Attachment 2

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)
CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2016-055-03

PERMITTEE: **California Department of Water Resources**

PROJECT: **Construction and Operation of Dual Conveyance Facilities of the State Water Project (California WaterFix)**

PURPOSE OF THE MMRP

The purpose of the MMRP is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Wildlife (CDFW) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by CDFW is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a permit requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance with all mitigation measures and for reporting to CDFW on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

CDFW may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
BEFORE DISTURBING SOIL OR VEGETATION					
1	Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Permittee shall notify CDFW in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition # 7.1	Before commencing Covered Activities, through end of construction	Permittee	
2	Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of one or more biological monitor(s) (Designated Biologist(s)) at least 30 days before starting Covered Activities. Permittee shall ensure that each Designated Biologist is knowledgeable and experienced in the biology, natural history, collecting and handling of the Covered Species. The Designated Biologist(s) shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain CDFW approval of a Designated Biologist in writing before starting Covered Activities, and shall also obtain approval in advance in writing if a Designated Biologist must be changed.	ITP Condition # 7.2	Before commencing Covered Activities, through end of construction	Permittee	
3	Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information of one or more fisheries biologist (s) (Designated Fisheries Biologist(s)) at least 30 days before starting Covered Activities. Permittee shall ensure that each Designated Fisheries Biologist has 1) a four-year college degree in fisheries or biology, or a related degree, 2) at least two years of professional experience in fisheries field surveys and fish capture and handling procedures, and 3) completed an electrofishing training course such as Principles and Techniques of Electrofishing (USFWS, National Conservation Training Center), or similar course. The Designated Fisheries Biologist(s) shall be responsible for monitoring in-water Covered Activities and fish salvage to help minimize or avoid the incidental take of individual Covered Fish Species and to minimize disturbance of Covered Fish Species' habitat. Permittee shall obtain CDFW approval of the Designated Fisheries Biologist in writing before starting Covered Activities, and shall also obtain approval in advance in writing if a Designated Fisheries Biologist must be changed.	ITP Condition # 7.3	Before commencing Covered Activities, through end of construction	Permittee	
4	To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist and Designated Fisheries Biologist shall have authority to immediately stop any activity that does not comply with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species.	ITP Condition # 7.4	Throughout Project construction	Permittee	
5	Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a	ITP Condition #	Before commencing	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	presentation from the Designated Biologist or Designated Fisheries Biologist that includes: • Important timing windows for Covered Species, including information about the distribution and habitat needs of the Covered Species • Sensitivity of the Covered Species to human activities • Take minimization measures that will be implemented during Covered Activities • Protocols for identifying relevant take minimization measures based on the nature, timing, and location of Covered Activities • Species of Special Concern and federally listed species that may be present on the construction site but are not Covered Species • Boundaries of the construction site and demarcation of disturbance-free zones • Covered Species habitat avoidance commitments • Exclusion and construction fencing installation and monitoring • Roles and responsibilities of workers, managers, Designated Representative, Designated Biologist(s), and Designated Fisheries Biologist(s) • Measures to take when encountering Covered Species and what to do when Covered Species are found dead, injured, stressed, or entrapped • Covered Species status pursuant to CESA (including legal protection) and penalties for violations and Project-specific protective measures described in this ITP Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.	7.5	Covered Activities, through end of construction		
6	The Designated Biologist shall maintain a construction-monitoring notebook on-site throughout the construction period, which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by CDFW.	ITP Condition # 7.6	Before commencing ground- or vegetation-disturbing activities, through end of construction	Permittee	
7	Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed at least once a week to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs	ITP Condition # 7.7	Before commencing Covered Activities, through end of construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
8	Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.	ITP Condition # 7.8	Throughout Project construction	Permittee	
9	Before starting Covered Activities Permittee shall clearly delineate the boundaries of the construction site with fencing, stakes, or flags. Permittee shall restrict all Covered Activities to within the fenced, staked, or flagged areas. Permittee shall maintain all fencing, stakes, and flags until the completion of Covered Activities in that area.	ITP Condition # 7.9	Before commencing Covered Activities, through end of construction	Permittee	
10	Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat.	ITP Condition # 7.10	Before commencing Covered Activities, through end of construction	Permittee	
11	Permittee shall restrict all project-related vehicle or heavy equipment traffic to established roadways or designated ingress/egress routes within the Project Area. Project-related personnel shall observe a speed limit of 20 miles per hour in construction sites, except on county roads, state and federal highways, and other roads where 20 miles per hour would unsafely impede the normal flow of traffic. Permittee shall post a vehicle speed limit of 20 miles per hour on all nonpublic construction and access roads.	ITP Condition # 7.11	Throughout Project construction	Permittee	
12	Permittee shall confine project-related vehicles, storage areas, equipment storage, and laydown sites to the Project Area using previously disturbed locations to the extent possible. Permittee shall restrict all vehicle parking to established construction sites, existing roads, or cleared areas.	ITP Condition # 7.12	Throughout Project construction	Permittee	
13	Project personnel shall visually check for Covered Species under vehicles and equipment prior to moving them.	ITP Condition # 7.13	Throughout Project construction	Permittee	
14	Permittee shall immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition # 7.14	Throughout Project construction, Test Period, and Full Operations	Permittee	
15	Permittee shall provide CDFW staff with reasonable access to the Project, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.	ITP Condition # 7.15	Throughout Project construction, Test Period, and Full Operations	Permittee	
16	Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine,	ITP Condition # 7.16	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	buckets, metal or plastic containers, flags, and boxes.				
MONITORING, NOTIFICATION, AND REPORTING PROVISIONS					
17	The Designated Representative shall notify CDFW 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.	ITP Condition # 8.1	Before starting Covered Activities	Permittee	
18	The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any non-compliance with this ITP to CDFW within 24 hours	ITP Condition # 8.2	Throughout Project construction, Test Period, and Full Operations	Permittee	
19	The Designated Biologist(s) shall be on-site daily at each construction site within the Project Area when Covered Activities occur. The Designated Biologist(s) shall conduct compliance inspections to: (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; (5) ensure that signs, stakes, and fencing are intact; and (6) ensure that Covered Activities are only occurring in the Project Area. During initial vegetation and soil disturbance, the Designated Biologist(s) shall monitor compliance continuously where Covered Activities are occurring. After initial vegetation and soil disturbance, the Designated Biologist(s) shall conduct compliance inspections a minimum of once per day where Covered Activities are occurring. The Designated Representative or Designated Biologist(s) shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP. Permittee shall compile and report observation and inspection records as described in Condition of Approval 8.6. The Designated Biologist(s) shall conduct compliance inspections a minimum of monthly during periods of inactivity and after clearing, grubbing, and grading are completed.	ITP Condition # 8.3	Throughout Project construction	Permittee	
20	Permittee shall maintain Geographic Information System (GIS) shapefile layers and associated maps depicting: 1) mapped areas of all land disturbances within the Project Area; and 2) mapped areas of disturbed identified habitat features suitable for Covered Species (see Condition of Approval 8.4.1 for habitat features) within the Project Area (as depicted in Attachment 1, Figures 1-10). Permittee shall maintain the GIS layers and metadata for those maps and shall update the GIS layers and maps if there are any new detections of Covered Species or their habitat features. Within each construction site, Permittee shall track, in real time, acreages of identified habitat features suitable for Covered Species disturbed by Covered Activities. Permittee shall maintain this tracking using a GIS format and include photo documentation of the habitat feature, conducted no more than 14 days prior to initiation of Covered Activities. The photo documentation of each habitat feature shall include a minimum of four photos: one taken each from the North, South, East, and West and facing the habitat feature. Permittee shall include	ITP Condition # 8.4	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	separate photo documentation of each habitat feature suitable for Covered Species. Accordingly, if there are multiple habitat features in a construction site, Permittee shall include multiple sets of photo documentation for that site. The Permittee shall document the total disturbed acreage of habitat features for each Covered Species compiled from the real-time tracking, and compare the documented disturbance in each construction site to the Baseline Maps shown in Attachment 6. Permittee shall provide GIS layers and the associated metadata to CDFW with the Monthly Compliance Report (see Condition of Approval 8.6). Permittee shall also maintain maps for each Covered Species separately, and shall include updates to any of the maps in the next Annual Status Report (see Condition of Approval 8.7). Permittee shall also provide up-to-date GIS layers of the identified habitat features suitable for Covered Species with the Monthly Compliance Report and a summation of disturbance of identified habitat features annually at the time of Annual Status Report submission.				
21	Permittee shall track suitable habitat for the Covered Species in each construction site within the Project Area and surrounding species-specific buffers. Suitable habitat will be defined based on the following habitat features (see items 22 through 31, below) and the professional judgement of the Designated Biologist(s) conducting on-the-ground habitat evaluation surveys:	ITP Condition # 8.4.1	Throughout Project construction	Permittee	
22	CTS Upland habitat containing any of the following habitat features: • Grassland: native, ruderal, or annual grasses, weeds, and forbs • Pasture • Undisked barren • Undisked fallow field • Degraded vernal pool complex • Alkali seasonal wetland complex • Within 1.3 miles of suitable aquatic breeding habitat • No impermeable barriers to CTS movement between the potential upland refugia and suitable aquatic habitat • Contains burrows, cracks, or crevices (or presence of ground squirrels or gophers)	ITP Condition # 8.4.1.1	Throughout Project construction	Permittee	
23	CTS Aquatic Breeding habitat shall include necessary components from the most current USFWS recovery plan in any of the following habitat features: • Vernal pools • Natural and artificial swales • Seasonal ponds • Seasonal wetland/vernal pool complex	ITP Conditions # 8.4.1.2	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	• Perennial ponds such as stock ponds				
24	SWHA Breeding habitat: • Suitable nest trees: 20-ft (6-m) minimum height in any of the following habitat features: o Riparian including valley oak, Fremont cottonwood, willow, sycamore o Isolated trees, small groves, or tree rows including oak, walnut, locust, conifers, or *Eucalyptus*	ITP Conditions # 8.4.1.3	Throughout Project construction	Permittee	
25	SWHA Foraging habitat in any of the following habitat features: • Grassland: native, ruderal, or annual grasses, weeds, and forbs • Pasture or open rangeland • Barren fields • Fallowed fields • Irrigated field crops; including alfalfa and other hay, grains, sunflower, corn, safflower • Managed row crops; including tomatoes, beets, peppers, beans, lettuce, broccoli, asparagus, carrots, melons, squash, cucumbers, onions, garlic, berries • Shrub/sage • Managed or seasonal wetlands	ITP Condition # 8.4.1.4	Throughout Project construction	Permittee	
26	GGS Aquatic (active season) habitat shall include necessary components from the most current USFWS recovery plan in any of the following habitat features: • Freshwater perennial aquatic—all types • Freshwater emergent wetland • Rice • Managed wetland • Agricultural ditches and irrigation canals	ITP Condition # 8.4.1.5	Throughout Project construction	Permittee	
27	GGS Upland (active and inactive season) habitat within 200 feet of suitable aquatic habitat and contains burrows, cracks or crevices within any of the following habitat types: • Non-irrigated pasture • Annual or native grasslands and forbs • Seasonal wetland • Vernal pool complex • Levee rock riprap • Vegetated banks and levees • Dune scrub • Managed wetland • Low-canopy riparian	ITP Condition # 8.4.1.6	Throughout Project construction	Permittee	
28	8.4.1.7 TRBL Nesting habitat in any of the following habitat features that are within five miles of an observed or historic breeding colony, within three miles of suitable foraging	ITP Condition #	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	habitat, and within 0.3 miles of a water source: • In any healthy freshwater emergent wetland • In any flooded riparian TRBL nesting habitat feature, including small willows and cottonwoods, giant reed, desert olive, mulefat scrub, coyote bush, tamarisk, elderberry, buttonwillow, poison oak, or other riparian species • The Designated Biologist shall also conduct preconstruction surveys for breeding colonies (Condition of Approval 9.3.1) in the following alternative nesting substrates: o Agricultural fields, such as triticale, fava beans, wheat, barley, rice, or safflower o Large weedy fields at least 30 feet wide, such as mustard, foxtail, and mallow o In any of the following armored plant habitat: thistle; blackberry or raspberry, particularly Himalayan blackberry; nettle; prickly lettuce; wild rose; poison hemlock; or other thorny plants If a breeding colony is observed in above TRBL nesting habitat or alternative nesting substrates in areas not already shown in Attachment 6, all avoidance and minimization measures described in Condition of Approval 9.3 shall apply and Permittee shall consult with CDFW regarding the need to amend the ITP with additional compensatory mitigation requirements from what is described in Condition of Approval 10.	8.4.1.7			
29	TRBL Foraging habitat in any of the following habitat types: • Grasslands – all types • Pasture • Weedy fields • Seasonal wetlands • Vernal pool complex • Dry and irrigated pasture • Sage/scrub • Hay crops including alfalfa • Grain crops; including wheat, oats, and millet • Field crops; including sunflower, corn, and rice	ITP Condition # 8.4.1.8	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	• Idle or fallowed croplands • Stored grain and livestock feed lots • Dairies • Farmsteads				
30	TRBL Roosting habitat: • Managed wetland • Tidal freshwater and brackish emergent wetland • Nontidal freshwater emergent wetland • Riparian; including blackberry, elderberry, and willows	ITP Condition # 8.4.1.9	Throughout Project construction	Permittee	
31	Covered Fish Species Migration, Rearing, Foraging, and Spawning habitat: • Accessible tidal freshwater and brackish emergent wetland • Sandy shoals • Deep channels, rivers and streams • Emergent and riparian vegetation • Riparian bench migration and rearing habitat	ITP Condition # 8.4.1.10	Throughout Project construction	Permittee	
32	Permittee shall document the cumulatively disturbed acreages of identified habitat suitable for each Covered Species within the Project Area, as well as acreages of identified habitat features anticipated to be disturbed over the succeeding 30 days, using the data maintained according to Condition of Approval 8.4. Permittee shall provide the above information to CDFW with the Monthly Compliance Report.	ITP Condition # 8.5	Throughout Project construction	Permittee	
33	For the duration of the Covered Activities, the Designated Representative(s) or Designated Biologist(s) shall compile the observation and inspection records identified in Conditions of Approval 8.3 and 8.4 into a Monthly Compliance Report and submit it to CDFW along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Monthly Compliance Reports shall also include: 1) an accounting of the number of acres that have been disturbed within the Project area, both for the prior month and a total since ITP issuance; 2) the cumulatively disturbed acreages of identified habitat features for each of the Covered Species within the Project Area, both for preceding 30 days and a total since ITP issuance; and 3) the acreages of identified habitat features anticipated to be disturbed over the succeeding 30 days; and 4) the up-to-date GIS layers, associated metadata, and photo documentation used to track acreages disturbed during Covered Activities and as identified in Conditions of Approval 8.4 and 8.5. Permittee shall submit Monthly Compliance Reports to CDFW no later than the 15th day of the month. The Monthly Compliance Report is due at the office listed in the Notices section of this ITP and via e-mail to CDFW's Representative and Headquarters CESA Program. At the time of this ITP's approval, the CDFW Representative is Carl Wilcox (Carl.Wilcox@wildlife.ca.gov) and Headquarters CESA Program (email is	ITP Condition # 8.6	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	CESA@wildlife.ca.gov). CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.				
34	Permittee shall provide CDFW with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Monthly Compliance Reports for that year identified in Condition of Approval 8.6; (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) information about other Project impacts on the Covered Species; (7) updates to the mapped areas of all land disturbances and mapped areas of identified habitat features suitable for Covered Species within the Project Area in accordance with Condition of Approval 8.4 above; 8) a summary of findings from pre-construction surveys (e.g., number of times a Covered Species or a burrow or nest was encountered, location, if avoidance was achieved, if not, what other measures were implemented); 9) beginning and ending dates of maintenance, emergency related, and other Covered Activities undertaken during the reporting year; and 10) a summary of the cumulative status of the disturbed acreages of all land disturbances and identified habitat features for each of the Covered Species within construction sites in the Project Area, both for the preceding twelve months and a total since ITP issuance, and the acreages of all land and identified habitat features anticipated to be disturbed over the succeeding twelve months in accordance with Conditions of Approval 8.4 and 8.5 above.	ITP Condition # 8.7	Annually beginning with initiation of Covered Activities, through completion of Project construction	Permittee	
35	The Designated Biologist shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next Monthly Compliance Report or ASR, whichever is submitted first relative to the observation.	ITP Condition # 8.8	Throughout Project construction	Permittee	
36	Permittee shall prepare and submit to CDFW three summary reports (see below) describing progress on the Project during the permit term. These reports will supplement annual syntheses and evaluations of studies and monitoring data conducted on an ongoing basis as a part of the Adaptive management Program.	ITP Condition # 8.9	Throughout Project construction, Test Period, and Full Project Operations	Permittee	
37	No later than 180 days after completion of Project construction, Permittee shall provide CDFW with a Project Construction Report. The Designated Biologist and Designated Representative shall prepare the Project Construction Report which shall include, at a minimum: (1) a summary of all Monthly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was	ITP Condition # 8.9.1	Within 180 days of completion of Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.				
38	At least 180 days prior to completion of the Test Period Permittee shall provide CDFW with a Test Period Report documenting results of all pre-construction studies and monitoring conducted during the Test Period of Project operations, and monitoring of HM lands established as compensatory mitigation for Project impacts.	ITP Condition # 8.9.2	Prior to completion of the Test Period	Permittee	
39	Before June 30th 2042, Permittee shall provide CDFW with a Full Project Operations Report documenting the results of all post-construction studies and monitoring conducted during Full Project Operations, and monitoring of HM lands established as compensatory mitigation for Project impacts.	ITP Condition # 8.9.3	Prior to June 30, 2042	Permittee	
40	Permittee shall immediately notify the Designated Biologist if a Covered Species is taken or injured by a Covered Activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist or Designated Representative shall provide initial notification to CDFW by calling the CDFW Office at (916) 445-8576. The initial notification to CDFW shall include information regarding the location, species, and number of animals taken or injured and the ITP Number. Following initial notification, Permittee shall send CDFW a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible provide a photograph, explanation as to cause of take or injury, and any other pertinent information.	ITP Condition # 8.10	Throughout Project construction, Test Period, and Full Project Operations	Permittee	
Take Minimization Measures - The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area and associated impacts of the taking during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species.					
41	Project Construction Multi-species Measures (see items below).	ITP Condition # 9.1	Throughout Project construction	Permittee	
42	Permittee shall ensure that all herbicide and pesticide use (mixing, application, and clean-up) is done by a licensed applicator in accordance with all applicable state, federal, and local regulations. Permittee shall only apply herbicide sprays via ground application when wind speed measures less than three miles per hour. Permittee shall ensure all herbicide sprays utilized within and adjacent to identified habitat features suitable for Covered Species contain a dye (registered for aquatic use by the California Department of Pesticide Regulation, if warranted) to prevent overspray.	ITP Condition # 9.1.1	Throughout Project construction	Permittee	
43	Permittee shall prohibit the use of rodenticides in construction sites.	ITP	Throughout Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
		Condition # 9.1.2	construction		
44	Permittee shall use artificial outdoor lighting only as needed for safety and security. Permittee shall ensure all lighting minimally impacts the surrounding environment, and Permittee or contractors shall shield lighting to direct the light only toward objects requiring illumination in construction and permanent facility sites within the Project Area. Lights shall be downcast, cut-off type fixtures with non-glare finishes set at a height that casts low-angle illumination to minimize incidental spillover of light onto adjacent properties or open spaces and backscatter into the nighttime sky. Lights shall provide good color rendering with natural light qualities with the minimum intensity feasible for security, safety, and personnel access. All lighting shall be directed away from waterways near Project facilities with shielding to further minimize potential light spillover into Covered Fish Species habitat.	ITP Condition # 9.1.3	Throughout Project construction	Permittee	
45	Project personnel shall inform the Designated Biologist(s) if they encounter Covered Species within or near the construction site during all phases of Covered Activities. Permittee shall cease Covered Activities in the vicinity of Covered Species that could cause injury or mortality until the Covered Species is moved by the Designated Biologist(s) or it moves from the construction site of its own accord (see species-specific Relocation Conditions).	ITP Condition # 9.1.4	Throughout Project construction	Permittee	
46	Permittee shall not permit pets, campfires, or firearms in construction sites, except firearms carried by authorized security personnel or local, state, or federal law enforcement officials. To avoid attracting predators, Permittee shall ensure Project personnel dispose of all food-related trash items such as wrappers, cans, bottles, and food scraps in enclosed containers. Permittee shall ensure trash is removed from the construction site and taken to an appropriate facility at least once a week for disposal (see Condition of Approval 7.7).	ITP Condition # 9.1.5	Throughout Project construction	Permittee	
47	Upon completion of work, Permittee shall backfill geotechnical test pits with the excavated material on the same day as they are excavated, and shall place the stockpiled topsoil at the surface and restore the site where geotechnical exploration activities were conducted. Permittee shall backfill bored holes on the same day as they were drilled, after exploration is completed at that site.	ITP Condition # 9.1.6	Post-construction and after completion of mitigation	Permittee	
48	To prevent inadvertent entrapment of Covered Species during construction, Permittee shall cover all excavated, steep-walled holes or trenches more than six inches deep at the close of each working day with plywood or similar material and shall ensure the cover is sealed with rock bags or other methods to prevent animals from reentering. While pits or holes are open, Permittee shall provide one or more escape ramps constructed of earth fill or wooden planks, as approved by the Designated Biologist. When such holes or trenches are being covered or filled, the Designated Biologist(s) shall be present to ensure there are no trapped Covered Species and the hole or trench cover is secure. If a Covered Species or other wild animal is encountered in holes or trenches during construction work, Permittee shall divert Covered Activities away from the Covered Species until Project personnel contact the Designated Biologist. The Designated Biologist(s) shall attempt to	ITP Condition # 9.1.7	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	relocate the trapped Covered Species if safe or feasible to do so or shall determine further action.				
49	The Designated Biologist(s) or Project personnel shall inspect all construction pipes, culverts, or similar structures with a diameter of 0.25 inch or greater that are stored for one or more overnight periods in construction sites that may be occupied by Covered Species, at the beginning of each day during which such materials will be used for construction, moved, buried, or capped. If Project personnel detect Covered Species within a pipe, culvert, or similar structure, they shall notify the Designated Biologist(s) and allow the animal to safely escape, or be relocated by the Designated Biologist(s) outside of the construction site, prior to moving, capping, burying, or utilizing the structure. If necessary, and under the direct supervision of the Designated Biologist(s), Project personnel may move the structure up to one time to isolate it from construction activities until the Covered Species moves from the structure of its own volition or the Designated Biologist(s) relocates the individual outside of the construction site. Immediately after inspection or after the animal has vacated the structure, Project personnel shall securely cap the pipes, culverts, or similar structures to prevent Covered Species from entering the structures.	ITP Condition # 9.1.8	Throughout Project construction	Permittee	
50	Prior to finalizing Project engineering design, Permittee shall coordinate with the TOT to develop a spoils disposal plan for the storage of spoils, RTM, and dredged material. The spoils disposal plan shall address size, locations, and required characteristics of designated storage sites; storage site preparation and dewatering; excavation of contaminated material; and chemical characterization, drainage, and treatment. The spoils disposal plan shall include protocols for sampling and analysis of dredge materials, spoils, and RTM that shall address: handling and disposal of hazardous material; the presence and concentrations of contaminants (including mercury, arsenic, barium, cadmium, chromium, copper, lead, nickel, selenium, silver, zinc, tributyltin, polycyclic aromatic hydrocarbons, and organochlorine pesticides); potential discharge of contaminants that would affect surface water or groundwater (e.g., instream discharges during dredging, effluent discharge from the disposal site; leachate from the disposal site); sediment analyses; chemical analyses; a protocol to reduce or eliminate the release of contaminated sediment; and BMPs to be implemented during handling and disposal of any potentially hazardous dredged or excavated material (see Condition of Approval 9.1.21). Permittee shall size the designated storage sites to accommodate all RTM, dredge material, or spoils expected to be generated by Covered Activities and shall size and locate the sites to minimize the impact or encroachment on environmentally sensitive areas within the Project Area. Permittee shall set aside a portion of each designated storage site for topsoil storage. Permittee shall immediately haul vegetative material off site for disposal, or place the material in piles 200 feet from Covered Species habitat to be left undisturbed. Permittee shall not chip, stockpile, and spread vegetative material over the topsoil unless such material does not contain seeds of invasive nonnative species and it is processed immediately. Permittee shall use rocks and other inorganic material grubbed from storage	ITP Condition # 9.1.9	Prior to initiating Covered Activities, and throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	sites to backfill borrow pits or shall remove these materials from the site. Permittee shall not place grubbed material in environmentally sensitive areas. Permittee shall conduct discharges from RTM draining operations in such a way as to not cause erosion at the discharge point. If RTM liquid requires chemical treatment, Permittee shall ensure chemical treatment of RTM liquid is nontoxic to aquatic organisms.				
51	To minimize the potential for bird strikes with transmission lines, Permittee shall install bird strike diverters on all new permanent and temporary lines. For optimum results, Permittee shall space the diverters along the lines in accordance with the Avian Powerline Interaction Committee's guidance (Avian Power Line Interaction Committee 2012). Permittee shall use the most effective and appropriate diverter for minimizing strikes, according to best available science. Permittee shall install bird strike diverters in a configuration that research indicates would reduce bird strike risk by 60% or more. Permittee shall also install bird strike diverters on the same length of existing lines within the Project Area as the length of new transmission lines constructed, unless the new lines replace existing lines. Permittee shall periodically inspect and replace bird strike diverters placed on new and existing lines as needed until or unless the lines are removed (also see Condition of Approval 10.4.4).	ITP Condition # 9.1.10	Throughout Project construction, Test Period and Full Project Operations	Permittee	
52	Permittee shall restrict the times of year when in-water Covered Activities are conducted to minimize impacts on Covered Species. The following Covered Activities are permitted only during the in-water work windows (in-water Covered Activities): over water geotechnical exploration, dredging, cofferdam installation and removal, pile driving, levee clearing and grading, riprap placement, construction of sheetpile walls, and placing of rock bedding and stone slopes. In-water Covered Activities associated with mobilization and demobilization are not subject to the work window restrictions. The in-water work windows do not apply to in-water Covered Activities conducted behind a dewatered cofferdam, except impact pile driving. Permittee may conduct in-water impact pile driving outside of the in-water work windows within a dewatered cofferdam and with in-channel acoustic monitoring to verify that generated sound thresholds do not exceed the 150 dB disturbance criterion, as described in the CDFW-approved Underwater Sound Abatement Plan (see Condition of Approval 9.1.13). Permittee shall restrict in-water Covered Activities associated with construction of the NDD intakes, CCF, HOR Gate and barge landings to the following in-water work windows: • Permittee shall only conduct in-water work at the NDD intakes from June 1 through October 31: o Permittee shall only conduct in-water impact pile driving at the NDD intakes from June 15 - September 15. Mobilization and demobilization are not included within this work window. o Permittee may conduct in-water impact pile driving at the NDD intakes from June 1 – June 15 and September 16 - October 31 if bubble curtains and other measures demonstrate that an equivalent level of protection can be achieved during the	ITP Condition # 9.1.11	Throughout Project Construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	primary work window, and as approved in writing by CDFW. o Permittee may conduct impact pile driving between June 1 – June 15 and September 16 – October 31 behind cofferdams at the NDD Intakes construction sites outside of the above shortened work window with in-channel acoustic monitoring (see Condition of Approval 9.1.13) required to verify that generated sound thresholds do not exceed the disturbance threshold of 150 dB. o Permittee shall conduct acoustic monitoring (see Condition of Approval 9.1.13) to verify that any sound transmitted to the water column is below the disturbance threshold of 150 dB for all other in-water Covered Activities at the NDD intakes, including drilled shaft (also known as cast-in-drilled hole piles) construction, riprap placement, and dredging in NDD intake dewatered cofferdams outside the above referenced work windows. • Permittee shall only conduct in-water Covered Activities associated with the construction of the HOR Gate from August 1 - October 31. o Permittee shall implement use of bubble/sound barrier with acoustic monitoring to verify reduction in the sound field when impact hammers are used. • Permittee shall only conduct in-water Covered Activities associated with the construction of barge landings from July 1 - August 31. • Permittee shall only conduct barge operations within the following windows and associated locations: o Permittee shall only conduct barge operations from the Port of Stockton, San Francisco, and Antioch to all barge landings from June 1 – October 31 o Permittee shall only conduct barge operations from the Port of Stockton to Bouldin Island from November 1 - February 28. o Permittee shall only conduct barge operations from the Port of Stockton to Bouldin Island from March 1 - May 31 to move critical heavy construction equipment and materials that cannot be moved by land. Barge traffic shall be restricted to minimize impacts to emigrating CHNSR from the San Joaquin River basin. o During the period from November 1 to May 31 no trips will originate from the ports in San Francisco or Antioch. o Barge operations will occur only during the work week and will not occur on weekends.				

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	• Permittee shall only conduct over-water geotechnical exploration from August 1 - October 31. • Permittee shall only conduct in-water Covered Activities associated with construction of the CCF facilities from July 1 - November 30 o Permittee shall only conduct in-water impact pile driving from July 1 - October 31. Mobilization and demobilization could continue to occur outside this window. o Permittee shall only conduct dredging operations from July 1 – October 31 at South CCF. o Permittee shall only conduct dredging of the North CCF after fish have been rescued/salvaged. o Permittee may conduct other low impact in-water work from November 1 – November 30. Permittee shall coordinate with the NDDTT, HGTT, CCFTT, and the TOT prior to finalizing Project engineering design to further limit the times when Permittee shall conduct in-water work, as feasible. Further limits to the timing of in-water work windows may be incorporated into the final Project engineering design in coordination with the TOT, and if approved in writing by CDFW.				
53	Permittee shall terminate all in-water Covered Activities 30 minutes before sunset and shall not resume until 30 minutes after sunrise. Permittee shall use sunrise and sunset times established by the U.S. Naval Observatory Astronomical Applications Department for the geographic area.	ITP Condition # 9.1.12	Throughout Project Construction	Permittee	
54	Prior to finalizing Project engineering design Permittee shall coordinate with the TOT to develop an underwater sound abatement plan outlining specific measures to avoid and minimize the effects of underwater construction noise on Covered Fish Species. The underwater sound abatement plan shall evaluate methods to minimize the potential effects of underwater noise on Covered Fish Species in the context of established underwater noise thresholds for disturbance and injury of fish. The underwater sound abatement plan shall include a requirement for continual acoustic monitoring of pile driving conducted outside in-water work windows in dewatered areas by the Designated Fisheries Biologist, and procedures for measuring pile driving sound consistent with ICF Jones and Stokes 2009 *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish, Appendix II*. Permittee shall consider incorporating California Department of Transportation (2009) thresholds into the underwater sound abatement plan: • Fish of all sizes single event injury threshold: Injury at a peak sound pressure level of 206 decibels (dB) relative to 1 micropascal. Disturbance at 150 dB root mean square relative to 1 micropascal. • Fish less than 2 grams cumulative exposure injury threshold: Injury at 183 dB relative to 1 micropascal cumulative sound exposure.	ITP Condition # 9.1.13	Prior to initiating Covered Activities, and throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	• Fish greater than or equal to 2 grams cumulative exposure injury threshold: Injury at 187 dB relative to 1 micropascal cumulative sound exposure. Permittee shall implement the underwater sound abatement plan to verify that any sound transmitted to the water column by Covered Activities conducted outside the in-water work window, but within de-watered areas, is below the disturbance threshold of 150 dB. The Designated Fisheries Biologist shall retain the authority to stop work in the event that sound pressure level (SPL) measured during acoustic monitoring exceeds the disturbance threshold. Permittee shall submit the underwater sound abatement plan to the TOT for review at least 90 days prior to finalization of the Project engineering design. Permittee shall not initiate in-water Covered Activities until the final underwater sound abatement plan is approved in writing by CDFW.				
55	Prior to finalizing Project engineering design Permittee shall coordinate with the TOT to develop a pile driving plan to minimize the impacts of pile driving on Covered Species. The pile driving plan shall include an explanation of how the Project engineering design minimizes the total number of pilings, the number of pilings that will be driven per day with an impact pile driver, the number of pile driving strikes per day, the duration of pile driving within the in-water work windows, and the duration of pile driving within the daily in-water work construction window. To minimize impacts of pile driving on Covered Species the pile driving plan shall incorporate, but not be limited to, the following pile driving minimization measures and performance reporting requirements: • Restrict impact pile driving activities to specific times of the day and for a specific duration to be determined in coordination with the TOT. • Minimize impact pile driving used in the construction of barge landings by using floating docks instead of pile-supported docks, where feasible. • Implement vibratory pile driving methods to minimize the noise generated from construction activities to the greatest extent feasible. • Initiate impact pile driving with a soft-start, such that pile strikes are initiated at reduced impact and increase to full impact over several strikes to provide Covered Species an opportunity to move out of the area. • Ensure pile driving activities are initiated in a way that provides an escape route and avoids trapping Covered Fish Species between pile drivers in waters exposed to underwater noise levels that could potentially cause injury when more than one pile driving rig is employed. • Abate underwater noise generated by impact pile driving using the best available and practicable technologies. • Establish hydroacoustic objectives to minimize potential impacts of impact pile driving on Covered Fish Species and implement hydroacoustic monitoring where impact pile driving is required to determine compliance with established objectives.	ITP Condition # 9.1.14	Prior to initiating Covered Activities, and throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	• Immediately report exceedances of hydroacoustic objectives to CDFW and implement corrective actions. • Monitor the in-water work area for Covered Fish Species that may be showing signs of distress or injury as a result of pile driving activities and stop work when distressed or injured Covered Fish Species are observed. Immediately report to CDFW observations of distressed or injured Covered Fish Species resulting from pile driving activities. • Provide an annual pile driving monitoring report to the TOT, summarizing pile driving monitoring observations over the course of each construction year, including an evaluation of the plan performance measures. The annual monitoring report shall also include a description of exceedances of hydroacoustic objectives and measures implemented to remediate impacts to Covered Fish Species. • Permittee shall ensure the pile driving plan is reviewed and finalized by the TOT and submitted to CDFW for written approval at least 90 days before Permittee initiates pile driving. Permittee shall implement all measures in the approved plan.				
56	Permittee shall coordinate with the TOT prior to finalizing Project engineering design, to develop a barge operations plan to minimize the number of barge trips necessary to conduct Covered Activities, identify the barge routes that minimize impacts on Covered Fish Species, and minimize general barge operation related effects on Covered Fish Species. Permittee shall submit a draft barge operations plan to the TOT at least 90 days prior to finalization of the Project engineering design. Permittee shall not initiate Covered Activities that require barge operations until the final barge operations plan is approved in writing by CDFW. The barge operations plan shall describe measures to avoid and minimize impacts to Covered Fish Species caused by direct mortality due to propeller strikes or propeller wash, bottom scour from propeller wash, bank erosion or loss of submerged or emergent vegetation from propeller wash and/or excessive wakes, fish stranding due to wakes, accidental spillage of hazardous material, sediment that could cause turbidity or changes to bathymetry if disturbed, and disturbance to the bottom dwelling (benthic) invertebrates that provide a prey base for Covered Fish Species. Permittee shall also investigate the potential of using rail to deliver materials and components to Stockton and the CCF location and the potential for transporting materials by truck or rail to launch and retrieval points along the tunnel alignment. Permittee shall incorporate, but not be limited to, the following requirements into the barge operations plan: • Limit vessel speeds to maintain wake heights of less than two feet at shore to minimize the potential for vessel wakes to strand Covered Fish Species and the effects of wakes on unarmored or vegetated banks. • Ensure that tug boat and barge operators are trained to minimize impacts on Covered Species' habitats such as reducing the effects of wake on vegetated	ITP Condition # 9.1.15	Prior to initiating Covered Activities, and throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	banks. Permittee shall require vessel operators to obey all federal and state navigation regulations that apply to the Delta. • Limit the direction and/or velocity of propeller wash to prevent bottom scour and loss of aquatic vegetation. • All vessels shall approach and depart from the NDD intake and barge landing sites at dead slow to reduce vessel wakes and propeller wash. • Tie up barges whenever possible to avoid the necessity of maintaining stationary position by tugboat or by the use of barge spuds. Use anchors and barge spuds to secure vessels only when it is not possible to tie up. • Identify the location of barge anchoring planned at each barge landing and NDD intake site. Vessel operators shall not anchor barges where they will ground during low tides. • Lower anchors into place so they are not allowed to drag across the channel bed. • Avoid pushing stationary vessels up against cofferdams, docks, or other structures for extended periods, which could result in excessive directed propeller wash impinging on a single location. • All vessel operators shall obey U.S. Coast Guard regulations related to the prevention, notification, and cleanup of hazardous materials spills. • When transporting loose materials (e.g., sand, aggregate), vessel operators shall use deck walls or other features to prevent loose materials from blowing or washing off of the deck. • The Designated Representative shall report to CDFW within 24 hours any vessel grounding and deviations from the barge operations plan, and barge operations that could have resulted in the disturbance of bottom sediments, damage to river banks, loss of submerged, emergent, or riparian vegetation or impacts to Covered Fish Species. • All vessel operators shall keep an oil spill containment kit and spill prevention and response plan onboard. In the event of a fuel spill, vessel operators shall contact the CDFW Office of Spills Prevention and Response immediately at 800-852-7550 or 800-OILS-911 (800-645-7911) to report the spill. • Permittee shall visit each NDD intake and barge landing site to determine the extent of emergent and riparian vegetation, bank conditions, and general site conditions during the growing season prior to initiation of construction (see *7.4 Tracking Suitable Habitat Feature Disturbances, Map Updating, and Reporting*) and then annually during and after construction until barge landings are				

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	disassembled. Permittee shall monitor the condition of both river banks at each landing site. • Permittee shall provide an annual monitoring report to CDFW, summarizing monitoring observations over the course of each construction year, including an evaluation of the plan performance measures. The annual monitoring report shall also include a description of and representative photographs and/or videos of conditions of river banks and vegetation, deviations from the barge operations plan, accidental contaminant and materials spills, and other impacts to Covered Fish Species and their habitats. • Permittee shall develop plans to transport materials by truck or rail, instead of barges, to launch and retrieval points along the tunnel alignment and shall investigate the potential of using rail to deliver materials and components to Stockton and the CCF location. Permittee shall ensure the barge operations plan is reviewed and finalized by the TOT and submitted to CDFW for written approval. Permittee shall implement all measures in the approved plan. Permittee shall not initiate barge operations that have the potential to impact Covered Fish Species until the barge operations plan is approved in writing by CDFW.				
57	Permittee shall coordinate with the TOT to develop a fish salvage plan that describes procedures for fish rescue and salvage to minimize the number of Covered Fish Species stranded during Project construction. Permittee shall submit a draft fish salvage plan to the TOT at least 90 days prior to finalization of Project engineering design. Permittee shall not initiate Covered Activities that have the potential to strand fish until the final fish salvage plan is approved in writing by CDFW. Permittee shall incorporate, but not be limited to, the following requirements into the fish salvage plan: • Conduct fish salvage operations in accordance with all required state and federal permits. • Fish salvage operations shall occur at all in-water construction sites where dewatering and resulting isolation of fish may occur. • The Designated Representative or Designated Fisheries Biologist shall notify CDFW at least seven days prior to an anticipated activity that could result in isolating fish, such as installation of a cofferdam. • The Designated Representative or Designated Fisheries Biologist shall notify CDFW at least seven days prior to dewatering activities that are expected to require fish salvage. • The Designated Fisheries Biologist(s) shall, in consultation with CDFW, determine	ITP Condition # 9.1.16	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	appropriate site-specific procedures for excluding fish from construction zones, removing fish from construction zones should they become trapped, and preventing fish from reentering construction zones prior to dewatering based on site-specific conditions and construction methods. • Each fish salvage team conducting fish salvage efforts shall contain at least one Designated Fisheries Biologist. • To avoid and minimize the risk of injury to fish, attempts to seine and/or net fish shall always precede the use of electrofishing equipment. Conduct electrofishing in accordance with NMFS electrofishing guidelines (NMFS 2000) and other appropriate fish and wildlife agency guidelines. One or two 3- to 4-person teams shall conduct electrofishing, with each team having an electrofishing unit operator and two or three netters. • Permittee shall provide an annual report to the TOT summarizing the results of the fish salvage operations (including date, time, location, comments, method of capture, fish species, number of fish, approximate age, condition, release location, and release time) within 90 days from the end of each in water work window. • The Designated Fisheries Biologist shall place dead Covered Fish Species in sealed plastic bags with labels indicating species, location, date, and time of collection, store them on ice then freeze as soon as possible, and provide the frozen specimens to CDFW. • Fish capture, release, and relocation measures shall be consistent with the following general guidelines: - Use dip nets made of soft (nonabrasive) nylon material and small mesh size (0.125 inch) to collect small fish. - After conducting herding and netting operations use electrofishing, as needed, to remove as many fish as possible from the enclosure. - Make at least three passes through the enclosed cofferdam areas to remove as many fish as possible. - Initially place salvaged fish in containers filled with water obtained from the immediate area. - Transfer salvaged fish into 5-gallon buckets filled with clean river water at ambient temperature. - Hold fish in 5-gallon buckets equipped with a lid and an aerator, and add fresh river water or small amounts of ice to the fish buckets if the water temperature in the buckets becomes more than 2°F warmer than ambient river waters.				

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	- Maintain low densities of salvaged fish in holding containers to avoid effects of overcrowding. - Use water-to-water transfers whenever possible. - Release salvaged fish at predetermined locations approved by CDFW in appropriate habitat upstream or downstream of the construction site with similar temperature to the area from which fish were rescued and a low likelihood of fish reentering the construction site or being impinged on exclusion nets/screens. - Segregate larger fish from smaller fish to minimize the risk of predation and physical damage to smaller fish from larger fish. - Limit holding time to about 10 minutes, to the extent possible. - Avoid handling fish during processing unless absolutely necessary. Use wet hands or dip nets if handling is necessary. - Handle fish with hands that are free of potentially harmful products, including but not limited to sunscreen, lotion, and insect repellent. - Avoid anesthetizing or measuring fish. - Note the date, time, and location of fish collection; species; number of fish; approximate age (e.g., young-of-the-year, yearling, adult); fish condition (dead, visibly injured, healthy); and water temperature. - If positive identification of fish cannot be made without handling the fish, note this and release fish without handling. - In notes, indicate the level of accuracy of visual estimates to allow appropriate reporting to CDFW (e.g., “Approx. 10–20 young-of-the-year steelhead”). - Note the fish release date, time, and location. - Provide CDFW with unrestricted access to construction sites for the duration of implementation of the fish salvage plan and fish salvage activities. - Begin fish salvage operations as soon as fish stranding is discovered and when conditions are safe enough to do so, and complete within 48 hours after isolation of a construction site to minimize potential predation and adverse water quality impacts (high water temperature, low dissolved oxygen) associated with confinement. - Install cofferdams to block off the construction area before fish removal activities occur. Use block nets or other temporary				

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	exclusion methods (e.g., silt curtains) for other in-water construction activities exclude fish or isolate the construction area prior to the fish removal process. Permittee shall ensure the fish salvage plan is reviewed and finalized by the TOT and submitted to CDFW for written approval prior to initiating Covered Activities. Permittee shall implement all measures in the approved plan.				
58	Permittee shall screen dewatering pump intakes to prevent entrainment of fish in accordance with screening criteria for salmonid fry National Marine Fisheries Service 1997 *Fish Screening Criteria for Anadromous Salmonids*. During dewatering a Designated Fisheries Biologist shall remain onsite to observe the process and remove Covered Species that were not successfully salvaged prior to dewatering (see Condition of Approval 9.1.16). If Covered Species salvage operations cannot be conducted effectively or safely by the Designated Fisheries Biologist, it may be necessary to begin the dewatering process prior to salvage. During the dewatering process, a Designated Fisheries Biologist shall be onsite to implement Covered Species salvage during dewatering with the aim of minimizing the number of Covered Species that become trapped in isolated areas or impinged on pump screen(s) or isolation nets. If the Designated Fisheries Biologist determines the proposed methods are found to be insufficient to avoid undue losses of Covered Species, they shall implement alternative salvage methods to minimize impacts to Covered Species. Permittee shall temporarily stop dewatering if the Designated Fisheries Biologist or CDFW personnel determine that water levels may drop too quickly to allow successful fish salvage. Upon dewatering to water depths at which neither electrofishing nor seining can effectively occur (e.g., less than 3 inches [0.1 meter]), the Designated Fisheries Biologist shall inspect the dewatered areas to locate any remaining fish and collect them by dip net. The Designated Fisheries Biologist shall notify the Permittee and CDFW when the fish salvage has been completed and construction can recommence.	ITP Condition # 9.1.17	Throughout Project construction	Permittee	
59	Permittee shall ensure compliance with all construction stormwater permitting requirements and shall ensure the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) to control short-term and long-term effects associated with construction-generated stormwater runoff. The SWPPP shall include all applicable SWRCB and Central Valley Regional Quality Control Board requirements regarding construction-generated stormwater collection, detention, treatment, and discharge that will be in place throughout the duration of construction activities. The SWPPP shall include measures that address erosion and sediment control (see Condition of Approval 9.1.19), management of construction materials, waste management, site dewatering and pipeline testing, accidental spill prevention and response, site inspection and monitoring, and measures to prevent nonstormwater discharges from reaching surface water. Nonstormwater discharge examples include washing vehicles, cleaning streets, or applying erodible landscape	ITP Condition # 9.1.18	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	material during rain. The SWPPP shall be submitted to CDFW for written approval prior to initiating construction activities.				
60	Permittee shall develop one or more erosion and sediment control plan(s) to be incorporated in the SWPPP prior to disturbance and throughout all phases of Construction Activities. The erosion and sediment control plan(s) shall include best management practices such as: physical erosion control stabilization (see Condition of Approval 9.1.20); maintaining emergency erosion control supplies at all times during construction and replacing used materials within 48 hours; minimal disturbance of the terrain and natural land features; diverting runoff away from steep, denuded slopes; retaining trees and vegetation where practicable to stabilize hillsides, retain moisture, and reduce erosion; limiting disturbance to areas of proven stability; implementing site inspections before and after storm events; installing drainage control features; and installing wind erosion control features. Sediment control measures shall include retaining sediment transported by run-off; collecting and directing surface runoff at non-erosive velocities to common drainage courses; using sediment and turbidity areas where ground disturbance is adjacent to surface water or wetlands; preventing mud tracking; and depositing or storing excavated materials away from drainage courses and keeping them covered when stored over five days or within 48 hours of a forecasted rain event. The erosion and sediment control plan(s) shall be submitted to CDFW for written approval prior to initiating construction activities.	ITP Condition # 9.1.19	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
61	Permittee shall not use plastic monofilament netting or similar material such as nylon for erosion control, to avoid entanglement or trapping of Covered Species. Permittee shall not use products that use photodegradable or biodegradable synthetic netting. Acceptable materials include natural fibers such as jute matting, coconut, twine, or other similar fibers or tackified hydroseeding compounds. Permittee shall communicate this measure to Project contractor(s) through specifications or special provisions included in the construction bid solicitation package. Permittee shall bury the edge of erosion control materials in the ground to prevent reptiles and amphibians from crawling underneath them. Permittee shall submit the erosion control stabilization measures to CDFW for written approval prior to initiating construction activities. SWRCB requirements shall prevail where they are more restrictive than CDFW requirements. Permittee shall consult 72-hour weather forecasts from the National Weather Service prior to startup of Covered Activities within a construction site that may result in sediment runoff to any source of water. Permittee may not start Covered Activities within a construction site that may cause the introduction of sediments into a waterway if the erosion control measures applicable to that construction site cannot be completed prior to the onset of a storm (rainfall exceeding 0.5 inch during a 24-hour period). The Designated Biologist(s) shall monitor erosion control measures before, during, and after each storm event, and Permittee shall repair and/or replace ineffective measures immediately.	ITP Condition # 9.1.20	Throughout Project construction	Permittee	
62	In accordance with local, state, or federal regulations, Permittee or its contractors shall	ITP	Prior to initiation of	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	develop a spill prevention, containment, and countermeasure plan (SPCC) at each site where ground-disturbing activity will occur. Each SPCC shall address actions used to prevent spills and actions that will be taken should any spills occur, including emergency notification procedures. The SPCC plans shall include measures and processes that address the following: procedures for routine handling of products; discharge or drainage controls such as secondary containment and procedures for discharge control; countermeasures for discharge discovery, response, and cleanup; methods of disposal of recovered materials; personnel training in emergency response, spill containment techniques, and pollution control laws, rules, and regulations; storage of petroleum products in non-leaking containers at impervious storage sites from which an accidental spill cannot escape; storing and maintaining spill containment materials --such as absorbent pads, pillows, socks, or booms-- in non-leaking sealed containers until transported and disposed of; using spill containment materials under transfer areas when transferring oil or other hazardous materials from trucks to storage containers; storage of concrete, wash water, and other contaminants in watertight containment structures; daily inspection of equipment for oil, grease, and other petroleum products if equipment is in contact with surface water; cleaning of external petroleum products off of equipment prior to its contact to water; and use of oil-absorbent booms for equipment used in or adjacent to water. In the event of a spill, personnel shall identify and secure the source of discharge and contain the discharge with spill kit materials, such as sorbents or sandbags, and shall contact CDFW and other appropriate regulatory authorities within 24 hours. Permittee shall submit the SPCC plans to CDFW for written approval prior to initiating construction activities.	Condition # 9.1.21	Covered Activities, and throughout Project Construction		
63	Permittee or its contractors shall develop and implement one or more hazardous materials management plan(s) (HMMP) prior to initiating construction activities. The HMMP shall provide detailed information on the types of hazardous materials used; phone numbers of emergency response agencies; appropriate practices to reduce the likelihood of a spill of toxic chemicals or other hazardous waste (see Condition of Approval 9.1.21); and a specific protocol for the proper handling and disposal of hazardous materials. The HMMP shall address the following measures or practices; clear labeling, handling and safety instructions, and emergency contact information on hazardous material containers; use or transfer of hazardous materials near wet or dry streams; Material Safety Data Sheets, accumulation and temporary storage of hazardous wastes (e.g., not to exceed 90 days); and disposal of contaminated soils. Permittee shall submit the HMMP to CDFW for written approval prior to initiating construction activities.	ITP Condition # 9.1.22	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
64	Permittee shall implement fugitive dust control measures and enhanced dust control measures at all construction and staging areas to reduce construction-related fugitive dust. Measures shall be consistent with Air Quality Management District (AQMD) guidelines and requirements for each region. Fugitive dust control measures shall address: applying water	ITP Condition # 9.1.23	Prior to initiation of Covered Activities, and throughout Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	to all exposed surfaces—such as soil piles, graded areas, unpaved parking areas, staging areas, and access roads--to prevent visible dust from leaving construction sites; covering and maintaining at least two feet of freeboard space on trucks transporting soil, sand, and other loose material; using wet power vacuum street sweepers to remove visible track-out of mud or dirt; limiting vehicle speeds on unpaved roads to 15 miles per hour; and completing paving projects and laying construction pads as soon as possible after grading. Enhanced dust control measures shall address: watering exposed soil with adequate frequency; suspending excavation, grading, or demolition activity when wind speeds exceed 20 miles per hour or conducting fugitive dust control measures more frequently during dry summers and wind conditions higher than 20 miles per hour; installing wind breaks such as trees or solid fencing on the windward side(s) of construction sites; and planting vegetative ground cover, such as fast-germinating native grass seed, as soon as possible after construction is completed and ensuring vegetation becomes established. Permittee shall develop measures for entrained road dust—such as washing wheels and equipment or treating access to sites with material such as wood chips or gravel that would reduce carry-out. Permittee shall develop measures for concrete batching, such as achieving a 70 % reduction in dust from concrete batching and 80 % reduction in dust from aggregate and sand pile erosion. Permittee shall submit fugitive dust control and enhanced dust control measures to CDFW for written approval prior to initiating construction activities.		Construction		
65	Specific Measures for Swainson's Hawk (see items below)	ITP Condition # 9.2	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
66	The Designated Biologist(s) shall conduct preconstruction surveys to identify the presence of suitable SWHA nest trees and known nest trees (occupied within one or more of the past five years) within 0.5 mile of the construction site. Suitable nest trees shall be defined by Condition of Approval 8.4.1 and the Designated Biologist(s)' professional judgment. The Designated Biologist(s) shall also conduct preconstruction surveys prior to maintenance activities that could disturb SWHA nests, such as dredging. Permittee shall ensure surveys for nesting SWHA are conducted in all suitable and known nest trees identified by the Designated Biologist(s), and are consistent with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SWHA Technical Advisory Committee 2000), or methodology modified with written approval from CDFW. Permittee shall provide survey results to CDFW by phone or e-mail no less than five days prior to commencement of Covered Activities and in a written report within 30 days after commencement of Covered Activities. The Designated Biologist(s) shall include the location of all known and occupied nest trees present within 0.5 mile of the construction site. A nest tree shall be considered occupied from the time the SWHA pair starts	ITP Condition # 9.2.1	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	constructing the nest until the young leave the nest, or until the Designated Biologist(s) determine(s) the nesting attempt failed and the nest is abandoned.				
67	Where the construction site occurs within 0.5 mile of known or occupied nest trees identified by the Designated Biologist(s), Permittee shall limit Covered Activities to outside the SWHA breeding season (March 1 – August 15), to the extent practicable. Where Covered Activities cannot be restricted to more than 0.5 mile of an occupied nest tree during the breeding season, Permittee shall restrict the Covered Activities to not occur during the period of egg laying to post-hatching, as determined by the Designated Biologist(s), to the extent practicable. If not practicable, Permittee shall initiate Covered Activities prior to egg laying to allow time for SWHA to acclimate to disturbance before eggs are laid. Where restricting work to outside the breeding season or during the period of egg laying to post-hatching is not practicable, Permittee shall submit plans to initiate Covered Activities to CDFW for written approval.	ITP Condition # 9.2.2	Throughout Project construction	Permittee	
68	Where Covered Activities must occur within 0.5 mile of an occupied SWHA nest tree, Permittee shall establish a 650-foot-radius, no-activity buffer (buffer) around each occupied nest tree, and the buffer shall remain in place until the end of the breeding season or until the last chick has left the nest. Permittee shall clearly delineate the buffer with fencing or other conspicuous marking. The Designated Biologist(s) shall monitor occupied nest trees to track progress of nesting activities (see Condition of Approval 9.2.4). Permittee shall not conduct any Covered Activity within the buffer unless a smaller buffer is approved in writing by CDFW. If a Covered Activity must occur within 0.5 mile of an occupied nest tree, Permittee shall follow the conditions in Condition of Approval 9.2.4. Permittee shall not conduct any Covered Activity within 150 feet of an occupied nest tree.	ITP Condition # 9.2.3	Throughout Project construction	Permittee	
69	Where Covered Activities must occur within 0.5 mile of an occupied SWHA nest tree, Permittee shall implement the following monitoring plan. If a nesting bird monitoring and management plan is prepared by the Designated Biologist(s) and approved in writing by CDFW, that plan shall prevail where it differs from these measures. • Five days and three days prior to the initiation of Covered Activities at any site where an occupied nest tree is within 0.5 mile of the Covered Activity, the Designated Biologist(s) shall observe the occupied nest(s) for at least one hour or until nest status can be determined. The Designated Biologist(s) shall document nesting status and behaviors to compare to nesting status and behaviors after Covered Activities begin. Permittee shall report the results of preconstruction monitoring to CDFW within 24 hours of each survey. • Where an occupied nest tree occurs between 150 and 325 feet from Covered Activities, the Designated Biologist(s) shall observe the nest for at least four hours per day during Covered Activities to ensure the SWHA are engaged in normal nesting behavior. Permittee shall limit Covered Activities to between 30 minutes after sunrise and 30 minutes	ITP Condition # 9.2.4	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	before sunset. • Where an occupied nest tree occurs between 325 and 650 feet of Covered Activities, the Designated Biologist(s) shall observe the nest for at least two hours per day during Covered Activities to ensure the SWHA are engaged in normal nesting behavior. • Where an occupied nest tree occurs between 650 and 1,300 feet of Covered Activities, the Designated Biologist(s) shall observe the nest for at least one hour on at least three days per week during Covered Activities to ensure the SWHA are engaged in normal nesting behavior and to check the status of the nest. • Where an occupied nest tree occurs between 1,300 and 2,640 feet of Covered Activities, the Designated Biologist(s) shall observe the nest for at least one hour on at least one day per week during Covered Activities to ensure the SWHA are engaged in normal nesting behavior and to check the status of the nest.				
70	Permittee shall prohibit physical contact with an occupied nest tree throughout the breeding season (see *Condition of Approval 9.2.2*). All workers within 650 feet shall be out of the line of sight of the occupied nest tree during breaks, or shall take breaks more than 650 feet from the occupied nest tree.	ITP Condition # 9.2.5	Throughout Project construction	Permittee	
71	If, during Covered Activities, the Designated Biologist(s) determine(s) that nesting SWHA within 0.5 mile of the construction site are disturbed by Covered Activities, to the point where nest abandonment is likely, the Designated Biologist(s) shall have the authority to stop Covered Activities and shall immediately notify Permittee. The Designated Representative shall contact CDFW within 24 hours to determine additional protective measures to be implemented. The Designated Biologist(s) shall: • Stop Covered Activities until additional protective measures are implemented, unless SWHA behavior normalizes on its own. Potential nest abandonment and nest failure shall be indicated if, in the Designated Biologist(s)' professional judgment, SWHA exhibit distress and/or abnormal nesting behavior, such as swooping/stooping at equipment or personnel, excessive distress-call vocalization or agitated behavior directed at personnel, failure to remain on nest, or failure to deliver prey items. • Continue monitoring and ensure additional protective measures remain in place until the Designated Biologist(s) determine(s) SWHA behavior has normalized. • Determine if additional protective measures are ineffective and stop Covered Activities until the additional protective measures are modified. • Continue monitoring until determining that SWHA behavior has normalized. The Designated Representative or Biologist shall notify CDFW within 24 hours if nests or	ITP Condition # 9.2.6	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	nestlings are abandoned and if the nestlings are still alive. The Designated Biologist(s) shall work with CDFW to determine appropriate actions.				
72	Permittee shall avoid removal of known SWHA nest trees and suitable nest trees to the maximum extent practicable. If a known nest tree must be removed for Covered Activities, Permittee shall notify and obtain written approval from CDFW. The notification shall include the location of the known nest tree, conditions to offset the loss of the nest tree, and the timing of removal, which shall generally be October 1 – February 1. Permittee shall not remove any occupied nest tree until the last young have left the nest, as verified by the Designated Biologist.	ITP Condition # 9.2.7	Throughout Project construction	Permittee	
73	Permittee shall restrict safe haven site construction activities to outside of the SWHA breeding season, to the extent practicable. The Designated Biologist(s) shall delineate with flagging or other visible markers suitable breeding habitat in the construction site. Permittee shall restrict safe haven site construction to areas outside of the delineated breeding habitat. If safe haven site construction must occur during the breeding season, the Designated Biologist(s) shall survey breeding habitat within 0.5 mile for nesting SWHA. Permittee shall locate the construction site at least 0.5 mile from any occupied nest tree, or Permittee shall notify and obtain written approval from CDFW prior to conducting safe haven site construction within 0.5 mile of the occupied nest tree(s). Permittee shall implement Conditions of Approval 9.2.1 through 9.2.6 for any safe haven site construction work within 0.5 mile of the occupied nest tree.	ITP Condition # 9.2.8	Throughout Project construction	Permittee	
74	Permittee shall conduct geotechnical exploration outside of the breeding season, to the extent practicable. The Designated Biologist(s) shall delineate with flagging or other visible markers suitable breeding habitat within the geotechnical exploration site. Permittee shall restrict geotechnical exploration to areas outside of the delineated breeding habitat. If geotechnical exploration must occur during the breeding season, the Designated Biologist(s) shall survey the breeding habitat within 0.5 mile for nesting SWHA. Permittee shall limit geotechnical exploration activities to least 0.5 mile away from any occupied nest tree.	ITP Condition # 9.2.9	Throughout Project construction	Permittee	
75	Permittee shall not use helicopters to string transmission lines within 0.5 mile of an occupied nest tree. Permittee shall not remove or trim occupied nest trees for transmission line construction until after the breeding season has ended or the last young have left the nest. Permittee shall not remove or trim occupied nest trees during transmission line maintenance. If removal or trimming of an occupied nest tree needs to occur for human or wildlife safety, Permittee shall conduct removal or trimming from October 1 – February 1 (outside of the breeding season), or with written approval and guidance from CDFW. Permittee shall avoid removal or trimming of known or suitable nest trees, to the extent practicable, during transmission line stringing and reconductoring activities or during power and pole placement. Where practicable, Permittee shall place poles and lines outside of breeding habitat, as delineated by the Designated Biologist(s). Permittee shall follow Condition of Approval 9.2.7 when removal or trimming of known or suitable nest trees	ITP Condition # 9.2.10	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	cannot be avoided.				
76	Specific Measures for Tricolored Blackbird (see items below)	ITP Condition # 9.3	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
77	Prior to initiation of Covered Activities in the Project Area and within 1,300 feet of the Project Area, the Designated Biologist(s) shall conduct preconstruction surveys to evaluate the presence of TRBL breeding colonies and suitable nesting habitat. Surveys shall be conducted during the breeding season (March 15 - July 31) one year prior to, and then again the year of, the Covered Activities within the Project Area. During each year, surveys shall be conducted monthly in March, April, May, June, and July. If Covered Activities are initiated during the breeding season, the Designated Biologist(s) shall conduct three surveys shall be conducted within 15 days of the Covered Activities, with one of the surveys within five days of the start of the Covered Activities. Permittee shall use a breeding season survey protocol approved in writing by CDFW. The Designated Biologist(s) shall delineate suitable nesting habitat and breeding colonies with flagging or other visible marking. Prior to initiation of Covered Activities in the Project Area and within 300 feet of a construction site , the Designated Biologist(s) shall conduct preconstruction surveys to establish the existence and use of roosting habitat by TRBL. Surveys shall be conducted during the nonbreeding season (August 1 - March 14) one year prior to, and then again the year of, the Covered Activities. If construction is initiated at a site during the nonbreeding season, the Designated Biologist(s) shall conduct three surveys within 15 days prior to the Covered Activity, with one of the surveys within five days prior to the start of the Covered Activity. Permittee shall use a roosting survey protocol approved in writing by CDFW. Permittee shall consider roosting habitat occupied by large mixed blackbird flocks to be occupied by TRBL if the Designated Biologist(s) cannot clearly identify TRBL presence within the flock. The Designated Biologist(s) shall check suitable roost sites within 300 feet of Covered Activities that are not occupied at the time of preconstruction surveys daily throughout the nonbreeding season, in accordance with the roosting survey protocol approved by CDFW, to determine whether TRBL later occupies the roost site.	ITP Condition # 9.3.1	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
78	Permittee shall ensure Covered Activities avoid suitable nesting habitat within 1,300 feet, to the extent practicable. If nesting habitat cannot be avoided and a TRBL breeding colony is detected, Permittee shall ensure Covered Activities do not occur within a 1,300-foot diameter no-activity buffer surrounding the colony and associated habitat during the breeding season (March 15–July 31) (no-activity buffer). The no-activity buffer may be reduced to a minimum of 300 feet, with written approval from CDFW, in areas with dense forest, buildings, or other features between the Covered Activities and the breeding colony; where there is sufficient topographic relief to protect the colony from excessive noise or	ITP Condition # 9.3.2	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	visual disturbance; or where sound curtains have been installed. If TRBL colonizes habitat adjacent to Covered Activities after they have been initiated, Permittee shall reduce disturbance through establishment of no-activity buffers or sound curtains, as determined in consultation with CDFW.				
79	Permittee shall restrict Covered Activities to 30 minutes after sunrise to 30 minutes before sunset if occurring within 1,300 feet of a breeding colony or a roost site occupied by TRBL.	ITP Condition # 9.3.3	Throughout Project construction	Permittee	
80	The Designated Biologist(s) shall monitor breeding colonies that are within 1,300 feet of Covered Activities for at least six hours per day, to verify the Covered Activity is not disrupting the colony. If the Designated Biologist(s) determines that the Covered Activity is causing a disruption to the colony, the Designated Biologist(s) shall have the authority to stop Covered Activities and shall notify Permittee immediately. The Designated Representative shall notify CDFW within 24 hours to determine additional protective measures that can be implemented. The Designated Biologist(s) shall have the authority to: • Stop Covered Activities until additional protective measures are implemented, unless TRBL breeding behavior normalizes on its own. • Continue monitoring and ensure additional protective measures shall remain in place for the duration of the Covered Activities. • Determine if additional protective measures are ineffective, and stop Covered Activities as needed until the additional protective measures are modified. • Continue monitoring until determining TRBL behavior has normalized. Additional protective measures may include, but are not limited to, increasing the size of the buffer, delaying Covered Activities until the colony is finished breeding and chicks have left the nest site, temporarily relocating staging areas, or temporarily rerouting access to the construction site. The Designated Biologist(s) shall notify CDFW within 24 hours if nests or nestlings are abandoned. If the nestlings are still alive, the Designated Biologist(s) shall work with CDFW to determine appropriate actions. Notification to CDFW shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident.	ITP Condition # 9.3.4	Throughout Project construction	Permittee	
81	Permittee shall not conduct Covered Activities within 300 feet of suitable roosting habitat, to the extent practicable. If occupied roosting habitat cannot be avoided, Permittee shall not conduct Covered Activities within a 300-foot no-activity buffer surrounding the roost site (no-activity buffer). The no-activity buffer may be modified in areas with dense forest, buildings, or other features between the Covered Activities and the occupied roost site; where there is sufficient topographic relief to protect the roost site from excessive noise or visual disturbance; or where sound curtains are installed, as approved in writing by CDFW. Occupied roost sites that are within 300 feet of Covered Activities shall be monitored daily by the Designated Biologist, for at least four hours or until the roost site is no longer occupied, to verify that the activity is not disrupting the roosting birds. If the Designated	ITP Condition # 9.3.5	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Biologist determines Covered Activities are disrupting roosting activity, Permittee shall put additional protective measures in place until the TRBL behavior normalizes. Additional protective measures may include, but are not limited to, increasing the size of the no-activity buffer, delaying Covered Activities until the flock has left the roost site or the end of the nonbreeding season, temporarily relocating staging areas, temporarily rerouting access to the construction site, or installation of sound curtains. Permittee shall contact CDFW if protective measures are not effectively reducing disruption to the roost site.				
82	Permittee shall prohibit physical contact with a breeding colony during the breeding season from the time of nest site selection until after the chicks have fledged. Permittee shall prohibit physical contact with an occupied roost site during the nonbreeding season. Project personnel shall not exit vehicles when inside the established no-activity buffer for breeding or roosting when TRBL is present (see Conditions of Approval 9.3.3 and 9.3.5).	ITP Condition # 9.3.6	Throughout Project construction	Permittee	
83	The Designated Biologist(s) shall delineate suitable nesting and roosting habitat and buffers with flagging or other visible marking at construction sites for geotechnical exploration, transmission line construction, transmission line maintenance, and safe haven construction, including work and staging areas and access roads. Permittee shall restrict these Covered Activities to construction sites outside of the delineated habitat. Permittee shall not conduct these Covered Activities within no-activity buffers established for breeding colonies or occupied roost sites (see Conditions of Approval 9.3.3 and 9.3.5).	ITP Condition # 9.3.7	Throughout Project construction	Permittee	
84	Permittee shall not use helicopters to string transmission lines within 200 horizontal feet or 150 vertical feet of breeding colonies or occupied roost sites unless the helicopter is small enough to only cause a down draft of 15 to 18 miles per hour at up to 150 feet. Permittee shall only operate helicopters at these distances from the breeding colony or occupied roost site for up to three minutes in duration, once or twice per day, with a minimum of four hours between helicopter activities. For larger helicopters or longer work periods, Permittee shall consult with CDFW to establish the appropriate buffer. Permittee shall ensure helicopters do not land or take off within 500 feet of any breeding colony or occupied roost site. This buffer may be modified in areas with dense forest, buildings, or other features between the helicopter landing/take-off site and the occupied roost site; where there is sufficient topographic relief to protect the roost site from excessive noise or disturbance; and as approved in writing by CDFW.	ITP Condition # 9.3.8	Throughout Project construction	Permittee	
85	Specific Measures for California Tiger Salamander (See items below)	ITP Condition # 9.4	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
86	The Designated Biologist(s) shall conduct a field evaluation of the Project Area southwest of Byron Highway and shall identify suitable CTS aquatic breeding and upland habitat within the Project Area that may have been excluded from the modeled habitat. Suitable habitat shall be defined by Condition of Approval 8.4.1 and the Designated Biologist(s)'	ITP Condition # 9.4.1	Prior to initiation of Covered Activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	professional judgment.				
87	If CTS breeding habitat is identified by the Designated Biologist(s) within the Project Area southwest of Byron Highway, Permittee shall restrict Covered Activities to beyond 300 feet of the breeding habitat. Permittee shall consult with CDFW to develop further habitat protection measures to maintain connectivity between breeding habitat and suitable upland habitat and ensure impacts to breeding habitat are fully avoided. Permittee shall site transmission line poles or towers at least 300 feet from suitable breeding habitat. Permittee shall clearly demarcate the habitat to be avoided with signs or another type of marking that is visible to Project personnel.	ITP Condition # 9.4.2	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
88	Permittee shall prepare a CTS Mortality Reduction and Relocation Plan (Relocation Plan). The Relocation Plan shall include, but not be limited to, the name(s) of the Designated Biologist(s) who will relocate CTS; pre-construction survey methodology; method for the hand excavation of burrows that cannot be avoided during Covered Activities; capture, handling, and relocation methods; a map and description of the relocation area(s) for captured CTS, including relative location, quality of habitat, non-native species or the potential for CTS-barred tiger salamander hybrids to be present, other CTS present, identified upland burrows determined to be suitable for CTS placement, distance to aquatic habitat, and potential barriers for movement; written permission from the landowner to use their land as a relocation site; and identification of a wildlife rehabilitation center or veterinary facility that routinely evaluates or treats amphibians. Permittee shall submit the Relocation Plan to CDFW for written approval at least 15 days prior to the beginning of any Covered Activities, including preconstruction surveys. Permittee shall not conduct Covered Activities within the Project Area south of Byron Highway until the Relocation Plan is approved in writing by CDFW. If CTS is found within a construction site or 75 feet beyond the construction site (75-foot boundary), Project personnel shall notify the Designated Biologist(s) immediately. If CTS is encountered within a construction site, it is directly threatened by Covered Activities, and it is unable to move to a safe area on its own, the Designated Biologist(s) shall relocate CTS to a safe area in accordance with the Relocation Plan. CTS may only be captured and handled by the Designated Biologist(s) holding capture and handling permits (ESA Section 10(a)(1)(A) recovery permit and CDFW 2081(a) MOU). The Designated Biologist(s) shall determine whether the CTS should be captured and handled and shall relocate CTS in accordance with the Relocation Plan. Relocated CTS shall be released as soon as possible. The Designated Representative shall notify CDFW within 24 hours of each time CTS is relocated. Notification to CDFW shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident. If CTS is captured and handled for relocation, the Designated Biologist(s) shall take tissue samples and mark or photograph the CTS for potential follow-up studies if they have authorization to do so on their capture and handling permits.	ITP Condition # 9.4.3	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
89	Within suitable upland habitat, Permittee shall mow grasses within 24 hours of initiation of preconstruction surveys (see Condition of Approval 9.4.5) in each construction site where ground disturbance will occur and within the 75-foot boundary. Permittee shall use light mowing equipment that would not crush burrows or impact the ground to mow vegetation until it reaches a height that allows the Designated Biologist to see and survey for CTS and burrows. The Designated Biologist shall walk in front of the mower and monitor for CTS escaping out of burrows. If CTS is found, mowing shall cease until the CTS is relocated by the Designated Biologist in accordance with Condition of Approval 9.4.3. Mowing shall occur in rows in a pattern that would not concentrate animals in the center of the construction site. Mowing shall only occur during the day in dry conditions (no rain within the past 24 hours), when the Designated Biologist determines CTS is unlikely to be above ground.	ITP Condition # 9.4.4	Prior to initiation of Covered Activities, and throughout Project construction	Permittee	
90	The Designated Biologist(s) shall complete nocturnal walking or cover-board surveys in each of the construction sites located within suitable upland habitat (see Condition of Approval 9.4.1). This survey shall provide 100% visual coverage of the construction site and 75-foot boundary, including access roads. Permittee may only modify the 75-foot boundary with written approval by CDFW and may exclude obvious barriers to CTS movement, such as the California Aqueduct. The Designated Biologist(s) shall pay particular attention to suitable CTS habitat features and search beneath woody debris. If CTS is found within the construction site, access roads, or the 75-foot boundary, the Designated Biologist(s) shall delay installation of the exclusion barrier (see Condition of Approval 9.4.8) until the Designated Biologist(s) relocate(s) the CTS out of the Project Area and 75-foot boundary in accordance with 9.4.3. The Designated Biologist(s) shall visually inspect all small mammal burrows within suitable upland habitat in the construction site, access roads, and 75-foot boundary. The Designated Biologist(s) shall immediately collapse small unoccupied burrows (e.g., less than three feet long and checked for dead ends). The Designated Biologist(s) shall inspect larger burrows for occupancy and shall collapse or block the burrow if determined they are not occupied. Permittee shall submit the preconstruction survey protocols to CDFW for written approval prior to initiating preconstruction surveys. The Designated Biologist(s) shall submit a report documenting the results of the pre-construction surveys to CDFW within five days after performing the surveys.	ITP Condition # 9.4.5	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
91	Permittee shall establish a 50-foot-radius no activity buffer (no activity buffer) around small mammal burrows that can be avoided within the construction site, access roads, and the 75-foot boundary and shall designate the no-activity buffers with flagging. If small mammal burrows cannot be avoided by a no-activity buffer and are within suitable upland habitat, Permittee shall excavate occupied burrows as described in Condition of Approval 9.4.7.	ITP Condition # 9.4.6	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
92	The Designated Biologist(s) shall fully excavated by hand small mammal burrows that cannot be avoided by the no-activity buffer and were found to be occupied by CTS during preconstruction surveys. The excavation method shall ensure CTS emerges or is removed	ITP Condition # 9.4.7	Prior to initiation of Covered Activities, and throughout	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	from the burrow without causing harm to the individual. The excavation requirement shall apply to burrows located within the construction site, access roads, or the 75-foot boundary. The Designated Biologist(s) shall relocate CTS from the burrow to a suitable burrow outside of the Project Area and 75-foot boundary in accordance with Condition of Approval 9.4.3. Once the Designated Biologist(s) determine(s) a burrow is no longer occupied, they shall collapse or block the burrow.		Project Construction		
93	Permittee shall install an exclusion barrier around the perimeter of all construction sites within CTS suitable upland habitat, including access roads, that are adjacent to CTS suitable habitat (see 8.4.1) to prevent CTS from migrating into the construction sites or using the access roads. Permittee shall install the exclusion barrier prior to the start of ground disturbing Covered Activities and within 24 hours after preconstruction surveys and burrow excavation are completed (see Conditions of Approval 9.4.5 and 9.4.6). Exclusion barriers shall not be required for geotechnical exploration sites, transmission line construction, or maintenance sites for transmission lines or facilities. The exclusion barrier shall consist of taut silt fencing extending at least 24 inches above ground; shall be buried a minimum of six inches below ground surface; and shall be constructed with a lip so that CTS cannot scale and go over the barrier. Permittee shall ensure no gaps or holes are allowed in the exclusion barrier except for access gates required for vehicular and pedestrian traffic and as required for one-way exit points (e.g., ramps or doors) to allow CTS to move out of the construction site. Permittee shall construct the exit points no more than 200 feet apart and flush to the ground to prevent CTS or other wildlife from accessing the construction site. Permittee shall design the exclusion barrier to include redirection points at access gates and at no greater than 100-foot intervals (for example, at least five feet of fencing perpendicular to the exclusion barrier) to redirect CTS on the outside of the barrier back to intact habitat. Permittee shall ensure the exclusion barrier is supported sufficiently to maintain its integrity under all conditions, such as wind and heavy rain, for the duration of the Covered Activities in the Project Area. Permittee shall provide refuge opportunities (such as cover boards or straw wattles) on both sides of the exclusion barrier. The Designated Biologist(s) shall inspect refuge areas each morning during and after rain events (rainfall predicted to exceed 0.25 inches during a 24-hour period at the nearest weather station). Permittee shall submit the exclusion barrier material and design to CDFW for written approval no less than 30 days prior to the proposed start of Covered Activities. Permittee shall obtain written approval from CDFW before exclusion barrier installation. Permittee shall not use plastic monofilament netting for the exclusion barrier (see Condition of Approval 9.1.19).	ITP Condition # 9.4.8	Prior to initiation of Covered Activities, and throughout Project Construction	Permittee	
94	Permittee shall maintain vegetation within three feet of the edge of the exclusion barrier away from the construction site at a height that allows visibility of CTS (four to six inches, depending on the terrain and at the discretion of the Designated Biologist[s]) near the barrier. Permittee shall use hand tools (e.g., trimmer, chainsaw, etc.) to trim or remove	ITP Condition # 9.4.9	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	vegetation. The Designated Biologist(s) shall be onsite during all exclusion barrier installation activities that could result in take, including trenching, vehicular access, erecting fencing material, installing posts, and any other activity that requires vehicle or foot traffic in suitable upland habitat. The Designated Biologist(s) shall watch for burrows on either side of the exclusion barrier during trenching. If CTS or new burrows are discovered during exclusion barrier construction, the Designated Biologist(s) shall have the authority to stop construction until new burrows are checked for occupancy, CTS is relocated in accordance with Condition of Approval 9.4.3, and unoccupied burrows are blocked or collapsed. The Designated Biologist(s) shall check the exclusion barrier at least once daily, and during and after storm events (rainfall predicted to exceed 0.25 inches during a 24-hour period at the nearest weather station) to ensure that it is functional and without defects, that fencing material is taut, and that the bottom edge of the fencing material remains buried. If the fence is compromised, Permittee shall repair the barrier within 24 hours to ensure that it is functional and without defects. After the barrier is repaired, the Designated Biologist(s) shall conduct a survey, using CDFW-approved protocol, within 24 hours prior to initiation of Covered Activities that may result in take of CTS within the construction site or access roads. The Designated Biologist(s) shall carefully search potential hiding spots, such as along exclusion fences and in pipes, culverts, or other similar structures, trenches (see Conditions of Approval 9.1.7 and 9.1.8), large downed woody debris, and beneath vehicles or equipment before they are moved. The survey shall also include checking new burrows for occupancy and collapsing the burrows when they are not occupied (see Conditions of Approval 9.4.5 and 9.4.6). The Designated Biologist(s) shall relocate CTS found within burrows in accordance with 9.4.3. Permittee shall instruct Project personnel to make sure access gates are securely closed when not in use. If access gates are left open and unattended, the Designated Biologist shall stop Covered Activities until preconstruction surveys are repeated, CTS found are relocated from the construction site, and additional burrows are checked and collapsed. Permittee shall ensure the CTS exclusion barrier remains in place for the duration of Covered Activities other than ongoing maintenance. Permittee shall remove the barrier and all barrier materials upon completion of construction-related Covered Activities.				
95	Permittee shall confine ground disturbance activities that could result in take of CTS (clearance work) to the minimal area necessary to conduct Covered Activities. Permittee shall avoid, to the extent practicable, clearance work during rainfall events between sunset and sunrise. If clearance work is conducted at night the Designated Biologist(s) shall conduct daily surveys not more than two hours after sunrise for CTS in suitable habitat within each construction site and access road, using a CDFW-approved protocol, prior to site clearing activities until the construction site has been completely cleared. The Designated Biologist(s) shall be onsite during clearance work and shall check potential hiding places (see Condition of Approval 9.4.7). If CTS is discovered inside the exclusion	ITP Condition # 9.4.10	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	fencing, the Designated Biologist(s) shall have the authority to stop Covered Activities until the CTS is relocated in accordance with Condition of Approval 9.4.3 and appropriate corrective measures are implemented to ensure CTS cannot enter the construction site.				
96	Where possible, Permittee shall conduct Covered Activities within paved roads, farm roads, road shoulders, and similarly disturbed and compacted areas. Where it is not possible to conduct Covered Activities in already disturbed areas, Permittee shall confine ground disturbance and habitat removal to the minimal area necessary. Project-related vehicles shall observe a speed limit of 10 miles per hour within suitable CTS habitat prior to ground clearance, within 300 feet of suitable aquatic habitat, or 50 feet from a flagged burrow, except on the Byron Highway and other roads where 10 miles per hour would unsafely impede the normal flow of traffic. A vehicle speed limit of 10 miles per hour shall be posted on all nonpublic construction and access roads where the speed limit is required. If Project personnel observe CTS, or a salamander resembling CTS, retreating into an underground burrow, crack or crevice, or under woody debris (hereafter refuge) within a construction site, Permittee shall not allow Covered Activities within a 50-foot radius of the refuge until a Designated Biologist is contacted and is on-site. If the Covered Activities cannot avoid the refuge, the Designated Biologist shall excavate, expose, and relocate the CTS in accordance with Condition of Approval 9.4.3. All Project personnel shall inform the Designated Biologist if they encounter CTS, or a salamander similar to CTS within the construction site, the 75-foot boundary, or on access roads during all phases of Covered Activities.	ITP Condition # 9.4.11	Throughout Project construction	Permittee	
97	For geotechnical exploration, transmission line construction, transmission line maintenance, and facility maintenance within suitable CTS upland habitat, Permittee and Designated Biologist(s) shall monitor the National Weather Service (NWS) 72-hour forecast for the location nearest to the Project Area. If a 40% or greater chance of rainfall is predicted within 72 hours, Permittee shall cease Covered Activities 24 hours prior to the 40% or greater forecast event within CTS suitable upland habitat and on access roads to construction sites. Work may continue 24 hours after the rain ceases if there is 0% chance of precipitation in the 72-hour forecast. The Designated Biologist(s) shall survey each construction site before these Covered Activities resume, using the CDFW-approved preconstruction survey protocol. If CTS is found, the Designated Biologist(s) shall halt the Covered Activities until the CTS is relocated in accordance with Condition of Approval 9.4.3 and workers are further instructed by the Designated Biologist to cease work during rain events when CTS are expected to be above ground.	ITP Condition # 9.4.12	Throughout Project construction	Permittee	
98	Permittee shall cease Covered Activities no less than 30 minutes before sunset on sites and access roads for geotechnical exploration, transmission line construction and maintenance, and facility maintenance within suitable CTS upland habitat or within 300 feet of suitable CTS aquatic habitat. Permittee shall not begin Covered Activities again until no less than 30 minutes after sunrise.	ITP Condition # 9.4.13	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	If night work is required within construction sites with an exclusion barrier, Permittee shall not use artificial lighting unless it is needed for worker safety. Where artificial lighting is required for worker safety, Permittee shall follow night lighting provisions in Condition of Approval 9.1.13. If light spillover into suitable CTS habitat occurs during night work, the Designated Biologist(s) shall be present to survey burrows for emerging CTS in portions of the 75-foot buffer illuminated by construction lighting. If CTS is found above-ground, the Designated Biologist(s) shall have the authority to stop Covered Activities until the light is directed away from the burrows, CTS moves out of the illuminated area, or CTS is removed from the illuminated area. The Designated Biologist(s) shall relocate removed CTS in accordance with Condition of Approval 9.4.3).				
99	Permittee shall implement the following measures during geotechnical exploration activities and maintenance of transmission lines or the canal connecting the CCF siphon under the Byron Highway to the California aqueduct: • Permittee shall restore temporarily disturbed CTS upland habitat with appropriate native vegetation in accordance with a Vegetation Restoration Plan (see Condition of Approval 10.13). • The Designated Biologist(s) shall be present during selection of the geotechnical or maintenance sites, ingress and egress to these sites, and during set-up activities to guide workers to avoid visible burrows, cracks, or crevices until avoidance routes are clearly established. • The Designated Biologist(s) shall flag potentially occupied burrows to be avoided by a 50-foot radius no-activity buffer or shall designate and flag areas within the site and ingress/egress routes that avoid potentially occupied burrows. • Permittee shall confine movement of heavy equipment to existing access roads or to locations at least 50 feet from flagged burrows. Vehicles shall follow the shortest possible routes from existing roads to the site. • Project personnel shall limit vehicle speed to 10 miles per hour within the site and on non-public access routes (such as transmission line spur roads). • The Designated Biologist(s) shall conduct pre-construction surveys (see Condition of Approval 9.1.4) prior to these Covered Activities. If CTS is found, the Designated Biologist(s) shall have the authority to delay these Covered Activities until CTS is removed from the site. The Designated Biologist(s) shall relocate removed CTS in accordance with Condition of Approval 9.4.3.	ITP Condition # 9.4.14	Throughout Project construction, Test Period, and Full Project Operations	Permittee	
100	Specific Measures for Giant Garter Snake	ITP Condition # 9.5		Permittee	
101	Prior to ground disturbing Covered Activities, the Designated Biologist(s) shall evaluate and clearly delineate suitable GGS habitat, within each construction site, that will be	ITP Condition #	Prior to initiating Covered Activities,	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	avoided to minimize habitat disturbance as a result of Covered Activities (disturbance-free zone). Suitable GGS habitat shall be defined by Condition of Approval 8.4.1 *Tracking Suitable Habitat Feature Disturbances, Map Updating, and Reporting* and the Designated Biologist(s)' professional judgment. Permittee shall erect high visibility poly wire around suitable GGS habitat, as directed by the Designated Biologist(s), on stakes placed every six feet along the boundary. The high visibility poly wire shall be raised at least four feet above grade and marked with high visibility flagging or markers. Permittee shall also post and maintain signs identifying the disturbance-free zone every 50 feet along the edge of the suitable GGS habitat, and ensure signs are clearly visible and recognizable to Project personnel. Where agricultural ditches and other suitable aquatic habitat can be avoided and delineated, Permittee shall clearly mark the aquatic habitat by surrounding it with poly wire. All Project personnel shall avoid suitable GGS habitat in the disturbance-free zone during all phases of Covered Activities. Permittee shall inspect the stakes and high visibility poly wire before the start of each work day during ground disturbance activities, and Permittee shall maintain the stakes and poly wire until completion of Covered Activities within a construction site. Permittee shall remove all stakes and high visibility poly wire upon completion of Covered Activities. The Designated Biologist shall flag construction sites in suitable GGS habitat outside of the disturbance-free zone to guide installation of an exclusion barrier (see Condition of Approval 9.5.8 *GGS Exclusion Barrier*).	9.5.1	and throughout Project construction		
102	Project personnel shall avoid suitable GGS habitat in the disturbance-free zone during all phases of Covered Activities. Permittee shall avoid all suitable aquatic GGS habitat located at the southern tip of Zacharias Island on the inside of levees and demarcate it as a disturbance-free zone (see Attachment 6, Figure 4.6.14).	ITP Condition # 9.5.2	Throughout Project construction, Test Period, and Full Project Operations	Permittee	
103	Permittee shall develop a Mortality Reduction and Relocation Plan (Relocation Plan) for GGS and submit it to CDFW for written approval no less than 30 days prior to initiating Covered Activities. Permittee shall include in the Relocation Plan, at a minimum, the proposed GGS capture and handling technique; a quantification of the amount, relative location, and quality of suitable habitat (aquatic and upland)--including invasive and non-native species present, available upland burrows for aestivation and high-water refugia, suitable prey items, and potential barriers for movement--within proposed relocation site(s); written permission from the landowner to use their land as a relocation site; and identification of a wildlife rehabilitation center or veterinary facility that routinely evaluates or treats reptiles. If GGS, or a snake resembling GGS, is found within a construction site, or three feet beyond the construction site (three-foot boundary), Project personnel shall notify the Designated Biologist(s) immediately. The Designated Biologist(s) shall relocate GGS if the individual is directly threatened by Covered Activities and is unable to move to a safe area on its own.	ITP Condition # 9.5.3	Prior to initiating Covered Activities, and throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	GGS shall only be captured and handled by Designated Biologist(s). The Designated Biologist(s) shall determine whether or not GGS should be captured and handled and shall only relocate GGS to areas identified in the Relocation Plan. Relocated GGS shall be released as soon as possible. The Designated Representative shall notify CDFW of each relocation incident within 24 hours. Notification to CDFW shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident.				
104	In suitable GGS aquatic habitat that cannot be avoided by Covered Activities, Permittee shall dewater the habitat within the construction site–or, in the case of rice fields, shall not irrigate the portion of rice field within the construction site–prior to starting the Covered Activity. The Designated Biologist shall be on site when dewatering begins and when the level of water reaches the level of the intake to salvage and relocate any GGS that cannot swim away from the suction pumps and escape on its own. If Project personnel see GGS at the screen during dewatering, they shall shut down the pump and contact the Designated Biologist to remove the snake. Permittee shall ensure the habitat remains dry for at least 15 consecutive days after May 1 and prior to excavating or filling aquatic habitat. Permittee shall limit dewatering to May 1 – October 1 and shall limit dewatering to the immediate construction site. Following de-watering of aquatic habitat, the Designated Biologist(s) shall survey for GGS in all suitable GGS aquatic or upland habitat within the construction site that is not within the disturbance-free zone. If GGS is observed, Permittee and the Designated Biologist(s) shall follow Condition of Approval 9.5.3 GGS *Relocation Conditions*. Permittee shall obtain written approval from CDFW for any deviation from this measure and shall coordinate alternative actions with CDFW.	ITP Condition # 9.5.4	Throughout Project construction	Permittee	
105	Within 24 hours of preconstruction surveys (see Condition of Approval 9.5.6) in construction sites with high grass cover or vegetation, Permittee shall mow the flagged construction site and three-foot boundary. Permittee shall use light mowing equipment that would not crush burrows or impact the ground, until vegetation reaches a maximum height of four inches or, at the Designated Biologist's discretion, a height that allows the Designated Biologist to see and survey for snakes and burrows. The Designated Biologist shall walk in front of the mower and monitor for GGS escaping the vegetation or burrows. If GGS is found, Permittee shall cease mowing until GGS moves out of the way or is relocated by the Designated Biologist(s). Permittee shall mow in rows and not in a circular pattern that would concentrate animals in the center of a construction site. Permittee shall start mowing farthest from aquatic habitat to push GGS toward the water.	ITP Condition # 9.5.5	Throughout Project construction	Permittee	
106	The Designated Biologist shall conduct two days of walking pre-construction surveys within each construction site and the three-foot boundary, beginning no more than seven days prior to initiating ground disturbing Covered Activities during the active season (May 1 – October 1). The final preconstruction survey shall occur within 24 hours preceding exclusion barrier installation (see Condition of Approval 9.5.8). If GGS is discovered, the Designated Biologist(s) shall have the authority to delay installation of the exclusion barrier	ITP Condition # 9.5.6	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	until the GGS leaves the construction site or three foot boundary of its own volition or is removed from the construction site. The Designated Biologist shall relocate removed GGS in accordance with Condition of Approval 9.5.2. Within the construction site and three-foot boundary, the Designated Biologist(s) shall investigate all small mammal burrows within suitable upland habitat outside of disturbance-free zones, using a CDFW-approved methodology at the biologist's discretion, to determine whether or not the burrows are occupied by GGS. The Designated Biologist(s) shall immediately collapse small unoccupied burrows (e.g., less than three feet long and with dead ends). Permittee shall submit the preconstruction survey protocols to CDFW for written approval prior to initiating preconstruction surveys.				
107	If GGS is found present within a burrow, the Designated Biologist(s) shall fully excavate the occupied burrow by hand. If GGS does not leave the burrow, construction site, and three-foot boundary of its own volition, the Designated Biologist(s) shall relocate the snake in accordance with Condition of Approval 9.5.2. The Designated Biologist(s) shall conduct excavation upon discovery of GGS during preconstruction surveys. Once determined the burrow is not occupied, the Designated Biologist(s) shall collapse or block the burrow to prevent GGS from re-entering.	ITP Condition # 9.5.7	Throughout Project construction	Permittee	
108	To exclude GGS from entering any construction site where ground disturbing Covered Activities will occur, Permittee shall erect an exclusion barrier that encircles all suitable GGS habitat prior to habitat disturbance and within 24 hours after the pre-construction surveys have been completed. Where GGS aquatic habitat is not being disturbed, Permittee shall install the exclusion barrier at least 10 feet from the edge of the aquatic habitat. The Designated Biologist(s) shall be onsite during all barrier installation activities that could result in take, including trenching, vehicular access, erecting fencing material, installing posts, and any other activity that requires vehicle or foot traffic in suitable GGS upland habitat. The Designated Biologist(s) shall watch for burrows on either side of the barrier during trenching. If GGS are discovered during barrier construction, the Designated Biologist(s) shall have the authority to stop barrier construction until the GGS leaves the construction site of its own volition or is relocated in accordance with Condition of Approval 9.5.2. The exclusion barrier shall consist of taut silt fencing supported by wooden stakes on the Project side only. The barrier shall be buried a minimum of six inches below ground, and soil shall be compacted against both sides of the barrier for its entire length to prevent animals from passing under. The exclusion barrier shall extend at least 24 inches above the ground and shall be designed with a lip to prevent GGS from climbing over the barrier. Permittee shall ensure there are no gaps or holes in the barrier except for access areas required for vehicular and pedestrian traffic and for one-way exit funnels to allow GGS to move out of the construction site but not reenter. Access points shall be flush to the ground to prevent GGS or other wildlife from entering the barrier. At all access gates, a directional barrier shall be designed to divert GGS away from each access gate (for example, fencing	ITP Condition # 9.5.8	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	that extends at least one perpendicular foot from the gate and connects to approximately ten feet of fencing parallel to the barrier leading GGS away from the gate and back into intact habitat). The exclusion and directional barrier design shall be submitted to CDFW for written approval before exclusion barrier installation and no less than 30 days prior to the start of Covered Activities. Permittee shall not use plastic monofilament netting for the exclusion barrier (see Condition of Approval 9.1.19). Permittee shall maintain vegetation within three feet of the edge of the barrier outside construction sites at a maximum height of four inches to discourage GGS from using vegetation along the barrier fencing and to increase visibility of GGS near the barrier. Permittee shall use hand tools (e.g., trimmer, chainsaw, etc.) to trim or remove vegetation. The Designated Biologist(s) shall monitor all vegetation removal to minimize impacts to GGS. The Designated Biologist(s) shall inspect the exclusion barrier daily and during and after rain events to ensure it is intact and upright. If the exclusion barrier is found to be compromised, Permittee shall repair the barrier within 24 hours to ensure that it is functional and without defects, that fencing material is taut, and that the bottom edge of the fencing material remains buried. After fencing is repaired, the Designated Biologist(s) shall conduct a survey within 24 hours preceding Covered Activities within the construction site. The Designated Biologist(s) shall search within and along exclusion fencing and in pipes, culverts, or other potential places of hiding or entrapment (see Conditions of Approval 9.1.7 and 9.1.8) and beneath vehicles or equipment immediately before they are moved. The Designated Biologist shall capture and relocate any GGS found that does not safely leave the construction site of its own volition in accordance with Condition of Approval 9.5.2. Permittee shall instruct Project personnel to make sure access gates are securely closed when not in use. If access gates are left open and unattended, the Designated Biologist(s) shall have the authority to stop all ground disturbing Covered Activities until preconstruction surveys are repeated (see Condition of Approval 9.5.6) and GGS found have left or are removed from the construction site. The Designated Biologist(s) shall relocate removed GGS in accordance with Condition of Approval 9.5.3.Permittee shall ensure the GGS exclusion barrier remains in place and shall maintain the barrier for the duration of ground disturbing Covered Activities. Permittee shall remove the barrier and all barrier materials upon completion of construction-related Covered Activities.				
109	Permittee shall confine all fill, vegetation removal, and other ground disturbing Covered Activities in construction sites located within suitable GGS habitat to the active period between May 1 and October 1.	ITP Condition # 9.5.9	Throughout Project construction	Permittee	
110	Permittee may conduct Covered Activities within suitable GGS habitat after September 15, during the GGS inactive season, if Permittee notifies CDFW in writing, initiates Covered Activities prior to September 15, and the construction site already has an exclusion barrier in place.	ITP Condition # 9.5.10	Throughout Project construction	Permittee	
111	Permittee shall confine ground disturbance to the minimal area necessary to facilitate	ITP	Throughout Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Covered Activities. The Designated Biologist shall be onsite during initial ground disturbing activities to assess the construction site each morning before construction work for that day begins. The Designated Biologist(s) shall monitor burrows that have not been collapsed for emerging GGS. The Designated Biologist(s) shall also check any potential hiding places in the construction site, such as cracks, crevices, or cavities; stockpiles that have been left for more than 24 hours where cracks or crevices may have formed; and under or around vehicles and equipment before they are moved. If GGS is discovered, the Designated Biologist(s) shall have the authority to delay construction activities until the GGS leaves the construction site of its own volition or is removed from the construction site and Permittee implements appropriate corrective measures to ensure GGS will not enter the construction site through the exclusion barrier. The Designated Biologist(s) shall relocate removed GGS in accordance with Condition of Approval 9.5.3. If ground disturbance is delayed for more than seven days after the exclusion fencing is installed, the Designated Biologist(s) shall repeat preconstruction surveys and collapsing of burrows (see Conditions of Approval 9.5.6 and 9.5.7) before ground disturbance begins.	Condition # 9.5.11	construction		
112	Permittee shall use one, but not both, of the following methods to handle natural debris (debris composed of on-site vegetation, usually removed from waterways, not including spoils from dredging): 1. Permittee shall place debris in piles 200 feet from suitable aquatic habitat and within the exclusion barrier. Permittee shall not disturb or remove debris piles once placed; or 2. Permittee shall haul debris outside of the Project Area for disposal within 24 hours of placement.	ITP Condition # 9.5.12	Throughout Project construction	Permittee	
113	Where possible, Permittee shall conduct Covered Activities within paved roads, farm roads, road shoulders, and similarly disturbed and compacted areas. Where Covered Activities cannot occur in already disturbed areas, Project-related vehicles shall observe a speed limit of 10 miles per hour in construction sites and access roads within suitable GGS upland habitat, except on county roads, highways, and other roads where 10 miles per hour would unsafely impede the normal flow of traffic. Permittee shall post a vehicle speed limit of 10 miles per hour on all nonpublic construction site and access roads within suitable GGS upland habitat. If GGS, or any snake resembling GGS, is found on or traversing a roadway, Project personnel shall allow the snake to safely move off the road on its own, maneuver to avoid striking it, or shall notify the Designated Biologist(s) to move the snake off the road. If Project personnel observe GGS, or any snake resembling GGS, retreating into an underground burrow, crack, or crevice, including rock riprap (hereafter refuge) within a construction site, Permittee shall not allow the Covered Activity within a 50-foot radius of the refuge until Project personnel contact the Designated Biologist(s) and the Designated Biologist(s) is/are on site. If the refuge cannot be avoided by the Covered Activities, the Designated Biologist(s) shall attempt to excavate or expose and identify the snake. If GGS	ITP Condition # 9.5.13	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	is found, the Designated Biologist(s) shall allow it to escape the construction site of its own volition or relocate it in accordance with Condition of Approval 9.5.3. Project personnel shall inform the Designated Biologist(s) if they encounter GGS, or any snake resembling GGS, within or near the construction site during all phases of Covered Activities. Permittee shall store equipment, supplies, and vehicles and conduct vehicle or equipment service or refueling in designated laydown and staging areas within the Project Area at least 200 feet from suitable GGS aquatic habitat.				
114	Upon completion of work, Permittee shall restore GGS habitat on-site by removing temporary fill and construction debris, re-contouring, if appropriate, and re-vegetating areas with CDFW approved and available native plant species (see Condition of Approval 10.8). The restoration effort shall comply with the U.S. Fish and Wildlife Service Guidelines for the Restoration and/or Replacement of GGS Habitat (U.S. Fish and Wildlife Service 2007), and Permittee shall monitor the restoration site for one year.	ITP Condition # 9.5.14	Throughout Project construction	Permittee	
115	The Designated Biologist(s) shall delineate with flagging or other visible markers suitable GGS habitat within construction sites for atmospheric or pressurized safe havens. Permittee shall ensure no Covered Activities associated with the construction of, access to, or operation of safe havens occur within delineated GGS habitat.	ITP Condition # 9.5.15	Throughout Project construction	Permittee	
116	The Designated Biologist(s) shall delineate suitable GGS aquatic habitat within geotechnical exploration sites with poly wire or other visible flagging approved by CDFW to demarcate it as a disturbance-free zone (see Condition of Approval 9.5.1*)*. Permittee shall not conduct geotechnical exploration Covered Activities in suitable GGS aquatic habitat. The Designated Biologist(s) shall delineate with flagging or other visible markers suitable GGS upland habitat within geotechnical exploration sites. Permittee shall not conduct geotechnical exploration Covered Activities in suitable GGS upland habitat during the inactive season from October 2 – April 30. For Covered Activities conducted during the active season of May 1 – October 1 in suitable GGS upland habitat, Permittee shall implement the following measures: • Permittee shall confine movement of heavy equipment to existing access roads or to locations outside of suitable GGS upland habitat to the extent practicable. • Project personnel shall limit vehicle speed to 10 miles per hour within exploration sites and on non-public access roads. • The Designated Biologist(s) shall be on-site during selection of the exploration site, ingress and egress to the exploration site, and during set-up activities to guide Project personnel to avoid visible burrows until access routes are clearly established. • The Designated Biologist(s) shall conduct daily surveys prior to the start of Covered Activities each day to check for burrows within the exploration site.	ITP Condition # 9.5.16	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	The Designated Biologist(s) shall either flag burrows to be avoided by a 50-foot radius no-activity buffer or designate and flag work sites, staging areas, and ingress/egress routes that avoid potentially occupied burrows. • If GGS, or any snake resembling GGS, is detected retreating into or exiting a burrow, the Designated Biologist(s) shall flag the burrow to be avoided by the no-activity buffer. • If Project personnel find GGS, or any snake resembling GGS, within the exploration site, they shall allow GGS to leave the site, or notify the Designated Biologist(s) to relocate the GGS outside of the exploration site, before continuing Covered Activities.				
117	For transmission line maintenance activity, Permittee shall follow the same measures as geotechnical exploration (see Conditions of Approval 9.5.16). Permittee shall follow Condition of Approval 9.5.13 for all transmission line maintenance-related Covered Activities. Permittee shall only use mowing or burning for vegetation control within suitable GGS upland habitat. Permittee shall use light mowing equipment that would not crush burrows or impact the ground. Permittee shall not use flail or other high-suction mowers in suitable GGS upland habitat during the active season unless the Designated Biologist(s) is/are on site in front of the mower to help GGS escape the blades. Permittee shall start mowing farthest from aquatic habitat in order to force GGS toward the water. Permittee shall limit mowing on channel banks to one side of the channel per year to maintain cover for GGS. Permittee shall avoid mowing emergent vegetation such as tules, cattail, sedge, or rush to the extent practicable and shall keep grassy vegetation at a minimum height of 4 inches. Permittee shall ensure maintenance activities do not include ground disturbance activity that would crush burrows or entomb GGS within a burrow.	ITP Condition # 9.5.17	Throughout Project construction, Test Period and Full Project Operations	Permittee	
118	When practicable, in channels with suitable GGS aquatic habitat during the active season Permittee shall suction dredge from only one side of the water channel during a given year and shall confine suction dredging to the channel bed below the high-water mark to avoid suction dredging near shallow water edges and channel-side banks. Where channel margin disturbance cannot be avoided, the Designated Biologist(s) shall be on-site to look for GGS basking or hiding in riprap, on channel bank edges, or swimming in the shallow water along the channel margin before suction dredging begins. The Designated Biologist(s) shall have the authority to delay suction dredging until GGS is safely out of the water or removed from the construction site. The Designated Biologist(s) shall relocate removed GGS in accordance with Condition of Approval 9.5.2.	ITP Condition # 9.5.18	Throughout Project construction	Permittee	
119	Required Technical Teams, Studies, and Project Operations Plans (see items below)	ITP Condition # 9.6		Permittee	
120	Permittee shall, in consultation with CDFW, identify participants in a Technical Oversight	ITP	Prior to initiation of	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Team (TOT) within 30 days of issuance of a SWRCB approval of a change in point of diversion for the Project. The purpose of the TOT is to ensure that the final design, construction, and operations of the Project minimize effects on Covered Fish Species. The TOT shall include only representatives from CDFW, USFWS, NMFS, DWR, and Reclamation. If at least three of the participating TOT agencies approve, other experts in fish biology, hydrology, or engineering may also participate in the TOT to assist in the development, review and finalization of specific TOT work products. Permittee shall: • Convene the first meeting of the TOT within 60 days of issuance of a SWRCB change in point of diversion, and regularly thereafter throughout the development of the final project design, project construction, the Test Period, and Full Project Operations. • Create additional technical teams including HOR Gate Technical Team, CCF Technical Team, and the NDD intakes Technical Team to develop final work products as described below in this condition to support the TOT. As appropriate, the technical teams may include experts in fish biology, hydrology, and engineering, for example experts from IEP or water operations technical work teams. Permittee shall ensure that TOT and technical team work products comply with all requirements of this condition. • Develop and distribute regular meeting schedules for the TOT and technical teams at the beginning of each calendar year, based on anticipated needs. • Reschedule or call for a special meeting of the TOT or technical teams outside the regular schedule, upon request from CDFW or any two or more TOT or technical team members. Such meetings shall be scheduled within 3 working days of receiving a request, and shall be held in a timeframe responsive to the issue(s) warranting the meeting. • Ensure that all draft documents for discussion in the regularly scheduled TOT and technical team meetings are distributed at least five working days prior to each meeting. • Distribute a meeting agenda at least two working days prior to each TOT and technical team meeting. • Record and distribute meeting notes no more than five working days after each TOT and technical team meeting. • Provide a NDD intake fish screen final as-built construction report to the TOT within six months of completion of construction of the NDD intake fish screens.	Condition # 9.6.1	Covered activities; and throughout Project construction, Test Period, and Full Project Operations		

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	The TOT shall: • Review and finalize plans required to minimize impacts of Project construction on Covered Species associated with underwater sound, fish salvage, pile driving, and barge operations (see Conditions of Approval 9.1.13, 9.1.14, 9.1.15, and 9.1.16). • Ensure the final construction plan incorporates final fish screen design recommendations developed by the NDDTT, final HOR Gate construction and design recommendations developed by the HGTT, and final CCF construction and design recommendations developed by the CCFTT. • Synthesize results from pre-construction studies and incorporate into the draft Test Period Operations Plan prepared by Permittee (see Condition of Approval 9.6.7). • Synthesize results from all pre-construction and test period studies and incorporate into the draft Full Project Operations Plan prepared by Permittee (see Condition of Approval 9.6.8). • Annually synthesize results from all post-construction studies, and operations modeling and measurement, to evaluate Project performance relative to required biological criteria (see Condition of Approval 9.7) and to evaluate compliance with operating criteria described in the Condition of Approval 9.9, the Test Period Operations Plan, and the Full Project Operations Plan. All final work products (including but not limited to construction designs, study plans, reports, and recommendations) produced by the technical teams supporting the TOT, shall be submitted to the TOT for the TOT's approval, CDFW approval where required, and incorporation into final project design, construction contract documents, and studies and monitoring programs. Plans for Pre-construction studies 10-15, plans for Post-construction studies 10-12, the Test Period Operations Plan, and the Full Project Operations Plan shall be finalized by the TOT, then provided to the IICG for review and integration into the Adaptive Management Program decision-making process. As a part of the Adaptive Management Program decision-making process final plans approved by the TOT, as appropriate, shall be independently peer reviewed prior to implementation by Permittee, as determined in consultation with CDFW.				
121	The TOT shall collaborate with Collaborative Science and Adaptive Management Program (CSAMP) and IEP to establish CWF project work team(s) (Project Work Team) responsible for developing initial study plans for Pre-construction Studies 10-15 and Post-construction	ITP Condition # 9.6.2	Prior to initiation of Covered Activities, throughout Project	Permittee and TOT	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Studies 10-12. The Project Work Team(s) shall be overseen by the Collaborative Adaptive Management Team (CAMT). The Project Work Team(s) will present draft study plans for review to CAMT and TOT and subsequent independent peer review. After review comments have been addressed, and the TOT approves, the study plans will be sent to the IICG for review. Permittee shall submit the final plan(s) to CDFW for written approval.		Construction, Test Period and Full Project Operations		
122	Permittee shall convene the NDD Intake Technical Team (NDDTT) within 60 days of TOT establishment and regularly thereafter throughout the development of the final design of NDD intakes, the Test Period, and Full Project Operations. The NDDTT shall only include representatives from CDFW, NMFS, USFWS, DWR, and Reclamation. With the approval of three or more of the original five agencies participating in the NDDTT, other individual experts in fish biology, hydrology, and engineering from other agencies, or non-agency experts may also participate in the NDDTT to assist in the review and finalization of specific NDDTT work products. The TOT shall collaborate with the NDDTT to: • Develop final fish screen design. Final fish screen design shall be consistent with criteria described in *NMFS 1997 Fish Screening Criteria for Anadromous Salmonids* and *CDFG 2000 Fish Screening Criteria*. Final fish screen design must receive written CDFW approval before construction can begin. • Develop study plans for all Pre-construction Studies 1-9, and Post-construction studies 1-9 and 13 (see Conditions of Approval 9.6.10 and 9.6.11). • Review and finalize annual reports for all required pre-construction and post-construction studies (see Conditions of Approval 9.6.10 and 9.6.11). • Review and comment on the NDD intake subcomponent of the draft Test Period Operations Plan (see Condition of Approval 9.6.7). • Review and comment on the NDD intake subcomponent of the draft Full Project Operations Plan (see Condition of Approval 9.6.8). • Annually synthesize results from Project operations modeling and measurement (see Condition of Approval 9.8) to evaluate compliance with operating criteria described in the Test Period Operations Plan and the Full Project Operations Plan. All final work products produced by the NDDTT (including but not limited to construction designs, study plans, reports, and recommendations) shall be submitted to the TOT for approval, and CDFW approval where required, and incorporation into final project design, construction contract documents, future studies, and monitoring programs.	ITP Condition # 9.6.3	Prior to initiation of Covered activities; and throughout Project construction, Test Period, and Full Project Operations	Permittee	
123	Permittee shall convene an HOR Gate Technical Team (HGTT) at the initiation of the HOR Gate design that will meet periodically (at least quarterly) to provide technical input to the Permittee on the design process of the HOR Gate until Permittee completes final design (a	ITP Condition # 9.6.4	Prior to initiation of Covered Activities at the HOR Gate	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	time period expected to be at least two years). The HGTT shall include only representatives from CDFW, NMFS, USFWS, DWR, and Reclamation. With the approval of three or more of the initial agencies participating in the HGTT, experts in fish biology, hydrology, and engineering from other agencies, or non-agency experts may also be participate in the HGTT to assist in the development, review and finalization of specific HGTT work products.. The TOT shall collaborate with the HGTT to: • Review construction plans and make recommendations regarding appropriate techniques for dewatering, fish rescue, and fish exclusion during in-water work at the HOR Gate. • Identify near-term research/monitoring needs, if any, to reduce Covered Species impact uncertainties (e.g. HOR Gate area habitat use) prior to construction. • Prior to completion of final HOR Gate design, prepare draft and final reports summarizing HGTT work products that have been provided to the TOT for final approval prior to completion of final HOR Gate design. All final work products produced by the HGTT (including but not limited to construction designs, study plans, reports, and recommendations) shall be submitted to the TOT for approval and incorporation into final project design, construction contract documents, and studies and monitoring programs.				
124	Permittee shall convene a Clifton Court Forebay Technical Team (CCFTT) regularly (at least quarterly) throughout the development of the final design of CCF modifications, the Test Period, and Full Project Operations. The CCFTT shall include only representatives from CDFW, NMFS, USFWS, DWR, and Reclamation. With approval of three or more of the original agencies participating in the CCFTT, other individual experts in fish biology, hydrology, and engineering from other agencies, or non-agency experts, may also participate in the CCFTT to assist in the development, review and finalization of specific TOT work products. The TOT shall collaborate with the CCFTT to: • Review construction plans and make recommendations regarding phasing of CCF construction to further minimize impacts to Covered Species. • Review Permittee's construction plans and make recommendations regarding appropriate techniques for dewatering, fish rescue, and fish exclusion during in-water work. Dewatering and fish rescue shall be conducted for all cofferdam work at CCF, and fish exclusion shall be conducted for dredging. • Implement requirements and recommendations described in Condition of Approval 9.8.13 - Clifton Court Forebay Aquatic Weed Control Program. • Develop studies and monitoring programs to assess impacts on Covered Fish Species resulting from CCFPP and CCF operations and as part of	ITP Condition # 9.6.5	Prior to initiation of Covered activities; and throughout Project construction, Test Period, and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	requirements described in Condition of Approval 9.8.4 – DS and LFS Larval South Delta Abundance and Entrainment Monitoringand Condition of Approval 9.6.6 – Clifton Court Forebay Loss Multiplier. • Annually, synthesize results from south Delta and CCF operations modeling and monitoring (described in Condition of Approval 9.8) to evaluate compliance with operating criteria described in the Test Period Operations Plan and the Full Project Operations Plan. • Review and comment on the CCF subcomponent of the draft Test Period Operations Plan (see Condition of Approval 9.8.7). • Review and comment on the CCF subcomponent of the draft Full Project Operations Plan (see Condition of Approval 9.8.8). All final work products produced by the CCFTT (including but not limited to construction designs, study plans, reports, and recommendations) shall be submitted to the TOT for approval, and CDFW approval where required, and incorporation into final project design, construction contract documents, and studies and monitoring programs.				
125	The purpose of this condition is to estimate the extent to which the reconfigured CCF, and associated changes to the south Delta export facilities, or changes the prescreen loss of juvenile salmonids (i.e., from the CCF radial gates to the primary louvers at the Skinner Fish Facility) relative to the assumptions currently made for estimating loss and take in NMFS (2009). Upon completion of construction and initiation of the Test Period Permittee shall implement studies to estimate prescreen loss of juvenile salmonids in coordination with the CCFTT as described in the *CCF* subsection of the Project Description. These studies shall consist of releases of tagged or marked juvenile salmonids, followed by recapture or detection to estimate survival during passage through CCF. The results of these studies shall be used by CDFW to determine whether the pre-screen loss multipliers used to estimate loss and take need to be revised. If CDFW determines that these studies indicate biologically significant differences between the loss multipliers calculated prior to issuance of this permit and the multipliers following completion of Project construction, the new Project multipliers shall from then on be employed in subsequent loss estimates to quantify the level of incidental take of CHNWR and CHNSR for the Project in each water year. South Delta export pumping shall be managed in real time, as currently occurs, in order to ensure that losses of CHNWR and CHNSR remain below the authorized incidental take (see Condition of Approval 9.9.8).	ITP Condition # 9.6.6	During the Test Period and Full Project Operations	Permittee	
126	Full Project Operations shall be preceded by a period of testing (Test Period) during which Permittee, in collaboration with the TOT, shall evaluate and demonstrate compliance with operating criteria for all Project facilities and biological criteria set forth in this permit (see Condition of Approval 9.9, and the *Operational Criteria for the NDD Intakes* subsection of the Project Description).	ITP Condition # 9.6.7	During Project construction, the Test Period and the initiation of Full	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Prior to initiation of the Test Period Permittee shall develop a draft Test Period Operations Plan and submit it to the NDDTT, CCFTT, and the TOT for review and finalization. The Test Period Operations Plan shall be used to conduct coordinated operations of all Project facilities and evaluate compliance with NDD intake operating criteria and biological criteria over the full range of diversion rates and flow conditions anticipated throughout the permit term. The Test Period Operations Plan shall include the synthesis of results from all pre-construction studies approved by the TOT and shall describe how Permittee shall implement all post-construction studies during the Test Period. Operation of the NDD intakes shall be restricted to isolated and brief tests of individual intakes to verify functionality of primary structural components prior to initiation of the Test Period in consultation with CDFW, NMFS, and USFWS. The Test Period shall not commence until after construction of all Project components is complete and the final Test Period Operations Plan is approved in writing by CDFW. Upon initiation of the Test Period the terms of this permit shall prevail over existing incidental take permit(s) or other approvals pursuant to CESA authorizing take of Covered Species for the operations of the SWP. During the Test Period, Permittee shall implement post-construction studies described in the Test Period Operations Plan and provide draft annual reports to the NDDTT and the TOT for review. The TOT shall approve final reports prior to submission to the IICG and incorporation into the Adaptive Management Program decision-making process. CDFW, NMFS, and USFWS shall determine when the Test Period ends, and when Full Project Operations can commence, consistent with operating criteria evaluated during the Test Period and as described in Condition of Approval 9.9 and the Full Project Operations Plan. Following completion of the Test Period subsequent tests of the NDD intakes shall continue during infrequently occurring hydrologic conditions to determine compliance with NDD intake operating criteria and biological requirements. The Full Project Operations Plan shall include a description of subsequent tests to evaluate operations of the NDD intakes in hydrologic conditions that were not evaluated during the Test Period.		Project Operations		
127	In collaboration with the NDDTT, CCFTT, and TOT, Permittee shall develop and obtain approval of a Full Project Operations Plan prior to completion of the Test Period and initiation of coordinated long-term operations of all Project facilities described in Condition of Approval 9.9 (Full Project Operations). Permittee shall submit a draft Full Project Operations Plan to the NDDTT, CCFTT and the TOT for review and finalization. The Full Project Operations Plan shall be used to conduct coordinated operations of all Project facilities and evaluate compliance with operating criteria and biological criteria over the full range of diversion rates and flow conditions anticipated throughout the permit term. The Full Project Operations Plan shall include the synthesis of all pre-construction and test period studies prepared by the TOT and use such information to provide a detailed description of how Permittee shall meet all required operating criteria and ensure	ITP Condition # 9.6.8	During the Test Period and throughout Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	compliance with biological criteria during Full Project Operations. The Full Project Operations Plan shall describe how Permittee will implement all required post-construction studies and monitoring during Full Project Operations. Full Project Operations shall not commence until after the final Full Project Operations Plan is approved in writing by CDFW. The Full Project Operations Plan shall include: • Detailed descriptions of how the biological criteria established in Condition of Approval 9.7 will be met following completion of the Test Period. • All operational criteria included in Condition of Approval 9.9 of this permit (also see Condition 6). • Results of pre-construction studies and post-construction studies conducted during the Test Period (see Conditions of Approval 9.6.10 and 9.6.11). Upon completion of the Test Period, and initiation of Full Project Operations, Permittee shall adhere to the Full Project Operations Plan.				
128	Permittee shall develop and implement a sediment reintroduction plan that enhances DS and LFS habitat through recurring sediment reintroduction and placement to maintain turbidity and create and maintain spawning habitat for DS and LFS. The sediment reintroduction plan shall include monitoring programs to assess the effectiveness of sediment reintroduction in maintaining turbidity and DS and LFS spawning habitat in the Delta. The sediment reintroduction plan shall also identify separate CEQA and other permitting requirements and a plan for compliance with those requirements. Permittee shall develop the sediment reintroduction plan in coordination with CDFW and submit a draft to the TOT for review and finalization. The Test Period shall not commence until the sediment reintroduction plan is finalized by the TOT and approved in writing by CDFW.	ITP Condition # 9.6.9	Prior to initiation of theTest Period	Permittee	
129	Permittee shall coordinate with the NDDTT to develop study plans for Pre-construction studies 1-9 and with the CSAMP CWF Project Work Team to develop study plans for Pre-construction studies 10-15, as identified in the Fish Facilities Technical Memorandum 2011[1], further described in the Fish Facilities Work Plan 2013[2], and as described below. Study plans shall include requirements for the timing of study initiation, study duration, timing of report review and finalization, and final approval prior to study termination. Permittee shall implement additional studies, as recommended through the Adaptive Management Program decision-making process, to evaluate relevant physical and biological parameters. Permittee shall initiate and fully fund each study within 60 days of study plan finalization	ITP Condition # 9.6.10	Prior to initiation of Project construction and during Project construction	Permittee	

[1] Fish Facilities Technical Team. 2011. BDCP Fish Facilities Technical Team Technical Memorandum.

[2] Fish Facilities Working Team. 2013. Work Plan—Intake Design Criteria and Performance Monitoring Development. June 28. California Department of Water Resources, California Department of Fish and Wildlife, U. S. Bureau of Reclamation, U. S. Fish and Wildlife Service, and the National Marine Fisheries Service.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	and submit annual and final reports describing study progress and outcomes to the NDDTT and the CSAMP CWF Project Work Team for review. Final reports describing outcomes of pre-construction studies 1-9 must be provided to the TOT and approved no less than nine (9) months prior to Permittee's completion of final design and of the relevant Project elements. Final written reports must be approved in writing by the TOT before they are incorporated into the final project design and construction contract documents. *Pre-construction Study 1 - Site Locations Lab Study:* The purpose of this study shall be to develop physical hydraulic models to optimize hydraulics and sediment transport at each NDD intake site to ensure NDD intake designs minimize Covered Fish Species impingement and entrainment risk. *Pre-construction Study 2 - Site Locations Mathematical Modeling Study:* The purpose of this study shall be to develop site specific mathematical models to assess the performance of each NDD intake under the full range of tidal and river hydraulic conditions and associated operating conditions. *Pre-construction Study 3 - Refugia Lab Study:* The purpose of this study shall be to use laboratory studies to test and optimize fish refugia designs to be incorporated in the final design of the NDD intakes. *Pre-construction Study 4 - Refugia Field Study:* The purpose of this study shall be to conduct field experiments to evaluate the effectiveness of incorporating refugia into the NDD intakes to provide areas for juvenile fish passing the screen to hold and recover from swimming fatigue and avoid exposure to predatory fish. *Pre-construction Study 5 - Predator Habitat Locations:* The purpose of this study shall be to perform a field evaluation of predator habitat at facilities similar to the NDD intakes (e.g., Freeport, RD 108, Sutter Mutual, Patterson Irrigation District, and Glenn Colusa Irrigation District) to inform final design of the NDD intakes. *Pre-construction Study 6 -Predator Reduction Methods:* The purpose of this study shall be to evaluate predator reduction techniques implemented at facilities similar to the NDD intakes (e.g., Freeport, RD 108, Sutter Mutual, Patterson Irrigation District, and Glenn Colusa Irrigation District), to determine whether similar techniques could minimize potential predation impacts on Covered Fish Species and be feasible to implement at the NDD intakes. *Pre-construction Study 7 - Flow Profiling Field Study:* The purpose of this study shall be to use field data collection to characterize the water velocity distribution at river transects within the NDD intake reach for a range of flow conditions. Water velocity distributions within the NDD intake reach will identify how hydraulics change with flow rate and tidal cycle. This information shall be used to inform fish screen final design and model-based testing of fish screen performance (see Pre-construction Study 8 below). *Pre-construction Study 8 - Deep Water Screens Study:* The purpose of this study shall be to develop a computational fluid dynamics model to evaluate the need for hydraulic tuning baffles which can be adjusted in both the vertical and horizontal directions to achieve NDD intake design requirements to minimize Covered Fish Species impingement and				

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	entrainment. *Pre-construction Study 9 - Predator Density and Distribution:* The purpose of this study is to determine the baseline densities, species composition, and seasonal and geographic distribution of predatory fish (and birds and mammals if appropriate) within the Sacramento River in the NDD intake reach and in adjacent control reaches. Baseline data collected on predator occurrence in the vicinity of each NDD intake and adjacent control reaches shall be used in the future, during the Test Period and Full Project Operations, to determine changes in predator density and distribution associated with construction and operation of the NDD intakes (see Post-construction Study 9 in Condition of Approval 9.6.11). *Pre-construction Study 10 – NDD Intake Reach Baseline Juvenile*[3] *CHNWR and CHNSR Survival Rates:* The purpose of this study shall be to quantify baseline survival rates for juvenile CHNWR and CHNSR before initiation of construction activities at the NDD intakes based on empirical field data collection. This study shall be conducted within the NDD intake reach over the full range of flow conditions anticipated to occur over the permit term prior to initiation of construction and during Project construction to monitor impacts of construction on CHNWR and CHNSR. For the purposes of this study and Post-construction Study 10 only, the NDD intake reach shall begin 0.25 miles upstream of Intake 2 and end 0.25 miles downstream of Intake 5. During the Test Period and Full Project Operations, this study shall continue as Post-construction Study 10 (in Condition of Approval 9.6.11), using the same or compatible methodology. Together, these studies will quantify the change in survival rates of juvenile CHNWR and CHNSR due to construction and operation of the NDD intakes (see Biological Criteria 1 in Condition of Approval 9.7). *Pre-construction Study 11 - Baseline DS and LFS Survey:* The purpose of this study shall be to determine baseline abundance, distribution, and timing of all life stages of DS and LFS inhabiting, or migrating through, all portions of the Sacramento River upstream of Intake 5. This study shall quantify: • Seasonal and geographic variation in DS and LFS abundance within the study reach • The percentage of the total population of adult DS and LFS that spawn in the NDD intake reach and in the Sacramento River upstream of the NDD intakes • The percentage of the total population of juvenile and larval DS and LFS that migrate through the NDD intake reach. • The relative use of right-bank, left-bank and low velocity bottom habitats for adult upstream migration and for downstream larval and juvenile				

[3] Juvenile CHNWR and CHNSR survival rates shall be determined for the fry, parr, smolt, and yearling life stages and the rearing and emigrating life history strategies.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	migration. During the Test Period and Full Project Operations, this study shall continue as Post-construction Study 11 (in Condition of Approval 9.6.11), using the same, or compatible, methodology. Together, these studies will be used as inputs to the DS and LFS life cycle models (Pre-construction Studies 14 and 15) to quantify the effect of NDD intake operations on DS and LFS population dynamics (see Biological Criteria 3 in Condition of Approval 9.7). *Pre-construction Study 12 – Through Delta Baseline Juvenile CHNWR and CHNSR Survival Rates:* The purpose of this study shall be to develop a flow-based index of baseline survival rates for juvenile CHNWR and CHNSR to Chipps Island through the full range of inflows and South Delta exports. The flow-based index shall be based on Sacramento River inflow at Freeport. Best available science shall be used to develop a method utilizing mark/recapture, acoustic telemetry, or other methods to implement this study. During the Test Period and Full Project Operations, this study shall continue as Post-construction Study 12, using the same or compatible methodology. Together, the results of these studies shall be used to quantify changes in juvenile CHNWR and CHNSR survivorship to Chipps Island as a result of the Project and ensure compliance with Biological Criteria 2 (see Condition of Approval 9.7). *Pre-construction Study 13 – Monitoring Sacramento River Reverse Flows*: The purpose of this study is to monitor the magnitude, frequency, and duration of Sacramento River reverse flows at the Georgiana Slough junction prior to initiation of the Test Period. This study shall be used to establish a pre-Project baseline and inform development of the Test Period Operations Plan and the Full Project Operations Plan. This study shall continue during the Test Period and Full Project Operations as Post-construction Study 13 (see Condition of Approval 9.6.11) using the same methodology. Together, the results of these studies shall be used to ensure compliance with Condition of Approval 9.9.4.1. *Pre-construction Study 14 – DS Life Cycle Model*: The purpose of this study is to develop or enhance mathematical life cycle models for use as quantitative tools to characterize the effects of abiotic (including climate change effects) and biotic factors on the DS population. Model enhancements shall employ best available science and modeling methods, and be verified through empirical data collection. The DS life cycle model shall be used to quantify the effects of the Project throughout construction, the Test Period, and Full Project Operations to ensure compliance with DS biological criteria (see Condition of Approval 9.7). *Pre-construction Study 15 – LFS Life Cycle Model*: The purpose of this study is to use best available science to develop a mathematical life cycle model for LFS, verified with field data collection, as a quantitative tool to characterize the effects of abiotic (including climate change effects) and biotic factors on LFS populations. The LFS life cycle model shall be used to quantify the effects of the Project throughout construction, the Test Period, and Full Project Operations to ensure compliance with LFS biological criteria (see Condition of				

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Approval 9.7). *Pre-construction Study 16 – CHNWR and CHNSR Life Cycle Models*: The purpose of this study is to use best available science to continue to support and refine the existing NMFS mathematical life cycle models for CHNWR, and verify it with field data collection, as a quantitative tool to characterize the effects of abiotic (including climate change effects) and biotic factors on CHNWR populations. This CHNWR life cycle model shall be expanded and adapted to CHNSR. The CHNWR and CHNSR life cycle models shall be used to quantify the effects of the Project throughout construction, the Test Period, and Full Project Operations to ensure compliance with CHNWR and CHNSR biological criteria (see Conditions of Approval 9.6.11 and 9.7).				
130	Prior to initiation of the Test Period Permittee shall coordinate with the NDDTT to develop study plans for Post-construction studies 1-9 and 13, and with the CSAMP CWF Project Work Team to develop study plans for Post-construction Studies 10-12, as identified in the Fish Facilities Technical Memorandum 2011[4], further described in the Fish Facilities Work Plan 2013[5], and as described below. Post-construction studies shall be implemented throughout the Test Period to inform the development of the Full Project Operations Plan, and throughout Full Project Operations. Study plans shall include requirements for the timing of study initiation, study duration, timing of report review and finalization, and written approval from CDFW prior to study termination. Permittee shall implement additional studies, as recommended through the Adaptive Management Program decision-making process, to evaluate relevant physical and biological parameters. Permittee shall initiate each study within 60 days of study plan finalization and written approval from CDFW. Following final approval by the TOT, Permittee shall fully fund and implement post-construction studies, and submit annual reports to the NDDTT for review and finalization. Annual and final written reports must be approved in writing by the TOT. *Post-construction Study 1 – Hydraulic Screen Evaluations to Set Baffles:* The purpose of this study shall be to conduct initial hydraulic field evaluations of the NDD intakes to measure velocities over a designated grid in front of each screen panel. This study shall be conducted at diversion rates close to the maximum diversion rate. Results of this study shall be used to set initial baffle positions. *Post-construction Study 2 - Long-term Hydraulic Screen Evaluations:* The purpose of this long term monitoring program shall be to measure approach velocities, sweeping velocities, and other hydrodynamic characteristics across the entire fish screen face at each intake. Results of this monitoring program shall be used to “tune” baffles and other components of the screen system to consistently achieve compliance with final fish screen	ITP Condition # 9.6.11	Throughout the Test Period and Full Project Operations	Permittee	

[4] Fish Facilities Technical Team. 2011. BDCP Fish Facilities Technical Team Technical Memorandum.

[5] Fish Facilities Working Team. 2013. Work Plan—Intake Design Criteria and Performance Monitoring Development. June 28. California Department of Water Resources, California Department of Fish and Wildlife, U. S. Bureau of Reclamation, U. S. Fish and Wildlife Service, and the National Marine Fisheries Service.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	design criteria (see Condition of Approval 9.6.3). *Post-construction Study 3 - Periodic Visual Inspections:* The purpose of this monitoring program shall be to perform visual inspections of NDD intake screens to evaluate screen integrity and the effectiveness of the cleaning mechanism in protecting the structural integrity of the screen and maintaining uniform flow distribution through the screen. Results of this monitoring program shall be used to adjust cleaning intervals as needed to achieve compliance with final fish screen design criteria (see Condition of Approval 9.6.3). *Post-construction Study 4 - Velocity Measurement Evaluations:* The purpose of this monitoring program shall be to determine sweeping velocities along the length of each fish screen and in front of, and within, refugia areas over a range of flow conditions. The results of this monitoring program shall be used to determine if sweeping velocities and refugia areas are within the final fish screen design criteria (see Condition of Approval 9.6.3). Sweeping velocities in front of and within refugia areas shall be implemented if refugia are incorporated into the design of the NDD intakes. *Post-construction Study 5: - Refugia Effectiveness:* This study shall be implemented if refugia are incorporated into the design of the NDD intakes. The purpose of this study shall be to monitor NDD intake fish screen refugia to evaluate effectiveness in minimizing screen impingement and near-screen predation. This includes evaluating refugia effectiveness at a range of flow conditions. Results of this monitoring program shall be used to evaluate compliance with final fish screen design criteria (see Condition of Approval 9.6.3). *Post-construction Study 6 - Sediment Management:* The purpose of this study is to quantify sediment deposition in front of the NDD intake screen base, and behind screens, to evaluate the effectiveness of sediment management devices and ensure compliance with final fish screen design criteria (see Condition of Approval 9.6.3). *Post-construction Study 7- Evaluation of Screen Impingement:* The purpose of this monitoring program is to observe fish activity at the screen face and quantify Covered Fish Species impingement and injury rates. Results of this monitoring program shall be used to assess NDD intake performance relative to final fish screen design criteria (see Condition of Approval 9.6.3). *Post-construction Study 8 - Screen Entrainment:* The purpose of this study is to monitor densities of all Covered Fish Species life stages behind fish screens to quantify entrainment rates into the NDD intakes. Permittee shall identify the species and size of all entrained fish. Results of this study shall be used to assess performance of NDD intakes relative to biological criteria in Condition of Approval 9.7 and final fish screen design criteria (see Condition of Approval 9.6.3). *Post-construction Study 9 – Predator Density and Distribution:* The purpose of this study, which is associated with Pre-construction Study 9 in Condition of Approval 9.6.10, is to determine the densities, species composition, and seasonal and geographic distribution of predatory fish (and birds and mammals if appropriate) within the Sacramento River in the NDD intake reach and adjacent control reaches during the Test Period and Full Project Operations. Data collected on predator occurrence in the vicinity of each NDD intake and				

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	control reaches shall be used to determine whether predator control, facility modification, or operational changes at the NDD intakes are warranted to reduce predation of Covered Fish Species. *Post-construction Study 10 – Post-construction NDD Intake Reach Juvenile*[6] *Salmon Survival Rates:* The purpose of this study is to quantify survival rates for juvenile CHNWR and CHNSR at the NDD intakes based on empirical field data collection. This study shall be conducted within the NDD intake reach throughout the Test Period and Full Project Operations. For the purposes of this study and Pre-construction Study 10 only, the NDD intake reach shall begin 0.25 miles upstream of Intake 2 and end 0.25 miles downstream of Intake 5. This study shall use the same methods or compatible methods as Pre-construction Study 10 to enable direct comparison of juvenile CHNWR and CHNSR survival rates quantified before construction, during construction, throughout the Test Period, and throughout Full Project Operations. Together, these studies will quantify the change in survival rates of juvenile CHNWR and CHNSR due to construction and operation of the NDD intakes (see Biological Criteria 1 in Condition of Approval 9.7). *Post-construction Study 11 – Post-construction DS and LFS Surveys:* The purpose of this study is to determine the distribution, abundance, and timing of all life stages of DS and LFS inhabiting, or migrating through, all portions of the Sacramento River upstream of Intake 5 throughout the Test Period and Full Project Operations. This study shall quantify: • Seasonal and geographic variation in DS and LFS abundance within the study reach. • The percentage of the total population of DS and LFS that spawn in the NDD intake reach and in the Sacramento River upstream of the NDD intakes. • The percentage of the total population of juvenile and larval DS and LFS that migrate through the NDD intake reach. • The relative use of right-bank, left-bank and low velocity bottom habitats for adult upstream migration and for downstream larval and juvenile migration. This study shall use the same, or compatible, methods as Pre-construction Study 11 to enable direct comparison of DS and LFS distribution and abundance quantified before construction, during construction, throughout the Test Period, and throughout Full Project Operations. Together, these studies will be used as inputs to the DS and LFS life cycle models (Pre-construction Studies 14 and 15) to quantify the effect of NDD intake construction and operations on DS and LFS population dynamics (see Biological Criteria 3				

[6] Juvenile CHNWR and CHNSR survival rates shall be determined for the fry, parr, smolt, and yearling life stages and the rearing and emigrating life history strategies.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	in Condition of Approval 9.7). *Post-construction Study 12 –Through Delta Post-construction Juvenile*[7] *CHNWR and CHNSR Survival Rates*: The purpose of this study is to quantify flow-based survival rates of juvenile CHNWR and CHNSR to Chipps Island throughout the Test Period and Full Project Operations. This study shall use the same, or compatible, methods as Pre-construction Study 12 to enable direct comparison of pre-construction and post-construction juvenile CHNWR and CHNSR flow-based survival rates quantified before construction, during construction, the Test Period and Full Project Operations. Together, the results of these studies shall be used to verify that flow-based juvenile CHNWR and CHNSR survival rates established by Pre-construction Study 12 are not impacted by Test Period and Full Project Operations and ensure compliance with Biological Criteria 2 (see Condition of Approval 9.7). *Post-construction Study 13 – Monitoring Sacramento River Reverse Flows*: The purpose of this study is to monitor the magnitude, frequency, and duration of Sacramento River reverse flows at the Georgiana Slough junction throughout the Test Period and Full Project Operations. This study shall use the same methodology as Pre-construction Study 13 in Condition of Approval 9.6.10. Together, the results of these studies shall be used to determine compliance with Condition of Approval 9.9.4.1. *Post-construction Study 14 – DS Life Cycle Model*: The purpose of this study is to continue to support, refine, and enhance mathematical life cycle models for use as quantitative tools to characterize the effects of abiotic (including climate change effects) and biotic factors on the DS population. Model enhancements shall employ best available science and modeling methods, and be verified through empirical data collection. The DS life cycle model shall be used to quantify the effects of the Project throughout construction, the Test Period, and Full Project Operations to ensure compliance with DS biological criteria (see Condition of Approval 9.7). *Post-construction Study 15 – LFS Life Cycle Model*: The purpose of this study is to continue to support, refine, and enhance mathematical life cycle models developed as a part of Pre-construction Study 15, for use as quantitative tools to characterize the effects of abiotic (including climate change effects) and biotic factors on the LFS population. Model enhancements shall employ best available science and modeling methods, and be verified through empirical data collection. The LFS life cycle model shall be used to quantify the effects of the Project throughout construction, the Test Period, and Full Project Operations to ensure compliance with LFS biological criteria (see Condition of Approval 9.7). *Post-construction Study 16 – CHNWR and CHNSR Life Cycle Models*: The purpose of this study is to use best available science to continue to support and refine the life cycle models for CHNWR and CHNSR, and verify them with field data collection, as a				

[7] Juvenile CHNWR and CHNSR survival rates shall be determined for the fry, parr, smolt, and yearling life stages and the rearing and emigrating life history strategies.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	quantitative tool to characterize the effects of abiotic (including climate change effects) and biotic factors on CHNWR and CHNSR populations. The CHNWR and CHNSR life cycle models shall be used to quantify the effects of the Project throughout construction, the Test Period, and Full Project Operations to ensure compliance with CHNWR biological criteria (see Condition of Approval 9.7).				
131	Permittee shall ensure that all pre-construction studies, post-construction studies and monitoring programs which result in the direct take of CHNWR, CHNSR, DS, and LFS are conducted by a person or entity with necessary state and federal scientific collecting permits and take authorizations.	ITP Condition # 9.6.12	Prior to initiation of Covered Activities; and throughout Project construction, Test Period, and Full Project Operations	Permittee	
132	Permittee shall utilize operating criteria described in Condition of Approval 9.9 to meet or exceed the following biological criteria for CHNWR, CHNSR, DS and LFS (Covered Fish Species): *Biological Criterion 1:* Permittee shall operate the NDD intakes to achieve juvenile[8] CHNWR and CHNSR survival rates through NDD intake reach of 95 percent or more of the pre-construction survival rate (established by Pre-construction Study 10 and Post-construction Study 10 in Conditions of Approval 9.6.10 and 9.6.11). For the purposes of Biological Criterion 1 only, the NDD intake reach shall be defined as beginning 0.25 miles upstream of Intake 2 and ending 0.25 miles downstream of Intake 5. Permittee shall provide survival estimates on an annual basis to CDFW, the TOT and the NDDTT. *Biological Criterion 2:* Permittee shall operate the Project to achieve pre-project juvenile CHNWR and CHNSR survival rates to Chipps Island (as established by Pre-construction Study 12 in Condition of Approval 9.6.10). Test Period and Full Project Operations survival rates shall be determined by Post-Construction Study 12 (see Condition of Approval 9.6.11). Permittee shall provide survival estimates on an annual basis to CDFW, the TOT and the NDDTT[9]. *Biological Criterion 3:* Permittee shall ensure that the Project, including effects from construction and operation of NDD intakes, does not result in an overall decrease in the population size of DS and LFS from pre-project conditions. On an annual basis, Permittee shall provide estimates of overall adult DS and LFS population size, and an analysis of how the Project affected population size as determined through life cycle modeling, to CDFW, the TOT and the NDDTT (see Pre-construction Studies 14 and 15 in Condition of	ITP Condition # 9.7	Throughout Project construction, Test Period, and Full Operations	Permittee	

[8] Juvenile CHNWR and CHNSR survival rates shall be determined for the fry, parr, smolt, and yearling life stages and the rearing and emigrating life history strategies.

[9] Juvenile CHNWR and CHNSR survival rates shall be determined for the fry, parr, smolt, and yearling life stages and the rearing and emigrating life history strategies.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Approval 9.6.10 and Post-construction Studies 14 and 15 in Condition of Approval 9.6.11). These analyses shall incorporate the results of Pre-construction Study 11 and Post-construction Study 11 in Conditions of Approval 9.6.10 and 9.6.11.				
133	Project Operations Monitoring and Funding (see items below)	ITP Condition # 9.8		Permittee	
134	Permittee shall document NDD intake operations compliance using data obtained from existing environmental monitoring programs including (1) Interagency Ecological Program Environmental Monitoring Program: Continuous Multi-parameter Monitoring, Discrete Physical/ Chemical Water Quality Sampling; (2) DWR and Reclamation: Continuous Recorder Sites; (3) Central Valley RWQCB: NPDES Self- Monitoring Program; and (4) USGS Delta Flows Network and National Water Quality Assessment Program. Permittee shall provide copies of monitoring reports prepared for these environmental monitoring programs to the TOT with other monitoring reporting required by this permit. Permittee shall fully fund and implement these existing environmental monitoring programs prior to initiation of Covered Activities and continue funding and implementation for the duration of the permit term.	ITP Condition # 9.8.1	Throughout Test Period and Full Project Operations	Permittee	
135	Permittee shall coordinate with Reclamation to continue Red Bluff Diversion Dam rotary screw trapping operations to determine juvenile CHNWR and CHNSR passage and abundance year-round through the duration of this Permit.	ITP Condition # 9.8.2	Throughout Test Period and Full Project Operations	Permittee	
136	Permittee shall fund and implement hydrologic monitoring and modeling to document Project operations and ensure that the Project is operated consistent with required operational criteria (see Condition of Approval 9.9). This Condition of Approval shall commence upon initiation of the Test Period and continue for the duration of the permit term. Permittee shall submit annual reports describing hydrologic monitoring and modeling conducted throughout the previous year with other monitoring reporting required by Condition of Approval 9.8 to the TOT for review and approval.	ITP Condition # 9.8.3	Throughout Test Period and Full Project Operations	Permittee	
137	Permittee shall collaborate with the CCFTT to develop a South Delta Larval DS and LFS Monitoring and Reporting Program to quantify DS and LFS larval entrainment at south Delta salvage facilities and support implementation of Biological Criteria 3 (see Condition of Approval 9.7) throughout the Test Period and Full Project Operations. Permittee shall submit the draft plan to the TOT at least 90 days prior to the initiation of the Test Period. Permittee shall fully fund and implement the final Larval South Delta DS and LFS Monitoring and Reporting Program approved by the TOT, and submit annual reports describing results of this entrainment monitoring to the TOT for review and approval.	ITP Condition # 9.8.4	Prior to initiation of Test Period, and throughout Test Period and Full Project Operations	Permittee	
138	Permittee shall fund and implement Pre-construction Studies 10 - 15 upon completion of approval of the change in point of diversion for the Project by the State Water Resources Control Board until the initiation of the Test Period (see Condition of Approval 9.6.10). Upon initiation of the Test Period (see Condition of Approval 9.6.7), Permittee shall fund	ITP Condition # 9.8.5	Prior to initiation of Covered Activities, throughout Project construction, Test	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	and implement Post-construction Studies 10 - 13 (see Condition of Approval 9.6.11*)* throughout the duration of the permit term.		Period, and Full Project Operations		
139	Permittee shall fund all costs associated with the annual production of hatchery origin Chinook salmon necessary to implement studies and monitoring including, but not limited to, pre-construction studies, post-construction studies, and long-term compliance and effectiveness research and monitoring (see Conditions of Approval 9.6.10, 9.6.11, and 9.8). These hatchery-origin Chinook salmon shall be provided to support implementation of the Project, in addition to Permittee's existing mitigation requirements, through the duration of the permit term.	ITP Condition # 9.8.6	Upon initiation of Covered Activities; and throughout Project construction, Test Period, and Full Operations	Permittee	
140	Permittee shall provide funding for all costs associated with genetic testing and coded wire tag (CWT) tagging and processing and analysis necessary to implement studies and monitoring required by this permit including pre-construction studies, post-construction studies, and long term compliance and effectiveness research and monitoring (see Conditions of Approval 9.6.10, 9.6.11, and 9.8). Permittee shall provide this funding throughout the duration of the permit term.	ITP Condition # 9.8.7	Upon initiation of Covered Activities; and throughout Project construction, Test Period, and Full Operations	Permittee	
141	Permittee shall construct and operate a nonphysical fish barrier at Georgiana Slough (Georgiana Slough NPB) prior to initiation of the Test Period. Design and operation of the NPB shall be developed and finalized in coordination with CDFW, USFWS and NMFS. Operation of the Georgiana Slough NPB shall not commence until operational criteria are approved in writing by CDFW. Permittee shall include a description of Georgiana Slough NPB operational criteria in the Test Period Operations Plan and Full Project Operations Plan. As part of that coordination Permittee shall continue pilot investigations to refine the understanding of barrier efficiency and impacts on Covered Fish Species. This permit does not provide take authorization for construction of the Georgiana Slough NPB. Permittee shall submit a separate 2081(b) application for incidental take authorization associated with construction of the barrier. The Georgiana Slough NPB is expected to provide a higher probability of survival for emigrating juvenile salmon that pass the NDD intakes and encounter the Sacramento River-Georgiana Slough junction since the reduced Sacramento River flows that result from the operation of the NDD intakes could increase the potential for entrainment into Georgiana Slough.	ITP Condition # 9.8.8	Prior to initiation of the Test Period	Permittee	
142	Permittee shall fund its share of the IEP and other existing monitoring efforts in the lower Sacramento River, the lower Feather River, the lower San Joaquin River, and the Delta to establish presence and timing of migration of Covered Fish Species and inform implementation of RTO (described in Condition of Approval 9.9.5) including Fall Midwater Trawl (FMWT), Spring Kodiak Trawl, 20mm Survey, Smelt Larval Survey, Summer Townet, Bay Study sampling, Tisdale RST, Knights Landing RST, Beach Seine, Sacramento Trawl, Mossdale Trawl, and Chipps Island Trawl. This condition includes Permittee funding its	ITP Condition # 9.8.9	Throughout Project construction, the Test Period and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	share of any modifications or additions that may be made to IEP or other existing monitoring efforts through the Adaptive Management Program, consistent with Condition of Approval 9.8.11.				
143	Permittee shall fund and conduct required monitoring, and the staff and equipment that are needed for such monitoring, throughout the Test Period and Full Project Operations to document Project compliance with required operating criteria (see Condition of Approval 9.9).	ITP Condition # 9.8.10	Throughout Project construction, the Test Period and Full Project Operations	Permittee	
144	Permittee shall fund additional studies and monitoring, and the staff and equipment that are needed for such studies and monitoring, to document compliance with the terms of this permit, the Test Period Operations Plan, and the Full Project Operations Plan as deemed necessary under the Adaptive Management Program. Permittee shall implement the monitoring and scientific research detailed in the AMP, as coordinated through the IICG. This is required to assure monitoring to evaluate the efficacy of minimization and mitigation measures is occurring. Continuation of core monitoring specified in the current biological opinions and CESA authorizations, or the then-governing biological opinions and CESA authorization(s), is required as part of the Adaptive Management Program and included as a requirement of this permit. Permittee shall prepare and submit to CDFW within one year of permit issuance an initial Adaptive Management Program funding strategy for review and approval (see Condition of Approval 11.2.2). The interagency adaptive management effort that developed the Adaptive Management Program and *Agreement For Implementation Of An Adaptive Management Program For Project Operations* has identified existing and new monitoring and study efforts to be implemented as part of the Adaptive Management Program in the near term (i.e., 2019-2024) and longer term (i.e., 2025 and later) (see Implementation Schedule to Adaptive Management Program in Attachment 5). Permittee shall develop a funding strategy that clearly identifies responsible parties and levels of annual and total program funding consistent with the above identified funding needs for implementation of the Adaptive Management Program starting in 2019. The strategy shall include detailed funding and commitments for the first five years (2019-2024), and lesser detail for the studies required after 2024. Consistent with the role of the IICG as detailed in the Adaptive Management Program, Permittee in cooperation with Reclamation, shall submit annual updates to the strategy to CDFW for review and approval. These updates shall include extension of the detailed funding strategy for five years post submission date. To the degree that annual appropriations are relied upon, the funding strategy shall demonstrate that those funds have been appropriated, similar levels of annual appropriations have been consistently available in past years, and/or that those funds are planned for subsequent appropriations	ITP Condition # 9.8.11	Throughout Project Test Period and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	processes. CDFW anticipates that this condition is fully consistent with the Adaptive Management Program, including the role of the IICG. As identified in the Agreement for Implementation of an Adaptive Management Program for Project Operations (Attachment 5), the IICG Manager shall manage preparation of the Annual Monitoring and Research Plan. Reclamation and DWR in coordination with the IICG, shall refer management related actions or proposals, as appropriate, to the Delta Science Program for review by an independent science panel consistent with that agreement.				
145	Permittee shall fund long-term fish monitoring and any subsequent fish and water quality monitoring stations required to implement RTO of the Project throughout the Test Period and Full Project Operations, as described in Condition of Approval 9.9.5, and as may be further described in the Real Time Operations sections of the Test Period Operations Plan and the Full Project Operations Plan.	ITP Condition # 9.8.12	Throughout the Test Period and Full Project Operations	Permittee	
146	Permittee shall implement the CCF Aquatic Weed Control Program as follows: Permittee shall apply herbicides or use mechanical harvesters on an as-needed basis to control aquatic weeds and algal blooms in CCF. Herbicides may include Komeen®, a chelated copper herbicide (copper-ethylenediamine complex and copper sulfate pentahydrate) and Nautique®, a copper carbonate compound. Herbicide treatments shall occur only in July and August on an as needed basis in the CCF, dependent upon the level of vegetation biomass in the enclosure.	ITP Condition # 9.8.13			
146	Specific Measures for Covered Fish Species	ITP Condition # 9.9		Permittee	
147	The operational criteria specified in Conditions of Approval 9.9.4 and 9.9.5 shall be implemented consistent with the Coordinated Operating Agreement (COA), as follows: Under the COA, Reclamation and DWR agree to operate the CVP/SWP under balanced conditions in a manner that meets Sacramento Valley and Delta needs while maintaining their respective annual water supplies as identified in the COA. Balanced conditions are defined as periods when the two projects agree that releases from upstream reservoirs, plus unregulated flow, approximately equal water supply needed to meet Sacramento Valley in-basin uses and CVP and SWP exports. Coordination between the CVP and the SWP is facilitated by implementing an accounting procedure based on the sharing principles outlined in the COA. During balanced conditions in the Delta when water must be withdrawn from storage to meet Sacramento Valley and Delta requirements, 75 percent of the responsibility to withdraw from storage is borne by the CVP and 25 percent by the SWP. The COA also provides that during balanced conditions when unstored water is available for export, 55 percent of the sum of stored water and the unstored water for export is allocated to the CVP, and 45 percent is allocated to the SWP. The Project	ITP Condition # 9.9.1	Throughout the Test Period and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	operational criteria specified under the Project Description and throughout Condition of Approval 9.9 shall be implemented consistent with the COA.				
148	Upon initiation of the Test Period, Permittee shall adhere to the requirements outlined in the Test Period Operations Plan. Upon initiation of Full Project Operations Permittee shall adhere to the operating criteria described in the Full Project Operations Plan. The Test Period Operations Plan and the Full Project Operations Plan shall include all operational criteria and real-time operations requirements described in this Condition, or as modified through amendments to this permit (see Condition of Approval 6). Throughout Condition 9.9 the water year type used to determine Project operations shall be based on the Sacramento 40-30-30 index to be based on the 50% exceedance forecast in the Water Quality Control Plan per current approaches; the first update of the water year type to occur in February. The Permittee shall use the previous water year type for October through January, and the current water year type from February onwards. Throughout Condition 9.9 OMR flows used to determine Project operations shall be based on the Old and Middle River Index developed through the Old and Middle River Index Demonstration Project initiated in 2014 by Reclamation, and be in compliance with the USGS tidally filtered Old and Middle River Stream Gages.	ITP Condition # 9.9.2	Throughout the Test Period and Full Project Operations	Permittee	
149	When this permit, D-1641, the biological opinion(s), or other SWP authorizations establish operational criteria, the criteria that provide the highest level of protection for Covered Fish Species shall control Project operations.	ITP Condition # 9.9.3	Throughout the Test Period and Full Project Operations	Permittee	
150	Project operations criteria are presented in Table 9.9.4-1 of the ITP. The criteria represent restrictions on Project operations to be implemented to protect Covered Fish Species, which shall be met unless superseded by real-time operations described in Condition of Approval 9.9.5.	ITP Condition # 9.9.4	Throughout the Test Period and Full Project Operations	Permittee	
151	Permittee shall manage NDD intake operations at all times to avoid increasing the magnitude, frequency, or duration of flow reversals in the Sacramento River at the Georgiana Slough junction above pre-Project levels. Permittee shall describe operational criteria to ensure this requirement is met throughout the Test Period and Full Project Operations and for inclusion in the Test Period Operations Plan and the Full Operations Plan. Permittee shall monitor the magnitude, frequency, and duration of Sacramento River flow reversals at the Georgiana Slough junction throughout the Test Period and Full Project Operations (see Pre-construction Study 13 and Post-construction Study 13 in Conditions of Approval 9.6.10 and 9.6.11).	ITP Condition # 9.9.4.1	Throughout the Test Period and Full Project Operations	Permittee	
152	RTOs will govern operations of the NDD intakes, when they are controlling (see Condition of Approval 9.9.3 *Controlling Operational Criteria*), during the October through June CHNWR and CHNSR migration period. Under RTOs, the NDD intakes shall be operated within the range of pulse protection and Levels 1, 2, and 3, with pulse protection operations (defined in ITP Table 9.9.4-1, Sub Table A) in place when CHNWR and CHNSR migration	ITP Condition # 9.9.4.2	Throughout the Test Period and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	is occurring. Post-pulse bypass flow operations from December 1 – June 30 may remain at Level 1 diversion depending on fish presence, abundance, and movement in the north Delta; however, the exact levels will be determined through initial operating studies evaluating the level of protection provided at various levels of diversions, and as described in Condition of Approval 9.9.5.1.				
153	To minimize take of LFS associated with impacts of Project operations on abiotic habitat, Permittee shall maintain Delta outflows that are protective of LFS every year from March 1 – May 31. These outflows will: 1) maintain estuarine processes and flow positively associated with LFS abundance; 2) maintain downstream transport of LFS larvae to rearing habitat; and 3) dedicate water to maintain LFS habitat quality and quantity at levels consistent with recent conditions. Protective outflows from March 1 – May 31 every year shall be determined by the use of a lookup table derived from a linear relationship between the 50% exceedance forecast for the current month's 8RI and recent historic Delta outflow (1980 – 2016), as shown in ITP Table 9.9.4-1, Sub Table B. Upon initiation of the Test Period and throughout the permit term, Permittee shall provide average Delta outflow for LFS based on the 50% exceedance forecast for the current month's 8RI, as specified in Sub Table B in Condition of Approval 9.9.4 and below: • February 8RI 50% exceedance forecast shall be used to establish the target average Delta outflow beginning on March 1, until the March 8RI 50% exceedance forecast is made available. • March 8RI 50% exceedance forecast shall be used to establish the target average Delta outflow beginning when the March 8RI 50% exceedance forecast is made available through March 31. • April 8RI 50% exceedance forecast shall be used to establish the target average Delta outflow beginning when the April 8RI 50% exceedance forecast is made available through April 30. If April 8RI 50% exceedance forecast is not available on April 1, March 8RI 50% exceedance forecast shall be used to establish target Delta outflow until April 50% exceedance forecast is available. • May 8RI 50% exceedance forecast shall be used to establish the target average Delta outflow from beginning when the May 8RI 50% exceedance forecast is available through May 31. If May 8RI 50% exceedance forecast is not available beginning May 1, April 8RI 50% exceedance forecast shall be used to establish target Delta outflow	ITP Condition # 9.9.4.3	Throughout the Test Period and Full Project Operations	Permitee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	until May 50% exceedance forecast is available. Permittee may use preliminary 8RI 50% exceedance forecast estimates to establish outflow targets in the first ten days of each month, if approved by CDFW in writing. Reduction in exports to minimum health and safety requirements (1500 cfs) may be necessary. These targets are intended to be provided through the acquisition of water from willing sellers and through operations of the CVP/SWP. Permittee shall achieve Delta outflow targets through shared export allocations between the NDD and South Delta, consistent with required Operating Criteria described in Condition of Approval 9.9. If the target average Delta outflow is greater than 44,500 cfs Permittee shall consult with CDFW to determine how to allocate exports between the NDD intakes and the South Delta. Permittee shall utilize Net Delta Outflow Index (NDOI) data to confirm that the average Delta outflow target was met from March 1 – March 31, April 1 – April 30, and May 1 – May 31. Permittee shall provide daily NDOI data quantifying daily Delta outflow in each 30 day period to CDFW on or before April 5, May 5, and June 5 every year. Permittee shall submit a written report to CDFW on or before June 30 every year explaining how operations of the Project complied with the requirements of this term. This annual report shall include, but is not limited to: 1) 50% exceedance 8RI forecasts in February, March, April, and May 2) Daily NDOI from March 1 – May 31, and 3) Daily diversion rates from each NDD intake 4) Daily total exports from the South Delta CVP/SWP facilities 5) Description of water obtained from willing sellers to contribute to achieving the outflow targets from March 1 – March 15, March 15 – March 31, April 1 – April 30, and May 1 – May 31. This report will be used to determine whether Permittee complied with the operational requirements in this Condition of Approval on an annual basis.				
154	Permittee shall coordinate with Reclamation to provide sufficient Delta outflow to maintain average X2 from September 1 – October 31 no greater (more eastward) than 74 km in the fall following wet years, and 81km from September 1 through November 30 following above normal years. The monthly average X2 shall be maintained at or seaward of these values for each individual month and not averaged over the two month period. In November, the inflow to CVP/SWP reservoirs in the Sacramento Basin shall be added to CVP/SWP reservoir releases to provide an added increment of Delta inflow and augment Delta outflow to achieve the target X2 location. Permittee shall utilize wet and above normal water year type classifications as defined in the Water Quality Control Plan.	ITP Condition # 9.9.4.4	Throughout the Test Period and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
155	Upon initiation of the Test Period and Full Project Operations Permittee shall adhere to Net Delta Outflow Index as defined in D-1641 from January 1 – August 31 when it is controlling (see Condition of Approval 9.9.3).	ITP Condition # 9.9.4.5	Throughout the Test Period and Full Project Operations	Permittee	
156	Upon initiation of the Test Period and Full Project Operations Permittee shall adhere to the export to inflow ratios as defined in D-1641 to conduct coordinated operations of all Project facilities.	ITP Condition # 9.9.4.6	Throughout the Test Period and Full Project Operations	Permittee	
157	Real-Time Operations. The real-time operational decision-making process (real-time operations (RTO)) shall allow short-term (*i.e*., daily and weekly) adjustments to be made to water operations, within the range of criteria described in Condition of Approval 9.9.4. RTO provides flexibility in operations based on monitoring for Covered Fish Species presence (see Condition of Approval 9.8), hydrologic conditions, and operational criteria throughout the Delta and as described in Condition of Approval 9.9.4 to contribute to meeting the biological criteria established in Condition of Approval 9.7. The RTO criteria and decision making process for all Project facilities during the Test Period and Full Project Operations shall be described in a Real Time Operations Plan developed by the TOT, NDDTT, HGTT, and CCFTT, and included in the Test Period Operations Plan and the Full Project Operations Plan. The Real Time Operations Plan shall include all criteria and decision making processes described in this Condition. Permittee shall not initiate the Test Period until the Real Time Operations Plan is approved in writing by CDFW. RTO shall be implemented through the existing decision-making process and related technical work teams described in the *Groups Involved in Real-Time Decision Making and Information Sharing* section of the Project Description. Permittee shall manage RTO to balance the distribution of exports among the three NDD intakes and the SWP/CVP south Delta export facilities.	ITP Condition # 9.9.5	Throughout the Test Period and Full Project Operations	Permittee	
158	RTOs will govern operations, when they are controlling (see Condition of Approval 9.9.3 *Controlling Operational Criteria*), during the October through June CHNWR and CHNSR migration period. Under RTOs, the NDD intakes shall be operated within the range of pulse protection and Levels 1, 2, and 3, with pulse protection operations in place when CHNWR and CHNSR migration is occurring. Post-pulse bypass flow operations from December 1 through June 30 may remain at Level 1 diversion depending on fish presence, abundance, and movement in the north Delta; however, the exact levels will be determined through initial operating studies evaluating the level of protection provided at various levels of diversions. The NDDTT shall develop criteria for transitioning between and among pulse protection, Levels 1, 2 and 3 based on best available science. The NDDTT shall recommend	ITP Condition # 9.9.5.1	Throughout the Test Period and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials

	transitional criteria to the TOT and IICG for consideration through the Adaptive Management Program, to ensure that the Project will achieve the objectives of Biological Criteria 1 and 2. New transitional criteria are subject to CDFW approval.
	The NDDTT shall evaluate fish triggers for initiating pulse protection and pulse duration based on new data (including but not limited to data obtained from Pre-construction Studies 7, 10 and 12), new monitoring stations and techniques, the method used to identify CHNWR and CHNSR, and the time of year when fish pulses are observed. The NDDTT may recommend new fish triggers for initiating pulse protection and pulse durations to the TOT and IICG for consideration through the Adaptive Management Program, to ensure that the Project will achieve the objectives of Biological Criteria 1 and 2. New fish triggers and pulse durations are subject to CDFW approval.
	October 1 – June 30: Permittee shall protect all CHNWR and CHNSR pulses by adhering to the following pulse protection criteria:
	• A fish pulse is defined as a Knights Landing Catch Index (KLCI) ≥ 5 where KLCI = (# of CHNWR + # of CHNSR)/(Total Hours Fished/24)[10].
	• Pulse protection operations shall be implemented within 24 hours of detection of a fish pulse.
	  • Diversions from the NDD intakes shall be reduced to low-level diversions of up to 6% of inflow measured at Freeport, but shall not exceed 900 cfs total and shall not exceed 300 cfs per intake.
	  • During the period of pulse protection, additional diversions above low-level diversions may occur provided that a minimum of 35,000 cfs bypass flow at the NDD intakes is maintained.
	• Pulse protection ends after five consecutive days of daily KLCI < 5.
	October 1 – November 30**:** Post-pulse minimum bypass flows of 7,000 cfs shall be maintained in river after diverting at the NDD intakes.				

159	Real time operations shall be implemented to make short-term decisions regarding operation of south Delta export facilities in coordination with real time operations of all other Project facilities. The south Delta facilities shall be operated within the range of criteria listed in Condition of Approval 9.9.4, and be subject to RTO decision making based on anticipated impacts to DS, LFS, CHNWR, and CHNSR. South Delta RTO criteria, as described in the Test Period Operations Plan and the Full Project Operations Plan, shall include the Measures described in detail for Condition of Approval 9.9.5.2 in the ITP.	ITP Condition # 9.9.5.2	Throughout the Test Period and Full Project Operations	Permittee	
160	Real Time Operations of the HOR Gate: October 1 – November 30: HOR gate shall be operated during the SJR pulse period, as determined by the SOG. During this pulse period operation shall be to close the gate	ITP Condition # 9.9.5.3	Throughout the Test Period and Full Project	Permittee	

[10] KLCI is based on length at date criteria to identify CHNWR and CHNSR.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	subject to RTO for purposes of water quality, stage and flood control considerations. January 1 – March 31, and June 1 – June 15: Operation of the HOR gate will be based on presence of migrating juvenile salmonids. During their migration, operation will be to close the gate for purposes of water quality, stage, and flood control. April 1 – May 31: Permittee shall close the gate 100% of the time for purposes for water quality, stage, and flood control. Reclamation, DWR, NMFS, USFWS and CDFW will explore the implementation of reliable juvenile salmonid tracking technology that may enable shifting to a more flexible real time operating criterion based on the presence/absence of Covered Fish Species. June 16 – September 30, and December 1 – December 31: Operable gates will be open At any time during the year Permittee may open the HOR gate to reduce downstream flood risks based on current conditions if San Joaquin River flow at Vernalis is greater than 10,000 cfs. This threshold may be revised to align with any future flood protection actions and with written approval from CDFW.		Operations		
161	RTO shall be implemented to make short-term decisions regarding operation of Suisun Marsh facilities (Suisun Marsh Salinity Control Gates (SMSCG), Roaring River Distribution System (RRDS), Morrow Island Distribution System (MIDS), and Goodyear Slough Outfall) in coordination with real time operations of all other Project facilities. The Suisun Marsh facilities shall be operated within the range of criteria listed in Condition of Approval 9.9.4, and be subject to RTO decision making based on anticipated impacts to DS, LFS, CHNWR, and CHNSR. Suisun Marsh facility RTO criteria, as described in the Real Time Operations Plan, shall include all Suisun Marsh RTO Measures included in this term. Permittee may modify requirements in Suisun Marsh RTO Measure 2 using a minor amendment to this permit if such modifications are recommended as a result of reinitiation of USFWS (2009) or under the Adaptive Management Program. *Suisun Marsh RTO Measure 1 - Suisun Marsh Salinity Control Gates Operating Criteria*: Permittee shall adhere to operating criteria as required by D-1641 and the following seasonal operation requirements from October 1 – February 28: 1) The radial gates shall be operational if Martinez EC is greater than 20,000, and for remaining months they remain open. 2) Permittee shall close gates when downstream channel flow velocity is < 0.1 (onset of flood tide); gates open when upstream to downstream stage difference is greater than 0.3 ft (onset of ebb tide). *Suisun Marsh RTO Measure 2 - MIDS Operating Criteria (LFS ITP Condition 6.1):* To minimize take of LFS at the MIDS diversion, in addition to any existing operating rules, Permittee shall adhere to CDFW average intake velocity specifications. CDFW will specify the required average intake velocities by August 15 each year in order to adequately protect LFS and, if appropriate, to allow Permittee to meet contractual water delivery requirements. Permittee shall maintain this velocity from September 1 to	ITP Condition # 9.9.5.4	Throughout the Test Period and Full Project Operations	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	December 31 each year to protect staging and spawning LFS from entrainment until alternative operational criteria are developed from completion of the study below.				
162	The purpose of this measure is to operate the North Bay Aqueduct to protect larval DS and LFS. Throughout the Test Period and Full Project Operations Permittee shall implement this measure from January 15 – March 31 of dry and critically dry years, as defined in D-1641 for the Sacramento River. If the Water Year type changes after January 1 to below normal, above normal, or wet, this measure shall be suspended. If the Water Year type changes after January to dry or critical, this measure shall apply. The SWG or CDFW SWG personnel shall provide Barker Slough Pumping Plant operations advice to the WOMT and to the Director weekly based on a review of the abundance and distribution survey data and other pertinent biological factors that influence the entrainment risk including detection of larval DS or LFS at Station 716. The advice for the Barker Slough Pumping Plant's maximum seven day average shall not exceed 50 cfs. WOMT shall provide weekly advice which may include information on other ecosystem and water supply considerations to the Director and may accept, reject, or revise the recommendation of the SWG. If WOMT rejects or revises the recommendation, the Director may require a Barker Slough diversion rate and Permittee shall implement the rate required by the Director. Once notice is provided by the Director that a diversion rate is required, or the WOMT accepts the SWG or CDFW SWG advice,, the rate of diversion at Barker Slough shall not increase. Beginning on the day on which notice is provided or the WOMT accepts the advice, the maximum diversion rate shall not exceed 50 cfs. This restriction shall be suspended when larval DS or LFS are no longer detected at Station 716 or after March 31, whichever occurs sooner.	ITP Condition # 9.9.5.5	Throughout the Test Period and Full Project Operations	Permittee	
163	Permittee shall not construct more than 22 atmospheric safe haven shafts during the course of Covered Activities without written approval from CDFW and an amendment to this permit. Individual atmospheric safe havens shall not impact more than three acres, including access roads. Permittee shall not construct more than 132 pressurized safe haven intervention shafts during the course of Covered Activities without written approval from CDFW and an amendment to this permit. Individual pressurized safe havens shall not exceed one acre, including access roads. Permittee shall construct atmospheric and pressurized safe haven intervention shafts as described in the Conveyance Facility Construction Activities section of the Project Description. Permittee shall restrict all Covered Activities associated with atmospheric and pressurized safe haven intervention shafts, including associated access roads, to construction sites within the safe haven corridor shown in Attachment 1, Figure 4. Permittee shall consult with CDFW after it constructs 18 atmospheric safe haven shafts or 110 pressurized safe haven intervention shafts to determine whether additional safe havens will be required during project construction and an amendment to this permit is necessary.	ITP Condition # 9.10	Throughout Project construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
164	Permittee shall site and design required DS and LFS tidal habitat compensatory mitigation (see Table 10-1) to expand the diversity, quantity, and quality of rearing and refuge habitat in the tidal portions of the Delta and Suisun Marsh. The HM lands intended to serve as compensatory mitigation for impacts to DS and LFS shall also include spawning habitat which meets specific salinity, velocity, substrate, and location specifications approved in writing by CDFW and USFWS. Permittee shall implement required DS and LFS compensatory mitigation prior to initiation of the Test Period. Permittee shall coordinate with USFWS and CDFW during the process of site selection and Project design for HM lands intended to serve as compensatory mitigation for impacts to DS and LFS habitat. HM lands and Project designs shall conform to the specifications and habitat crediting process described in the 2012 *Fish Restoration Program Agreement Implementation Strategy* (FRPA Implementation Strategy and Crediting, Attachment 8).	ITP Condition # 10.1	Prior to initiation of the Test Period		
165	Upon approval of the change in point of diversion for the Project by the State Water Resources Control Board Permittee shall provide $4,000,000 annually to benefit CHNWR and CHNSR in the Sacramento River watershed with primary focus on projects upstream of the Delta as compensatory mitigation for impacts associated with operation of the NDD intakes. This is required in addition to the compensatory mitigation requirements shown in Table 10-1 above to offset impacts to CHNWR and CHNSR habitat associated with operation of the NDD intakes. Using this funding, Permittee shall establish a new population of CHNWR through introduction and reintroduction of fish into Sacramento River tributaries (which may include Battle Creek and/or upstream of Shasta Reservoir) and support that population with associated habitat restoration prior to initiation of the Test Period or within 12 years of permit issuance. Reintroduction and establishment of a new population, habitat restoration, or other measures shall meet the low extinction risk criteria identified by the Central Valley Technical Recovery Team (CVTRT) (Lindley et al.2007) within the term of this permit. Permittee shall fully fund and implement reintroduction and restoration action effectiveness monitoring and extinction risk monitoring to ensure that the goal is met. Permittee shall focus siting and design of required CHNWR and CHNSR compensatory mitigation for impacts associated with Project construction on restoring 80 acres of spawning and rearing habitat in the upper Sacramento River above the Red Bluff Diversion Dam (RBDD). Restoration of rearing habitat in particular above RBDD is targeted at reducing density dependent reductions in CHNWR survival above RBDD. The committed annual funds may also be used to restore habitat in the middle Sacramento River (e.g., in Sutter Bypass). Permittee shall coordinate with CDFW, NMFS, USFWS, Reclamation and other entities undertaking restoration and enhancement actions to identify the highest priority projects for funding annually and to accomplish the total 154.8 acres of required CHNWR and CHNSR compensatory mitigation for habitat impacts associated with Project construction (see	ITP Condition # 10.2	Prior to initiation of the Test Period, and throughout the Test Period and Full Project Operations		

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Table 10-1). Restoration opportunities will align with CHNWR and CHNSR recovery needs and be guided by information in the Salmon Resiliency Strategy. This Condition of Approval may be terminated with written approval from CDFW upon demonstration that the measure has offset the population level effects of Project operations on CHNWR and CHNSR.				
166	Permittee shall provide for both the permanent protection and management of 615 acres of aquatic GGS habitat and 1,710 acres of upland GGS habitat in HM lands pursuant to Condition of Approval 10.9 (Habitat Acquisition and Protection) below and the calculation and deposit of the management funds pursuant to Condition of Approval 10.10 (Endowment Fund) below. If all HM lands intended to provide compensatory mitigation for impacts to GGS meet the requirements of large contiguous blocks of aquatic and upland habitat surrounded by compatible land uses outlined in the USFWS *2015 Revised Draft Recovery Plan for Giant Garter Snake*, and CDFW approves in writing, Permittee shall only be required to provide for the permanent protection and management of 410 acres of GGS aquatic habitat and 1,140 acres of upland GGS habitat. Permittee shall protect GGS upland habitat within HM lands that are adjacent to protected GGS aquatic habitat and extend at least 200 feet from protected aquatic habitat, unless approved by CDFW in writing. Permittee shall establish 200-foot buffers between protected GGS habitat and roads (other than those roads primarily used to support adjacent cultivated lands and levees). GGS habitat within HM lands shall be at least 2,500 feet from urban areas or areas zoned for urban development.	ITP Condition # 10.3	Prior to initiation of the Test Period		
167	Compensatory Mitigation for Swainson's Hawk	ITP Condition # 10.4			
168	In addition to compensatory mitigation listed above in Table 10-1, Permittee shall compensate for impacts to seven suitable nest sites as a result of Covered Activities by establishing seven new nest sites. To establish a new nest site Permittee shall transplant five mature suitable nest trees (at least 20 feet tall) and 15 five-gallon container sized suitable nest trees (see Condition of Approval 8.4.1.3 in *Tracking Suitable Habitat Feature Disturbances, Map Updating, and Reporting* and Appendix 6) to a location specified in the Vegetation Restoration Plan (see Condition of Approval 10.8) and approved in writing by CDFW. Permittee may obtain transplanted mature trees from nursery stock or trees transplanted from construction sites. Permittee shall plant a combination of five mature trees and fifteen saplings at each replacement nest site to provide longevity to the nest site and ensure a sufficient number of trees will meet replacement nest tree success criteria (see Condition of Approval 10.3.3) and will survive to continue to provide SWHA nesting habitat over the long-term.	ITP Condition # 10.4.1	Prior to initiation of the Test Period		

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	To ensure that transplanted trees and saplings establish new SWHA nest sites, Permittee shall: o Establish replacement nest sites at least 0.5 mile apart. o Establish replacement nest sites at least 0.25 mile from any existing suitable nest tree and at least 0.5 mile from any existing occupied nest tree. o Establish replacement nest sites as close as possible to the impacted nest site, unless such location would have low long-term conservation value due to threats such as ongoing disturbance, seasonal flooding, or sea level rise. o Plant the five mature trees and 15 saplings in sites within or adjacent to conserved suitable foraging habitat (see Condition of Approval 8.4.1.4 in *Tracking Suitable Habitat Feature Disturbances, Map Updating, and Reporting)* Plant mature nest trees and saplings before impacts to suitable nest sites to reduce temporal impacts resulting from the loss of mature nest trees.				
169	For each suitable nest tree removed as a result of Covered Activities, Permittee shall plant five native trees (five gallon container size) suitable for SWHA nesting to replace lost suitable nest trees (see 8.4.1.3 in *Tracking Suitable Habitat Feature Disturbances, Map Updating, and Reporting* and Appendix 6) at sites within or adjacent to conserved foraging habitat.	ITP Condition # 10.4.2	Prior to initiation of the Test Period		
170	Permittee shall monitor and maintain all replacement nest trees (mature trees and saplings) for a period of ten years to ensure survival and appropriate growth and development. Success shall be measured as an 80% survival rate of mature trees and 80% survival rate of saplings at five and ten years after planting. After the first ten years, Permittee shall monitor replacement nest trees every five years to verify their continued survival and growth. For every tree lost during the ten-year time period, Permittee shall immediately plant a replacement tree upon the detection of failure. Permittee shall provide all necessary maintenance (i.e., fertilizing, irrigation) to ensure successful tree establishment. Permittee shall irrigate trees for a minimum of five years after planting, and then gradually wean the trees off the irrigation during a period of approximately two years. If larger stock is planted, Permittee may reduce the number of years of irrigation accordingly. If the 80% establishment success criteria cannot be met, Permittee shall coordinate with CDFW to determine additional measures.	ITP Condition # 10.4.3	Prior to initiation of the Test Period		
171	Permittee shall install bird strike diverters on existing transmission lines within the Project Area and all new transmission lines constructed as a part of Covered Activities and shown in Attachment 1, Figures 4 c and d. Permittee shall install bird strike diverters on existing transmission lines in the Project Area equal in length to the length of new permanent and temporary transmission lines constructed as a part of Covered Activities and shown in	ITP Condition # 10.4.4	Prior to initiation of the Test Period, throughout the Test Period and Full Project		

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status/Date/ Initials
	Attachment 1, Figures 4 c and d, except where new transmission lines replace existing transmission lines. Permittee shall space bird strike diverters along transmission lines in accordance with the Avian Powerline Interaction Committee's guidance (Avian Power Line Interaction Committee 2012) and shall select bird strike diverters according to the best available science. Permittee shall inspect bird strike diverters annually and replace malfunctioning or lost diverters until the transmission line is removed. Permittee shall submit a plan describing the location and type of bird strike diverters installed as compensatory mitigation for impacts to SWHA and TRBL to CDFW for review. Upon written approval of the plan by CDFW Permittee shall install and maintain all bird strike diverters.		Operations		