

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
REGION 1 – NORTHERN REGION
619 Second Street
Eureka, CA 95501

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NOV 20 2019

CDFW - EUREKA



**STREAMBED ALTERATION AGREEMENT
NOTIFICATION No. 1600-2019-0484-R1**

Unnamed Tributary to Tom Long Creek, Tributary to the East Branch
South Fork Eel River, Tributary to the South Fork Eel River, Tributary to
the Eel River and the Pacific Ocean

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Shane Pacheco
Pacheco Water Diversion and Stream Crossings Project
8 Encroachments

NOV 20 2019

CDFW - EUREKA

This Lake or Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and Shane Pacheco (Permittee).

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, the Permittee initially notified CDFW on June 13, 2019, that the Permittee intends to complete the project described herein. A site visit attended by the Permittee and CDFW occurred on July 10, 2019.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, the Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, the Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project to be completed is located within the Eel River watershed, approximately 10.5 miles SE of the town of Garberville, County of Humboldt, State of California. The project is located in Section 21, T05S, R05E, Humboldt Base and Meridian; in the Harris U.S. Geological Survey 7.5-minute quadrangle; Humboldt County Assessor's Parcel Number 216-026-013; latitude 40.01635 N and longitude 123.62946 W at the point of diversion (POD).

PROJECT DESCRIPTION

The project is limited to eight encroachments (Table 1). Two encroachments are for water diversion from unnamed tributaries to Tom Long Creek. Water is diverted for domestic use. Work for the water diversion will include use and maintenance of the water diversion infrastructure. The six other proposed encroachments are to upgrade failing and undersized stream crossings. Work for these encroachments will include excavation, removal of the failing crossings, replacement with new properly sized crossings, backfilling and compaction of fill, and rock armoring as necessary to minimize erosion.

Table 1. Project Encroachments with Description

ID	Latitude/Longitude	Description
POD-1	40.01635, -123.62946	Point of Diversion (POD) diverts water from a hill-side spring for domestic use.
POD-2 / Well #3	40.01497, -123.63163	Water is diverted from a pipe in a hill-side spring.
Crossing-2	40.01384, -123.62836	Replace undersized 24" diameter culvert with minimum 42" diameter, 80' long culvert. The old vehicle embedded in the road embankment adjacent to the stream crossing shall be removed. Work shall be completed by October 15, 2021.
Crossing-3	40.01341, -123.62827	An existing 48" diameter culvert is lined with concrete, perched at the outlet, and undersized for the recommended 0.67 headwater depth to pipe diameter ratio. The culvert shall be replaced with a minimum 54" diameter culvert to accommodate a 0.67 headwater depth to pipe diameter ratio. Work shall be completed by October 15, 2023.
Crossing-4	40.01023, -123.62787	Replace undersized 36" diameter culvert with minimum 60" diameter culvert to accommodate a 0.67 headwater depth to pipe diameter ratio. A critical dip will be installed in the road on the west (down-road) side of the stream crossing. Work shall be completed by October 15, 2021.
Crossing-5	40.01409, -123.62817	Replace undersized 30" diameter culvert with minimum 42" diameter culvert to accommodate a 0.67 headwater depth to pipe diameter ratio. A critical dip will be installed on the right side of the culvert. Work shall be completed by October 15, 2021.
Crossing-6	40.01145, -123.63036	Replace undersized 48" diameter culvert with minimum 72" diameter, 80' long culvert to accommodate a 0.67 headwater depth to pipe diameter ratio. A critical dip will be installed on the left hinge line of road to prevent stream diversion. Work shall be completed by October 15, 2021.
Crossing-7	40.01284, -123.63149	An existing 48" diameter culvert is lined with concrete, not set to grade, and is perched at the outlet. The culvert shall be replaced with a minimum 36" diameter culvert to accommodate a 0.67 headwater depth to pipe diameter ratio. Work shall be completed by October 15, 2023.

The Permittee has disclosed an existing bridge (Crossing-1) located at 40.01093, -123.62936 that was stated to be installed in 2001 under FRGP grant #P0110534. The bridge appears to be in adequate condition and no work was proposed in the

Notification. Stream crossings that were disclosed in the Notification, but not included as 1602 projects with fees, are not covered under this Agreement. If maintenance (such as armoring) and/or replacement is necessary, that work will need to be covered under a major amendment or a separate Agreement.

The Permittee has disclosed a reservoir located at approximately 40.015363, -123.630787 within the footprint of a historic mill site. The reservoir is off-channel, lined, and used for irrigation water.

The Permittee has disclosed two water wells located at approximately 40.01460, -123.62924 and 40.01472, -123.62991. The well's potential for hydraulic connectivity to streams was not addressed in the Notification by a professional hydrogeologist licensed in the state of California and the Department has not evaluated this well.

No other projects that may be subject to FGC1602 were disclosed. This Agreement does not retroactively permit any stream crossings, water diversions or other encroachments not described in Table 1.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon (*O. kisutch*), Steelhead Trout (*O. mykiss*), Western Brook Lamprey (*Lampetra richardsoni*), Pacific Lamprey (*Entosphenus tridentata*), Southern Torrent Salamander (*Rhyacotriton variegatus*), Pacific Giant Salamander (*Dicamptodon tenebrosus*), Foothill Yellow-legged Frog (*Rana boylei*), Coastal Tailed Frog (*Ascaphus truei*), Western Pond Turtle (*Actinemys marmorata marmorata*) amphibians, reptiles, aquatic invertebrates, mammals, birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include:

Impacts to water quality:

- increased water temperature;
- reduced instream flow;
- temporary increase in fine sediment transport;

Impacts to bed, channel, or bank and direct effects on fish, wildlife, and their habitat:

- loss or decline of riparian habitat;
- direct impacts on benthic organisms;

Impacts to natural flow and effects on habitat structure and process:

- cumulative effect when other diversions on the same stream are considered;
- diversion of flow from activity site;

direct and/or incidental take;
indirect impacts;
impediment of up- or down-stream migration;
water quality degradation; and
damage to aquatic habitat and function.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

The Permittee shall meet each administrative requirement described below.

- 1.1 **Documentation at Project Site.** The Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 **Providing Agreement to Persons at Project Site.** The Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of the Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.
- 1.3 **Notification of Conflicting Provisions.** The Permittee shall notify CDFW if the Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact the Permittee to resolve any conflict.
- 1.4 **Project Site Entry.** The Permittee agrees to allow CDFW employees access to any property it owns and/or manages for the purpose of inspecting and/or monitoring the activities covered by this Agreement, provided CDFW: a) provides 24 hours advance notice; and b) allows the Permittee or representatives to participate in the inspection and/or monitoring. This condition does not apply to CDFW enforcement personnel. As a result of field inspection, CDFW may require that additional measures be applied to specific activities to protect sensitive biological resources. Such measures may be amended into this Agreement with the agreement of both parties, or if an exception to authorized activities is identified, Permittee may be asked to submit separate written notification to CDFW Northern Region.
- 1.5 **Adherence to Existing Authorizations.** All water diversion facilities that the Permittee owns, operates, or controls shall be operated and maintained in accordance with current law and applicable water rights.
- 1.6 **Other Agency Permitting Requirements.** The U.S. Army Corps of Engineers (Corps) has permitting requirements for certain instream projects under Section

404 of the Federal Clean Water Act. If this project features the placement of dredged or fill materials into the channels of streams (below the ordinary high water mark) that are waters of the United States, a permit may be required by the Corps. If your project needs a permit from the Corps, you will also need to obtain a Water Quality Certification pursuant to Section 401 of the Federal Clean Water Act from the Regional Water Quality Control Board (Regional Water Board). In addition, if your project will involve disturbance within or discharges of pollutants to waters of the State of California, the Regional Water Boards may require a permit, whether or not the Corps requires a permit. If there is any question regarding the possibility of the project meeting the above limitations, the Permittee should contact the Corps and the Regional Water Board prior to beginning work. This Agreement in no way represents permitting requirements by the Corps or the Regional Water Board. It is the responsibility of the Permittee to contact the Corps, and to comply with the provisions of any Section 404 permit issued, if required by the Corps. Similarly, it is the responsibility of the Permittee to contact the Regional Water Board and to comply with the provisions of any Section 401 Certification, Regional Water Board Waste Discharge Requirements or waiver of Waste Discharge Requirements issued by the Regional Water Board.

- 1.7 Change of Conditions and Need to Cease Operations. If conditions arise, or change, in such a manner as to be considered deleterious by CDFW to the stream or wildlife, operations shall cease until corrective measures approved by CDFW are taken. This includes new information becoming available that indicates bypass flows, diversion rates or other measures provided in this agreement are not providing adequate protection to keep aquatic life downstream in good condition or to avoid "take" or "incidental take" of federal or State listed species.
- 1.8 CDFW Notification of Work Initiation and Completion. The Permittee shall contact CDFW within the 7-day period preceding the beginning of work permitted by this Agreement. Information to be disclosed shall include Agreement number, and the anticipated start date. Subsequently, the Permittee shall notify CDFW no later than seven (7) days after the project is fully completed. **Notification of completion will include photographs of the completed work, erosion control measures, waste containment and disposal, and a summary of any CNDDDB submissions as required below.**
- 1.9 Notification to the California Natural Diversity Database. If any special status species are observed at any time during the project, a qualified Biologist shall submit California Natural Diversity Data Base (CNDDDB) forms to the CNDDDB within five (5) working days of the sightings. A summary of CNDDDB submissions shall be included with the completion notification. Forms and instructions for submissions to the CNDDDB may be found at:
<https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, the Permittee shall implement each measure listed below.

2.1 Permitted Project Activities. Except where otherwise stipulated in this Agreement, all work shall be in accordance with Permittee Notification, together with all maps, Best Management Practices (BMPs), photographs, drawings, and other supporting documents submitted with the Notification and received on June 13, 2019, that the Permittee intends to complete the project described herein.

2.2 Listed Species. This Agreement does not allow for the take, or incidental take of any state or federal listed threatened, endangered, or candidate species. No direct or indirect impacts shall occur to any threatened or endangered species as a result of implementing the project or the project's activities. If the project could result in the "take" of a state listed threatened or endangered species, the Permittee has the responsibility to obtain from CDFW, a California Endangered Species Act Permit (CESA section 2081).

2.3 Foothill Yellow-Legged Frog (FYLF) Avoidance. To avoid take of FYLF during its CESA candidacy period, the Permittee shall:

A. Conduct a Pre-Construction Survey. Within 3-5 days prior to entering or working at the Project Site, a qualified biologist shall examine the project site to determine the presence/absence of standing or flowing water, and the presence and/or the potential for presence of FYLF adults, juveniles, tadpoles or egg masses within the project area and 150 feet upstream and downstream. Prior to commencing work, Permittee shall provide to CDFW for review preconstruction survey notes and observations.

1. If FYLF are found during the pre-construction survey, Permittee shall:

- a) Consult CDFW immediately by either telephone or e-mail and provide a short description of observations, including a count of individuals and the life stage(s), conditions at the site, and other aquatic species observed; and
- b) Either propose site-specific mitigation measures that will be utilized to avoid take, or obtain an Incidental Take Permit (ITP) if take of FYLF cannot be avoided. Instream work shall not commence until CDFW has provided written approval of the proposed avoidance measures or an ITP has been issued.

2. If no FYLFs are found during the pre-construction survey and no surface water is present in the project area, work may commence without further surveys.

3. If no FYLFs are found but surface water is present during the pre-construction survey, *or if surface water becomes present at any time during the work period*, a qualified biologist shall survey the work site each day before commencement of work activities where equipment and/or materials may come in contact with FYLFs, streams, or riparian habitat.
4. If FYLFs are observed at any time during the construction season, work in the immediate area shall be halted, CDFW immediately consulted, and conservation measures developed and agreed to by CDFW prior to recommencing work.

B. Qualified Biologist. A qualified biologist is an individual who is experienced in construction level biological monitoring, knowledgeable in the biology, natural history, habits and behaviors of the FYLF, and who is able to recognize all age classes of FYLF relative to other amphibians in the project area. A qualified biologist shall have academic and professional experience in biological sciences or resource management activities. At least 15 days prior to commencement of Project-related surveys for FYLFs, Permittee shall provide to CDFW for review and approval the names and qualifications of individuals requesting qualified biologist status.

C. Decontamination. The Permittee is responsible for ensuring all project personnel adhere to the latest version of the Northern Region California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol for all field gear and equipment that will be in contact with water or FYLFs. Heavy equipment and other motorized or mechanized equipment that comes in contact with water should generally follow watercraft decontamination protocols found in the AIS Decontamination Protocol.

- 2.4 **Nesting Birds.** Actively nesting birds and their nests shall not be disturbed by project activities. If vegetation removal is necessary during the nesting season of protected raptors and migratory birds (**March 1 through August 15**), the Permittee shall notify CDFW of proposed work and a focused survey for bird nests and/or nesting behavior shall be conducted by a qualified biologist within seven days prior to the beginning of project-related activities. Surveys should encompass the area up to 50 feet from disturbance to account for songbirds, and up to 250 feet from disturbance for raptors. If a nest is found or suspected to be present, Permittee shall consult with CDFW regarding appropriate action to comply with the Migratory Bird Treaty Act of 1918 and Fish and Game Code. If a lapse in project-related work of seven days or longer occurs, another focused survey, and if required, consultation with CDFW shall be required before project work can be reinitiated.

- 2.5 Cannabis Cultivation Policy. If Cannabis is or becomes cultivated on the project parcel, Permittee shall comply with all requirements of the State Water Resource Control Board (SWRCB) Cannabis Cultivation Policy - Principles and Guidelines for Cannabis Cultivation (Cannabis Cultivation Policy), dated April 16, 2019, or the latest version.

Project Timing

- 2.6 Work Period. All work, not including diversion of water, shall be confined to the period **June 15 through October 15** of each year. Work within the active channel of a stream shall be restricted to periods of **dry weather**. Precipitation forecasts and potential increases in stream flow shall be considered when planning construction activities. Construction activities shall cease and all necessary erosion control measures shall be implemented prior to the onset of precipitation. Limited vegetation removal may occur outside of this work period as per Measure 2.4.
- 2.7 Extension of the Work Period. If weather conditions permit, and the Permittee wishes to extend the work period after October 15, a written request shall be made to CDFW **at least 10-working days before the proposed work period variance**. Written approval (letter or e-mail) for the proposed time extension must be received from CDFW prior to activities continuing past October 15.
- 2.8 Work Completion. The proposed work shall be completed by no later than the dates specified in **Table 1**. Extensions to this date may be granted on a case by case basis as a minor amendment requested at least 30 days prior to this date. Failure to complete work by this date may result in suspension or revocation of this Agreement. A notice of completed work, including photographs of each site, shall be submitted to CDFW within seven (7) days of project completion.

Vegetation Management

- 2.9 Prohibited Plant Species. Permittee shall not plant, seed or otherwise introduce invasive plant species within the Project area. Prohibited invasive plant species include those identified in the California Invasive Plant Council's inventory database, which is accessible at: <https://www.cal-ipc.org/plants/inventory/>.
- 2.10 Minimum Vegetation Removal. No native riparian vegetation shall be removed from the bank of the stream, except where authorized by CDFW. Permittee shall limit the disturbance or removal of native vegetation to the minimum necessary to achieve design guidelines and standards for the Authorized Activity. Permittee shall take precautions to avoid damage to vegetation outside the work area.
- 2.11 Vegetation Maintenance. Permittee shall limit vegetation management (e.g., trimming, pruning, or limbing) and removal for the purpose of stream crossing or

diversion infrastructure placement/maintenance to the use of hand tools.
Vegetation management shall not include treatment with herbicides.

- 2.12 Avoidance of Nesting Birds. Vegetation maintenance/removal as necessary within the scope of the project shall be confined to the period commencing August 16 and ending February 28, of any year in which this Agreement is valid, provided the work area is outside of the actively flowing stream. Work may continue during precipitation events provided stream flows have not risen into work areas and sediment delivery will not result.

General Stream Protection Measures

- 2.13 Fish and Aquatic Amphibians. If possible, work shall be conducted when the affected stream channel is void of surface water. If surface water is present during construction, the Permittee shall: a) have a biologist or other qualified professional survey the site and adjacent area for fish, amphibians, and turtles three days or less before commencing project activities and b) if fish, amphibians, or turtles are detected, CDFW's Greg O'Connell will be contacted by phone or email at (707) 441-5790 or gregory.oconnell@wildlife.ca.gov and work shall not commence until authorized by Mr. O'Connell or another CDFW representative.
- 2.14 Stream Protection. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete washings, oil or petroleum products, or other material deleterious to fish, plant life, mammals or bird life shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the stream.
- 2.15 No Dumping. Permittee shall not deposit, permit to pass into, or place where it can pass into a stream, lake, or other Waters of the State any material deleterious to fish and wildlife, or abandon, dispose of, or throw away within 150 feet of a stream, lake, or other Waters of the State any cans, bottles, garbage, motor vehicle or parts thereof, rubbish, litter, refuse, waste, debris, or the viscera or carcass of any dead mammal, or the carcass of any dead bird.
- 2.16 Passage of Aquatic Life. Permitting shall not construct or maintain any device or contrivance that prevents, impedes, or tends to prevent or impede, the passing of aquatic life up and down stream. (FGC sections 45 and 5901).
- 2.17 Equipment Maintenance. Refueling of machinery or heavy equipment, or adding or draining oil, lubricants, coolants or hydraulic fluids shall not take place within stream bed, channel and bank. All such fluids and containers shall be disposed of properly off-site. Heavy equipment used or stored within stream bed, channel and bank shall use drip pans or other devices (e.g., absorbent blankets, sheet barriers or other materials) as needed to prevent soil and water contamination.
- 2.18 Hazardous Spills. Any material, which could be hazardous or toxic to aquatic life and enters a stream (i.e. a piece of equipment tipping-over in a stream and

dumping oil, fuel or hydraulic fluid), the Permittee shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550, and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours at 707-445-6493 and consulted regarding clean-up procedures.

2.19 Clean-up. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the ordinary high water mark before such flows occur or the end of the yearly work period, whichever comes first. All project materials and debris shall be removed from the project site and properly disposed of off-site upon project completion.

2.20 Erosion Control Measures

2.20.1 Seed and Mulch. Upon completion of construction operations and/or the onset of wet weather, Permittee shall stabilize exposed soil areas within the work area by applying mulch and seed. Permittee shall restore all exposed or disturbed areas and access points within the stream and riparian zone by applying local native and weed free erosion control grass seeds. Locally native wildflower and/or shrub seeds may also be included in the seed mix. Permittee shall mulch restored areas using at least two to four inches of weed-free clean straw or similar biodegradable mulch over the seeded area. Alternately, Permittee may cover seeding with jute netting, coconut fiber blanket, or similar non-synthetic monofilament netting erosion control blanket.

2.20.2 Erosion and Sediment Barriers. Permittee shall monitor and maintain all erosion and sediment barriers in good operating condition throughout the work period and the following rainy season, defined herein to mean October 15 through June 15. Maintenance includes, but is not limited to, removal of accumulated sediment, replacement of damaged sediment fencing, coir rolls/logs and/or straw bale dikes and ensuring drainage structures and altered streambeds and banks remain sufficiently armored and/or stable. If the sediment barrier fails to retain sediment, Permittee shall employ corrective measures, and notify the department immediately.

2.20.3 Cover Spoil Piles. Permittee shall have readily available erosion control materials such as wattles, natural fiber mats, or plastic sheeting, to cover and contain exposed spoil piles and exposed areas in order to prevent sediment from moving into a stream or lake. Permittee shall apply and secure these materials prior to rain events to prevent loose soils from entering a stream, lake, or other Waters of the State.

2.20.4 Prohibition on Use of Monofilament Netting. To minimize the risk of ensnaring and strangling wildlife, Permittee shall not use any erosion control materials that contain synthetic (e.g., plastic or nylon) monofilament

netting, including photo- or biodegradable plastic netting. Geotextiles, fiber rolls, and other erosion control measures shall be made of loose-weave mesh, such as jute, hemp, coconut (coir) fiber, or other products without welded weaves.

- 2.21 **Site Management Plan.** If Cannabis is or becomes cultivated on the project parcel, Permittee shall submit to CDFW the initial preparation and subsequent updates to the project's Site Management Plan that is prepared in conformance with the SWRCB Cannabis Cultivation Policy.
- 2.22 **Waste Containment and Disposal.** Permittee shall contain all operation associated refuse in enclosed, wildlife proof, storage containers, at all times, and relocate refuse to an authorized waste management facility, in compliance with State and local laws, on a regular and ongoing basis. All refuse shall be removed from the site and properly disposed of, at the close of the cultivation season and/or when the parcel is no longer in use.

Water Diversion

- 2.23 **Maximum Diversion Rate.** The maximum instantaneous diversion rate from the water intake shall not exceed **three (3) gallons per minute (gpm)** at any time.
- 2.24 **Bypass Flow.** The Permittee shall pass **80% of the flow** at all times to keep all aquatic species including fish and other aquatic life in good condition below the point of diversion.
- 2.25 **Seasonal Diversion Minimization.** No more than **300 gallons in any one day from POD-1 and POD-2 combined** shall be diverted cumulatively during the low flow season from **April 1 to October 31** of each year. Water shall be diverted only if the Permittee can adhere to the maximum diversion rate and bypass flow conditions of this Agreement.
- 2.26 **Measurement of Diverted Flow.** Permittee shall install and maintain an adequate measuring device for measuring the instantaneous and cumulative rate of diversion. This measurement shall begin as soon as this Agreement is signed by the Permittee. The device shall be installed within the flow of diverted water. The Permittee shall maintain records of diversion, and provide information including, but not limited to the following:
- 2.26.1 A log including the date, time and quantity of water diverted from the POD.
- 2.26.2 The amount of water used per day for cannabis cultivation separated out from the amount of water used for other irrigation purposes and other uses of water (e.g., domestic use or fire protection).
- 2.26.3 Permittee shall make available for review at the request of the Department

the diversion records required by the SWRCB Cannabis Cultivation Policy.

Water Diversion Infrastructure

- 2.27 **Intake Structure.** No polluting materials (e.g., particle board, plastic sheeting, bentonite) shall be used to construct or screen, or cover the diversion intake structure.
- 2.28 **Intake Structure Placement.** Infrastructure installed in the streambed (e.g., cistern or spring box) shall not exceed 10 percent of the active channel width and shall not be located in the deepest portion of the channel. The depth of the intake shall be no greater than one foot (12 inches) below the streambed.
- 2.29 **Intake Screening.** The Permittee shall regularly inspect, clean, and maintain screens in good condition.
- 2.29.1 The water intake screens shall be securely attached (e.g., threaded or clamped) to the intake line and have a minimum wetted area of 0.25 square feet.
- 2.29.2 A water intake screen with round openings shall not exceed 3/32-inch diameter; a screen with square openings shall not exceed 3/32-inch measured diagonally; and a screen with slotted openings shall not exceed 0.069 inches in width. Slots must be evenly distributed on the screen area.
- 2.29.3 The water intake screen may be constructed of any rigid material, perforated, woven, or slotted and should have a minimum of 27% open area. Stainless steel or other corrosion-resistant material is recommended to reduce clogging due to corrosion. Care should be taken not to use materials deemed deleterious to aquatic species.
- 2.29.4 The screen shall be designed to distribute the flow uniformly over the entire screen area.
- 2.29.5 The water intake screen shall be placed in fast moving water with the long axis of the screen parallel to the streamflow. The water intake shall not be placed in pool habitat.
- 2.30 **Intake Shall Not Impede Aquatic Species Passage.** The water diversion structures shall be designed, constructed, and maintained such that they do not constitute a barrier to upstream or downstream movement of aquatic life.
- 2.31 **Intake Maintenance.** Intakes shall be kept in good repair. Intakes shall be inspected periodically and kept clean and free of accumulated algae, leaves or other debris, which could block portions of the screen surface and increase

approach velocities at any point on the screen. No part of screen surfaces shall be obstructed

2.32 Exclusionary Devices. Permittee shall keep the diversion structures (e.g. cistern) covered at all times to prevent the entrance and entrapment of amphibians and other wildlife.

2.33 Heavy Equipment Use. No heavy equipment shall be used in the excavation or replacement of the existing water diversion structure. The Permittee shall use hand tools or other low impact methods of removal/replacement. All project materials and debris shall be removed from the project site and properly disposed of off-site upon project completion.

Diversion to Storage

2.34 Water Storage. All water storage facilities (WSFs) (e.g., reservoirs, storage tanks, mix tanks, and bladders tanks), must be located outside the active 100-year floodplain and outside the top of bank of a stream. Covers/lids shall be securely affixed to water tanks at all times to prevent potential entry by wildlife. Permittee shall cease all water diversion at the point of diversion when WSFs are filled to capacity.

2.35 Water Storage Maintenance. WSFs shall have a float valve to shut off the diversion when tanks are full to prevent overflow. Water shall not leak, overflow, or overtop WSFs at any time. Permittee shall regularly inspect all WSFs and infrastructure used to divert water to storage and use and repair any leaks.

2.36 Water Conservation. The Permittee shall make best efforts to minimize water use, and to follow best practices for water conservation and management.

2.37 Limitations on Impoundment and Use of Diverted Water. The Permittee shall impound and use water in accordance with a valid water right, including any limitations on when water may be impounded and used, the purpose for which it may be impounded and used, and the location(s) where water may be impounded and used.

2.38 State Water Code. This Agreement does not constitute a valid water right. The Permittee shall comply with State Water Code sections 5100 and 1200 et seq. as appropriate for the water diversion and water storage. The application for this registration is found at:
https://www.waterboards.ca.gov/waterrights/water_issues/programs/registrations/ .

Reservoirs

2.39 Reservoirs. Shall be appropriately designed, sized, and managed to contain any diverted water in addition to precipitation and storm water runoff, without

overtopping. The Permittee shall install an overflow spillway that will withstand a 100-year flood event, designed with a dispersal mechanism, or low-impact design, that discourages channelization and promotes dispersal and infiltration of flows to prevent surface overflow from reaching waters of the State. The spillway shall be designed and placed to allow for a minimum of two-feet of freeboard.

2.40 **No Stocking.** Stocking of fish, wildlife, or plant of any kind, in any Waters of the State, including reservoirs, shall be prohibited without written permission from the department pursuant to Section 6400 of the Fish and Game Code.

2.41 **Invasive Species Management for Reservoirs.** Permittee shall implement an invasive species management plan prepared by a Biologist for any existing or proposed reservoir. The plan shall include, at a minimum, an annual survey for invasive aquatic species, including the American bullfrog (*Lithobates catesbeianus* = *Rana catesbeiana*). The Biologist, if appropriate, shall implement eradication measures if invasive aquatic species are identified as part of the survey.

2.41.1 **Bullfrog Management Plan.** If bullfrogs are observed, they shall be appropriately managed. Management of bullfrogs, including annual draining and drying of ponds, shall follow the guidelines in Exhibit A. A copy of the annual monitoring report, shall be submitted to CDFW in accordance with the reporting measures described in Exhibit A and in the Reporting Measures section of this Agreement.

2.42 **Wildlife Entrapment Prevention.** If open reservoirs have plastic lining, slopes greater than 2:1, or if there is any potential for wildlife entrapment, Permittee shall install several exit ramps to prevent wildlife entrapment. Exit ramps shall meet the following requirements: installed at no greater than 2:1 slope, securely fixed at the upslope end, made of solid material (e.g. wood), and be a minimum length of 1.5 times the radius of the pond.

Stream Crossings

2.43 **Road Approaches.** The Permittee shall treat road approaches to new or re-constructed permanent crossings to minimize erosion and sediment delivery to the watercourse. Permittee shall ensure road approaches are hydrologically disconnected to the maximum extent feasible to prevent sediment from entering the crossing site, including when a Stream Crossing is being constructed or reconstructed. Road approaches shall be armored from the crossing for a minimum of *50 feet in both directions*, or to the nearest effective water bar or point where road drainage does not drain to the crossing, with durable, clean, screened, angular rock.

2.44 **Excavated Fill.** Excavated fill material shall be placed in upland locations where it cannot deliver to a watercourse. To minimize the potential for material to enter the watercourse during the winter period, all excavated and relocated fill material shall

be tractor contoured (to drain water) and tractor compacted to effectively incorporate and stabilize loose material into existing road and/or landing features.

2.45 Runoff from Steep Areas. The Permittee shall make preparations so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential or contained behind erosion control structures. Erosion control structures such as straw bales and/or siltation control fencing shall be placed and maintained until the threat of erosion ceases. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

2.46 Crossing Maintenance. The Permittee shall provide site maintenance for the life of the structures, including, but not limited to, re-applying erosion control to minimize surface erosion and ensuring drainage structures, streambeds and banks remain sufficiently armored and/or stable.

2.46.1 The placement of armoring shall be confined to the work period when the stream is dry or at its lowest flow

2.46.2 No heavy equipment shall enter the wetted stream channel.

2.46.3 No fill material, other than clean rock, shall be placed in the stream channel.

2.46.4 Rock shall be sized to withstand washout from high stream flows, and extend above the ordinary high water level.

2.46.5 Rock armoring shall not constrict the natural stream channel width and shall be keyed into a footing trench with a depth sufficient to prevent instability.

2.47 Isolation of Work Site. Only when work in a flowing stream is unavoidable (e.g., perennial streams), Permittee shall divert the stream flow around or through the work area during construction operations. Permittee shall adhere to the following conditions:

2.47.1 Stream Diversion. Stream flow shall be diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses.

2.47.2 Coffer Dams. Prior to the start of construction, Permittee shall isolate the work area. Cofferdams shall be installed to divert stream flow; isolate and dewater the work site; catch and retain sediment-laden water; and minimize sediment transport downstream. Water tight coffer dams shall be constructed upstream and downstream of the work area and water diverted, through a suitably sized pipe, from upstream of the upstream coffer dam and discharge downstream of the downstream coffer dam. Cofferdams and the stream diversion system shall remain in place and functional throughout the construction period. Cofferdams or stream diversions that fail for any

reason shall be repaired immediately. Permittee shall use only clean, non-erodible materials such as sand bags, on-site rock, and/or plastic sheeting. Mineral soil shall not be used in the construction of cofferdams.

2.47.3 Stranded Aquatic Life. Once coffer dams are installed, a qualified biologist or other qualified professional trained to identify listed species shall check daily for stranded aquatic life as the water level in the dewatering area drops. All reasonable efforts shall be made to capture and move all stranded aquatic life observed in the dewatered areas. Capture methods may include fish landing nets, dip nets, buckets and by hand. Captured aquatic life shall be released immediately in the closest suitable aquatic habitat adjacent to the work site. This condition does not allow for the take or disturbance of any State or federally listed species, or State listed species of special concern. The Department staff who prepared this agreement shall be contacted immediately if any of these species are detected.

2.47.4 Dewatering. Permittee shall catch and retain sediment-laden water and minimize sediment transport downstream. Flowing water shall be cleanly bypassed and/or prevented from entering the work area through pumping or gravity flow, and cleanly returned to the stream below the work area. Permittee shall divert stream flow around the work site in a manner that minimizes turbidity, siltation, and pollution, and does not result in erosion or scour downstream of the diversion.

2.47.5 Remove any Materials upon Completion. Permittee shall remove any turbid water and sediment present in the work area prior to restoring water flow through the project site, and place them in a location where they cannot enter the Waters of the State. Permittee shall remove all materials used for the temporary stream flow bypass after the Authorized Activity is completed.

2.47.6 Restore Normal Flows. Permittee shall restore normal flows to the effected stream immediately upon completion of work at that location.

2.48 Culvert Installation.

2.48.1 Permanent culverts shall be sized to accommodate the estimated 100-year flood flow [i.e. ≥ 1.0 times the width of the bankfull channel width or the 100-year flood size, whichever is greater], including debris, culvert embedding, and sediment loads.

2.48.2 Where diversion potential exists and/or as prescribed in **Table 1**, a critical dip shall be installed to direct flood flow over the crossing fill and back into the channel. Critical dips shall be constructed to accommodate the entire estimated 100-year flood flow and may be installed by lowering the existing fill over the crossing or by constructing a deep, broad rolling dip over the

crossing surface to prevent flood flow from diverting down the road.

2.48.3 If the project is located in a high to very high Fire Hazard Severity Zone as designated by CAL FIRE, CDFW recommends culvert materials consist of corrugated metal pipe (CMP). Use of High Density Polyethylene (HDPE) pipe is discouraged.

http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps

2.48.4 Existing fill material in the crossing shall be excavated down vertically to the approximate original channel and outwards horizontally to the approximate crossing hinge points (transition between naturally occurring soil and remnant temporary crossing fill material) to remove any potential unstable debris and voids in the older fill prism.

2.48.5 Culvert shall be installed to grade (not perched or suspended), aligned with the natural stream channel, and extend lengthwise completely beyond the toe of fill. If culvert cannot be set to grade, it shall be oriented in the lower third of the fill face, and a downspout or energy dissipator (such as boulders, rip-rap, or rocks) shall be installed above or below the outfall as needed to effectively control stream bed, channel, or bank erosion (scouring, headcutting, or downcutting). The Permittee shall ensure basins are not constructed and channels are not be widened at culvert inlets.

2.48.6 Culvert bed shall be composed of either compacted rock-free soil or crushed gravel. Bedding beneath the culvert shall provide for even distribution of the load over the length of the pipe, and allow for natural settling and compaction to help the pipe settle into a straight profile. The crossing backfill materials shall be free of rocks, limbs, or other debris that could allow water to seep around the pipe, and shall be compacted.

2.48.7 Culvert inlet, outlet (including the outfall area), and fill faces shall be armored where stream flow, road runoff, or rainfall energy is likely to erode fill material and the outfall area.

2.48.8 Project Inspection. The Project shall be inspected by a licensed professional to ensure that the stream crossings were installed as designed. A copy of the inspection report, including photographs of each site, shall be submitted to CDFW within 90 days of completion of this project.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

- 3.1 **CDFW Notification of Work Initiation.** The Permittee shall contact CDFW within the seven-day period **preceding the beginning of work** permitted by this Agreement. Information to be disclosed shall include Agreement number, and the anticipated start date.
- 3.1.1 Prior to commencing work, Permittee shall provide to CDFW for review preconstruction FYLF survey notes and observations.
- 3.2 **Work Completion.** The proposed work shall be completed by no later than dates specified in **Table 1**. Extensions to this date may be granted on a case by case basis as a minor amendment requested at least 30 days prior to this date. Failure to complete work by this date may result in suspension or revocation of this Agreement. **Notification of completion will include photographs of the completed work, erosion control measures, waste containment and disposal, and a summary of any CNDDDB submissions** and shall be submitted to CDFW, LSA program at 619 Second Street, Eureka, CA 95501 **within seven (7) days** of project completion.
- 3.3 **Project Inspection.** The Project shall be inspected by a licensed professional to ensure that the stream crossings were installed as designed and/or the stream restoration was implemented as designed. A copy of the inspection report, including photographs of each site, shall be submitted to CDFW within 90 days of completion of this project. The Permittee shall submit the **Project Inspection Report** to CDFW, LSA Program at 619 Second Street, Eureka, CA 95501
- 3.4 **Measurement of Diverted Flow.** Copies of the **Water Diversion Records** shall be submitted to CDFW, LSA Program at 619 Second Street, Eureka, CA 95501 no later than **December 31** of each year beginning in **2019**.
- 3.5 **Invasive Species Management for Reservoirs.** The Permittee shall submit all required documents described in the Invasive Species Management for Reservoirs, **Bullfrog Management Plan (Exhibit A)** no later than **December 31** of each year. The Bullfrog Management Plan shall be submitted to CDFW at 619 Second Street, Eureka, CA 95501.
- 3.6 **Site Management Plan.** The Permittee shall submit to CDFW the project's **current draft** of the Site Management Plan if it was not included in the Notification. If the Site Management Plan is still in preparation, Permittee shall submit it and all **subsequent revisions and updates** within 30 days of submittal to the SWRCB.

CONTACT INFORMATION

Any communication that Permittee or CDFW submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or CDFW specifies by written notice to the other.

To Permittee:

Shane Pacheco
PO BOX 610
Garberville, CA 95542
530-414-3546
skylimit333@yahoo.com

To CDFW:

Department of Fish and Wildlife
Attn: Lake and Streambed Alteration Program – Greg O'Connell
Notification #1600-2019-0484-R1
619 Second Street
Eureka, California 95501

LIABILITY

Permittee shall be solely liable for any violation of the Agreement, whether committed by the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require the Permittee to proceed with the project. The decision to proceed with the project is the Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety this Agreement if it determines that the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide the Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide the Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to the Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against the Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with, or obtaining any other permits or authorizations that might be required under, other federal, state, or local laws or regulations before beginning the project or an activity related to it. For example, if the project causes take of a species listed as threatened or endangered under the Endangered Species Act (ESA), such take will be unlawful under the ESA absent a permit or other form of authorization from the U.S. Fish and Wildlife Service or National Marine Fisheries Service.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the Fish and Game Code including, but not limited to, Fish and Game Code sections 2050 *et seq.* (threatened and endangered species), section 3503 (bird nests and eggs), section 3503.5 (birds of prey), section 5650 (water pollution), section 5652 (refuse disposal into water), section 5901 (fish passage), section 5937 (sufficient water for fish), and section 5948 (obstruction of stream).

Nothing in the Agreement authorizes the Permittee or any person acting on behalf of the Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

The Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and the Permittee. To request an amendment, the Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, section 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by the Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, the Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, section 699.5).

EXTENSIONS

In accordance with Fish and Game Code section 1605, subdivision (b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, section 699.5). CDFW shall process the extension request in accordance with Fish and Game Code section 1605, subdivisions (b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code section 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after the Permittee signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall **expire five years** from date of execution, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. The Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as Fish and Game Code section 1605, subdivision (a)(2) requires.

EXHIBITS

The documents listed below are included as exhibits to the Agreement and incorporated herein by reference.

Exhibit A. Bullfrog Monitoring and Management Plan

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with Fish and Game Code section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR SHANE PACHECO

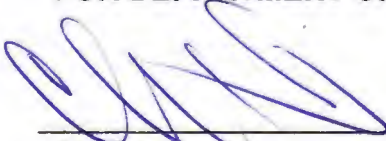


Shane Pacheco

11-19-19

Date

FOR DEPARTMENT OF FISH AND WILDLIFE



Cheri Sanville

Senior Environmental Scientist Supervisor

11/22/19

Date

EXHIBIT A.

BULLFROG MONITORING AND MANAGEMENT PLAN FOR 1600-2019-0484-R1

GENERAL BULLFROG INFORMATION

The American bullfrog (*Lithobates catesbeianus* = *Rana catesbeiana*); hereafter bullfrog, is an invasive non-native species in California and poses a significant threat to California's native fish and wildlife resources. Bullfrogs were introduced in California over 100 years ago from eastern parts of the United States as a food supply, but have since caused substantial ecological consequences. Bullfrogs are considered highly invasive and are well documented to be prey upon a variety of fish and wildlife species, including some that are rare, threatened, and endangered. Human modifications to the environment provide favorable condition to bullfrogs such as artificially created agricultural ponds, canals and ditches where warm still water occurs. As a result bullfrogs have spread throughout California.

Efforts to control bullfrogs have been met with varying degrees of success because: 1) bullfrogs can be difficult to detect and go dormant from fall through winter, 2) bullfrogs often take cover in difficult areas to manage (e.g. dense vegetation), 3) they can travel long distances to colonize and re-colonize areas, 4) they have high reproductive output, 5) they are weary and readily flee perceived threats, and 6) they can survive physical trauma remarkably well. CDFW scientific staff recognizes there is an urgent and immediate need to develop improved bullfrog management strategies to protect California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. Public support and implementation of bullfrog control in California is an important conservation strategy that will help protect natural resources for future generations.

MONITORING

The Project reservoir(s) shall be monitored for bullfrog presence on an annual basis with a minimum of five total surveys, no less than two weeks apart, throughout the months of May-July

- All pond survey effort must be made by a person knowledgeable in bullfrog identification (see Appendix A for reference photos);
- Survey efforts shall include listening for bullfrog calls and slowly walking the complete perimeter of the pond at night* (dusk or later) while shining a flashlight to detect movement and eye-shine

If bullfrogs are not detected upon completion of five total surveys, or at any other time of the year incidentally, removal efforts are not required that year.

*Day time monitoring can also be conducted to aid detection but is not required under this plan.

SUCCESS CRITERIA

The level of effort needed to successfully manage bullfrog populations varies with infestation levels. This plan shall be considered successfully implemented if sufficient effort is provided to prevent adult bullfrogs from reproducing in the reservoir(s) each year, and no bullfrog life-stages can be detected. Bullfrogs are capable of traveling long distances over-land, and on-going

efforts will be required to ensure dispersing bullfrogs do not colonize the reservoir(s) at a future time.

OPTIONS FOR MANAGEMENT

Two management methods may be employed for controlling bullfrogs under this plan and include:

- Manual direct removal
- Reservoir de-watering (Hydro-modification)

Implementing both reservoir de-watering and manual direct removal is currently believed to be the most effective method of managing bullfrog infestations. For reservoirs that are heavily infested with juvenile bullfrogs and/or tadpoles, reservoir dewatering may be necessary to break the bullfrog's life cycle and prevent on-going reproduction. Prior to conducting reservoir dewatering activities, please coordinate with CDFW Scientist Greg O'Connell at gregory.oconnell@wildlife.ca.gov

Direct Removal

All direct removal efforts must be made by a person knowledgeable in bullfrog identification.

- Removal efforts must occur during, but are not be limited to the active/breeding season, occurring May – July;
- A minimum of **five** efforts throughout the season are considered necessary;
- Direct removal efforts are typically most effective when conducted at night with use of lights but can also be conducted during the day;
- Direct removal must include working the entire perimeter of the reservoir;
- A rubber raft or small boat may be necessary to successfully remove some individuals;
- A team of two individuals or more is often helpful, one person for shining lights and/or operating a boat and the other person to perform removal efforts;
- Bullfrog tadpoles must be removed and dispatched and must not be relocated or kept as pets.

Management Authorization

Take of bullfrogs is specifically allowed in the California Code of Regulations (CCR), Title 14 (T-14) section 5.05(a)(28), under the authority of a sport fishing license. There is no daily bag limit, possession limit or hour restriction, but bullfrogs can only be taken by hand, hand-held dip net, hook and line, lights, spears, gigs, grabs, paddles, bow and arrow or fish tackle.

Alternatively, FGC Section 5501 allows CDFW, as limited by the commission, to issue a permit to destroy fish that are harmful to other wildlife. The regulations have addressed this under Section CCR T-14 226.5 Issuance of Permits to Destroy Harmful Species of Fish in Private Waters for Management Purposes. This allows the CDFW to issue free permits to destroy harmful aquatic species by seining and draining.

Pond Dewatering

Pond dewatering may be appropriate if the reservoir can be successfully dewatered without adversely affecting stream resources. Careful planning and coordination with CDFW, is necessary to ensure potential impacts to stream resources can be addressed, prior to commencing with pond draining. Discharge of polluted water to waters of the state may require permitting from other agencies with permitting authority, such as the Regional Water Quality Control Board.

In general, bullfrog tadpoles require two years to develop into frogs, whereas native amphibians only require one year. Therefore, draining a reservoir every year is intended to interrupt bullfrog tadpole development, dramatically decrease bullfrog populations and allow for reduced efforts as a measure of adaptive management. Typically in Northern California, reservoir draining should occur in September through October to avoid impacts to sensitive native amphibian and fishery resources. While draining occurs, direct removal efforts should be employed as described above if possible.

REPORTING

A written log shall be kept of monitoring and management efforts and shall be provided to CDFW **each year** by December 31. The written log shall include: 1) date and time of each monitoring and management effort, 2) approximate number of each bullfrog life stage detected and/or removed per effort, and 3) amount of time spent for each monitoring and management effort.

APPENDIX A. BULLFROG REFERENCE PHOTOS



This is a photo of a Bullfrog tadpole. (Photo taken by Mike van Hattem).



The photos shown in this Appendix demonstrate a medium sized adult bullfrog that was removed from Ten Mile Creek, Mendocino County. Note the bullfrog has a large tympanum, (circular ear drum shown with an arrow) and **does not** have distinct ridges along its back (dorsolateral folds). Photo taken by Wes Stokes.



The bullfrog has somewhat distinct mottling and the underside of the bullfrog's hind legs are not shaded pink or red.