APPENDIX B2
Friant-Kern Canal Middle Reach Capacity Correction Project

Environmental Commitments/Mitigation Measures

BUREAU OF RECLAMATION

Bureau of Reclamation
Interior Region 10 California-Great Basin
California*, Nevada*, Oregon*
***Partial**

Friant WATER AUTHORITY

May 2020

This appendix describes the Environmental Commitments and Mitigation Measures included in the Friant-Kern Canal Middle Reach Capacity Correction Project (Project) Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/R). Acronyms and abbreviations used in this appendix are listed in Appendix A of the Draft EIS/R.

Environmental Commitments

Land Use and Planning and Agricultural Resources

AG-2: Complete nonrenewable process for lands enrolled in Williamson Act contracts.

If land that would be acquired by the Project is enrolled in a Williamson Act contract, the lead agencies will coordinate with the appropriate county planning agency to ensure that the impact is compatible with state and county Williamson Act provisions. If the impact on the land is not compatible, the nonrenewable process will be completed or a contract cancellation will be obtained for the segment that would be affected. The nonrenewable process or contract cancellation must be approved by the appropriate county board of supervisors (in consultation with the California Department of Conservation [DOC]) before Project construction begins.

Biological Resources

BIO-1l.5: Construct San Joaquin kit fox artificial dens

Use of the Project area by San Joaquin kit foxes has not been detected during biological field surveys to date (i.e., burrow cameras at select locations, ecological scent dog survey throughout the Middle Reach, and scent-attractant baited arrays of remotely operated camera stations). However, if San Joaquin kit foxes are detected during future field surveys or den monitoring activities, artificial dens could, at Bureau of Reclamation's (Reclamation's) and Friant Water Authority's (FWA's) discretion and in numbers and locations determined based on apparent San Joaquin kit fox detections, be constructed at select locations and as determined to be needed along the 19-mile abandoned canal segment. The artificial dens would provide immediately available alternative habitats but would be considered temporary (i.e., unmonitored, not maintained, and potentially removed upon confirmation of vacancy and after natural potential kit fox dens have become reestablished along the canal). Constructed San Joaquin kit fox habitat would consist of "escape dens" and "chamber dens" grouped to create habitat complexes. Escape dens would be designed to provide escape cover for San Joaquin kit fox. Chamber dens would be designed to provide escape cover and diurnal resting cover for San Joaquin kit fox and provide a chamber for resting or reproduction. The number of complexes to be constructed and spacing of the complex components would be determined through coordination with the U.S. Fish and Wildlife Service (USFWS), Reclamation, and Friant.

Noise

NOI-1: Implement noise-reducing measures during construction.

During construction, noise-reducing measures will be employed as appropriate and to the extent feasible to help decrease construction noise to comply with local ordinances and general plan policies.

All construction activities will comply with the Kern County Municipal Code (Chapter 8.36, Noise Control [Section 8.36.020, Prohibited Sounds]), Policy HS-8.18 of the Tulare County General Plan, and Chapter 18 of the City of Porterville Municipal Code (Section 18-90.6.F), depending on where construction activities are occurring. When work outside of the approved hours is needed, (i.e., during nighttime work), the applicable agency (e.g., Tulare County, Kern County or Porterville) shall be consulted prior to such activities occurring and a waiver or exemption shall be obtained. Specifically, under the City of Porterville Municipal Code, Section 18.90.11, applications for a permit for relief can be filed with the city if construction noise cannot be achieved by the provisions set forth in Section 18-90.6.F. Similarly, the Tulare General Plan policy HS-8.18 allows for a permit, and Kern County Municipal Code Section 8.36.020 allows for an exemption of noise from construction work for a limited period of time. At each jurisdiction where nighttime work would be required, the contractor would apply for and obtain the associated permit prior to such activities taking place.

Mitigation Measures

Air Quality

AQ-1: Implement measures to reduce construction emissions.

The Project will comply with the San Joaquin Valley Air Pollution Control District's (SJVAPCD) Regulation VIII and Rule 9510, which serve to reduce emissions associated with fugitive particulate matter less than 10 microns diameter (PM_{10}) and dust and construction exhaust emissions, respectively. In addition, the following environmental commitments will be implemented, as appropriate, to reduce potential air quality impacts from construction of the Project.

NOx Reductions

- Prepare a construction emissions minimization plan that shall include the implementation of measures to reduce construction emissions. Those measures may include but not be limited to the following:
    - Use of Tier 4 equipment for the following pieces of construction equipment:
    - Generator Sets: 25 kVA Portable Generator
    - Scraper: CAT 631K

- Motor Grader: CAT 14M
- Dozer: CAT D11
- Wheel Loader: CAT 950M

- Prohibiting the use of portable diesel engines where access to alternative power sources are available.

- Instructing construction workers and equipment operators on the maintenance and tuning of construction equipment and require that such workers and operators properly maintain and tune equipment in accordance with manufacturer specifications.

AQ-2: Enter into a Voluntary Emissions Reduction Agreement.

If construction-related emissions cannot be reduced to less than 10 tons per year for SJVAPCD regional significance thresholds by implementation of EC/MM AQ-1, Reclamation and FWA will enter into a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD. Under the VERA, Reclamation and FWA would enter into a contractual agreement with the SJVAPCD to provide mitigation of air emission exceedances through a process that funds and implements emission reduction projects with the SJVAPCD consistent with the SJVAPCD's Rule 9510 fee structure.

Biological Resources

Measures to minimize effects on special-status plants.

BIO-1a.1: One botanical survey (late season) shall be conducted prior to construction activities to determine the presence or absence of special-status plant species including Earlimart orache, Lost Hills crownscale, brittlescale, lesser saltscale, and subtle orache in the Project area. The surveys should be conducted in general accordance with the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFW 2018) and shall be timed to appropriately coincide with the late blooming period (e.g., August and September) in all suitable habitat (e.g., annual grasslands) located within the Project disturbance areas.

BIO-1a.2: If more than five years lapse after the March 2020 botanical survey before ground disturbance takes place, two botanical surveys (early and late season) shall be conducted in all suitable habitat located within the Project disturbance areas to determine the presence or absence of special-status plants. Special-status plants with a potential to be within the Project area that typically bloom early in the season (e.g., March and April) include recurved larkspur, Hoover's eriastrum, spiny-sepaled button-celery, Munz's tidy-tips, and California alkali grass. Special-status plants with a potential to be within the Project area that typically bloom late in the season (e.g., August and September) include Earlimart orache, Lost Hills crownscale, brittlescale, lesser saltscale, and subtle orache.

BIO-1a.3: In the event that special-status plant species are found during the botanical surveys, the locations of the special-status plants will be marked as avoidance areas both in the field using flagging, staking, fencing, or similar devices and on construction plans.

BIO-1a.4: If special-status plants are identified during pre-construction surveys and complete avoidance is not practicable, and the Project would directly or indirectly affect more than 25 percent of a local occurrence by either number of plants or square footage of occupied habitat, a qualified biologist will determine if implementation of a conservation plan is recommended. The conservation plan may consist of but would is not limited to purchase of mitigation credits at a regional conservation bank; plant salvage and relocation; collection and subsequent planting of seed or incorporating seed from native nursery into seed mix used for revegetation efforts; stockpiling, storing, and replacing topsoil containing the local seed bank; or other measures determined practicable based on the species and site conditions. If onsite conservation measures are implemented, the objective is to restore the impacted special-status plant species community to pre-existing conditions by providing for the restoration of a self-sustaining population of special-status plants in the general area where the impact occurred at a minimum of a 1:1 ratio (e.g., number of plants, square footage occupied). For onsite conservation measures, the conservation plan will identify success criteria and provide for annual or other regular monitoring to evaluate whether the conservation effort has met the success criteria. The conservation plan will also include measures for remedial actions (e.g., additional plantings, supplemental irrigation, increased monitoring) in the event that monitoring efforts indicate that success criteria are not being met.

For some species and site conditions, the biologist may determine that a conservation plan is not recommended. Some of these circumstances may include but are not limited to the following: (1) there are other nearby populations that will not be disturbed; (2) plant relocation, seeding, or revegetation would not have a reasonable probability of success; (3) implementation of measures could result in detrimental effects on existing special-status plant populations; or (4) incompatibility with required operations and maintenance activities. If the biologist determines that a conservation plan is not warranted, no additional measures are required.

Measures to minimize effects on special-status animal species.

BIO-1b.1*:* A Biological Resources Management and Monitoring Plan (BRMMP) shall be developed and implemented for the Project. The BRMMP shall provide for the following:

1) Overall implementation and monitoring of the ECs/MMs for biological resources and the terms and conditions of any agency permits/authorizations throughout the duration of Project construction and restoration/revegetation of riparian habitat per BIO-2c.

2) Designation of an overall Project Biologist and the roles and responsibilities of the Project Biologist and other monitoring biologists and the roles of Reclamation, FWA, and construction personnel in coordinating and implementing the BRMMP.

3) Adaptive management in scheduling worker environmental awareness training (WEAT) and conducting pre-construction surveys for special-status species. In some cases, additional biological surveys beyond those identified in the ECs/MMs may be warranted to proactively avoid biological constraints or conflicts with protective measures. For

example, early monitoring for nesting birds or occupied mammal burrows may be needed to preserve opportunities for vegetation removal, removal of nesting starts before egg laying, and burrow monitoring and closure prior to the initiation of breeding or nesting activities.

4) The procedure and authorizations required to modify the ECs/MMs, if needed, to resolve conflicts with constructability requirements or other measures required by agency permits/authorizations or to provide for equivalent avoidance/minimization of adverse effects on sensitive biological resources under changing conditions over the life of Project construction.

   For example, nesting birds or other special-status species may initiate nesting or denning activities in proximity to construction areas while active construction activities are ongoing, including within the "no-disturbance buffers." In these cases, it may be that the animals are acclimated to the level of construction disturbance, and continuance of construction activities would not be expected to adversely affect the animals or their nesting/breeding activities (assuming that increased levels of disturbance or closer proximity of construction activities is not planned). The BRMMP will include provisions for how these and similar circumstances will be addressed and how determinations regarding additional biological monitoring or agency coordination will be addressed.

5) The procedure to record and document implementation of the ECs/MMs and other measures including any pre-construction survey reports, WEAT sign-in forms, routine biological monitoring forms, photographs, and other materials related to implementation of the BRMMP.

6) The procedure to comply with the terms and conditions and notification and reporting requirements of any agency permits/authorizations required for the Project, and the procedure for coordination/consultation with resource or permitting agencies as necessary.

7) The procedure to inform, document, and monitor restoration and revegetation activities associated with restoring temporary impacts on terrestrial and aquatic habitats and vegetation communities. This includes any post-construction monitoring/reporting and remedial measures that may be required.

BIO-1b.2: Prior to initiation of ground-breaking, a qualified biologist(s) will conduct a WEAT for all construction personnel. Training sessions will be repeated for all new personnel before they access the Project site. Sign-in sheets identifying attendees and the contractor/company they represent will be prepared for each training session, and records of attendance will be maintained by the Project. At a minimum, the WEAT will include a description of the protected species and biological resources that may occur in the Project area and their physical description, habitats, and natural history, as well as the measures that are being implemented to avoid or minimize Project-related impacts, penalties for non-compliance, and the boundaries of the work area. As appropriate, training will be conducted in languages other than English to ensure that employees and contractors understand their roles and responsibilities. A written summary of the training will be provided to all attendees, and an electronic copy will be provided so that the Project can

make and distribute future copies. The WEAT will be conducted annually, at a minimum, for all construction personnel.

BIO-1b.3: A litter control program will be instituted at each Project site. All workers will place their food scraps, paper wrappers, food containers, cans, bottles, and other trash in covered or closed trash containers. The trash containers should be removed from the Project area at the end of each working day.

BIO-1b.4: No firearms (except as possessed by federal, state, or local law enforcement officers) or pets will be permitted on construction sites.

BIO-1b.5: To prevent inadvertent entrapment of wildlife during construction, all excavated steep-walled holes or trenches greater than 2 feet deep (excluding excavation work on either the Friant-Kern Canal (FKC) itself or the realigned canal) should be covered or filled at the end of each working day or provided with one or more escape ramps no greater than 200 feet apart. Before such trenches or holes are filled, they must be thoroughly inspected for trapped animals. If protected species are found in any of the holes or trenches, work shall cease until an escape ramp is provided and the animal leaves on its own volition, or until the animal has been relocated by a USFWS-approved biologist, and/or in coordination with USFWS as appropriate.

BIO-1b.6: All construction activity will be confined within the Project site, which may include temporary access roads, haul roads, and staging areas specifically designated and marked for these purposes.

BIO-1b.7: Tightly woven fiber netting or similar material (no monofilament material) will be used for erosion control or other purposes at the Project site to ensure that animals do not become trapped.

Measures to minimize effects on nesting migratory birds.

BIO-1c.1: To the extent practicable, vegetation removal will be scheduled to avoid the breeding season for nesting raptors and other special-status birds (generally February 1 through August 31, depending on the species). Removal of vegetation outside of the nesting season is intended to minimize the potential for delays in vegetation removal due to active nests.

BIO-1c.2: Regardless of when vegetation removal is scheduled, a qualified biologist will conduct a minimum of one pre-construction survey for nesting migratory birds and raptors within the Project area and a 250-foot buffer around the Project area (where accessible) for all construction-related activities that will occur during the nesting season. The pre-construction survey will be conducted no more than 15 days prior to the initiation of construction in a given area and will be phased based on the construction schedule. Due to the ongoing, phased approach to construction, multiple pre-construction surveys per year may be required. If an active nest is found, appropriate conservation measures (as determined by a qualified biologist) will be implemented. These measures may include but are not limited to consultation with CDFW to establish a construction-free buffer zone around the active nest site, daily biological monitoring of the active nest site, and delaying construction activities in the vicinity of the active nest site until the young have fledged.

BIO-1c.3: If removal of bridges or other bridge work is scheduled to occur during the nesting season, exclusionary devices (e.g., netting) will be installed around the bridges prior to the initiation of the avian breeding season (before February 15) during the same year as the bridges are scheduled for removal and after a qualified biologist has determined no active nests (i.e., nests with eggs or young) are present. The exclusionary devices will remain in place until August 15 or until the bridge removal or other bridge work is completed. The exclusionary devices will be anchored such that swallows cannot attach their nests to the structure through gaps. Exclusionary devices will be regularly inspected as necessary to confirm that they are adequately preventing initiation of nest building. In the event that swallows have breached the exclusionary devices and began building nests on the structure, nesting material (i.e., partially built nests) can be removed only if a qualified biologist has determined that eggs or young are not present. No removal of nests with eggs or young can be conducted without written authorization from CDFW and USFWS, or until a qualified biologist has determined that the nest is no longer active (e.g., the nest has failed, the young have fledged and are no longer dependent on the nest).

Measures to minimize effects on burrowing owl.

BIO-1d.1: A minimum of one pre-construction survey for burrowing owls within 300 feet of the Project area (where accessible) will be conducted by a qualified biologist within 15 days prior to the initiation of construction activities in a given area, regardless of the timing of construction. Pre-construction surveys each year of construction during the non-breeding season (September 1 to January 31) will take place in order to determine the presence of burrowing owls before breeding activities begin. If any occupied burrows are identified, appropriate conservation measures (as determined by a qualified biologist) will be implemented. No disturbance will occur within 150 feet of occupied burrows during the non-breeding season (September 1 to January 31) or within 250 feet during the breeding season (February 1 to August 31). These measures may also include establishing a construction-free buffer zone around the active nest site in coordination with the CDFW, biological monitoring of the active nest site, and delaying construction activities in the vicinity of the active nest site until the young have fledged.

BIO-1d.2: If burrowing owls are detected within the Project area during the non-breeding season and maintaining a 150-foot, no-disturbance buffer is not practicable, a qualified biologist will submit an exclusion plan to CDFW. The exclusion plan will generally follow the guidelines outlined in Appendix E of the *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 2012). The exclusion plan will consist of installing one-way doors in potential burrows, daily monitoring, and collapsing burrows once it is determined the burrows are un-occupied. Exclusion may only take place during the non-breeding season (September 1 to January 31) and may be an ongoing effort during this time period. This will allow the owls to exit burrows if they are present, but not return.

BIO-1d.3: If occupied burrows are detected during the breeding season and maintaining a 250-foot no-disturbance buffer is not practicable, CDFW will be consulted to determine alternative measures to minimize the potential for disturbance to occupied burrows and nesting activities. Measures may include but are not limited to continuous biological monitoring by a qualified biologist until it has been determined that the young have fledged and are no longer reliant on the nest or parental care for survival or construction is complete. No direct disturbance of burrows

with eggs or young can be conducted without written authorization from the CDFW and USFWS.

Measures to minimize effects on golden eagle, Swainson's hawk, northern harrier, or white-tailed kite.

BIO-1e.1: For construction activities that occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys for golden eagle, Swainson's hawk, northern harrier, and white-tailed kite. The pre-construction surveys will include the Project footprint and a minimum of a 0.25-mile radius where access is permitted around the construction area in suitable nesting habitat (i.e., large trees). The pre-construction surveys will be conducted no more than 15 days before ground disturbance in a given area and will be phased based on construction schedule.

If nesting golden eagles, Swainson's hawks, northern harriers, or white-tailed kites are detected, an appropriate no-disturbance buffer (minimum of 500 feet) will be established and monitored daily by a qualified biologist. Buffers will be maintained until a qualified biologist has determined that the young have fledged and are no longer reliant on the nest or parental care for survival.

BIO-1e.2: If a minimum 500-foot no-disturbance buffer around an active golden eagle, Swainson's hawk, northern harrier, or white-tailed kite nest is not practicable, CDFW will be consulted to determine alternative measures to minimize the potential for Project-related disturbance to the nest site that could result in nest abandonment or other forms of take. Measures may include but are not limited to continuous biological monitoring by a qualified biologist until it has been determined that the young have fledged and are no longer reliant on the nest or parental care for survival or construction is complete. If the nesting pair shows signs of distress (i.e., adults leaving the nest when eggs or young chicks are present) as a result of Project-related activities, the monitoring biologist will have authority to stop work until it is determined that the adults have returned and are no longer showing signs of distress.

If trees suitable for nesting by Swainson's hawk are scheduled to be removed during the non-nesting season, a qualified biologist will conduct a pre-construction survey during the nesting season prior to tree removal to determine if Swainson's hawks are using the trees for nesting. If the trees proposed for removal are being used by nesting Swainson's hawk, consultation with the California Department of Fish and Wildlife (CDFW) will take place per BIO-1e.3. prior to tree removal.

BIO-1e.3: If consultation with CDFW results in a determination that take of an active Swainson's hawk nest cannot be avoided, then an Incidental Take Permit (ITP) pursuant to the California Endangered Species Act will be obtained from CDFW prior to initiation of any activities that are likely to result in such take.

If an active golden eagle or white-tailed kite nest may not be avoidable, then all activities that are likely to result in take will be delayed until a qualified biologist has determined that the young have fledged and are no longer reliant on the nest or parental care for survival.

BIO-1e.4: The Project-related permanent loss of alfalfa fields (high-quality foraging habitat for Swainson's hawk) will be mitigated at a minimum of a 1:1 ratio. Mitigation will occur in coordination with CDFW and may consist of but is not limited to purchase of mitigation credits from a CDFW-approved mitigation bank, obtaining conservation easements with appropriate provisions to maintain the land as suitable foraging habitat in perpetuity, establishing new alfalfa fields, or other habitat conservation measures as approved by CDFW.

Measures to minimize effects on bats.

BIO-1f.1: To the extent practicable, removal of large trees with cavities or destruction of large culverts will occur before maternity colonies form (i.e., prior to March 1) or after young are volant (able to fly) (i.e., after August 15).

BIO-1f.2: If construction (including the removal of large trees and/or destruction or expansion of large culverts) occurs during the non-volant season (March 1 to August 15), a qualified biologist will conduct a pre-construction survey of the study area for maternity colonies. The pre-construction survey will be performed no more than 14 days prior to the implementation of construction activities (including staging and equipment access). If a lapse in construction activities for 14 days or longer occurs between those dates, another pre-construction survey will be performed. If any maternity colonies are detected, appropriate conservation measures (as determined by a qualified biologist) will be implemented. These measures may include but are not limited to establishing a construction-free buffer zone around the maternity colony site, biological monitoring of the maternity colony, and delaying construction activities in the vicinity of the maternity site.

Measures to minimize effects on Kern brook lamprey, San Joaquin roach, and game fish.

BIO-1g: Work within Deer Creek and White River (e.g., siphon construction) will take place when the streams are dry. If this is not practicable, appropriate stream diversions that protect water quality will be constructed. Where there is a potential for fish entrapment (e.g., dewatering of streams or canal), a beach seine with a minimum of three passes or other appropriate method will be implemented in areas where fish could be trapped (e.g., remaining ponded areas). If appropriate, block nets could be placed upstream and downstream of the Project area to prevent fish from entering the area and further reduce the potential for entrapment. Implementation of measures to avoid fish entrapment and any translocation/removal of fish will be conducted with the oversight of qualified fisheries biologists. Coordination with CDFW will be conducted prior to initiation of any fish salvage/relocation activities to confirm that all required authorizations are in place.

Measures to minimize effects on western spadefoot.

BIO-1h.1: If western spadefoot is encountered during construction activities, it will be allowed to move out of harm's way of its own volition, or a qualified biologist will relocate it to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.

BIO-1h.2: Prior to moving equipment or materials each day, construction personnel will inspect underneath and around equipment and other Project materials (e.g., stored pipes greater than 2 inches in diameter) where located within 200 feet of aquatic habitat for western spadefoot. If

western spadefoots are found, they will be allowed to move out of the construction area under their own volition, or a qualified biologist will relocate the organism(s) to the nearest suitable habitat that is at least 100 feet outside of the construction impact area.

Measures to minimize effects on northern California legless lizard, California glossy snake, San Joaquin coachwhip, and coast horned lizard.

BIO-1i: Prior to moving equipment or materials each day, construction personnel will inspect underneath and around equipment for northern California legless lizard, California glossy snake, San Joaquin coachwhip, and coast horned lizard. If these species are encountered during construction activities, they will be allowed to move out of harm's way of their own volition or a qualified biologist will relocate the organism(s) the nearest suitable habitat that is at least 100 feet outside of the construction impact area.

Measures to minimize effects on Buena Vista Lake shrew.

BIO-1j.1: In areas of suitable habitat for Buena Vista Lake shrew (BVLS) (*Sorex ornatus relictus*) within the Project area (i.e., the Deer Creek crossing and adjacent areas), all above-ground herbaceous vegetation within the construction footprint will be cleared using hand tools (i.e., non-gasoline or electrically powered tools, including weed whackers and/or mowers, unless approved by USFWS) under the supervision of a USFWS-approved BVLS biologist or biological monitor. All leaf litter will be removed using rakes or similar hand tools. All woody vegetation will be cut as closely to the ground as possible using hand tools (which can include chainsaws). Vegetation will be removed immediately and stored away from areas of suitable BVLS habitat. Such vegetation hand-removal efforts will be implemented in the areas that require vegetation removal in order to clearly detect BVLS and will continue in each area of suitable habitat until it is reasonably certain that BVLS can be detected within the cleared areas, if present.

BIO-1j.2: After vegetation has been cleared from areas of suitable BVLS habitat, non-disturbance exclusion fencing will be installed along the edges of the Project area where vegetation was cleared from areas of suitable habitat; fencing will be buried to a minimum depth of 6 inches. Fencing will be placed between areas of active construction and adjacent to nearby suitable habitat to preclude BVLS from running through the Project area. In areas where installation of fencing is not practicable, the USFWS will be contacted and will provide direction on a case-by-case basis. The exclusionary fencing will be installed under the supervision of the USFWS-approved BVLS biological monitor, and fence placement/configuration will be determined by a USFWS-approved BVLS biologist with input from the USFWS as required. Fencing may consist of a combination of both Environmentally Sensitive Area fencing and Wildlife Exclusion fencing with one-way exit/escape points.

BIO-1j.3: If BVLS is found within the fenced-in Project area, work in the Project area will cease immediately and a section of fence will be removed so the BVLS may leave the fenced area on their own volition. The USFWS-approved BVLS biologist or biological monitor will monitor the BVLS to ensure that any BVLS has moved and remains outside of the fenced-in work area. If the BVLS does not leave of its own volition, it will be relocated following a USFWS-approved BVLS Relocation Plan.

BIO-1j.4: Prior to the vegetation removal described in measure BIO-1j.1 above, areas of potentially suitable habitat would be surveyed for BVLS using close-focus automated Reconyx camera stations, baited with live and dried mealworms, per the methodology described in the *Conservation of Endangered Buena Vista Lake shrews (Sorex ornatus relictus) through Investigation of Taxonomic Status, Distribution, and Use of Non-Invasive Survey Methods* (Cypher et al., 2017).

Measures to minimize effects on American badger.

BIO-1k: Any American badger detected within the Project area during Project-related activities will be allowed to move out of the work area of its own volition. If an American badger is denning on or within 50 feet of the Project work areas, the den will be avoided by maintaining a minimum 50-foot, no-disturbance buffer. If maintaining the buffer is not practicable, CDFW will be consulted to determine alternative measures to minimize the potential for disturbance of the burrow, or (if necessary) to develop and implement procedures to monitor and close the burrow to prevent use by badger during construction activities.

Measures to minimize effects on San Joaquin kit fox (SJKF).

The following measures would be limited to those areas where SJKF presence has been detected via scent attractant enhanced remote camera arrays and trained ecological scent dogs, and in areas otherwise determined to be sensitive for SJKF based on coordination with the USFWS.

BIO -1l.1: Determine the presence of San Joaquin kit fox dens:

a) Pedestrian inventories of potential and occupied dens will be completed to determine the need for pre-construction monitoring. Pedestrian inventories of potential and occupied dens shall be conducted within 90 calendar days prior to the start of construction (i.e., before any activity that covers or disrupts surface soils [e.g., clearing and grubbing; grading; excavation; soil or equipment stockpiling; equipment or vehicle storage or parking]). To the extent practicable, these surveys will be conducted nearer in time to the start of construction.

b) Pre-construction monitoring will be performed to confirm and document SJKF presence or absence at potential and occupied dens identified during the inventory.

c) Areas within which pedestrian den inventories or pre-construction monitoring have been completed more than 30 days prior to construction will be re-inventoried not more than 30 days prior to construction. Preconstruction monitoring will be performed on potential and occupied dens discovered during re-inventory that have not been previously monitored.

d) Pedestrian inventories and pre-construction monitoring for dens will be conducted by qualified biologists familiar with SJKF biology, natural history, and potential dens.

e) Pipes and culverts will be searched for SJKF immediately prior to being moved or sealed to ensure that an animal has not been trapped. If SJKF is observed, it will be gently encouraged to leave the area by a USFWS-approved biologist. (i.e., without using loud

noise, physical force, or physical movement of the pipe or culvert such that the animal could be injured or startled while it is leaving the area).

BIO -11.2: Identify and document locations of potential or occupied dens (natal or non-natal) and their status (occupied or unoccupied). Definitions:

a) Known den: any existing natural den or human-made structure for which conclusive evidence or circumstantial evidence can show that the den is used or has been used at any time in the past by SJKF.

b) Potential den: any natural den or burrow within the range of the species that has entrances of appropriate dimensions (4 to 12 inches in diameter) to accommodate SJKF. A qualified biologist will survey and investigate using remote cameras and track plates to determine use by species. If no information is collected that would indicate use by other species, the den will be treated as potentially occupied by SJKF.

c) Natal/pupping den: any known SJKF den (as defined) used by SJKF to whelp and/or rear pups.

d) Atypical den: any known SJKF den that has been established in or in association with a human-made structure.

BIO -11.3: Identify and execute appropriate action(s) regarding notification, buffers, excavation and fill, or seal-off:

a) Occupied natal den: if an occupied natal den is visible or encountered within the Project limits or on publicly accessible land sufficiently close to the Project construction area such that it would be disturbed (based on qualified biologist opinion and monitoring), USFWS will be contacted immediately and before any Project action occurs to determine permissible actions to permit resumption of work.

b) Unless determined necessary for safety or constructability by Reclamation, FWA, or the Project contractor, the Project site will not be lighted between sunset and sunrise.

c) Pipes or culverts with a diameter greater than 4 inches will be capped or taped closed when it is ascertained that no SJKF are present. Any SJKF found in a pipe or culvert will be allowed to escape unimpeded.

BIO -11.4: If a natural den is determined to meet size criteria (i.e., greater than 4-inches in diameter) and cannot be avoided and must be destroyed, the following guidelines will be followed:

a) Prior to den destruction, the den will be evaluated by a qualified biologist. If subjectively deemed suitable, the den would be monitored for at least 3 consecutive days to determine its status. Activity at the den will be monitored by placing tracking medium at the entrance and by remote cameras. If no SJKF activity is observed during this period, the den will be deemed unoccupied and destroyed immediately under the supervision of a USFWS-approved biologist to preclude subsequent use. If SJKF activity is observed at

the den during this period, the den will be monitored for at least 5 consecutive days from the time of observation to allow any resident animal to move to another den during its normal activities. Use of the den can be discouraged during this period by partially plugging the entrance(s) with soil in such a manner that any resident animal can escape easily. Destruction of the den may begin when, in the judgment of a USFWS-approved biologist, the animal has moved to a different den. The biologist will be trained and familiar with SJKF biology. If the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may be excavated when, in the judgment of a USFWS-approved biologist, it is temporarily vacant, for example during the animal's normal foraging activities. All den destruction shall be conducted under the supervision of a USFWS-approved biologist.

b) If it is determined to be unnecessary or logistically impractical to monitor all dens using remote cameras and tracking medium (or to hand excavate to confirm vacancy), alternative methods of assessing presence or absence of SJKF activity can be used provided that the alternative methods are approved by the USFWS. Alternative methods of assessing SJKF activity could include but are not limited to spotlighting, ecological scent-detection dogs, and digital video inspection cameras (videoscope).

c) All dens requiring excavation will be excavated under the supervision of a USFWS-approved biologist. In no event will an excavation that meets the definition of a confined space (i.e., a space large enough and so configured that a person can bodily enter but has limited or restricted means for entry or exit) be initiated. In this circumstance, discouragement (as in 4a above) would be used.

d) The den will be fully excavated and then filled with dirt and compacted so that SJKF cannot reenter or use the den during the construction period. If at any point during excavation, an SJKF is discovered inside the den, the excavation activity will cease immediately, and monitoring of the den will be resumed. Destruction of the den may be resumed when in the judgment of a USFWS-approved biologist, the animal has escaped from the partially destroyed den.

Measures to minimize effects on sensitive natural communities.

BIO-2a: Temporary and permanent impacts on the Fremont cottonwood forest habitat at Deer Creek will be minimized to the greatest extent practicable. Trees and other vegetation will not be removed if it can otherwise be reasonably avoided. In determining areas where vegetation must be removed to provide adequate access for construction or staging, consideration will be given to selecting areas that require the least amount of removal of mature trees and canopy cover in coordination with a qualified biologist.

BIO-2b: Prior to initiation of construction, exclusionary fencing will be installed along the boundaries of all environmentally sensitive areas to be avoided, which include sensitive natural communities and aquatic resources adjacent to the areas of Project-related impacts, so that impacts on environmentally sensitive areas outside of the construction area are minimized. Locations of environmentally sensitive areas and exclusionary fencing will be identified on construction plans. The exclusionary fencing will be inspected and maintained on a regular basis

throughout Project construction in the areas where the fencing is needed to avoid unintended disturbance.

BIO-2c: A Post-Construction Revegetation and Monitoring Plan will be developed and implemented to provide for the restoration of temporarily impacted riparian habitats to pre-existing conditions. The plan will include provisions for the planting of native woody vegetation and native seed mix or otherwise provide for the reestablishment of self-sustaining native riparian vegetation similar to the existing native riparian vegetation community. The plan will also identify success criteria and provide for annual or other regular monitoring to evaluate whether the revegetation effort has met the success criteria. The plan will include measures for remedial actions (e.g., additional plantings, supplemental irrigation, increased monitoring) in the event that monitoring efforts indicate that success criteria are not being met.

Measures to minimize effects on an intermittent stream channel and riparian wetland.

BIO-3a: All work within the active channel of Deer Creek and White River will be limited to the dry season when the channels are dry. If this is not practicable, stream flow will be diverted around the work area in the channel using a clear water diversion that maintains downstream water quality and minimizes stream impacts at the inlet and outlet locations of the diversion.

BIO-3b: Prior to any temporary or permanent impacts on aquatic resources, any required permits/authorizations from the Regional Water Quality Control Board (RWQCB) and the U.S. Army Corps of Engineers (USACE) will be obtained. All terms and conditions of the required permits/authorizations will be implemented.

Prior to any activities that would obstruct the flow of or alter the bed, channel, or bank of Deer Creek, White River, or any other streams, notification of streambed alteration will be submitted to the CDFW. If required, a streambed alteration agreement will be obtained from CDFW, and all conditions of the agreement will be implemented.

BIO-3c: Within 60 days of completion of siphon construction at Deer Creek and White River, the contours of the stream channels will be restored as close as practicable to their original contour and conditions.

All temporary impacts on riparian wetlands and other sensitive aquatic resources will be restored to pre-existing conditions in accordance with BIO-2c (Post-Construction Revegetation and Monitoring Plan).

BIO-3d: The permanent loss of riparian wetlands will be mitigated at a minimum of a 1:1 ratio. Mitigation will consist of the purchase of mitigation credits from an agency-approved wetland mitigation bank (i.e., CDFW, RWQCB, USACE) or payment into an agency-approved in-lieu fee fund. The purchase of mitigation credits or in-lieu fee payment will be completed prior to initiation of any permanent wetland impacts.

On- or offsite creation or restoration of wetland habitats may also be used to satisfy the compensatory mitigation requirement with written agency approval.

Cultural Resources

CUL-1: Implement Reclamation's amended Programmatic Agreement for treatment of the FKC.

Reclamation's amended Programmatic Agreement with the State Historic Preservation Officer and other consulting parties will be implemented for treatment of the FKC that complies with Section 106 and CEQA Guidelines Section 15064.5 (b) to identify and address any currently unknown and potentially inadvertently discovered archaeological resources and/or human remains (i.e., Reclamation's Plan of Action for Discovery and Identification of Human Remains, Funerary Objects, Sacred Objects and Objects of Cultural Patrimony under the Native American Graves Protection and Repatriation Act; and California Public Resource Code 5097.9-5097.991 and Health and Safety Code 7050). In addition, a Cultural Resources Awareness Training Program will be prepared before the initiation of any ground-disturbing activity. The training program will be prepared by individuals who meet the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in archaeology. The training program will present information about the identification and appropriate treatment of cultural resources (e.g., prehistoric or historic artifacts) and human remains that could be inadvertently uncovered during construction and about the discovery. All personnel participating in construction will participate in the training program. FWA, in coordination with Reclamation, will be responsible for completion and implementation of the training program and implementation of the stipulations in the Programmatic Agreement for identification and treatment of currently unknown archaeological resources and/or human remains.

Additionally, a Historic Properties Treatment Plan will be prepared as outlined in the PA that will include but will not be limited to preparing a Historic American Engineering Record (HAER) and developing an interpretive historic webpage for public education about the FKC. The HAER will be prepared for the segment of the FKC that would be affected by construction. The HAER will follow guidance presented in the Secretary of the Interior's Standards for Architectural and Engineering Documentation, will follow guidance in stipulations in Reclamation's amended Programmatic Agreement with the State Historic Preservation Officer and other consulting parties for treatment of the FKC that comply with Section 106 and CEQA Guidelines Section 15064.5 (b), and will be completed by individuals who meet the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in architectural history. FWA, in coordination with Reclamation, will be responsible for implementation and completion of the HAER.

Geology and Soils

GEO-1: Perform geotechnical studies prior to completion of project design.

Geotechnical investigations will be conducted by a Geotechnical Engineer registered in the State of California, which will include specific design recommendations. Typical geotechnical or engineering measures to reduce impacts related to soil liquefaction or other seismic-related ground failure could include but would not be limited to densifying loose soil, soil improvement with deep cement mixing, and flattening or buttressing slopes.

GEO-2-1: Prepare site-specific stormwater pollution prevention plan.

The construction contractor will prepare a site-specific stormwater pollution prevention plan (SWPPP), which must include approved best management practices (BMPs) to reduce erosion and sedimentation during construction. The SWPPP will establish good housekeeping measures such as construction vehicle storage and maintenance, handling procedures for hazardous materials, and waste management BMPs. The BMPs include procedural and structural measures to prevent release of wastes and materials used at the site. Implementation of the SWPPP will avoid or reduce runoff pollutants at the construction sites to the "maximum extent practicable."

Construction erosion and sediment control BMPs typically include but are not limited to the following measures:

- Temporary soil stabilization during site grading and active construction
- Permanent soil stabilization at constructions sites following construction
- Erosion and sediment controls during construction dewatering activities
- Control of site run-on and run-off to isolate the work area and prevent onsite or offsite erosion and sediment transport during construction
- Dust suppression

GEO-2-2: Prepare for unexpected failures of erosion control measures.

To prepare for unexpected failures of erosion control measures, a supply of erosion control materials will be maintained onsite during the construction period to facilitate a quick response to unanticipated storm events or emergencies.

GEO-2-3: Stabilize disturbed portions of FKC.

Disturbed portions of the existing FKC that are removed from active service (i.e., that have been excavated for use as borrow material) that result in new earthen embankment surfaces will have these earthen embankment surfaces stabilized to reduce the potential for erosion. Stabilization measures may include but are not limited to flattening slopes and providing appropriate drainage paths.

GEO-5: Protect paleontological resources encountered during ground-disturbing activities.

A Paleontological Resources Awareness Training Program will be prepared before the initiation of any ground-disturbing activity. The training program will present information about the identification and appropriate treatment of paleontological resources that could be inadvertently uncovered during construction.

If a potentially significant paleontological resource is encountered during ground-disturbing activities, all construction within a 100-foot radius of the find will immediately cease until a qualified paleontologist determines whether the resource requires further study. All construction

contracts for the Project will include a standard inadvertent discovery clause to inform contractors of this requirement. The paleontologist will notify the Kern and Tulare County Resource Management Agencies and the Project proponent of the procedures that must be followed before construction is allowed to resume at the location of the find. If the find is determined to be significant, and the County Resource Management Agencies determine avoidance is not feasible, the paleontologist will design and implement a data recovery plan consistent with applicable standards. The plan will be submitted to the County Resource Management Agencies for review and approval. Upon approval, the plan will be incorporated into the Project.

Hazards and Hazardous Materials

HAZ-1-1: Implement measures to avoid or reduce the potential for accidental spills.

During construction, measures to avoid or reduce the potential for accidental spills of pollutants will be implemented. These measures will include but not be limited to the following BMPs, as appropriate:

- Construction specifications will include the following measures to reduce potential impacts on vegetation and aquatic habitat in the Project area associated with accidental spills of pollutants (e.g., fuel, oil, and grease):
  - A site-specific spill prevention plan will be implemented for potentially hazardous materials. The plan will include the proper handling and storage of all potentially hazardous materials as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms will be constructed to prevent spilled materials from reaching surface water features.
  - Equipment and hazardous materials will be stored 50 feet away from surface water features.
  - Vehicles and equipment used during construction will receive proper and timely maintenance to reduce the potential for mechanical breakdowns that could lead to a spill of hazardous materials. Maintenance and fueling will be conducted in an area at least 50 feet away from any waterbody or within an adequate fueling containment area.
  - Equipment operating within the ordinary high water mark of any waterbody will use non-toxic vegetable oil rather than traditional hydraulic fluids for operating hydraulic equipment.
  - Plastic materials will be placed under asphaltic concrete paving equipment while not in use to catch and/or contain drips and leaks.
  - Sweeping will be used to prevent sand, gravel, or dirt associated with construction activities from entering storm drains, waterbodies, and streets.

- Old or spilled asphalt will be recycled or disposed of as approved by the Resident Engineer.

- Asphalt concrete grindings, pieces, or chunks used in embankments or shoulder backing will not be allowed to enter any storm drain or waterbody. Silt fencing will be installed and remain in place until the structure is stabilized or permanent controls are in place.

- Petroleum or petroleum-covered aggregate will not be allowed to enter any storm drain or waterbody during application of chip seal or sweeping operations. Silt fencing will be used for containment until installation of chip-sealed surfaces is complete.

- Only non-toxic substances will be used to coat asphalt transport trucks and asphalt spreading equipment.

- Drainage inlet structures and manholes will be covered with filter fabric during application of seal coat, tack coat, slurry seal, and/or fog seal.

- Seal coat, tack coat, slurry seal, or fog seal will not be applied if rainfall is predicted to occur during the application or curing period.

- Saw-cut Portland concrete cement slurry will not be allowed to enter storm drains or waterbodies.

HAZ-1-2: Implement measures to reduce construction-related impacts from asbestos removal.

During construction, the following measures will be implemented to reduce construction-related environmental impacts that could result from asbestos removal during demolition of existing bridges.

- Provisions in the construction bid documents will be included to ensure the proper testing and if present, the removal and disposal of asbestos contaminants (e.g., bridge materials). Examples of measures to be included in the construction bid document include but will not be limited to a requirement that the contractor's personnel be qualified to perform their specific duties; the contractor will be responsible for the acquisition of specific permits and maintenance of necessary records; the contractor has environmental impairment insurance; and the contractor must be familiar with all applicable federal, state, and local laws and regulations related to worker safety, the generation of hazardous wastes, and waste disposal procedures.

- Prior to the start of construction, building material used for the existing bridges proposed for demolition will be tested for asbestos by a state-certified asbestos inspector to determine if bridge materials contain asbestos and what action, according to DHS recommendations and Cal-OSHA requirements, are recommended. If necessary, measures shall include but not be limited to the following:

  - If an asbestos contractor is required for the removal of asbestos-containing bridge materials, he or she shall have a valid license issued by the California Contractor's State License Board and be certified by Cal-OSHA. The contractor shall obtain and follow

the rules and regulations of the SJVAPCD regarding asbestos. In addition, asbestos waste maintenance and handling shall be overseen by an onsite asbestos removal professional trained in the Asbestos Hazard Emergency Response Act (AHERA) and meeting the EPAs Asbestos Abatement Consultant Certification requirements.

– Asbestos-containing building materials will be removed using one of several methods approved by the U.S. Environmental Protection Agency (EPA) and the California Occupational and Safety Hazard Administration, at the contractor's discretion. Acceptable methods include wet scraping or the use of a dustless needle gun connected to a vacuum unit with a high-efficiency particulate air (HEPA) filter that empties directly into a waste container. The waste container will be properly documented and disposed of at a Class I landfill, such as the Clean Harbors Buttonwillow, LLC, facility in Buttonwillow, California (CAD980675276), or Chemical Waste Management, Inc.'s, Kettleman facility in Kettleman, California (CAT000646117). Additionally, any activity involving the removal of asbestos-containing materials will require notifying the appropriate air quality management district, and removal and disposal may require a permit from the district.

HAZ-1-3: Implement measures to reduce construction-related impacts from lead-contaminated materials.

The following measure will be used to reduce construction-related environmental impacts that could result from lead-based paint and lead in soils adjacent to roadways where existing bridges will be demolished:

- Provisions in the construction bid documents will be included to ensure the proper testing, and if present, the removal and disposal of lead contaminants (e.g., painted bridge surfaces and soil containing aerially deposited lead). Examples of measures to be included in the construction bid document include but will not be limited to a requirement that the contractor's personnel be qualified to perform their specific duties; the contractor will be responsible for the acquisition of specific permits and maintenance of necessary records; the contractor has environmental impairment insurance; and the contractor must be familiar with all applicable federal, state, and local laws and regulations related to worker safety, the generation of hazardous wastes, and waste disposal procedures.

- Prior to the start of construction, painted metal and wood surfaces on the existing bridges proposed for demolition will be tested for the presence of lead paint. Prior to demolition of the structures, painted surfaces should be tested by a state-certified lead inspector to determine if the paint contains lead and what actions are recommended based on DHS recommendations and Cal-OSHA requirements. If lead-based paint is present on the bridge structures, the materials containing the paint shall be handled by an appropriately licensed contractor prior to or during demolition and disposed at a regulated facility such as the Chemical Waste Management facility in Kettleman City, California (DTSC 2019b) that accepts materials containing lead-based paint.

If soil analysis determines that project area soils are considered hazardous waste the soil will be handled in accordance with the California Department of Toxic Substance Control.

Land Use and Planning and Agricultural Resources

AG-1: Conserve agricultural lands.

Reclamation and FWA will either (1) acquire agricultural conservation easements for designated Farmland/Important Farmland at a 1:1 ratio to be held by land trusts or public agencies who will be responsible for enforcement of the deed restrictions maintaining these lands in agricultural use, or (2) provide funds to a land trust or government program that conserves agricultural land sufficient to obtain easements on comparable land at a 1:1 ratio.

Transportation

TRAN-1-1: Clearly mark detour routes for all road closures during construction.

Clearly marked detour routes will be provided around all construction areas that require road closures. If required by Tulare County, Kern County, or Caltrans, temporary bypass roads will be constructed as necessary to maintain overall connectivity for the traffic circulation system.

TRAN-1-2: Prepare a traffic control plan.

Prior to construction, the contractor will prepare a traffic control plan that would minimize impacts on through traffic as a result of construction activities. The traffic control plan would be prepared in accordance with the *California Manual of Uniform Traffic Control Devices* (MUTCD) (Caltrans 2014) and all applicable requirements of the Tulare County and/or Kern County Department of Public Works, as appropriate. The traffic control plan will be approved by Caltrans and the two counties Public Works departments, as appropriate, prior to construction and implemented at all times during construction of the project. FWA, Reclamation, and their contractors will cooperate with all agencies to obtain the necessary approvals.

The traffic control plan shall be prepared by a qualified traffic control specialist and include recommendations for appropriately managing traffic during the construction period by implementing measures such as construction schedule restrictions, signage, and flaggers. Such measures would promote traffic movement during construction to avoid substantial level of service (LOS) degradation (i.e., LOS levels that are less than the county's adopted LOS threshold).

TRAN-2: Notify emergency dispatchers of road closures.

Local emergency dispatchers will be notified of temporary road closures associated with bridge/road crossings and informed of the associated detour routes. Short-term impacts to emergency access near bridge/road crossings during construction will be avoided by notifying local emergency dispatchers of any planned road closures. Any identified detour routes would

need to maintain the emergency response time of 14 minutes or less to be consistent with NFPA standards.

Utilities and Service Systems and Energy

EN-1: Prepare a Construction Equipment and Vehicle Efficiency Plan.

A Construction Equipment and Vehicle Efficiency Plan (Efficiency Plan) that identifies the specific measures that construction contractors will implement as part of construction will be prepared by a qualified professional. Performance standards include those required by the California Code of Regulations, Title 13 related to heavy-duty vehicle use such as Section 2182 for smoke opacity standards, Section 1956 for exhaust and emission standards, Section 2449 for general use of off-road diesel fueled fleets, and Section 2183 for regular inspections of emissions control system on heavy-duty vehicles. The standards included in these regulations ensure that construction equipment and vehicles are maintained in good working order, are regularly tested, use clean fuels, and overall do not result in inefficient energy use. These measures will increase the efficient use of construction equipment and vehicles to the maximum extent feasible. The Efficiency Plan will be submitted to FWA and Reclamation for review and approval at least 30 days prior to the beginning of construction activities. Such measures will include but not be limited to the following:

- Procedures to ensure that all construction equipment is properly maintained (e.g., ensure that excavators or wheel loaders are not carrying buckets so large that they can cause the vehicle to drag and burn excess fuel)
- Requirement to provide options for worker carpooling
- A commitment to use existing electricity sources where feasible (for example pumps for dewater wells during construction) rather than using diesel-powered generators
- Requirement to use light-emitting diodes (LEDs) for any construction lighting needs
- Identification of procedures (including routing of haul trips) that will be followed to ensure that all materials and debris hauling is conducted in a fuel-efficient manner