

# **Edson Foulke Yreka Ditch Company Site Plan**

## **For the Template Safe Harbor Agreement prepared by the Shasta River Water Conservation Group for Coho Salmon (*Oncorhynchus kisutch*)**

### **A. Introduction**

This Site Plan for the Template Safe Harbor Agreement (Agreement) for Southern Oregon and Northern California Coast (SONCC) Evolutionarily Significant Unit (ESU) of coho salmon (the Covered Species) is between Edson Foulke Yreka Ditch Company, (hereinafter referred to as the Permittee), National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW). This Site Plan, combined with the measures prescribed in the Agreement, may serve as the basis for NMFS to issue a federal enhancement of survival permit (Permit) to the above named Permittee pursuant to section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended (ESA). The joint and respective responsibilities of NMFS, CDFW and the Permittees are detailed in the Agreement. The Site Plan Agreement is subject to terms of the Agreement and Permit.

This Site Plan documents site-specific information detailing the Permittee's enrolled diversion point, including the location and management authority of the site (easement), its baseline conditions, existing and, as available, proposed future land-use activities, and the duration of this Site Plan and requested permit. This Site Plan also documents the agreed-upon conservation measures to be undertaken by the Permittee on the enrolled property/easement that are expected to benefit coho salmon.

### **B. Enrolled Property**

#### **B.1. General narrative and map describing property**

The entity applying for the Agreement is Edson Foulke Yreka Ditch Company, an association consisting of six individual members that divert water through a single delivery system commonly known as the Edson-Foulke or China Ditch. The water diverted through Edson-Foulke ditch is a combination of multiple shared water rights. Edson Foulke Yreka Ditch Company, hereinafter referred to as Permittee or Edson-Foulke, owns no real property and operates its diversion through an easement on Parks Creek Ranch. Edson-Foulke is seeking coverage for its easement area and infrastructure located at its point of diversion on Parks Creek, including its intake structure, initial reach of diversion ditch, fish screen and flow measuring device.

The furthest point of use is 15.45 ditch miles north of Parks Creek diversion point. The map included below shows the approximate location within the Covered Area within what has been designated the **Upper Parks Creek Reach** in the Agreement. The approximate general location of Edson Foulke diversion within the Agreement Area is shown in Figure 1.

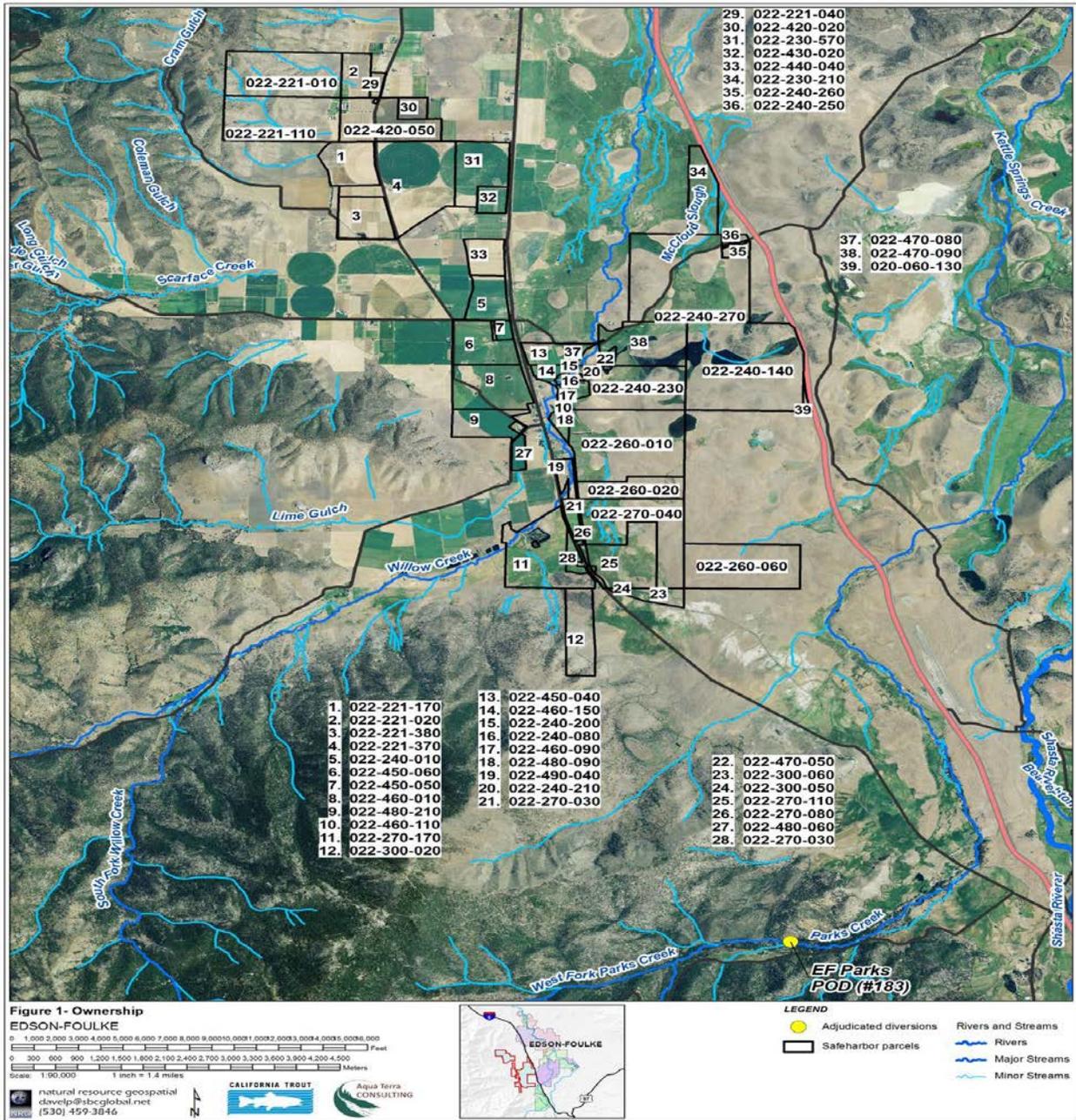


FIGURE 1. EDSON-FOULKE- Easement Location on Parks Creek

## B.2. Legal Description of Property Boundary (Parks Creek Diversion Point)

Permittee's has an easement on property owned by Outpost International - Parks Creek Ranch to divert water, maintain and operate its point of diversion located on Parks Creek. Permittee owns no real property. Permittee's easement for the Parks Creek POD is attached as Appendix B (Wells Agreement) The legal description of the involved water right is the Parks Creek Diversion Point identified as Diversion #183 in the Shasta River Decree and described in Paragraphs 33, 116, 117 and 324.

The Edson Foulke Parks Creek point of diversion is location at: (lat and lon) 41.435431°, 122.471370°

### **B.3. Description of Water Right**

Permittee is an association comprised of multiple users who operate the Parks Creek point of diversion that serve the users located along Edson-Foulkes 15.45 mile long canal. Permittee has a water right on Parks Creek, identified in the Shasta River Decree as Diversion #183 ( described in Paragraphs 33, 116, 117 and 324 attached as Appendix A).

Table 1: Apportionment of Edson Foulke Diversion #183 in Shasta River Decree

Paragraph	Owner	Time	Use	Decreed Acres	Source/Diversion Number	CFS
33	Halpenny	3/1-2/28	Irrigation/Stock water	212.1	Parks Creek #183	1.25
116	T. Nielsen, Crechriou, R. Nielsen, & Novy	3/1-2/28	Irrigation/Stock water	2,559.7	Parks Creek #183	7.45
		11/1-3/1	Storage		Shasta #18 or Parks #183	228 acre/ft
117	Emerson	3/1-2/28	Irrigation/Stock water	225.1	Parks Creek #183	0.6
324	Emerson	3/1-2/28	Irrigation/Stock water	102.4	Parks Creek #183	0.6
Total Acres:				3,099.3	Total CFS	9.9

Irrigation season at Parks Creek starts on March 1st and continues through October 31st. Winter diversion occurs from November 1st through February 28th. Maximum diversion volume for either period of diversion is 9.9 cfs. Permittee also has a 228 acre-feet storage right allowing water to be diverted from 11/1 through 3/1 in addition to the continuous flow volume of 9.9 cfs.

Belcampo Farms, operating as Parks Creek Ranch, also has an agreement that enables them to use Edson Foulke's Ditch infrastructure to convey 5.3 cfs of water from the Parks Creek POD from March 1 to July 10. This 5.3 cfs is a separate right from the 9.9 cfs adjudicated right of Edson Foulke's Parks Creek diversion. It is an agreement between current users which include the Permittee and Belcampo Farms to include their 5.3 cfs water right at the same Point of diversion, identified as the Wells Agreement, which establishes the easement (Appendix B).

The upper Parks Creek hydrograph is a snow melt driven system with highest constant flows during spring, April thru May on a normal water year. Inter-annual and seasonal variability is significant. Climatic influences from Mt Shasta and surrounding mountains can result in precipitation events, including rain on snow, causing more extreme stream flow variations compared to other tributaries of the Shasta River. . When snow melt tails off, flows reduce, typically starting during mid-June and ending in base flow condition by early-July, ceasing operation of diversion by mid July.

Summer flows are characterized by very low flow conditions from mid- July into October. Generally, Parks Creek diversion point ceases to divert as surface flows subside during summer. In most years, any stream flow in Parks Creek must be yielded to higher priority rights upstream of the Permittee's diversion. Surface flows typically do not recover until after mid-October or when a significant precipitation event occurs.

During the fall streamflow typically becomes more steady and dependable by mid-November in a normal water year. Figure 2 shows the Edson Foulke's diversion point in relation to the canal and irrigated acreage.

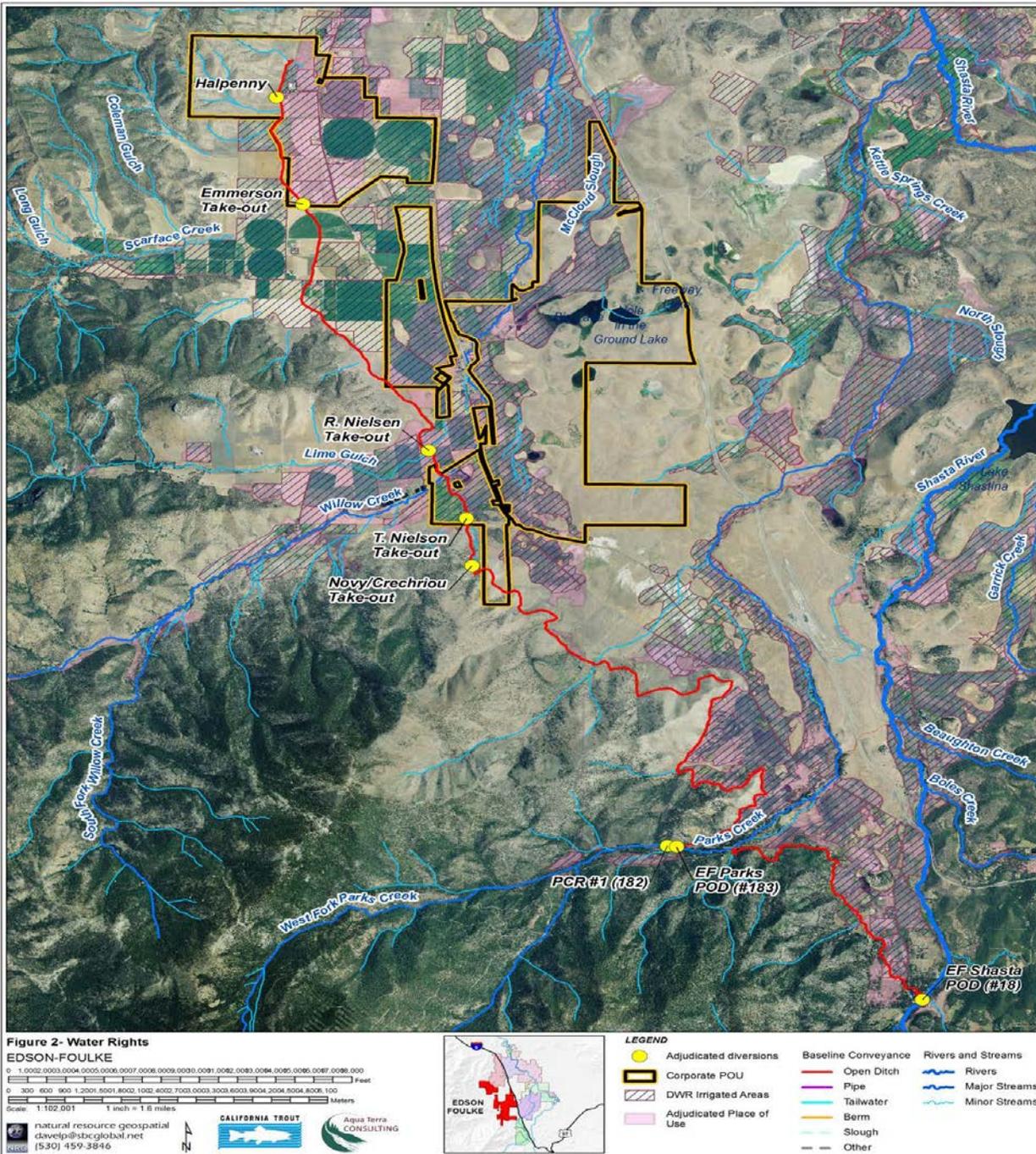


FIGURE 2. EDSON-FOULKE Enrolled Water Rights - Parks Creek

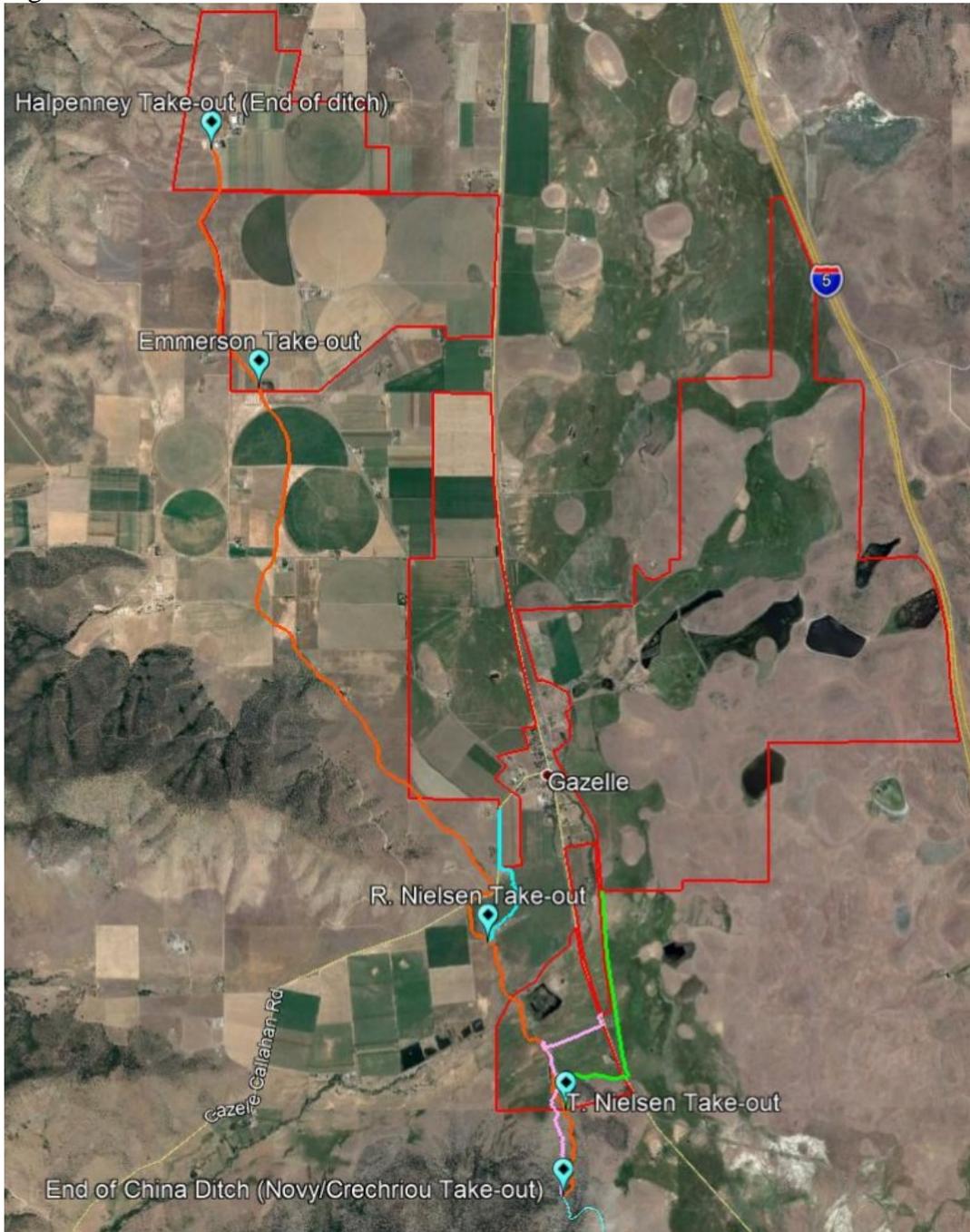
## C. Routine Land Use

### C.1. Present Routine Land Use

General description: Permittee is a ditch association that operates a diversion point located on Parks Creek, within the Upper Parks Creek Reach of the SHA Covered Area. The head of the

Edson Foulke's Parks Creek Ditch diverts water to the main canal which delivers water north along the west side of Shasta Valley. The furthest point of use is 15.45 ditch miles north of the diversion point. Water is used for multiple purposes including pasture production, crop production, stock water and delivery to storage. . Figure 3 shows Permittee /Edson Foulke Ditch Association member's parcels outlined in red and various laterals for delivery from the main stem China Ditch.

Figures 3a. Place of Use



The diversion point includes an adjustable head gate attached to a culvert that diverts water from the stream. Armoring around the head gate and along the left bank of the stream protects the diversion infrastructure and the initial reach of the ditch. As flows reduce, a gravel berm is constructed in Parks Creek to build water surface elevation to divert water via the existing

structure. Work to construct berm is often conducted by hand if winter flows are not significant. If high persistent winter flows occur, equipment is used to reestablish channel elevation to allow diversion via the head gate. By-pass flows and fish passage are provided with a 2' wide notch in the diversion berm constructed of native bedload material. The notch leads to a riffle allowing passage.

An on-canal self cleaning fish screen was constructed in 2007. A 30' long 24" diameter by-pass pipe allows fish to return to Parks Creek. Permittee and Belcampo Farms operate and maintain the fish screen. The volume of water diverted can be measured within the diversion ditch located downstream of the fish screen.

### Irrigation Management

Edson Foulke can typically divert full adjudicated volume during the spring until mid-June on an average year. Transmission losses can occur in the main canal. Losses are proportional to the volume of water diverted. Losses are proportionally higher when diverting near maximum volumes. Conversely, the efficiency of the ditch is higher when diverting smaller volumes of water. The ditch is an unlined earthen ditch excavated from native materials (consolidated and unconsolidated serpentine soils and rock). Transmission loss occurs through the fill side of the ditch when maximum capacity is approached.

During the non-irrigation season, a full volume of winter water is not able to be diverted until mid-November on Parks Creek or at least until after a significant precipitation event occurs. Parks Creek normally begins flowing at the POD again in mid-October but generally less than the water right (9.9 cfs). After Mid-November, flows increase but can be highly variable, exhibiting significant reductions during prolonged cold, dry periods or significant increases during heavy precipitation and high flow events. Management of the facility can be difficult and labor intensive from late fall, through winter and into spring.

Irrigation management includes managing the diversion point and diversion structure. Periodic cleaning of sediment deposited in front of the POD and development of a temporary gravel berm that is installed as surface flows subside to divert water. Bypass flows are managed until flows reduce to a minimal flow volume, typically in early summer. After mid-July, Parks Creek at the point of diversion is dry or nearly dry through mid to late October. A self-cleaning fish screen with a by-pass exists down ditch from the POD. Adequate amount of flows through the fish screen by-pass occur when POD is in operation until flows subside and diversion ceases. An adjustable head gate exists at the POD. A Department of Water Resources built and maintained stage measuring device exists down ditch from the fish screen. Evaluation is necessary to determine if current flow measuring methods are sufficiently accurate.

### Irrigation Maintenance

#### *Ditch Cleaning*

The ditch is maintained regularly by the ditch association, using heavy equipment and hand work. Cleaning and ditch bank maintenance is conducted annually, and usually occurs before the onset of irrigation season. Diversion of water ceases when ditch maintenance occurs.

#### *Diversion Cleaning*

The diversion point is maintained regularly by the ditch association, using heavy equipment and hand work. Maintenance is conducted most often at the head of the ditch between the head gate and the fish screen and in the active channel after high flow events. Maintenance of the gravel and rock diversion structure is necessary within the active channel as well, especially after significant storm events. Maintenance within the active channel usually occurs when stream flows began to decline, which usually occurs in June. Work in the active channel is usually conducted by hand and consists of clearing sediment and rocks from the active channel.

#### *Fish Screen Cleaning*

The Permittee and Belcampo Farms operates a fish screen that is located in the diversion ditch with a thirty-foot pipe bypass to Parks Creek. Ditch user's clean, repair and maintain the fish screen and by-pass. The fish screen requires monthly greasing of bearings and some infrequent hand cleaning of debris.

#### Riparian Grazing Management

The Permittee has no real property and does not manage or graze livestock.

#### Fence Maintenance

The Permittee has no real property and does not manage riparian habitat.

#### Road Maintenance

The Permittee shares an access road off of Stewart Springs Road which crosses the active channel of Parks Creek. A secondary access road is often used on the north side of Parks Creek through Belcampo property where crossing the stream is not required.

#### Crossing Maintenance

The Permittee uses a low water crossing located just upstream of the POD. However, the crossing is currently impassable due to significant bank erosion and near vertical approach resulting from high flows in 2017. The secondary access is currently the primary access point.

#### Herbicide/Fertilizer/Pesticide Use

The Permittee will not apply pesticides or herbicides at POD or where use could impact fisheries.

## **C.2. Avoidance and Minimization Measures Covered Activities and Avoidance and Minimization Measures**

This section outlines and describes all activities that may be implemented under the Template Safe Harbor Agreement (SHA) including Routine Land and Water Use Activities and Avoidance and Minimization Measures (AMMs), monitoring and Beneficial Management Activities (BMAs).

The Template SHA provides permittees with ESA assurances that efforts to promote the conservation and recovery of the Covered Species on their enrolled property, including implementation of Routine Land and Water Use Activities with AMMs, monitoring, and BMAs, will not result in additional restrictions on the use of the enrolled property.

Permits will authorize take of SONCC coho salmon incidental to the rights, obligations, and activities contemplated in the Template SHA provided that such take is consistent with maintaining the Present and Elevated Baseline Conditions identified in site plan agreements. The specific activities that will be implemented by each permittee on their enrolled property under the Template SHA are described in individual Site Plan Agreements. Each permittee will select appropriate activities from this section in coordination with NMFS and CDFW, and such measures will be included in Individual Site Plans.

## I. Routine Land and Water Use

Land and water management practices considered under the Template SHA for which incidental take will be authorized on the enrolled properties are considered standard practices for production of livestock, pasture and hay. For the purposes of the Agreement, standard practices for production of livestock, pasture and hay production means: any lawful practices performed by a permittee, and persons associated with the permittee, that are incident to or in conjunction with livestock, pasture and haying operations including crop production, cultivation, growing, replanting, diversion of water, irrigation, irrigation runoff management (tailwater), harvesting, preparation for market, vehicle operation, moving of livestock and watering of livestock. Other non-farming/ranching routine activities include installation, repair, maintenance and operation of: diversions, fish screens, instream habitat structures, fences, roads, riparian area cultivation and maintenance, stream crossings, monitoring infrastructure activities, erosion control, flood and emergency protection and invasive plant removal and control. These activities will be described, as appropriate, by each permittee through a completed Site Plan Agreement. The potential effects of Routine Land and Water Use activities on the Covered Species shall be minimized and avoided through the implementation of AMMs.

The Template SHA and Site Plan Agreements will grant NMFS and CDFW, after reasonable prior notice to the permittees, access (in any form, including aerial) to enrolled properties for purposes of technical assistance related to monitoring and implementation, and to ascertain compliance with the Template SHA and Site Plan Agreements. Implementation monitoring of Routine Land and Water Use Activities and AMMs as specified in Individual Site Plan Agreements will be accomplished by the permittees or their consultants, with the assistance of the Parties, when appropriate, on a schedule specified in each Individual Site Plan Agreement, and using specific protocols set forth below. Permittees will document implementation of AMMs on their enrolled property using the monitoring protocols set forth below and submit documentation to the Parties in the annual report.

## A. Water Diversion and Diversion Facilities

Water diversions included under the Template SHA include diversions of surface water through conduits or openings from streams, channels, or sloughs within the geographic scope of the Template SHA (as shown in Figure 1 of the Template SHA) by a permittee in accordance with a valid water right including the following activities associated with water diversion and diversion structures:

- Ongoing management and/or maintenance of existing flashboard dams, including the placement of boards into concrete abutments across the wetted channel to build head to divert water, and the removal of the boards.
- Ongoing maintenance, management, and repair of boulder weirs.
- Installing, operating, maintaining, and removing push-up dams or weirs. These are defined as temporary diversion structures created by using loaders, backhoes, or excavators to move bedload within the stream channel to form a flow barrier or weir that seasonally diverts a portion of the flow of the stream.
- Installing, operating, maintaining, and removing other temporary diversion structures that are not push-up dams. "Other temporary diversion structure" is defined as any temporary structure to divert water seasonally from a stream and is typically made with hay bales, hand-stacked rocks and cobble, tarps, wood, and/or a combination of these materials placed in the channel with or without the use of heavy equipment. Equipment may be used from the bank but not within the channel.
- Installing or placing pumps and sumps and maintaining existing pumps and sumps within or adjacent to the active channel of a stream, which sometimes requires the use of large machinery within or adjacent to the active channel.
- Installing head gates and measuring devices that meet NMFS and CDFW standards and is in compliance with Senate Bill 88 on or in a diversion channel, which usually is done by excavating the site to proper elevation using large machinery, positioning the head gate and measuring device at the appropriate elevation, and installing rock or other "armoring" around the head gate to protect the structure. During installation, the stream bank could be affected by the construction of concrete forms and other necessary construction activities.
- Operating head gates and measuring devices

The following AMMs may be applicable to the activities described above (specific AMMs for each enrolled property will be listed, as appropriate, in individual Site Plan Agreements):

A1. Install a locking head gate or valve sized appropriately for the authorized diversion, that can regulate flow, and a functional measuring device or flow meter on any structure or facility connected to a stream used to divert water to facilitate better control and monitoring of water delivery within three years, unless specified otherwise in the site plan, of the effective date of the Agreement on or in all water diversion structures identified in this Agreement. The designs for head gates or valves and measuring devices in State Watermaster or Special Watermaster District Service areas shall be approved by DWR or said Special District, if applicable, in coordination with the Parties. All measuring devices and methods of water measurement shall be constructed and maintained to meet a 10% measuring accuracy for points of diversion that

divert greater than or equal to 200 acre feet per year, and a 15% measuring accuracy for points of diversion that divert less than 200 acre feet per year. Data from these devices will be included in the annual SHA report, if required in the individual site plans.

A2. Fish passage will be provided for all life stages when sufficient flows are available per individual site plan descriptions.

A3. Contact NMFS and CDFW at least five (5) days before installing any dam or instream structure that could result in stranding of fish, or before changing the operation of any existing dam or instream structure that could result in stranding of fish. The types of activities that typically could result in stranding include rapid drawdown of flow or dewatering of the stream channel downstream of the diversion or within diversion ditches between the point of diversion, fish screen and bypass return flow channel.

A4. Construct, operate, maintain, and remove push-up and other temporary dams as described in the Agreement. Push-up dam or weir construction activities shall commence no earlier than May 1 and no later than November 1. Participant may commence push-up dam construction activities prior to May 1 if (a) permittee notifies NMFS and CDFW at least seven (7) days in advance of any dam construction proposed to occur prior to May 1, (b) a survey is completed by NMFS, CDFW or a mutually agreed-upon qualified biologist sufficient to determine the presence and distribution of any Covered Species, and (c) a determination by NMFS and CDFW whether and when the activity may proceed.

A5. Routine push-up dam construction and removal will be accomplished by the operation of a bucket attached to an excavator, or backhoe that is situated outside of the wetted portion of the stream channel. Participant will check and maintain vehicles used for push-up dam construction and removal on a daily basis during the construction and removal activities to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian habitat; minimize disturbance to the stream bed and bank and keep turbidity of the water to a level that is not deleterious to aquatic life; and allow the work area to “rest” to allow the water to clear after any activity that causes a plume of turbidity above background levels, resuming work only after the stream has reached the original background turbidity levels.

### **Monitoring Protocols for Implementation**

All maintenance of instream diversion structures shall be monitored as follows:

- Log of what in-water work had occurred and what minimization measures were implemented will be included in the Annual SHA report
- Data from measuring devices will be included in the annual SHA report, if required in the individual site plans.
- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch

- Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
  - Directional orientation of photos
  - Map scale and North marker
  - Landmarks such as labeled road crossings and waterways.
3. Photo log which includes:
- Site code
  - Photo's code (digital label)
  - Date photos were taken
  - Description of what was being documented (riparian growth, project implementation, etc)

## **B. Irrigation Management and Maintenance**

This Routine Land and Water Use Activity includes management and maintenance of conveyance facilities on enrolled properties that are used for diverting surface waters including: piping/buried mainline, buried mainline with risers, gated pipe, sprinkler systems, open ditches, sumps, storage ponds and tailwater capture ponds/sumps. The activities associated with irrigation management and maintenance may include; head gate on/off operation, moving sprinklers, turning risers on and off, board or tarp removal/placement in ditches, pump, ditch and pond maintenance, pipe clearing/cleaning, maintenance of fish screens, operations of tailwater collection (pick-up ditches and ponds), storing water and irrigation runoff (tailwater production) and general diversion of water per the Shasta River Decree.

Irrigation maintenance activities frequently require the use of heavy equipment. At times this requires equipment and vehicles to cross flowing streams or intermittent channels and/or the construction of stream crossings at designated locations where potential spawning gravels, incubating eggs, and fry are not present based on repeated site specific surveys. Vehicle wet crossings are described in more detail below.

Irrigation management and maintenance also includes operation and maintenance of all types of fish screens. Types of screens include self-cleaning screens, including flat plate self-cleaning screens, and other self-cleaning designs, including, but not limited to, rotary drum screens and cone screens, with a variety of cleaning mechanisms. These screens are designed to continuously clean the screen surface. Periodic maintenance may be needed to remove siltation, debris, sedimentation and anything else that could inhibit normal operation, which would require lifting the screen and using heavy equipment to remove sedimentation/debris. The screens also require regular greasing of bearing and other mechanical parts. Non-self cleaning screens, including tubular, box, and other screen designs consistent with NMFS and CDFW screening criteria are generally cleared daily to remove aquatic vegetation and debris, which is usually done by hand.

The following AMMs may be applicable to the activities described above (specific AMMs for each enrolled property will be listed, as appropriate, in Individual Site Plan Agreements):

B1. During regular maintenance work at diversions and fish screens, the permittee will minimize the discharge of sediments, debris, fine organic matter, and/or muddy, turbid, or silt-

laden waters into natural waterways. The permittee will clean instream structures as necessary to maintain proper function.

B2. The permittee will regularly inspect all fish screens and bypass pipes or channels to verify that they are effectively protecting salmonids and other fish species in accordance with CDFW and NMFS fish screening criteria. When necessary, the permittee will clean and repair all fish screens and bypass pipes or channels. If a fish screen is removed for cleaning or repair and in channel work is necessary, the permittee will ensure either that a replacement screen is installed immediately or water is not flowing through the area where the screen is removed by either implementing isolation or dewatering of the work site in coordination with the fish relocation effort described later in this document.

B3. When a bypass pipe is present, the bypass entrance(s) shall be installed and operated such that all life stages of the Covered Species can easily locate and enter them. All components of the bypass system, from entrance to outfall, shall be designed and operated to minimize the potential for debris blockage and must be sized to accommodate all life stages of fish and aquatic species which may be drawn into the diversion. Sufficient flow (site specifically determined depending on the volume and type of bypass structure) will be supplied from the diversion into a fish bypass to safely and efficiently return fish back to the stream.

Bypass outfalls shall be designed and located so that there is sufficient depth and velocity to avoid injury to all life stages of fish and aquatic life which may be directed into a bypass pipe.

B4. When cleaning/maintaining irrigation or drainage ditches or ponds, the permittee will work when the ditch is as dry as possible to minimize or eliminate surface water turbidity and sediment transport. The permittee will place sediment and organic materials excavated from ditches or ponds in a location where the materials cannot wash into any stream channel or Covered Species habitat.

B5. Permittee will regularly monitor and repair as necessary any earthworks or facilities designed to minimize tail water entering natural waterways.

B6. Planned Instream work shall occur only when Covered Species are least likely to be present or affected by the project; between June 15 and November 1, or as approved by NMFS and CDFW.

B7. In the case where the fish screen is down ditch, the Permittee shall notify CDFW at least 5 days prior to closing a head gate or valve when fish stranding may occur in the diversion conduit, to allow fish rescue notification and coordination by qualified individuals, NMFS and CDFW or otherwise mutually agreed upon individuals.

B8. Water releases from off-channel impoundments, ponds, and tail water basins will be conducted in a manner that minimizes turbidity, siltation, elevated temperatures, or pollution impacts to waterways supporting Covered Species. Water shall be released in the early morning (prior to 10:00 am) and/or during cool times of the year, and will be released as gradually as possible to minimize fine sediment discharges. If the release timing and rate is not feasible, landowner will contact NMFS and CDFW prior to release.

B9. When permittee is diverting water under the rotational provision under the decree, the river shall not be dewatered and an agreed upon bypass amount will always be provided, as stipulated under the reach wide flow management plans and/or the permittee's individual site plans.

### **Monitoring Protocols for Implementation**

All relevant maintenance of irrigation facilities shall be monitored. Following are some examples of protocols:

- Log of maintenance activities carried out within the calendar year will be included in the yearly SHA report.

### **E. Road Use and Maintenance**

Ranch roads are regularly used to access irrigation facilities, move cattle and equipment. Roads may be secondary, which are infrequently used or only utilized by cattle and ATVs, or primary, which are roads used more regularly by trucks and heavy equipment. This category is for both the use and the regular maintenance of all ranch roads, which could include grading, rocking, laying base, and culvert replacement.

The following avoidance and minimization measures may be applicable to the activities described above (specific AMMs for each enrolled property will be listed, as appropriate, in individual Site Plan Agreements):

E1. Ensure fish passage at road crossings of streams that are accessible to the Covered Species including at bridges, wet crossings and culverts. Any instream crossing structure will be designed and implemented in accordance with the fish passage evaluation methods specified in the 2010 4<sup>th</sup> edition of the Department's California Salmonid Stream Habitat Restoration Manual. The most current edition of the manual is available at: <http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp>.

E2. Minimize erosion and sedimentation from roads and road work. Rock road crossings and approaches to stream channels to minimize sedimentation. Utilize mulch or other suitable materials, as necessary, to minimize sediment runoff and transport to surface waters. Apply mulch so that not less than 90% of the disturbed areas are covered. Apply all mulches, except hydro-mulch, in a layer not less than two (2) inches deep. Where appropriate, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, will be reseeded with non-invasive species at a rate which will ensure establishment.

E3. Planned Instream work shall occur only when Covered Species are least likely to be present or affected by the project, typically from June 15 through November 1.

E.4 Avoid using native surface roads for heavy traffic during wet or thaw periods, and roads

not designed and constructed for these conditions. Evaluate the future needs for a road and close roads that will not be needed. Inspect roads annually to determine the need for structural maintenance. Conduct maintenance practices, when conditions warrant, including cleaning and replacement of deteriorated structures and erosion controls, grading or upgrading road surfaces with aggregate. Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood (a) that stream overflow will divert onto roads, and (b) that fill erosion will not occur if the drainage structures become obstructed

## Monitoring Protocols

All maintenance of roads that have an impact on water ways shall be monitored as follows:

- A short description of annual road maintenance activities will be included in the annual report.

## F. Livestock and Vehicle Wet Crossings

This category includes use of wet crossings, which are only allowed where the Covered Species is absent. This activity includes moving livestock, vehicles, ATVs, and equipment across flowing streams or intermittent channels, stock water access, and/or the construction, maintenance, and use of stream crossings at designated locations where potential Covered Species spawning gravels, incubating eggs, and fry are not present based on repeated site specific surveys by agencies or qualified biologists. The crossing may need yearly maintenance to remove debris and place new rock to reinforce an existing crossing.

The following avoidance and minimization measures may be applicable to the activities described above (specific AMMs for each enrolled property will be listed, as appropriate, in individual Site Plan Agreements):

F1. Cross livestock and vehicles only at stable designated locations where potential spawning gravel, incubating eggs, and fry are not present. Wet crossings for cattle should be armoured with rock. Fencing should be installed to guide the cattle to the crossing and across the stream on the armoured surface while minimizing impacts to the stream and stream banks.

- Factors considered when selecting a crossing location include the stream gradient, channel width, and the ability to maintain the existing channel slope. Generally, to construct a crossing, a boulder weir is placed on the downstream side of the crossing and angular quarry rock is placed in the crossing location; the width of the crossing does not exceed 25 feet; the crossing spans the entire width of the channel; the crossing is “keyed” into the bank on each side; the approaches on both sides do not exceed a slope of 3:1; and bank armoring (usually using quarry rock) is added where needed.
- Angular rock will be applied to the crossing during the period of June 15 through November 1 and maintained over time. The diameter of angular rock will be selected so as to eliminate the risk of angular rock becoming a grade control affecting channel conditions. In locations where the stream crossings occur on intermittent streams, application of rock shall occur when the stream channel is dry.

- Once a crossing is established, the landowner will corroborate with agency staff after high flow events and/or after gravel introduction, to inspect the crossing and ensure it has not been compromised. The inspection shall be completed in spring or early summer.

F2. When operating vehicles in wetted portions of a stream channel, check and maintain vehicles on a daily basis to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat; minimize the number of passes through the stream to avoid increasing the turbidity of the water to a level that is deleterious to aquatic life; and allow the work area to “rest” after each individual pass of the vehicle that causes a plume of turbidity above background levels, resuming work only after the stream has reached the original background turbidity levels.

### **Monitoring Protocols**

All maintenance activities related to livestock and vehicle crossing shall be monitored as follows:

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo’s code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

### **G. Herbicide (Weed Management), Fertilizer and Pesticide Use**

This category includes weed management, in the form of livestock grazing, use of California legal weed spray products, manual removal, burning, and mowing.

The following AMMs are applicable to the activities described above (specific AMMs for each enrolled property will be listed, as appropriate, in individual Site Plan Agreements).

G1. Ensure that any pesticide or herbicide is handled and applied by a licensed applicator (when required) in accordance with and all applicable, federal, state, local laws, regulations, procedures, and guidelines. Application of pesticides will be in conformance with the pesticide label as well as any required buffers from anadromous streams. The permittees will apply

herbicides/pesticides, if any, in conformance with the applicable label directions, as well as any required buffers from anadromous streams in conformance with the Order entered in Washington Toxics Coalition et al. v. Environmental Protection Agency et al., (W.D. Wash No. C01-132C) (January 22, 2004). When possible, areas will be spot treated to reduce the amount applied. Use of broad spectrum insecticides will be minimized or avoided as they are more likely to be harmful to non-target organisms including fish and aquatic insects if exposed. Chemicals with the lowest possible toxicity rating will be used when possible. Use of mobile, pre-emergent herbicides will be minimized or avoided as they can impact non-target plants in the riparian area leading to other impacts such as sedimentation. The Applicant will avoid or minimize exposing aquatic resources by managing spray drift. This includes using modern spray equipment (e.g., low volume or electrostatic sprayers); routinely checking for nozzle wear and calibrating the sprayer frequently throughout the growing season; turning off the sprayer along creeks, drainages and in the turn-around areas; supervising the spraying to minimize effects to surface waters.

G2. Use care to minimize fertilizer use in applications that could result in nutrient loading to natural waterways.

G3. Review label information and avoid the use of any material known to be detrimental to fish where it could impact Covered Species.

G4. Use or store stationary petroleum-powered equipment in a manner to prevent the potential release of petroleum materials into natural waterways by use of drip pans or other measures.

G5. Refuel machinery and handle or store hazardous materials no less than one hundred and fifty (150) feet away from the edge of any water body. All unused or leftover materials will be transported off-site and properly disposed of, when applicable.

## **Monitoring Protocols**

Herbicide, Fertilizer and Pesticide use shall be monitored as follows:

- Log of herbicide, fertilizer and pesticide use activities carried out within the calendar year to be included in the annual report.

## **H. Flood or Emergency Events**

This category includes immediate work needed to prevent loss of or damage to property from emergencies, including flood, fire, storm, earthquake or other unexpected natural events. Activities may include sediment and debris removal, emergency fish screen repairs, fencing repairs, streambank or crossing stabilization and moving livestock or equipment across streams during emergencies. Emergency is defined in California Code of Regulations section 15359.

The following AMMs are applicable to the activities described above (specific AMMs for each enrolled property will be listed, as appropriate, in individual Site Plan Agreements):

H1: Prior to, during or immediately after the event, NMFS and CDFW will be contacted and AMMs will be developed in coordination with the permittee for the particular flood or emergency circumstances.

H2: NMFS and CDFW will be notified within 14 days of beginning emergency work per Fish and Game Code 1610.

### Monitoring Protocols

All flood repair shall be monitored as follows:

- Photographs of the emergency site repairs and a detailed description of the repairs to be included in the annual report.

### II. Beneficial Management Activities

The primary objective of the Template SHA and Site Plan Agreements is to enhance, restore, or maintain habitat to benefit the Covered Species. To accomplish this, the Parties will implement BMAs (the types of actions to be implemented will vary with each Site Plan) that will result in improved habitat conditions for the Covered Species. Habitat restoration projects authorized under the Template SHA will be designed and implemented consistent with techniques and minimization measures presented in CDFG's *California Salmonid Stream Habitat Restoration Manual, Third Edition, Volume II* with four chapters (*Part IX: Fish Passage Evaluation at Stream Crossings, Part X: Upslope Assessment and Restoration Practices, Part XI: Riparian Habitat Restoration, and Part XII: Fish Passage Design and Implementation*) added in 2003, 2004, and 2009, respectively (Flosi et al. 1998, hereafter referred to as CDFG Manual). The Template SHA requires AMMs for all projects to avoid or minimize adverse effects to the Covered Species and habitat.

Individual Site Plans will include property-specific BMAs that will be implemented on an enrolled property, and the monitoring protocol that will be implemented for each BMA. Project design and implementation of BMAs will include the AMMs provided below. Table 1 lists the entire suite of potential BMAs that could be implemented under the Template SHA on a given property and the type of monitoring that will be associated with each BMA. If grant funds are obtained to implement a given BMA on an enrolled property, data collection and reporting will be required to satisfy the grant contract obligations. Implementation monitoring of BMA's, as described below will be used to inform the Parties and to confirm that each BMA has been constructed as intended, without any structural changes or omissions that would compromise the integrity of the project or reduce its intended benefits.

**Table 1. Beneficial Management Activities and Associated Monitoring Techniques.**

Beneficial Management Activity	Monitoring Techniques
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Barrier Modification and Fish Passage Improvement	Photo monitoring, as-built surveys
Fish Screen Installation or Replacement	Photo monitoring, screening criteria compliance monitoring
Instream Habitat Structures and Improvements	Photo monitoring, as-built surveys
Riparian Habitat Restoration, Bioengineering and Fencing	Photo monitoring, transects, survival monitoring
Off-channel and Side-channel restoration	Photo monitoring, as-built surveys
Road and Trail Erosion Control	Photo monitoring
Water Conservation Measures*	Photo monitoring, SB88 compliant diversion monitoring

\*includes Water Exchange and Efficiency Measures, Tail water Management and Collection Ponds, Irrigation Management, Water Storage Tanks, Piping Ditches and Loss Evaluation, Sprinkler/Pressurized Irrigation, Head gates and Water Measuring Devices)

### A. Instream Habitat Structures and Improvements

Instream habitat structures and improvements are intended to provide predator escape and resting cover, increase spawning habitat, improve migration corridors, improve pool to riffle ratios, and add habitat complexity and diversity. Specific techniques for instream habitat improvement may include:

- placement of large woody debris (LWD) scour and cover structures, log weirs, upsurge weirs, single and opposing log-wing-deflectors, engineered log jams, Hewitt ramps, divide logs, digger logs, spider logs; and log, root wad, and boulder combinations),
- boulder structures (boulder weirs, vortex boulder weirs, boulder clusters, and single and opposing boulder-wing-deflectors),
- install post-assisted wood structures (PAWS) or beaver dam analog structures (BDAS) to increase rearing habitat, and placement of imported spawning gravel. Implementation of these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, excavators, backhoes, helicopters), however, hand labor will be used when possible. Projects will include both anchored and unanchored logs, depending on site conditions and wood availability.

#### Monitoring Protocols:

- Provide Photo Monitoring in the Annual SHA report upon completion of the habitat structures that can clearly document changes over time. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch

- Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
  - Directional orientation of photos
  - Map scale and North marker
  - Landmarks such as labeled road crossings and waterways.
3. Photo log which includes:
- Site code
  - Photo's code (digital label)
  - Date photos were taken
  - Description of what was being documented (riparian growth, project implementation, etc.)

## B. Beaver Management

Two of the most common undesirable impacts to ranching activities that are caused by beavers include cutting of trees and flooding of properties or facilities important to the routine agricultural activities that occur on the property. Potential non-lethal measures that may be considered to mitigate for unwanted tree cutting in critical locations include the installation of wire mesh cages or the application of paint and sand mix at the base of trees in need of protection. Where the construction of beaver dams have raised the water level to cause unwanted flooding of ranch infrastructure landowners should consider installation of pond levelers or Clemson levelers as described Chapter 9 of The Beaver Restoration Guidebook (Pollock et al. 2015). If it is determined that implementation of the measures described in the Beaver Restoration Guidebook would not alleviate the impacts to agricultural activities caused by beaver dam construction, then the landowner is permitted to modify the structure and discourage future beavers from utilizing the site in the future when NMFS and CDFW have assessed the situation and agree on the extent of modification.

### Monitoring Protocols:

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

### C. Barrier Modification for Fish Passage Improvement

Barrier modification projects are intended to improve salmonid fish passage by (1) providing access to upstream habitat, and (2) increasing the duration of accessibility (both within and between years). Projects may include those that improve fish passage through beaver dams, existing culverts, diversions, dams, bridges, and paved and unpaved fords through replacement, removal, or retrofitting. In particular, these practices may include the use of gradient control weirs upstream or downstream of barriers to control water velocity, water surface elevation, or provide sufficient pool habitat to facilitate jumps, or interior baffles or weirs to mediate velocity and the increased water depth. BMAs also include log jam and beaver dam modifications to facilitate juvenile and adult fish passage. Implementing these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, mechanical excavators, backhoes), however, hand labor will be used wherever possible.

The chapter in the CDFG Manual (Part XII), entitled *Fish Passage Design and Implementation*, provides technical guidance for the design of fish passage projects at stream crossings, small dams and water diversion structures and should be referenced when developing fish passage remediation projects. Part XII is intended to “guide designers through the general process of selecting a design approach for passage improvement. Where there is further opportunity to protect salmonids, additional site-specific criteria may be appropriate and recommended by agencies.

### Monitoring Protocols

All fish passage projects shall be monitored using the following protocols:

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- The NOAA Restoration Center's Fish Passage Barrier Removal Performance Measures and Monitoring Worksheet which includes longitudinal profiles, cross sections and socio/economic information.

#### D. Bioengineering and Riparian Habitat Restoration

These projects are intended to improve salmonid habitat through increased stream shading intended to lower stream temperatures, increase future recruitment of LWD to streams, and increase bank stability and invertebrate production. Riparian habitat restoration projects will aid in the restoration of riparian habitat by increasing the number of plants and plant groupings, and will include the following types of projects: natural regeneration, livestock exclusion fencing, bioengineering, and revegetation. Part XI of the CDFG Manual, *Riparian Habitat Restoration*, contains examples of these techniques and should be referenced when planning riparian projects. Reduction of instream fine sediment will improve fish habitat and fish survival by increasing fish embryo and alevin survival in spawning gravels, reducing injury to juvenile salmonids from high concentrations of suspended sediment, and minimizing the loss of, or reduction in size of, pools from excess sediment deposition.

The proposed activities will reduce stream sedimentation from bank erosion by stabilizing stream banks with appropriate site-specific techniques including: boulder-streambank stabilization structures, log-streambank stabilization structures, tree revetment, native plant material revetment, willow wall revetment, willow siltation baffles, brush mattresses, check dams, brush check dams, water bars, and exclusion fencing.

Guidelines for stream bank stabilization techniques are described in Part VII of the CDFG Manual, *Project Implementation*. These types of projects usually require the use of heavy equipment but hand labor will be used where ever possible.

#### Monitoring Protocols:

- CDFW Quantitative Effectiveness Monitoring of Bank Stabilization and Riparian Vegetation Restoration, 2007. Reports on field testing specific protocols for bank stabilization and riparian vegetation restoration. <http://cesonoma.ucanr.edu/files/27283.pdf>
- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code

- Photo's code (digital label)
- Date photos were taken
- Description of what was being documented (riparian growth, project implementation, etc.)

### E. Removal of Small Dams (permanent and flashboard)

The CDFG Manual does not cover the removal of small dams, however guidelines and minimization measures have been developed here. Types of small dams covered are permanent, flash board, and seasonal dams with the characteristics listed below. Implementing these types of projects may require the use of heavy equipment (e.g., mechanical excavators, backhoes, etc.). Dams removed in part or in whole, by the use of explosives are not included as a BMA. Dams included here are less than 25 feet in height from the natural bed of the stream or watercourse at the downstream toe of the barrier, or from the lowest elevation of the outside limit of the barrier to the maximum possible water storage elevation. In addition, BMAs will only include dam removal that will result in the formation of a channel at natural grade and shape upstream of the dam, naturally or with excavation, in order to minimize negative effects on downstream habitat. Candidate dam removal projects will (1) have a relatively small volume of sediment available for release, that when released by storm flows, will have minimal effects on downstream habitat, or (2) are designed to remove sediment trapped by the dam down to the elevation of the target thalweg including design channel and floodplain dimensions. This can be accomplished by estimating the natural thalweg using an adequate longitudinal profile (CDFG Manual Part XII *Fish Passage Design and Implementation*) and designing a natural shaped channel that provides the same hydraulic conditions and habitat for the Covered Species that is provided by the natural channel and has the capacity to accommodate flows up to a 2-year flood.

#### *Data Requirements and Analysis*

- A longitudinal profile of the stream channel thalweg for at least a distance equal to 20 channel widths upstream and downstream of the structure and long enough to establish the natural channel grade, whichever is farther, shall be used to determine the potential for channel degradation (as described in the CDFW Manual).
- A minimum of five cross-sections: one downstream of the structure, three roughly evenly spaced through the reservoir area upstream of the structure, and one upstream of the reservoir area outside of the influence of the structure to characterize the channel morphology and quantify the stored sediment.
- Sediment characterization within the reservoir and within a reference reach of a similar channel to determine the proportion of coarse sediment (>2mm) in the reservoir area and target sediment composition.
- Prior to project initiation, further consultations with CDFW and NMFS will be required prior to removing a small dam to determine if: (1) sediments stored behind dam have a reasonable potential to contain environmental contaminants [dioxins, chlorinated pesticides, polychlorinated biphenyls (PCB's), or mercury] beyond the freshwater probable effect levels (PELs) summarized in the NMFS Screening Quick Reference Table guidelines or (2) the risk of significant loss or degradation of downstream

spawning or rearing areas by sediment deposition is high. Sites shall be considered to have a reasonable potential to contain contaminants of concern if they are downstream of historical contamination sources such as lumber or paper mills, industrial sites, or intensive agricultural production going back several decades (*i.e.*, since chlorinated pesticides were legal to purchase and use). In these cases, preliminary sediment sampling is advisable.

### **Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (*i.e.* fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- The NOAA Restoration Center's Fish Passage Barrier Removal Performance Measures and Monitoring Worksheet which includes longitudinal profiles, cross sections and socio/economic information.  
[http://www.habitat.noaa.gov/toolkits/restoration\\_center\\_toolkits/forms\\_and\\_guidance\\_documents/ori\\_monitoring\\_sheet\\_w\\_guidance.pdf](http://www.habitat.noaa.gov/toolkits/restoration_center_toolkits/forms_and_guidance_documents/ori_monitoring_sheet_w_guidance.pdf)

### **F. Creation of Off-channel/Side Channel Habitat**

The creation of off-channel or side channel habitat is not included in the CDFG Manual however, guidelines and minimization measures have been developed for this BMA. Types of side channel or off-channel restoration projects that are eligible as a BMA under the Template SHA are:

- Connection of abandoned side channel or pond habitats to restore fish access
- Connection of adjacent ponds
- Connection of oxbow lakes on floodplains that have been isolated from the meandering Channel by river management schemes, or channel incision
- Creation of side channel or off-channel habitat with self-sustaining channels
- Creation of alcoves
- Improvement of hydrologic connection between floodplains and main channels

Projects that involve the installation of a flashboard dam, head gate or other mechanical structure are not part of the BMAs under the Template SHA. Off channel ponds constructed under the Template SHA will not be used as a point of water diversion. The use of logs or boulders as stationary water level control structures will be allowed.

Restoration projects in this category may include: removal or breaching of levees and dikes, channel and pond excavation, creating temporary access roads, constructing wood or rock tail water control structures, and construction of LWD habitat features. Implementation of these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, mechanical excavators, backhoes).

Information regarding consideration of water supply (channel flow/overland flow/groundwater), water quality, and reliability; risk of channel change; as well as, channel and hydraulic grade should be considered when developing off channel habitat features. A good reference document for designing off channel habitat features can be found in "Section 5.1.2 Side Channel/Off Channel Habitat Restoration in the Washington Department of Fish and Wildlife 2004 Stream Habitat Restoration Guidelines" (Saldi-Caromile, et al. 2004).

### **Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- Pre- and post-construction and design flow surveys of constructed inlet and outlet structures, including any other critical or controlling hydraulic features.

### **G. Developing Alternative Stockwater Supply**

Many riparian fencing projects will require the development of off channel watering areas for livestock. These are often ponds that have been excavated and are filled either by rainwater, overland flow, surface diversions or groundwater (either through water table interception or pumping). BMAs under the Template SHA also include small wells with solar pumps, water lines, watering troughs, and piping used to provide ground or surface water to livestock. All

pump intakes associated with surface diversions will be screened in accordance with NMFS Southwest Region "Fish Screening Criteria for Salmonids" (NMFS 1997). Stockwater ponds will be located at a distance from the edge of the active channel as to avoid or minimize stranding of juvenile salmonids or channel avulsion during flood events.

### **Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

### **I. Monitoring and Research**

This includes monitoring required by permittee's ESA Section 10 permits, CDFW's 1600 permit and all other regulatory requirements. Other studies and research that landowners will allow to further the understanding of the Shasta River are also included such as studies for riparian survival, fish surveys, habitat improvement, and food availability.

### **Monitoring Protocols:**

- Reports on all monitoring and research done within a reporting year be included in the annual SHA report if author of the research gives consent for inclusion.

### **J. Water Storage and Tailwater Capture Systems**

This BMA addresses water storage that results from storage of water diverted from surface or groundwater sources and tail water capture (off channel). A water storage facility enables a landowner to use stored water at a later date or when desired. Water storage facilities can have many benefits that go beyond agricultural use including groundwater recharge, and allowing diversion during winter and early spring when instream discharge is ample. Water storage, when paired with reduction of water use later in the season, can be a benefit to the Covered Species.

Tailwater is created in flood irrigation operations as unabsorbed, untranspired, and

unevaporated irrigation water that may flow back into the stream. Restoration projects to address tailwater input will include construction of tailwater capture systems (pond, berms or pick up ditches) to intercept tailwater before it enters streams as surface flow. Water held in capture systems, such as a pond, can be reused for future irrigation purposes, therefore reducing the need for additional stream diversions. Tailwater ponds are used primarily during the irrigation season (dry summer months).

A tailwater pond allows a landowner the ability to irrigate between set irrigation cycles (if in an irrigation district). The State Water Board allows for captured water to be put to beneficial use, not used to irrigate ground that may not have been in production in the past or otherwise harm other legal users of water. Tailwater ponds will be located at a distance from the edge of the active channel to avoid causing stranding of juvenile salmonids or channel avulsion during flood events. Tailwater ponds must be combined with a reduction in diversion amounts or be utilized at an existing point of diversion to ensure water allocation is consistent with adjudication. Tailwater berms allow for intercepting tailwater before it enters the stream, but is not able to be reused. Berms allow tailwater to be kept on the fields and percolate into soils and back to the river. These shall be placed in areas where they will not pose any channel pressure in the event of a flood and in areas where soils have high permeability (well-draining) and not be an excessive amount. Tailwater pick up ditches allow the landowner to intercept tailwater and convey it to another place of use to utilize for irrigation, thereby reducing demand for surface water diversion.

#### **Monitoring Protocols:**

- Report of amount of water stored or captured and reused where possible.

#### **K. Piping/Lining Ditches**

Piping/Lining projects consist of constructing a pipe or installing a liner to transport irrigation water as an alternative to conveying water in an open ditch, thereby reducing water loss including from evaporation and absorption. A water budget/balance or consumptive use analysis will be completed to determine actual amount of water saved by these projects. The amount determined to be saved will remain in the stream to benefit the Covered Species. These projects must demonstrate that they intend to dedicate the saved water for instream beneficial use, and make progress towards instream dedication through a means mutually agreeable to the permittee and NMFS and CDFW.

#### **Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc.).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch

- Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
  - Directional orientation of photos
  - Map scale and North marker
  - Landmarks such as labeled road crossings and waterways.
3. Photo log which includes:
- Site code
  - Photo's code (digital label)
  - Date photos were taken
  - Description of what was being documented (riparian growth, project implementation, etc.)
- Real time water diversion monitoring protocol (TBD) or water measuring protocol that is in concurrence with SB88.

#### L. Fish Screens

This category includes the installation, operation, and maintenance of the types of fish screens described below, provided they meet the NMFS (1996, 1997) fish screening criteria. Installing a fish screen usually includes site excavation, forming and pouring a concrete foundation and walls, excavation and installation of a fish bypass pipe or channel, and installation of the fish screen structure. Dewatering is often required and could be implemented through coffer dams or sheet piling. Heavy equipment is typically used for excavation of the screen site and bypass. If the fish screen is placed within or near flood prone areas, typically rock or other armoring is installed to protect the screen. Fish screen types include:

- Self-cleaning screens, including flat plate self-cleaning screens, and other self-cleaning designs, including, but not limited to, rotary drum screens and cone screens, with a variety of cleaning mechanisms, consistent with NMFS fish screening criteria (1996, 1997).
- Non-self-cleaning screens, including tubular, box, and other screen designs consistent with NMFS screening criteria (1996, 1997).

#### Monitoring Protocols:

- In the event the fish screen is installed, repaired, replaced, and/or relocated, provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code

- Photo's code (digital label)
- Date photos were taken
- Description of what was being documented (riparian growth, project implementation, etc.)
- Pre- and post-construction and design flow surveys of structure and any other critical or controlling hydraulic features.

#### **M. Headgates and Water Measuring Devices**

Measuring devices are typically installed with the head gate to allow water users to determine the volume of water diverted. These devices will help diverters ensure that are diverting their legal water right. Head gate designs will be approved by a NMFS or CDFW engineer prior to installation; *provided, however*, that such approval will be deemed to have occurred if an agency fails to take action within 60 days of submission of head gate designs by a permittee to NMFS and CDFW. This category includes the installation and maintenance of stream gages in the active stream channel, usually using pipe 2" or greater in diameter. Typically, the pipe is secured to the bank by notching it into the bank and by then attaching it to the bedrock, a boulder, or a concrete buttress. Generally, heavy equipment is not needed to install and maintain stream gages. Water measuring devices will have the ability to record diversion volumes hourly for points of diversion that have water rights greater than or equal to 1,000 acre feet per year and daily for points of diversion with water rights less than 1,000 acre feet per year. For points of diversion with water rights less than or equal to 10 acre feet per year should be recorded monthly.

#### **Monitoring Protocols:**

- In the event a head gate is installed, replaced, repaired, and/or relocated, Permittee will provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc.).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- Include the water measuring data as specified in the individual site plan.

## O. Combining or moving points diversions

Combining or moving current points of diversion can be employed as a BMA in order to enhance flows in certain reaches, maintain cold water springs or provide fish passage so long as operations are undertaken in compliance with law. Each permittee shall affirm its operations complies with law if it undertakes operations under this section.

### Monitoring Protocols:

- To document the construction of new infrastructure that will facilitate moving a point of diversion or combining diversions the Permittee will provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc.).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- Temperature Monitoring Protocol (TBD) as specified in the Individual site plan or in the Flow Management Plan.
- Real time water diversion monitoring protocol (TBD) as specified in the Individual site plan or in the Flow Management Plan.

## IIA. Avoidance and Minimization Measures for Beneficial Management Activities

The following general minimization measures, as they apply to particular BMAs, shall be incorporated into Site Plan Agreements authorized under the Template SHA, as appropriate.

### A. General Protection Measures

- The general construction season shall be from June 15 to November 1<sup>st</sup>. Restoration, construction, fish relocation, and dewatering activities within any wetted or flowing stream channel shall only occur within this period. Revegetation outside of the active channel may continue beyond November 1, if necessary.
- Prior to construction, any contractor shall be provided with the specific protective measures to be followed during implementation of the project. In addition, a qualified biologist shall provide the construction crew with information on the listed species in the project area, the

protection afforded the species by the ESA, and guidance on those specific protection measures that must be implemented as part of the project.

- All activities that are likely to result in negative aquatic effects, including temporary effects, shall proceed through a sequencing of effect reduction: avoidance, reduction in magnitude of effect.
- Poured concrete shall be excluded from the wetted channel until the water surrounding the concrete structure has a PH between 6 and 8.5 to avoid water quality issues for salmonids.
- If the thalweg (location of the deepest and fastest part) of the stream has been altered due to construction activities, efforts shall be undertaken to reestablish it to its original configuration<sup>1</sup>.

## B. Requirements for Fish Relocation and Dewatering Activities

**1. Guidelines for dewatering.** Project activities funded or permitted under the Template SHA may require fish relocation or dewatering activities. Dewatering may not be appropriate for some projects that will result in only minor input of sediment, such as placing logs with hand crews, or installing boulder clusters. Dewatering can result in the temporary loss of aquatic habitat, and the stranding, or displacement of fish and amphibian species. Increased turbidity may occur from disturbance of the channel bed. The following guidelines may minimize potential effects for projects that require dewatering of a stream:

- In those specific cases where it is deemed necessary to work in flowing water, the work area shall be isolated and all flowing water shall be temporarily diverted around the work site to maintain downstream flows during construction. Restoration actions such as installing LWD, boulder structures or spawning gravel, where heavy equipment does not enter the stream and can operate from the streambank, do not need to occur in a dewatered stream channel.
- Exclude fish from occupying the work area by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh will be no greater than 1/8 inch diameter. The bottom of a seine must be completely secured to the channel bed. Screens must be checked twice daily and cleaned of debris to permit free flow of water. Block nets shall be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where fish will be removed. Block net mesh shall be sized to ensure salmonids upstream or downstream do not enter the areas proposed for dewatering between passes with the electrofisher or seine.
- Prior to dewatering, determine the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates (as described more fully below under **General conditions for all fish capture and relocation activities.**)
- Coordinate project site dewatering with a qualified biologist in coordination with NMFS and CDFW to perform fish relocation activities. The qualified biologist(s) must be familiar with the life history and identification of listed salmonids within the action area.
- Prior to dewatering a construction site, qualified individuals will capture and relocate

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<sup>1</sup> Projects that may include activities, such the use of willow baffles, which may alter the thalweg are allowed

Covered Species and other native fish and amphibians to avoid direct mortality and minimize adverse effects. This is especially important if listed species are present within the project site.

- Minimize the length of the dewatered stream channel and duration of dewatering, to the extent practicable.
- Any temporary dam or other artificial obstruction constructed shall only be built from materials such as sandbags or clean gravel which will cause little or no siltation. Cofferdams should be constructed to minimize water seepage into the construction areas. Cofferdams and stream diversion systems shall remain in place and fully functional throughout the construction period.
- When coffer dams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet. Bypass pipes will be monitored a minimum of two times per day, seven days a week. All accumulated debris shall be removed.
- Bypass pipes will be sized to not create scour at the outflow and to accommodate the existing streamflow.
- The work area may need to be periodically pumped dry of seepage. Place pumps in flat areas, well away from the stream channel. Secure pumps by tying off to a tree or stake in place to prevent movement by vibration. Refuel in an area well away from the stream channel and place fuel absorbent mats under pump while refueling. Pump intakes shall be covered with 1/8 inch mesh to prevent potential entrainment of fish or amphibians that failed to be removed. Check intake periodically for impingement of fish or amphibians.
- If pumping is necessary to dewater the work site, procedures for pumped water shall include requiring a temporary siltation basin for treatment of all water prior to entering any waterway and not allowing oil or other greasy substances originating from operations to enter or be placed where they could enter a wetted channel. Projects will adhere to NMFS Southwest Region *Fish Screening Criteria for Salmonids* (NMFS 1997).
- Discharge sediment-laden water from construction areas to an upland location or settling pond where it will not drain sediment-laden water back to the stream channel.
- When construction is complete, the flow diversion structure shall be removed as soon as possible in a manner that will allow flow to resume with the least disturbance to the substrate. Cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. This will minimize the probability of fish stranding as the area upstream becomes dewatered.

## **2. General conditions for all fish capture and relocation activities:**

- Fish relocation and dewatering activities shall only occur between June 15 and November 1 of each year.
- All seining, electrofishing, and relocation activities shall be performed by a qualified fisheries biologist. The qualified fisheries biologist shall capture and relocate listed salmonids prior to construction of the water diversion structures (e.g., cofferdams). The qualified fisheries biologist shall note the number of salmonids observed in the affected area, the number and species of salmonids relocated, where they were relocated to, and the date and time of collection and relocation. The qualified fisheries biologist shall have a minimum of three years field experience in the identification and capture of salmonids.. The qualified biologist will adhere to the following requirements for capture and transport

of salmonids:

1. Determine the most efficient means for capturing fish (*i.e.*, seining, dip netting, trapping, electrofishing). Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down the pool and then seining or dipnetting fish.
  2. Notify NMFS and CDFW one week prior to capture and relocation of salmonids to provide NMFS and CDFW an opportunity to monitor.
  3. Initial fish relocation efforts will be conducted several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional seining or electrofishing passes immediately prior to construction. In many instances, additional fish will be captured that eluded the previous day's efforts.
  4. In streams with high water temperature, perform relocation activities during morning periods.
- Prior to capturing fish, determine the most appropriate release location(s). Consider the following when selecting release site(s):
    1. Similar water temperature as capture location
    2. Ample habitat for captured fish
    3. Low likelihood of fish reentering work site or becoming impinged on exclusion net or screen.
    4. Fish must be released in the nearest suitable location within the same stream . If another location is proposed, this will be approved in advance by NMFS or CDFW.
  - Periodically measure air and water temperatures. Cease activities when measured water temperatures exceed 18 °C if fish are present. Temperatures will be measured at the head of riffle tail of pool interface.

**3. Electrofishing Guidelines.** The following methods shall be used if fish are relocated via electrofishing:

- All electrofishing will be conducted according to NMFS *Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act (2000)*.
- The backpack electrofisher shall be set as follows when capturing fish:

Voltage setting on the electrofisher shall not exceed 300 volts.

A) Voltage:	100 Volts	300 Volts
B) Duration:	500 $\mu$ s (microseconds)	5 ms (milliseconds)
C) Frequency:	30 Hertz	70 Hertz

- A minimum of three passes with the electrofisher shall be conducted to ensure maximum capture probability of salmonids within the area proposed for dewatering.
- No electrofishing shall occur if water conductivity is greater than 350 microSiemens per centimeter ( $\mu$ S/cm) or when instream water temperatures exceed 18 °C. Water temperatures shall be measured at the pool/riffle interface. Direct current (DC) shall be used.
- A minimum of one assistant shall aid the fisheries biologist by netting stunned fish and

other aquatic vertebrates.

**4. Seining guidelines.** The following methods, shall be used if fish are removed with seines.

- A minimum of three passes with the seine shall be utilized to ensure maximum capture probability of salmonids within the area.
- All captured fish shall be processed and released prior to each subsequent pass with the seine.
- The seine mesh shall be adequately sized to ensure fish are not gilled during capture and relocation activities.

**5. Guidelines for relocation of salmonids.** The following methods shall be used during relocation activities associated with either method of capture (electrofishing or seining):

- Salmonids shall not be overcrowded into buckets; allowing approximately six cubic inches per young-of-the-year (0+) individual and more for larger fish.
- Every effort shall be made not to mix 0+ salmonids with larger salmonids, or other potential predators. Have at least two containers and segregate 0+ fish from larger age-classes. Place larger amphibians,, in containers with larger fish.
- Salmonid predators, such as sculpins (*Cottus sp.*) collected and relocated during electrofishing or seining activities shall be relocated so as to not concentrate them in one area. Particular emphasis shall be placed on avoiding relocation of sculpins relocation sites. To minimize predation on salmonids, these species shall be distributed throughout the wetted portion of the stream so as not to concentrate them in one area.
- All captured salmonids shall be relocated, preferably upstream, of the proposed construction project and placed in suitable habitat. Captured fish shall be placed into a pool, preferably with a depth of greater than two feet with available instream cover.
- All captured salmonids will be processed and released prior to conducting a subsequent electrofishing or seining pass.
- All native captured fish will be allowed to recover from electrofishing before being returned to the stream.
- Minimize handling of salmonids. When handling is necessary, always wet hands or nets prior to touching fish. Handlers will not wear DEET based insect repellents.
- Temporarily hold fish in cool, shaded, aerated water in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release.
- Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 °C., fish shall be released and rescue operations ceased.
- In areas where aquatic vertebrates are abundant, periodically cease capture, and release at predetermined locations.
- Visually identify species and estimate year-classes of fishes at time of release. Record the number of fish captured. Avoid anesthetizing or measuring fish.
- If more than three percent of the salmonids captured are killed or injured, the project lead shall contact NMFS and CDFW. The purpose of the contact is to allow the agencies a courtesy review of activities resulting in take and to determine if additional protective

measures are required. All salmonid mortalities must be retained, placed in an appropriately sized whirl-pak or zip-lock bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by NMFS.

### C. Measures to Minimize Disturbance from Instream Habitat Restoration Construction

Measures to minimize disturbance associated with instream habitat restoration construction activities are presented below.

- Construction will only occur between June 15 and November 1.
- Debris, soil, silt, excessive bark, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project related activities, shall be prevented from contaminating the soil or entering waterways. Any of these materials, placed within or where they may enter a stream or lake, by the applicant or any party working under contract, or with permission of the applicant, shall be removed immediately. During project activities, all trash that may attract potential predators of salmonids will be properly contained, removed from the work site, and disposed of daily.
- Where feasible, the construction shall occur from the bank, or on a temporary pad underlain with filter fabric.
- Use of heavy equipment shall be minimized in a channel bottom with rocky or cobbled substrate. If access to the work site requires crossing a rocky or cobbled substrate, a rubber tire loader/backhoe is the preferred vehicle. Only after this option has been determined infeasible will the use of tracked vehicles be considered. The amount of time this equipment is stationed, working, or traveling within the creek bed shall be minimized. When heavy equipment is used, woody debris and vegetation on banks and in the channel shall not be disturbed if outside of the project's scope.
- Hydraulic fluids in mechanical equipment working within the stream channel shall not contain organophosphate esters. Vegetable based hydraulic fluids are preferred.
- The use or storage of petroleum-powered equipment shall be accomplished in a manner to prevent the potential release of petroleum materials into waterways.
- Areas for fuel storage, refueling, and servicing of construction equipment must be located in an upland location.
- Prior to use, clean all equipment to remove external oil, grease, dirt, mud and potential invasive species. Wash sites must be located in upland locations so wash water does not flow into a stream channel or adjacent wetlands.
- All construction equipment must be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment shall be thoroughly inspected and evaluated for the potential of fluid leakage. All mechanical equipment shall be inspected on a daily basis to ensure there are no motor oil, transmission fluid, hydraulic fluid, or coolant leaks. All leaks shall be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.
- Oil absorbent and spill containment materials shall be located on site when mechanical equipment is in operation with 100 feet of the proposed watercourse crossings. If a spill

occurs, no additional work shall commence in-channel until (1) the mechanical equipment is inspected by the contractor, and the leak has been repaired, (2) the spill has been contained, and (3) CDFW and NMFS are contacted and have evaluated the impacts of the spill.

## **D. Measures to Minimize Degradation of Water Quality**

Construction or maintenance activities for projects covered under the Template SHA may result in temporary increases in turbidity levels in the stream. The following measures will be implemented to reduce the potential for adverse effects to water quality during and post-construction:

### **1. General erosion control during construction:**

- When appropriate, isolate the construction area from flowing water until project materials are installed and erosion protection is in place.
- Effective erosion control measures shall be in place at all times during construction. Do not start construction until all temporary control devices (e.g., straw bales with sterile, weed free straw, silt fences) are in place downslope or downstream of project site within the riparian area. The devices shall be properly installed at all locations where the likelihood of sediment input exists. These devices shall be in place during and after construction activities for the purposes of minimizing fine sediment and sediment/water slurry input to flowing water and detaining sediment-laden water on site. If continued erosion is likely to occur after construction is complete, then appropriate erosion prevention measures shall be implemented and maintained until erosion has subsided. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain reptiles (esp. snakes) and amphibians.
- Sediment shall be removed from sediment controls once it has reached one-third of the exposed height of the control. Whenever straw bales are used, they shall be sterile and weed free, staked and dug into the ground 12 cm. Catch basins shall be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.
- Sediment-laden water created by construction activity shall be filtered before it leaves the settling pond or enters the stream network or an aquatic resource area.
- The contractor/applicant to the Program is required to inspect, maintain or repair all erosion control devices prior to and after any storm event, at 24 hour intervals during extended storm events, and a minimum of every two weeks until all erosion control measures have been completed.

### **2. Guidelines for temporary stockpiling:**

- Minimize temporary stockpiling of material. Stockpile excavated material in areas where it cannot enter the stream channel. Prior to start of construction, determine if such sites are available at or near the project location. If nearby sites are unavailable, determine location where material will be deposited. Establish locations to deposit spoils well away from watercourses with the potential to deliver sediment into streams supporting, or historically

supporting populations of listed salmonids. Spoils shall be contoured to disperse runoff and stabilized with mulch and (native) vegetation. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles, silt fences, or berms of hay bales, to minimize movement of exposed or stockpiled soils.

- If feasible, conserve topsoil for reuse at project location or use in other areas. End haul spoils away from watercourses as soon as possible to minimize potential sediment delivery.

***Pre Rainstorm and Post construction erosion control:***

- Prior to a forecasted precipitation event of  $> \frac{1}{2}$  inch, immediately after project completion and before close of seasonal work window, stabilize all exposed soil with erosion control measures such as mulch, seeding, and/or placement of erosion control blankets. Remove all artificial erosion control devices after the project area has fully stabilized. All exposed soil present in and around the project site shall be stabilized after construction. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain reptiles (esp. snakes) and amphibians.
- All bare and/or disturbed slopes ( $> 100$  square ft of bare mineral soil) will be treated with erosion control measures such as hay bales, netting, fiber rolls, and hydroseed as permanent erosion control measures.
- Where straw, mulch, or slash is used as erosion control on bare mineral soil, the minimum coverage shall be 95 percent with a minimum depth of two inches.
- When seeding is used as an erosion control measure, only seeds from native plant species will be used. Sterile (without seeds), weed-free straw, free of exotic weeds, is required when hay or hay bales are used as erosional control measures.

**E. Measures to Minimize Loss or Disturbance of Riparian Vegetation**

Measures to minimize loss or disturbance to riparian vegetation are described below. The revegetation and success criteria that will be adhered to for projects implemented under the Template SHA that result in disturbance to riparian vegetation are also described below.

***1. Minimizing disturbance:***

- Retain as many trees and brush as feasible, emphasizing shade-producing and bank-stabilizing trees and brush.
- Prior to construction, determine locations and equipment access points that minimize riparian disturbance. Avoid entering unstable areas. Use project designs and access points that minimize riparian disturbance without affecting less stable areas, which may increase the risk of channel instability.
- Minimize soil compaction by using equipment with a greater reach or that exerts less pressure per square inch on the ground than other equipment, resulting in less overall area disturbed or less compaction of disturbed areas.
- If riparian vegetation is to be removed with chainsaws, only use vegetable-based bar oil.

## 2. Revegetation and success criteria:

- Any stream bank area left barren of vegetation as a result of the implementation or maintenance of the practices shall be restored to a natural state by seeding, planting, or other means with native trees, shrubs, or grasses prior to November 1 of the project year. Barren areas shall typically be planted with a combination of willow stakes, native shrubs and trees and/or erosion control grass mixes.
- Native plant species shall be used for revegetation of disturbed and compacted areas. The species used shall be specific to the Shasta Valley, and comprise a diverse community structure (plantings shall generally include both woody and herbaceous species, in coordination with NMFS and CDFW).
- For projects where re-vegetation is implemented to compensate for riparian vegetation impacted by project construction, a re-vegetation monitoring report will be required after 5 years to document success. Success is defined as 50 percent survival of plantings or 50 percent native ground cover for broadcast planting of seed after a period of 3 years. If revegetation efforts will be passive (*i.e.*, natural regeneration), success will be defined as total cover of woody and herbaceous material equal to or greater than pre-project conditions. If at the end of five years, the vegetation has not successfully been re-established, the project applicant to the Program will be responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve the above success standards. If success is not achieved within the first 5 years, the project applicant will need to prepare a follow-up report in an additional 5 years. This requirement will proceed in 5 year increments until success is achieved.
- All exclusion netting or fencing placed around plantings will be removed after 3 years, or later until plantings are no longer being substantially impacted by livestock or wildlife.

## F. Measures to Minimize Impacts to Roads in Project Area

Upon the completion of restoration activities, roads within the riparian zone used for implementation of BMAs and AMMs shall be weather proofed according to measures as described in *Handbook for Forest and Ranch Roads* by Weaver and Hagans (1994) of Pacific Watershed Associates and in Part X of the CDFG Manual entitled "*Upslope Assessment and Restoration Practices.*" The following are some of the methods that may be applied to roads impacted by project activities implemented under the Template SHA.

- Establish waterbreaks (*e.g.*, waterbars and rolling dips) on all seasonal roads, skid trails, paths, and fire breaks by October 15. Do not remove waterbreaks until May 15.
- Maximum distance between waterbreaks shall not exceed the following standards: (1) 100 feet for road or trail gradients less than 10 percent slope; (2) 75 feet for road or trail gradients from 11 to 25 percent; (3) 50 feet for road or trail gradients from 26 to 50 percent slope; and (4) 50 feet for road or trail gradients greater than 50 percent slope. Depending on site-specific conditions more frequent intervals may be required to prevent road surface rilling and erosion.
- Locate waterbreaks to allow water to be discharged onto some form of vegetative cover, slash, rocks, or less erodible material. Do not discharge waterbreaks onto unconsolidated

fill.

- Waterbreaks shall be cut diagonally a minimum of six inches into the firm roadbed, skid trail, or firebreak surface and shall have a continuous firm embankment of at least six inches in height immediately adjacent to the lower edge of the waterbreak cut.
- The maintenance period for waterbreaks and any other erosion control facilities shall occur after every major storm event for the first year after installation.
- Rolling-dips are preferred over waterbars. Waterbars shall only be used on unsurfaced roads where winter use (including use by bikes, horses, and hikers) will not occur.
- After the first year of installation, erosion control facilities shall be inspected for failure prior to the winter period (October 15) after the first major storm event, and prior to the end of the winter period (May 15). If the erosion controls have failed, additional erosion control elements will be installed to the project site.
- Applicant will establish locations to deposit spoils well away from watercourses with the potential to deliver sediment into streams supporting, or historically supporting salmonids. Spoils shall be contoured to disperse runoff and stabilized with mulch and (native) vegetation.
- No berms are allowed on the outside of the road edge.

### III. References

- National Marine Fisheries Service. 1996. Juvenile Fish Screen Criteria for Pump Intakes. National Marine Fisheries Service, Southwest Region. [http://www.westcoast.fisheries.noaa.gov/publications/hydropower/fish\\_screen\\_criteria\\_for\\_pumped\\_water\\_intakes.pdf](http://www.westcoast.fisheries.noaa.gov/publications/hydropower/fish_screen_criteria_for_pumped_water_intakes.pdf)
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- National Marine Fisheries Service. 2014. Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*). National Marine Fisheries Service. Arcata, CA. [http://www.westcoast.fisheries.noaa.gov/publications/recovery\\_planning/salmon\\_steelhead/domains/southern\\_oregon\\_northern\\_california/sonccfinal\\_ch1to6\\_mainchapters\\_\\_1\\_.pdf](http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/southern_oregon_northern_california/sonccfinal_ch1to6_mainchapters__1_.pdf)
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- Saldi-Caromile, K., K. Bates, P. Skidmore, J. Barenti, D. Pineo. 2004. Stream Habitat Restoration Guidelines: Final Draft. Co-published by the Washington Departments of Fish and Wildlife and Ecology and the U.S. Fish and Wildlife Service. Olympia, Washington.

#### D. Description of Baseline Conditions

Baseline Conditions mean the habitat conditions for the Covered Species on the Enrolled Property when NMFS approves this Site Plan Agreement. The Enrolled Property is an easement Permittee operates on property owned by Parks Creek Ranch within the Upper Parks Creek Reach of the Covered Area. Baseline conditions for the Enrolled Property are the Conditions described in the Template Safe Harbor Agreement for these reaches of the Parks Creek.

Elevated Baseline Conditions are certain Baseline Conditions improved as a result of certain Beneficial Management Activities.

Table 2 Summarizes the Beneficial Management Activities required to maintain Baseline Conditions and achieve Elevated Baseline Conditions on the Enrolled Property for the term of the Site Plan Agreement. Section E (Description of Beneficial Management Activities) describes the activities in more detail. The Beneficial Management Activities implement habitat enhancement actions recommended for the Upper Parks Creek Reach.

Note: Permittee does not own property. Permittee operates a diversion point only.

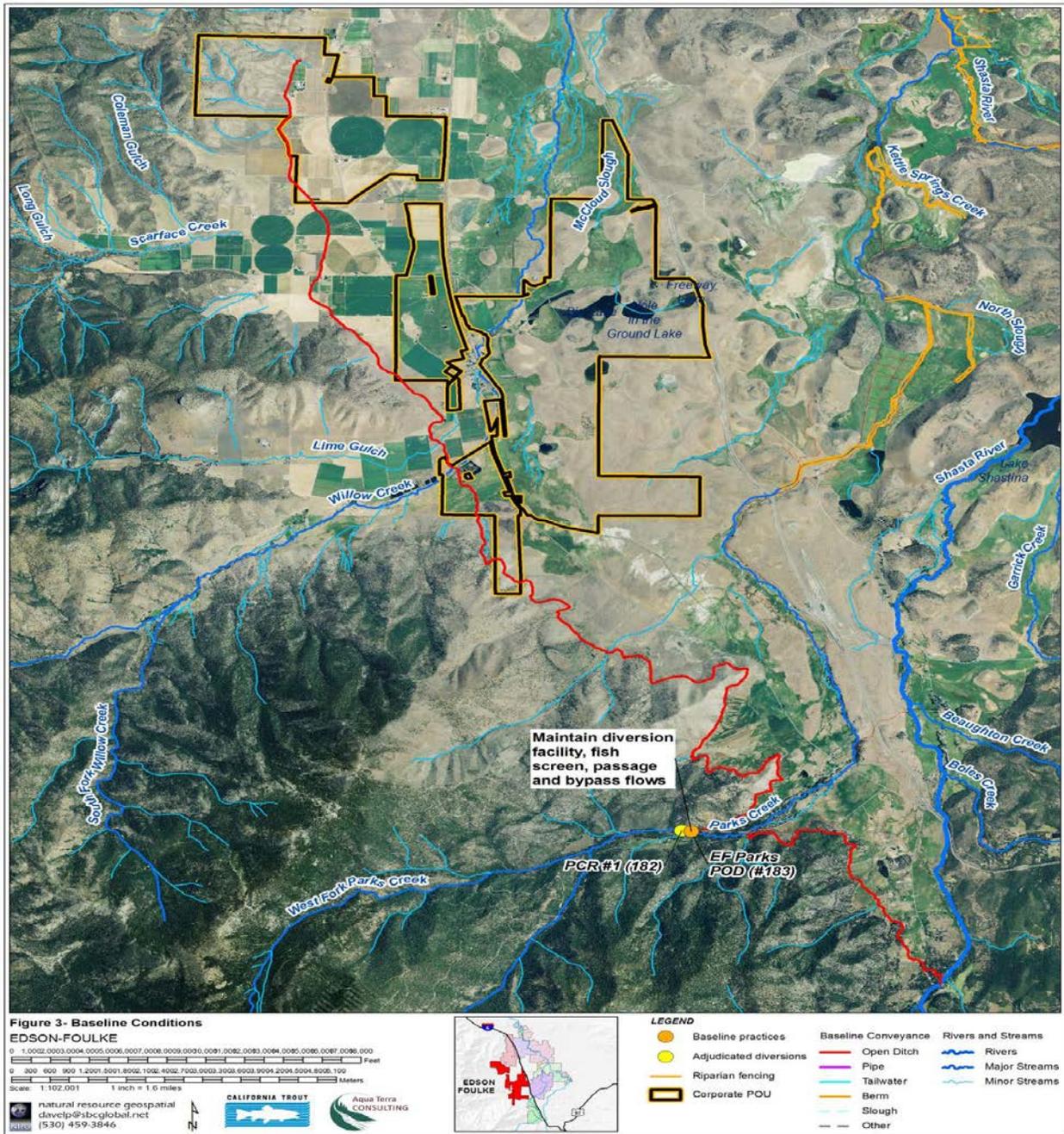


Figure 3. EDSON-FOLKE- Baseline Conditions

Table 2- Summary of Baseline and Net Conservation Benefits

Habitat Parameter	Net Conservation Benefit Actions		
	Present Baseline E1	Elevated Baseline E2	Other Beneficial Management Activities E3
Hydrology/Water Quality (A)	-Maintain diversion facility and diversion operation as described in E.1.a.		<p>-Participate in Upper Parks Creek Flow Plan E.3a1.</p> <p>-To implement Upper Parks Creek Flow Plan, design and construct diversion facility which includes: programmable, automated head gate and flow gage for the diverted volume. Facility will also include stream flow gage facility located above or below diversion, based on feasibility and design E.3a2</p> <p>Assess, design, permit and implement a water conservation project on Edson-Foulke Ditch that conserves 3.0 cfs when ditch is operating at 60% capacity or greater. By-pass the 3.0 cfs of conserved water prior to diverting for irrigation or stock watering purposes. E.3a3</p>

<b>Passage/Migration /Screening</b> (B)	-Maintain unimpeded fish passage at EF Parks Creek diversion except when surface flows cease E.1.a.  -Maintain Edson - Foulke Fish Screen and by-pass as described in Section E.1.b	-Improve/replace existing fish screen based on screening criteria evaluation results, incorporate fish screen into new facility, if determined feasible E.2.b	
<b>Instream Habitat Complexity</b> (C)	N/A	N/A	N/A
<b>Riparian Condition/Function</b>	N/A	N/A	N/A
<b>Substrate Quality</b>	N/A	N/A	N/A
<b>Pasture Management</b>	N/A	N/A	N/A
<b>Assessments/Studies</b> (G)			
<b>Supplementation</b>	N/A	N/A	N/A

**E. Beneficial Management Activities** (a detailed description of Habitat Enhancement Project/s for the property that will improve existing instream and riparian habitat conditions).

Measures identified in Section E are mutually agreed upon actions and commitments that the applicant is agreeing to participate in but will not accept the responsibility to implement solely, without public participation and investment. This agreement embraces the concept that

meaningful restoration actions include private commitment and investment combined with public commitment and investment and accepts that both private and public interests may benefit via increased commitments identified in this agreement and presented in Figures 4 and 5 below.

## **E.1. Present Baseline**

### **E.1.a. Hydrology/Water Quality**

Permittee will continue to operate and maintain the diversion facility including operation of an adjustable head gate. A seasonal cobble coffer berm is constructed to divert flows as flow volumes reduce typically after the beginning of June. Some minor instream work is necessary to maintain the seasonal diversion structure for passage. Work conducted to clear diversion of debris from high flow events and construct annual diversion berm will not exceed 10 cubic yards per year. Routine operations include constructing temporary gravel berm and/or remove bed load material from intake structure to divert water as flows reduce and maintaining a fish passage route through the diversion berm. Permittee will monitor, maintain and repair the Edson Foulke Ditch to ensure best delivery efficiency.

### **E.1.b. Passage/Migration/Diversion Screening**

An in-canal fish screen was installed in 2007 with a 30' long by-pass pipe returning flow and fish to Parks Creek. Fish screen should be evaluated to ensure it meets criteria. Install downstream of fish screen a Department of Water Resources stage recorder measuring device to ensure diversion volumes are not exceeded.

### **E.1.c Instream Habitat Complexity**

-N/A as Permittee only operates a POD and does not own property

### **E.1.d Riparian Condition/ Function**

-N/A as Permittee does not own property at the site.

### **E.1.e Substrate Quality**

-N/A as Permittee does not own riparian property

### **E.1.f Pasture Management**

-N/A as Permittee does not own pasture.

### **E.1.g Assessment/Studies**

-N/A as Permittee does not own riparian property

### **E.1.h Supplementation**

-N/A as Permittee does not own riparian property

## **E.2. Elevated baseline:**

This section details the land and water management activities that will be implemented on the enrolled property to improve unsuitable habitat conditions for the Covered Species.

### **E.2.b. Passage/Migration/Diversion Screening**

Evaluate current fish screen and fish passage at point of diversion (POD) using current criteria.

Scenario 1. If current fish screen and fish passage is acceptable, leave in place as is. If new POD facility/structure will be built, fish screen and fish passage will be reevaluated.

Scenario 2. If alternative fish screen and fish passage is needed, this project would occur simultaneously with the assessment and design process of a new diversion, automated gate and gaging/monitoring facility/structure at Permittee's POD.

Scenario 3. If alternative fish screen and fish passage is necessary, but funding for a new diversion, automated gate and gaging/monitoring facility/structure is not achieved, a separate project would be initiated for fish screen and/or fish passage alternatives

Scenario 4. If current fish screen and fish passage is acceptable, but instream improvements are necessary to improve instream fish passage, Permittee agrees to assist agencies to design and seek funding for instream improvements. If a new POD facility/structure will be built, instream fish passage will be reevaluated.

For the above scenarios, evaluation and analysis of current fish screen and fish passage and development of possible design alternatives, if necessary, would be completed by close of 3<sup>rd</sup> year of permit. Improvement/replacement, if necessary, would be completed by close of 6<sup>th</sup> year of project

### **E.2.c Instream Habitat Complexity**

-N/A as Permittee does not own property

#### **E.2.d Riparian Condition/ Function**

-N/A as Permittee does not own property

#### **E.2.e Substrate Quality**

-N/A as Permittee does not own property

#### **E.2.f Pasture Management**

-N/A as Permittee does not own property

#### **E.2.g Assessment/Studies:**

-Permittee will work with upper Parks Creek participants and agencies to develop and implement an interim program to collect data which will inform and evaluate habitat parameters including flow volume, diversion volume, water quality leading to improved projects and justified expectations.

#### **E.2.h Supplementation**

-N/A as Edson Foulke does not own riparian property

### E.3 Beneficial Management Activities

FIGURE 4. EDSON-FOULKE- Proposed Conditions

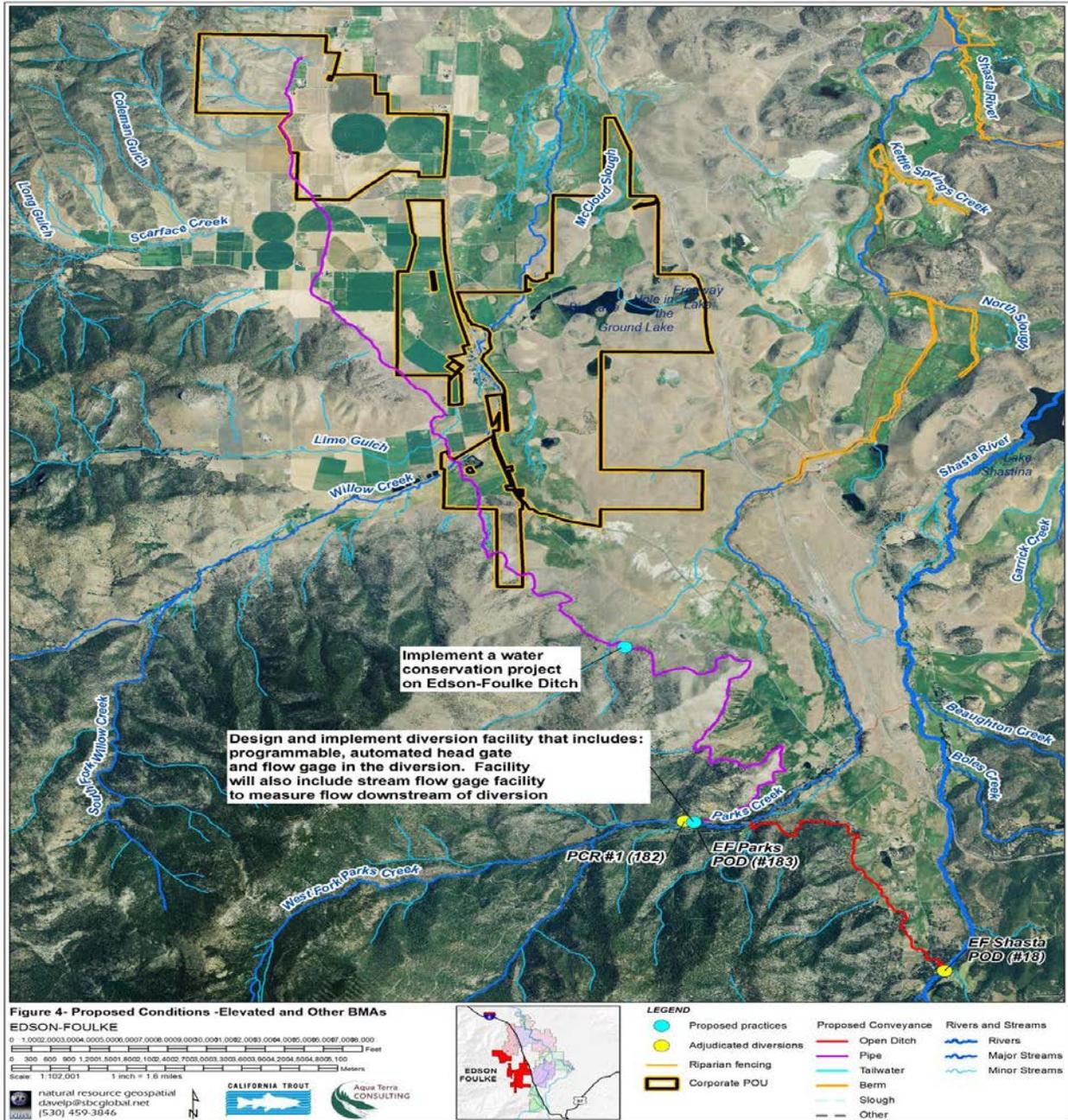
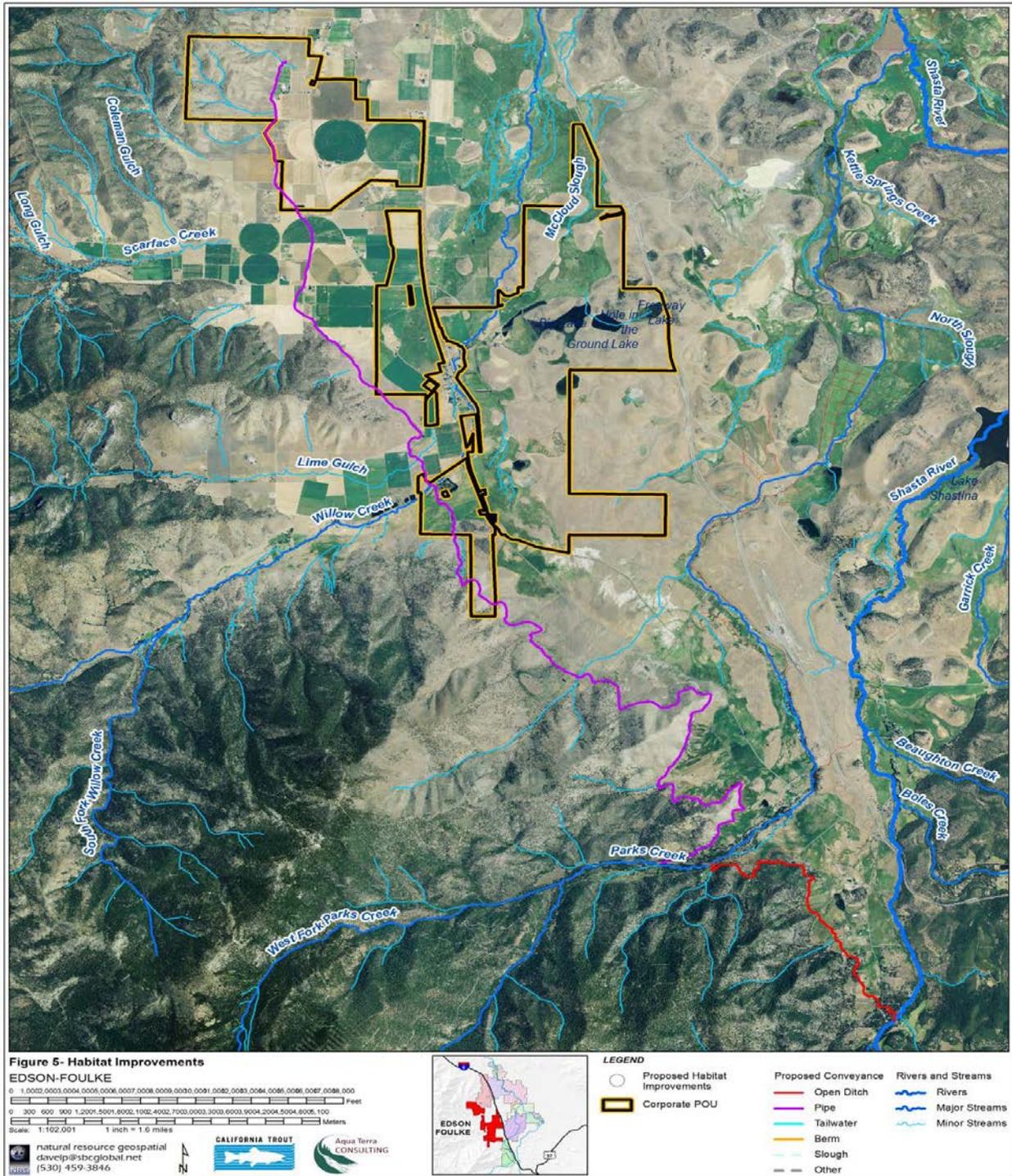


FIGURE 5. EDSON-FOULKE- Habitat Improvements



E.3.a. Hydrology/Water Quality

*E3a1: Participate in Upper Parks Creek Flow Plan:*

The Permittee agrees to coordinate diversion volume and by-pass volumes with the other Permittees within the Upper Parks Creek reach to optimize reach-scale flow objectives. Permittee will coordinate with Parks Creek Ranch and Montague Water Conservation District to assure the instream flow targets identified below are met, based on the Upper Shasta Flow Plan and priority identified in the Shasta River Decree.

Permittee agrees to Upper Parks Creek Flow Plan which focuses on meeting biological objectives through water conservation and, at times, by-passing water or reducing (or ceasing) diversion below legal right to meet the biological flow targets presented below. The Upper Parks Creek Reach downstream boundary is located below the I5 crossing of Parks Creek, identified as PCE on CDEC PCE is a current measuring site. The Upper Parks Creek Flow Plan identifies target flows at gage site PCE. The Upper Parks Creek Flow Plan also requires accurate measuring of flows at the involved diversion facilities. Biological Flow Objectives are identified per life stage as identified below:

**Upper Parks Creek Flow Strategy - Instream flow targets at PCE:**

<u>Life Stage:</u>	<u>Time Period</u>	<u>Flow at PCE</u>
Adult Migration and Spawning	11/1-12/31*	10.00 cfs @PCE prior to diverting
Over-wintering/Incubation	1/1-2/28*	6.00 cfs @PCE prior to diverting
Juvenile outmigration/distribution		
Stage 1:	3/1-5/16	8.45 cfs @PCE prior to diverting more than 12.9 cfs (PCR #1,2 and EF #3)
Stage 2:	3/1-5/16	20.00 cfs @PCE prior to diverting more than 6.95 cfs (PCR #3-6)
Juvenile outmigration/distribution	5/16-5/23	12.00 cfs @PCE prior to diverting**
Juvenile outmigration/distribution	5/24-5/31	8.00 cfs @PCE prior to diverting**
Juvenile outmigration/distribution	6/01-6/10	4.00 cfs @PCE prior to diverting**
Over-summering	6/11-10/14	1.00 cfs @PCE prior to diverting
Fall Ramp-up	10/15-11/1	4.00 cfs @PCE prior to diverting

\*Storage rights for 228 acre/feet may be diverted from 11/1-2/28 by Edson Foulke after PCE target is met. Diverted volume for storage will not exceed 5.0 cfs

*E.3.a2: Enhance Edson-Foulke's Parks Creek Point of Diversion (POD):*

For Permittee to abide by the Proposed Upper Parks Creek Flow Plan and ensure water conserved through the proposed water conservation project is provided to instream benefit, a new diversion facility is required. Proposed Facility/Structure shall include: programmable, automated head gate and flow gage/monitoring for diverted water with real time capability. Real time stream flow gage/monitoring located upstream or downstream of the diversion (dependent on design) is necessary to affirm by-pass provided by either meeting the flow objective or verifying conserved water provided by the water conservation project. Real time monitoring would also satisfy 15 minute flow data log recording requirement for the California State

Waterboard. The diversion facility will be designed to withstand flood events and protect facility infrastructure including the initial reach of the ditch. Gauging infrastructure operation and maintenance would need to be conducted by another entity than Permittee, presumably through the SWCG project monitoring requirements. The diversion facility improvements will be coordinated with other participating diversions participating in the Upper Parks Creek Flow Strategy. Assessment and potential design includes consideration of combining Edson-Foulke Ditch with Parks Creek Ranch Diversion Points #1 and #2.

#### Enhanced Parks Creek POD Phases:

##### Phase 1. Assessment and selection of preferred POD alternative:

Permittee commits to seek funds and participate jointly with agencies and Parks Creek Ranch to assess appropriate POD location and preliminary design criteria. Phase 1 to be completed by close of 2<sup>nd</sup> year of permit.

##### Phase 2. POD design and permitting for installation:

Permittee commits to seek funding and participate jointly with agencies and Parks Creek Ranch to select a design engineering firm to conduct and complete POD enhanced design based on preferred POD location and preliminary design criteria and related permitting for installation. Phase 2 to be completed by close of 4<sup>th</sup> year of permit.

##### Phase 3. POD installation:

Permittee commits to seek funding jointly with agencies and Parks Creek Ranch and participate with installation of POD enhancement by close of 6<sup>th</sup> year of permit.

If at any Phase funding cannot be found or approved or other aspects of the project will result in a delay, Permittee and agencies will meet to discuss project scope and other alternatives that will allow the project to move forward or be terminated.

Permittee will not be financially responsible for replacing new diversion facility, automated headgate and flow monitoring gages if destroyed by a flood event. Permittee agrees to a maximum annual cost of \$1500.00 to cover maintenance.

#### *E3a3: Water Conservation:*

Edson Foulke Ditch has a right to divert 9.9 cfs from Parks Creek throughout the year. During the period from 3/1-10/31 water is diverted for irrigation. During the period from 11/1-2/28, water is diverted for livestock watering. In addition to a right for continuous use, Permittee has a right to 288 acre ft of storage from 11/1-2/28.

Permittee is an association that does not own property. Permittee only manages a point of diversion at Park Creek and a ditch that passes through, with easements, multiple non-association properties. Therefore, projects for instream benefit are limited. Permittee's focus is to improve ditch conveyance efficiencies where conserved water would be used to provide by-pass flows in Parks Creek.

The proposed project is as follows:

Phase 1: Assessment and design alternatives analysis of water conservation project:

- Permittee commits to jointly seek funding with agencies to hire a 3<sup>rd</sup> party to help Permittee continue to assess where water can be conserved and identify what project alternatives would best conserve this water. Complete final analysis and issue report. Review report with agencies and mutually select preferred alternative/project.
- Permittee is committed to conserve at least 3.0 cfs when the ditch is operating at 60% capacity.
- It is estimated water conserved for instream benefit from this project would be 850 acre ft/yr during the irrigation season (3/1-10/31) and 440 acre ft/yr during winter diversion (12/15-2/28).
- Phase 1 to be completed by close of 2<sup>nd</sup> year of permit.

Phase 2: Engineering and permitting of shovel ready design:

- Permittee commits to jointly seek funding with agencies to hire an engineering firm to conduct final assessment and analysis of preferred design and to complete final designs and required permits.
- Phase 2 to be completed by close of 4<sup>th</sup> year of permit.

Phase 3: Project Installation:

- Permittee commits to jointly seek funding with agencies to complete construction of project.
- Upon completion of project, Permittee will deliver 3.0 cfs of its 9.9 cfs rights for instream benefit. The 3.0 cfs will be provided for instream benefit prior to diverting for irrigation. Permittee agrees to incorporate other fish and wildlife as a secondary beneficial use of conserved water.
- Phase 3 to be completed by close of 7<sup>th</sup> year of permit.

If at any Phase funding cannot be found or approved or other aspects of the project would result in a delay, Permittee and agencies will meet to discuss project scope and other alternatives that will allow project to move forward or be terminated.

*E3a4: Forbearance Agreement:* Permittee agrees to enter into a Forbearance Agreement with SWCG members for the purpose of improving habitat for covered species in the Shasta River.

### **E.3.b. Passage/Migration/Diversion Screening:**

See E.2.b

### **E.3.c Instream Habitat Complexity**

-N/A as Edson Foulke only operates a POD and does not own property

### **E.3.d Riparian Condition/ Function**

-N/A as Edson Foulke only operates a POD and does not own property

### **E.3.e Substrate Quality**

-N/A as Edson Foulke does not own riparian property

### **E.3.f Pasture Management**

-N/A as Edson Foulke does not own pasture.

### **E.3.g Assessment/Studies**

-N/A as Edson Foulke does not own riparian property

### **E.3.h Supplementation**

-N/A as Edson Foulke does not own riparian property

## **F. Effective Date and Duration of the Site Plan and Agreement**

The Template Safe Harbor Agreement, Site Plan Agreement and the Permit take effect when signed by the Participants/Permittees, NMFS, and CDFW. The Permit's take authorization will not be effective until Permittee implements the flow strategy contained in Section E.3 of this Site Plan. Permittee will implement the flow strategy contained in Section E.3 of the Site Plan within two years of permit issuance. Permittee will notify both NMFS and CDFW upon flow strategy implementation. Upon written confirmation by NMFS that the flow strategy is being implemented, the Permit's take authorization will become effective.

If within three years of permit issuance NMFS does not issue confirmation that Permittee is implementing the flow strategy contained in Section E.3 of this Site Plan, then the Permit will automatically expire and its take authorization will never have been effective.

The Template Safe Harbor Agreement, Site Plan Agreement and Permit have a term of 20 years, which may be extended by mutual written consent of the Participants/Permittees, NMFS, and CDFW as stipulated in the Agreement. One (1) year prior to end of term of the Template Safe Harbor Agreement, Site Plan Agreement and Permit, the Participant/Permittees, NMFS, and CDFW will meet to decide whether to extend the term of the Template Safe Harbor Agreement, Site Plan Agreement and Permit.

## G. Monitoring and Reporting (who, what, when, where)

### G.1. Avoid and Minimization Monitoring Commitments

The Permittee agrees to the following AMMs and Monitoring actions:

<b>Covered Activity</b>	<b>Edson-Foulke Ditch -AMM</b>	<b>AMM Monitoring Technique</b>
<b>Irrigation Management</b>	A1 A2	All maintenance of instream diversion structures shall be monitored as follows: -Log of what in-water work had occurred and what minimization measures were implemented will be included in the Annual SHA report -When construction or repair work is being done, three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 <a href="http://www.fs.fed.us/pnw/pubs/gtr526/">http://www.fs.fed.us/pnw/pubs/gtr526/</a> or an annual agency inspection can be requested.

<p><b>Irrigation Maintenance</b></p>	<p>B1 B2 B3 B4 B5 B6 B7 B8</p>	<p>All maintenance of instream irrigation facilities shall be monitored. Following are some examples of protocols:</p> <p>-Log of maintenance activities carried out within the calendar year be included in the yearly SHA report.</p>
<p><b>Riparian Grazing Management</b></p>	<p>C1 C2 C3</p>	<p>Riparian grazing management shall be monitored as follows:</p> <p>-Three to five permanent photo point stations will be established and marked at locations within each riparian pasture designed to show both vegetation changes before and after seasonal grazing activities, and long-term trends. Photo points shall be established using USDA Forest Service Photo Point Monitoring Handbook, 2002 <a href="http://www.fs.fed.us/pnw/pubs/gtr526/">http://www.fs.fed.us/pnw/pubs/gtr526/</a>. Digital photographs will be taken at each photo point station once per year for trend monitoring, and before and after riparian pasture grazing takes place for annual implementation reporting.</p> <p>-Maintain a log of grazing activities carried out within the calendar year and include in the yearly Site Plan monitoring report. At a minimum, the</p>

		<p>log will include the following information: beginning and end dates of riparian pasture grazing; number of animals, monitoring practices during the riparian grazing period, and management actions taken as a result of monitoring results including management cues used to determine the time to move livestock out of the riparian pasture.</p> <p>-NMFS and CDFW may initiate periodic inspection of grazed riparian pastures to ensure riparian grazing management plan is effective.</p> <p>--NMFS, CDFW, or a qualified party, approved by CDFW or NMFS, may conduct redd surveys to determine the need for livestock restrictions in streams. In the event surveys indicate redds are not present, then livestock access will follow the procedures described in riparian grazing management plan.</p>
<b>Fence Maintenance</b>	D1 D2	-A short description of fence maintenance activities will be included in the annual report template.
<b>Road Maintenance</b>	E2 E3	-A short description of annual road maintenance activities will be included in the annual report.
<b>Crossing Maintenance</b>	F1 F2	- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 <a href="http://www.fs.fed.us/pnw/pubs/gtr526/">http://www.fs.fed.us/pnw/pubs/gtr526/</a>
<b>Herbicide/Fertilizer/Pesticide Use</b>	G1 G2 G3 G4	- Participant commits to log use of herbicide, fertilizer and pesticide activities carried out within the calendar year be included in the annual report.

	G5	
<b>Flood Repair</b>	H1 H2	- Participant shall take photographs of the emergency site repairs and a detailed description of the repairs to be included in the annual report.

## G.2 Implementation and Effectiveness Monitoring Commitments

The Permittee agrees to the following monitoring actions:

Habitat Parameter	Edson-Foulke Ditch -Net Conservation Benefit Actions	Implementation Monitoring Technique	Effectiveness Monitoring Commitment? Technique?
Hydrology/Water Quality	-Participate in Upper Parks Creek Flow Plan E.3a1.  -In order to implement Upper Parks Creek Flow Plan, design and construct diversion facility that includes: programmable, automated head gate and flow gage for the diverted volume. Facility will also include stream flow gage facility located above or above or below diversion, based on feasibility and design E.3a2	- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 documenting functioning diversion, pipeline improvements and spring source enhancements.	- Diversion monitoring station will be maintained and operated as designed. Provide yearly data.

	<p>Assess, design, permit and implement a water conservation project on Edson-Foulke Ditch that conserves 3.0 cfs when ditch is operating at 60% capacity or greater. By-pass the 3.0 cfs of conserved water prior to diverting for irrigation or stock watering purposes. E.3a3</p>	<p>-Evaluate Soil Moisture sensor opportunities</p> <p>-</p>	
<p><b>Passage/Migration/Screening</b></p>		<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 documenting fish passage and fish screen.</p> <p>-Water measuring protocol that is in concurrence with</p>	

		SB88 of diversion, submit diversion data.	
<b>Instream Habitat Complexity</b>		- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 Habitat improvements	
<b>Riparian Condition</b>		- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 To document riparian grazing area, and crossing and stockwater systems in proper function.	-Survival rates of riparian planting will be reported by Shasta Valley RCD or other implementing organization for a minimum period of 3 years after planting occurs or term will be stipulated by the grants utilized for implementation.
<b>Substrate Quality</b>		- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 To document fence maintenance.	
<b>Pasture Management</b>		- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 To document pasture condition.	
<b>Assessment/Studies</b>		-Reports of studies will be written/summarized/ obtained and provided in the annual report	-Access to maintain existing pit tag array and trap and tag fish as deemed feasible by agency staff -Juvenile surveys for presence absence and for capturing and PIT tagging fish with 7 day notification of landowner.

Supplementation			
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## H. Annual Report and Adaptive Management

The Participant will complete the Annual Report Form and as stipulated in the Agreement.

## I. Regulatory Assurances

“Upon execution of this Agreement by the Parties, and the satisfaction of all other applicable legal requirements, NMFS will issue a permit under Section 10(a)(1)(A) of the ESA to assure the Participant may incidentally take Covered Species, in accordance with the Site Plan and Agreement, as a result of Routine Land Use and Beneficial Management Activities as described in each Agreement, and except where such Routine Land Use would result in the diminishment or non-achievement of the Baseline and/or Elevated Baseline Conditions established for the enrolled property. This assurance depends on the Participant maintaining the Baseline and/or achieving the Elevated Baseline Conditions set forth in the Site Plan, complying fully with the Agreement and their Site Plan, and so long as the continuation of Routine Land Use and Beneficial Management Activities would not be likely to result in jeopardy to Covered Species or the adverse modification or destruction of their designated critical habitat. NMFS provides no assurances with regard to any action that may affect Non-Covered species, including the take of Non-Covered Species and the adverse modification or destruction of their designated critical habitat.

1. Responsibilities of the Parties (further details of the Permittee, SWCG, CDFG, NMFS respective responsibilities under the Site Plan and Agreement).

## J. Signatures of NMFS, CDFW and the Permittee

\_\_\_\_\_  
Permittee

\_\_\_\_\_  
Date

\_\_\_\_\_  
NMFS

\_\_\_\_\_  
Date

### SEPARATE SIGNATURE BLOCK FOR CDFW:

By signing the Template Safe Harbor Agreement CDFW expresses its expectation that the Agreement along with a Permittee's Site Plan Agreement signed by NMFS, and the NMFS ESP, could meet the requirements of section 2089.22 of the California Fish and Game Code with respect to the particular property described in the Site Plan Agreement. However, CDFW will not make such determination until reviewing that Site Plan Agreement signed by NMFS and the NMFS ESP.

\_\_\_\_\_  
CDFW

\_\_\_\_\_  
Date

**Appendix A - Edson-Foulke- Proof of Water Right from Shasta River Decree:**

**Appendix B - Edson-Foulke Easement for Parks Creek POD**