with the NMFS RPAs.

USFWS Comment (Delta Smelt – 9):
2) (sic) Appendix B; Chapter 4, page 4-45, if Jones and Banks pumping increases and entrainment risks to delta smelt increases (sic) than (sic) how can the project minimize entrainment, particularly in April or March?

Reclamation Response:
See response to USFWS Comment (Delta Smelt – 2) and (Delta Smelt – 7). The Proposed Action would increase San Joaquin River inflows to the Delta and, therefore, would also increase the ratio of inflows to reverse flows in OMR. This effect of increased inflows and ratios is may serve to offset the increased entrainment risk of delta smelt from increased exports. SJRRP flows are expected to reduce turbidity and it is anticipated that delta smelt will move out of the south Delta to more suitable foraging habitat in Suisun Bay and the lower Delta, thus reducing their risk of entrainment at the export facilities. Because of this reduction in risk and potential benefit to delta smelt by their migration to better foraging grounds, additional measures beyond adherence to existing biological opinions for operations of the CVP and SWP are not proposed.