

***Parks Creek Ranch***  
**Site Plan Agreement between Park Creek Ranch, National Marine Fisheries Service  
(NMFS) and  
California Department of Fish and Wildlife (CDFW)  
For the Template Safe Harbor Agreement for Coho Salmon (*Oncorhynchus kisutch*)**

**A. Introduction**

This Site Plan Agreement 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 Outpost MR, LLC, (hereinafter referred to as the Parks Creek Ranch or the Permittee), National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW). This Site Plan Agreement, 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 Template Safe Harbor Agreement. The Site Plan Agreement is subject to terms of the Template Safe Harbor Agreement and Permit.

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

**B. Enrolled Property**

**B.1. General narrative and map describing the Enrolled Property**

Parks Creek Ranch (the Ranch) is owned by Outpost MR, LLC and operated by Belcampo Farms. The Parks Creek Ranch is located within the Agreement Area along Old Highway 99 and Stewart Springs Road in central Siskiyou County (41°26'54.26" N latitude, 122°27'46.39" W longitude). Parks Creek enrolled property includes a total of 3,970± acres, with 1,480 ± acres under irrigation from Parks Creek and Spring Creek. Approximately 6.5 miles of Parks Creek flows through the Parks Creek Ranch within the reach designated as the Upper Parks Creek Reach of the Shasta Watershed Conservation Group (SWCG). Existing conditions are described in Appendix 2 of the Template safe Harbor Agreement. The approximate property boundaries and general location of the Ranch is within the Agreement Area is shown in Figure 1.

The Parks Creek Ranch properties within the Agreement are riparian to Parks Creek and/or irrigated by Parks Creek water rights. Spring Creek is a tributary to Parks Creek, which is actually a system of small diffuse springs originating just west of Parks Creek. Operations have historically focused on cattle production. Ownership of the Ranch transferred to Outpost MR, LLC in the summer of 2017. The new

ownership of the Ranch is analyzing and evaluating future management of the property and may implement more diverse and intensive management compared to previous ownership, dependent on further analysis and assessment. However, the focus will remain on pasture, crop and livestock production.

## **B.2. Legal Description of Property Boundary**

The Enrolled Property consists of the following APNs:

APN: List APNs:

022-300-180	020-300-140
020-090-090	020-160-140
020-160-050	020-160-030
020-150-030	020-160-020
020-160-181	029-090-170
020-150-021	020-150-091
020-150-100	020-160-160
020-150-011	020-160-171
020-160-190	020-160-200
020-340-130	020-150-080
020-100-240	020-090-150
020-090-130	020-090-600
020-090-520	020-090-510
020-080-230	020-090-430
020-090-230	020-090-360
020-090-260	020-090-630
020-090-620	

The Legal Descriptions of the Enrolled Property are from the Landowner Deeds and are included as **Appendix A**.

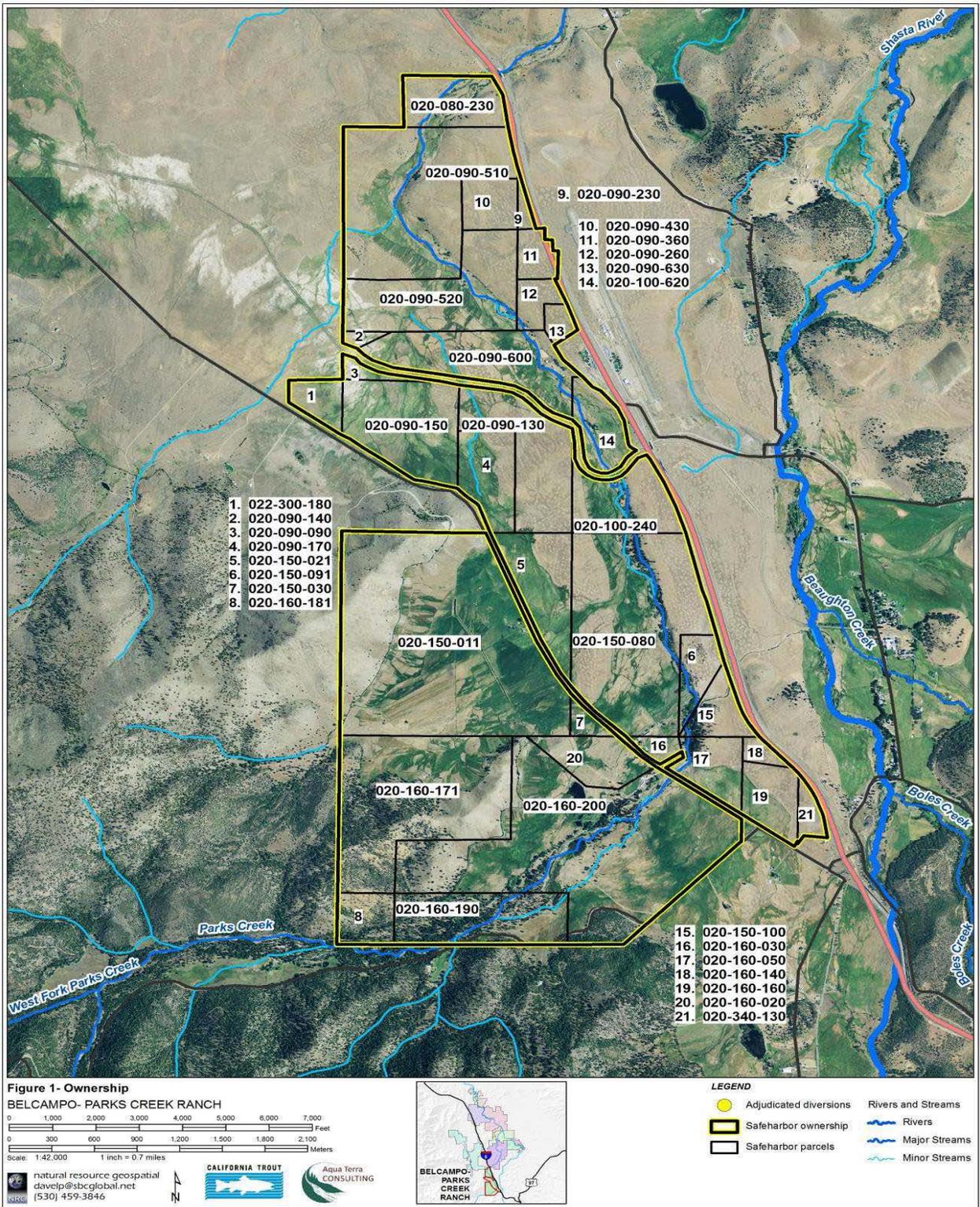


Figure 1- The Enrolled Property Boundary Map

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

PARKS CREEK RANCH uses a combination of water sources for irrigation. The ranch has a total of 19 distinct water rights identified in the Shasta River Adjudication that either divert from Parks Creek or Spring Creek as shown on Table 2. Over time, points of diversion were combined into seven points of diversion on Parks Creek and two points of diversion on Spring Creek. Decreed Livestock watering (winter) rights are 5.65 cfs for Parks Creek Ranch. Parks Creek Ranch is seeking inclusion of the seven active points of diversion on Parks Creek and three active points of diversion on the Spring Creek system. Specific to Parks Creek there are currently 18.65 cfs of irrigation rights from seven active points of diversion. 2.0 cfs of additional rights are identified for the two active points of diversion on Spring Creek which were combined from rights eight rights identified in the Shasta River Decree.

Parks Creek is a snowmelt system and typically has a prolonged low flow condition (from 7/15-10/1) where available flow does not fulfill the identified water rights. In fact, the base flow condition typically cannot meet Parks Creek Ranch's first priority right of 6.00 cfs, for approximately 90 days from late July through September, regardless of water year type.

Table 1- PARKS CREEK RANCH diversion and irrigation information

Diversion #/Water Source	Permit/ Adjudicate d/ Filed Water Use Statement Amounts (cfs)	Description	Season Duration	Acreage Irrigated with Diversion	Decreed Days per Season Diverted
<b>Summer Rights</b>					
182=PCR #1/ 188,189,190,192,194 =PCR#2	6.0	PCR-1 and/or PCR- 2	3/1- 10/31	324.2	244
183 #Edson-Foulke	5.3* * 1.2 cfs of 2nd priority, 4.1 cfs of 23rd priority	Edson- Foulke (Parks Diversion)		488.1	
193,195,196,197,201, 202,204,205	2.00	Spring Ck. System		139.4	
206,208,209,210,212 #3	4.00	PCR 3-3		175.1	
211 #4	.25	PCR-4		5.5	
213 #5	.25	PCR-5		8.0	
219,220 #6	0.85	PCT-6		25.0	
<b>Total Parks Cr</b>	<b>16.65 cfs</b>			<b>1,165.3</b>	
<b>Total Spring Creek</b>	<b>2.0 cfs</b>				

\* Per language from Decree Table DWR regarding “Wells Agreement” for Edson-Foulke right. “Tract 87 can use the Yreka Ditch (Diversion #183) to convey 1.00 of 1.20 cfs 2<sup>nd</sup> priority and 4.10 of 4.10 cfs 23<sup>rd</sup> priority summer period water rights until July 10<sup>th</sup> only. Tract 87 can use the Yreka Ditch the entire year to convey 0.20 cfs. See “Wells Agreement” dated 11/7/1905, recorded in Siskiyou County Book of Deeds, Volume 71, and Page 529.”

Table 2. Parks Creek Ranch - Water Right Summary, Irrigation season:  
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3/1-10/31

**Parks Creek  
Water Rights  
3/1-10/31**

Current Diversion Location	PCR #1/#2	Edson-Foulke	PCR #3	PCR #4	PCR #5	PCR #6	Total CFS	Acres Irrigated
182	6.00						6.00	324.20
183		5.30					5.30	488.10
206			0.70				0.70	30.80
208			0.80				0.80	37.60
209			1.05				1.05	41.80
210			0.75				0.75	33.30
211				0.25			0.25	5.50
212			0.70				0.70	31.60
213					0.25		0.25	8.00
219						0.60	0.60	22.10
220						0.25	0.25	2.90
<b>Total</b>	6.00	5.30	4.00	0.25	0.25	0.85	16.65	1,025.90

**Spring Creek Water Rights - 3/1-10/31 Irrigation, 11/1-2/28 Winter Stock water**

<b>Diversions #193,195,196,197, 201,202,204, 205</b>	2.00 CFS 3/1-10/31	139.4 Acres Irrigated
<b>Diversion 195</b>	0.15 CFS 11/1 - 2/28	Stock water

**Parks Creek Ranch Winter Water Rights 11/1-2/28**

Current Diversion Location	PCR #1/#2	Edson-Foulke	PCR #3	PCR #4	PCR #5	PCR #6	Total CFS
182 -Parks Ck	1.00						1.00
183		2.05					2.05
208			0.75				0.75
209			0.25				0.25
210				0.25			0.25
211				0.25			0.25
212			0.25				0.25
213					0.35		0.35
<b>Total</b>	1.00	2.05	1.25	0.50	0.35	0.00	5.15

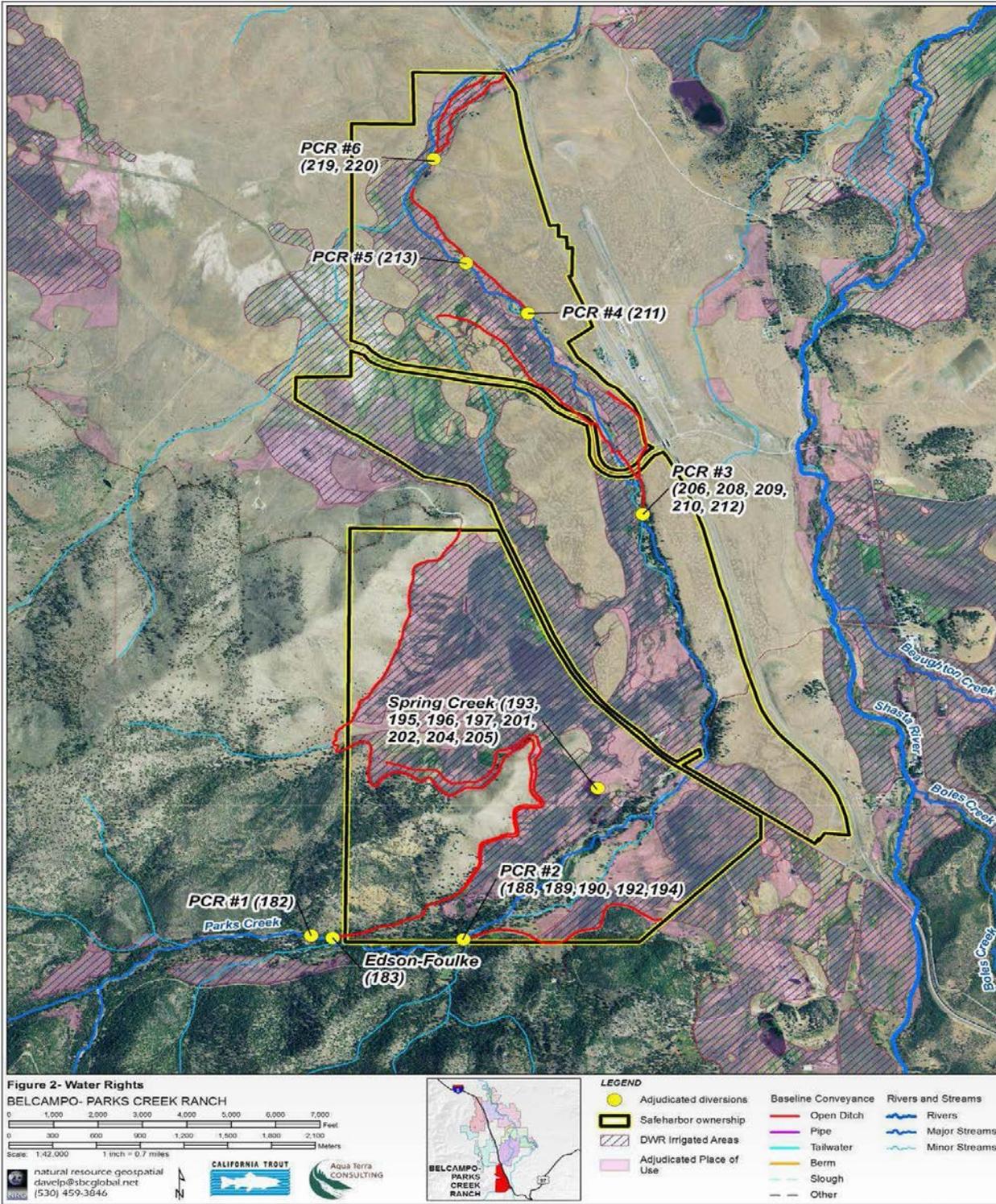


Figure 2- The Enrolled Property Place of Use and Irrigated Acreage Map.

## C. Routine Land Use

### C.1. Present Routine Land Use

The PARKS CREEK RANCH property consists of approximately 3,970 acres, with an estimated 1,700 +/- acres under irrigation for livestock grass production. All of the 1,480 +/- acres are considered grass pasture and are flood irrigated. The PARKS CREEK RANCH has an estimated approximately 18+ miles of open ditch to distribute irrigation and livestock water. The PARKS CREEK RANCH also has several small reservoirs that are used to build volume to improve irrigation capabilities when released. Parks Creek flows through the full length of the property, essentially dividing the entirety of the ranch. Therefore, there are eight distinct rock stream crossings on the PARKS CREEK RANCH used as vehicle and livestock crossings. Livestock are rotated through large fields on a grazing plan.

#### **Irrigation Management**

Water is diverted from seven current locations on Parks Creek, through DWR approved head gates. All diversion points have functioning measuring weirs with the exception of diversions #4 and #5 where diversion infrastructure has been damaged from high flow events in 2016 and 2017. Spring Creek is a diffuse spring system that is tributary to Parks Creek. The system does not have a defined channel but is a series of small diffuse springs where water is collected and distributed with ditches for irrigation. Spring Creek system has 7 small rights identified on the Shasta River Decree. Three diversion points remain but the primary active diversion point is identified as diversion #202. Flow from Spring Creek system does connect to Parks Creek when not diverted.

When flows reduce after spring snowmelt, some diversions on Parks Creek require construction of small impoundments that are typically accomplished with hand tools, while diversions #1 and #2 require use of heavy equipment to annually to construct impoundments to allow for diversion of water rights. Volume of material required to be moved is less than 5 cubic yards at sites #1 and #2. Fish passage is always maintained so long as flow is present. All irrigation water is conveyed through numerous open ditches, canals, and capture ponds using flood irrigation on pasture.

The irrigation season begins on March 1 and continues through October 31. As described above, Parks Creek is a snowmelt driven stream with peak sustained flows occurring during the snowmelt period of April and May. Natural flow levels in Parks Creek typically begin to decline as snow fields at higher elevations melt in later May through June. As snowmelt driven flows tail off, natural flow levels in Parks Creek during this period are typically less than the total volumes of water currently adjudicated for beneficial agricultural uses along upper Parks Creek.

Water year types vary significantly dependent upon winter precipitation volume, snowpack

conditions and snow-melt variability. Snow melt duration is variable dependent upon ambient temperatures and precipitation events during April and May. Regardless, a long period of base flows typically occurs in the upper reaches of Parks Creek from late-July until October. Therefore, Parks Creek Ranch operates under deficit irrigation conditions for several months including reducing the volume of acreage irrigated.

Late August-early September base flow conditions in Parks Creek reduce to approximately 3-4 cfs (normal water year) entering the upper boundary of the Parks Creek Ranch. Parks Creek often disconnects through an alluvial fan reach located above Old Hwy 99. Continuous and varied small accretions occur below Hwy 99 where four of the seven diversions on Parks Creek are located.

The Parks Creek Ranch's average annual irrigation application rate is approximately 3.0 acre feet of water applied per acre largely due to unavailable flows during the summer months on much of the irrigated property. The Ranch has no alternative water sources such as groundwater to replace its dependency on Parks Creek. Therefore, the Ranch manages for full irrigation application during the spring to maximize production, especially on its seasonally irrigated fields that experience deficit irrigation conditions throughout the peak summer months.

As flows decline and adjudicated diversion volumes are no longer available, the Scott and Shasta Watermaster District implements a water rights priority system identified in the Shasta River Decree under authority of the Superior Court of Siskiyou County. Lower priority water rights are curtailed to assure delivery to higher priority rights. As the season progresses, the Parks Creek Ranch reduces the number of operating diversions to just 2-3 active diversions during base flows (typically diversions #1, #3 and #6), with diversion #1 being the highest priority right in Parks Creek and most important point of diversion related to irrigation value.

Parks Creek flow volumes of less than 10 cfs enter the Ranch's upstream boundary for prolonged periods during the summer and early fall. Regardless of water year type, flow volumes, less than 6.0 cfs exist for approximately 80-100 days. Flow conditions typically increase slowly during the month of October. The Ranch currently uses the increased flows to expand irrigation areas for a final irrigation set until the irrigation season ends on October 31, or earlier if cold weather ends the growing season. The Ranch typically increases diversion volumes as instream flows increase at diversions #1 and #3 during October or until the growing season ends due to temperature (mid-October).

#### Stockwater/Winter Rights:

Parks Creek Ranch has a winter right to divert 5.65 cfs from Parks Creek to water livestock between November 1 and February 28. This coincides with Parks Creek Ranch management objective of expanding livestock access to all reaches of the ranch to encourage livestock consumption of available dry feed. Therefore, access and distribution of livestock water also expands to allow livestock to feed off the standing dry feed throughout the ranch.

## **Irrigation Maintenance**

### *Ditch cleaning*

The open irrigation ditches are prone to vegetation growth, which slows the conveyance of water and clogs the buried mainlines. The ditches need to be mechanically cleaned at least yearly to remove vegetation and repair breaches, by using a backhoe. Irrigation ditch maintenance cleaning is required annually, at a minimum, and as needed throughout the irrigation season.

*Diversion Structure:* Annual diversion dam construction: Parks Creek Ranch diverts water using hand piled cobble or gravel push-up dams to annually construct diversion impoundments to increase water surface elevation to allow for diversion. Parks Creek Ranch diversions #1 and #2 typically require use of a back-hoe to construct impoundments that begin initial impoundment work as flows reduce during late spring. The impoundment at #1 is extended across a portion of the wetted channel as flows decline through the summer.

Diversion structures at diversion points # 3, #4, #5 and #6 are typically constructed by hand unless winter high flows have caused significant alterations. At times tarps are used in combination with hand constructed or equipment constructed impoundments. The timing of when the diversion work is conducted is dependent on flow volume, need for irrigation and damage resulting from high flows during the previous winter. Diversions #1 and #2 require the POD to be opened by removing some larger rock and bedload material which is placed in the head of the diversion the previous fall to prevent high flows from entering the diversion. Initial diversion typically just requires removal of material from the head of the diversion ditch rather than impounding the stream. No impoundment is necessary until typically late May. Late May is also typically when hand work is done at diversion points #3, #4, #5 and #6. Fish passage is provided using an opening at least 1.0' wide with several inches of water passing through/over the diversion structure during base flows.

Spring Creek system is primarily operated at a reservoir (diversion #202). The other diffuse sources of Spring Creek feed into established ditches and eventually drain to Parks Creek approximately .5 miles below the MWCD diversion from Parks Creek. Spring Creek system does not have a channel or annual scour but does connect to Parks Creek delivered via a grass dominated swale.

### *Diversion cleaning*

The natural rock riffles at the diversion structures and the head gates can become clogged with debris or blackberries. They need to be periodically cleared mechanically to ensure proper operation. This entails the use of heavy equipment but typically every few years, as needed to clear large woody debris in the spring of the year prior to diversion operation. Parks Creeks is prone to flooding and has an active bed load, some diversions become washed out or buried during high water events and those diversions require repair sometimes using heavy equipment.

## **Fish Screen Cleaning**

There are six paddle wheel operated self-cleaning fish screens on the ranch that were installed from 2003-2007. Parks Creek Ranch maintains and operates all of the diversion facilities and fish screens including sharing responsibility of maintaining the fish screen on Edson-Foulke Ditch. Three of the fish screens (Diversion #4, #5 and #6) were used previously in other locations and are likely not compliant with current fish screening criteria and should be evaluated if proposed to remain in operation.

Spring Creek system does not have a fish screen but because of its diffuse nature which is not possible to screen including the collection reservoir (Diversion #220). No fish are assumed present within the spring system and long series of ditches.

## **Pasture Grazing Management**

The PARKS CREEK RANCH has 12 distinct pastures where cattle graze. Cattle are rotated through the 12 pastures as part of Parks Creek Ranch's pasture management. The cattle are rotated based upon available feed.

## **Riparian Grazing Management**

Of the seven miles of Upper Parks Creek owned by Parks Creek Ranch, 4.1 miles of the riparian area has been fenced to control livestock grazing the riparian area. riparian area width ranges from 80' to approximately 650' depending on location. Parks Creek Ranch will continue to install riparian fencing and design riparian pastures with guidance from UC Extension Service. No unmanaged grazing of the riparian area will occur under this plan. Approximately 2.9 miles of Parks Creek remains unfenced as of January 2018.

## **Riparian Fence Maintenance**

Parks Creek will maintain and repair existing riparian fencing to control riparian grazing. In the event major damage results from flood or natural disaster, Parks Creek will meet with NOAA/CDFW to address repair options. Parks Creek will not replace fencing damage greater than one cumulative mile prior to agency consultation. Parks Creek will also construct riparian fencing where fencing is not present to develop riparian fencing throughout the ranch on Parks Creek. In the event a natural disaster damages more than 1.0 mile/25% of the riparian fencing, Parks Creek Ranch will meet with agencies to determine assistance or alternatives to replacing. Approximately 2.9 stream miles of Parks Creek remains unfenced on Parks Creek Ranch.

## **Road Maintenance**

The main ranch road from Old Highway 99 to the residences and barn complex on PARKS CREEK RANCH is aggregate base/rock. The aggregate base is maintained on an annual basis, or as needed, to minimize erosion. Other roads on the ranch are not highly utilized by vehicle traffic and are native soils. Other than crossings over ditches, there are no culvert crossings over drainages or intermittent streams.

### **Crossing Maintenance**

There are 8 active livestock and vehicle wet crossings. The sites are located in relatively stable stream reaches where channel elevation is stable. Approach material is composed of coarse bed load material (6" minus). Due to the alluvial gravel/cobble present around the crossings, erosion and fine sediment introduction is not a concern. Re-grading of native material for the approaches occurs after significant flood events. Native bedload material for approaches is collected outside of the wetted channel. Some work including clearing and snagging debris and black berries is required. Re-grading and shaping of approaches are required using equipment after some high flow events. The crossing material used in the bottom of the channel will be selected based on design and maintained by the ranch during low flow.

Livestock utilization of these crossings is minimal and typically occurs when livestock are moved from one pasture to another or to the corrals. Livestock are expected to be moved across the stream up to 8 times during the growing season on the most active crossings. However, the crossings can also be utilized as watering lanes. The ranch is in process of installing an alternative livestock watering system which will reduce the crossing also being used as a watering lane. Duration of use for livestock and as a source for livestock watering occurs throughout the year but more so during the summer months when stocking rates are higher.

Vehicle crossings are typically limited to crossing in an ATV. Crossings below the rail road trestle are utilized more often than others, especially during irrigation season where a crossing may be utilized up to two times a day.

### **Herbicide/Fertilizer/Pesticide Use**

The PARKS CREEK RANCH reserves the right to apply herbicides or pesticides by spot application as recommended the product label. The PARKS CREEK RANCH does periodically apply fertilizer to irrigated areas in very early spring months, prior to irrigation. Riparian areas are not treated with pesticides or fertilizer. PARKS CREEK RANCH reserves the right to utilize spot applications of herbicides for invasive weed control in riparian areas.

## **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

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.

### **1. 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.

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 tailwater 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 headgate 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 tailwater 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.

### **1. 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.

## C. Pasture Grazing and Riparian Grazing Management

Pasture grazing management includes the movement of cattle between pastures, as well as harrowing, mowing, and haying of pastures. Riparian grazing management includes cattle grazing within riparian areas according to a riparian grazing management plan that is part of a permittee's Site Plan Agreement. Riparian grazing management plans have been developed cooperatively with University of California (UC) Cooperative Extension or other range management specialists.

C1. Develop riparian grazing management plans in coordination with UC Cooperative Extension or other range management specialists.

C2. Fenced riparian areas may be grazed in accordance with grazing management plans approved by the Parties. The grazing management plan will address standard grazing management principles, such as the seasonal timing, duration, and intensity (number of livestock allowable per unit area [i.e., stocking rate]), of livestock grazing within the riparian zone and will explain how the proposed management plan will result in improved riparian function and enhanced aquatic habitat. In addition, the grazing plan will describe the means by which the flash grazing will avoid and minimize impacts to streambanks, riparian vegetation, spawning and rearing areas, and avoid direct impacts to spawning and rearing coho salmon.

C3. To avoid direct impacts to Covered Species spawning, incubation, and emergence, grazing in riparian pastures with streams that are accessible to the Covered Species will be allowed from May 1 to November 1 or as approved by NMFS and CDFW. The permittee will perform at least one of the following actions prior to grazing livestock in riparian pastures where livestock could enter a stream between November 1 and May 9:

- Obtain written concurrence from NMFS and CDFW that potential Covered Species spawning habitat does not occur adjacent to the riparian pasture.
- If potential spawning habitat occurs adjacent to the riparian pasture, perform weekly redd surveys between November 1 and January 15. Redd surveys may be performed by NMFS, CDFW, or a qualified biologist. If surveys are performed by a non-agency biologist, written survey results will be provided to NMFS and CDFW for concurrence prior to grazing. If redds are not detected during the redd surveys, riparian grazing may occur in conformance with the Participant's riparian grazing management plan.
- If redds are determined to be present, livestock may graze within the riparian pasture between November 1 and April 30 if a temporary electric exclusion fence or wire is installed between the riparian pasture and the stream bank, and provisions are made to supply off-channel stockwater. The electric fence must be checked and maintained daily.

### 1. Monitoring Protocols

Riparian grazing management shall be monitored as follows:

- 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. 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. Permittee will 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.
- Permittee will also provide a 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.)
- 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 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.
- NMFS and CDFW may initiate periodic inspection of grazed riparian pastures to ensure riparian grazing management plan is effective.
- NMFS, CDFW, or a qualified party, approved by NMFS and CDFW, 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.

#### **D. Fence Maintenance**

Installation, construction, maintenance, and removal of fencing material, including mesh field fence, panels, or other designed fence barriers, within riparian areas for riparian zone protection, stream crossings & stock-water access.

D1. Inspect riparian exclusion fencing during and after each season of grazing and after high flow events where over bank flows may inundate fences and prior to and after riparian grazing has occurred. If riparian exclusion fencing is damaged, repair fencing and move livestock, as appropriate, to minimize resource impacts. If cattle are present, riparian fences shall be repaired within 30 days.

D2. If riparian fences are lost due to a catastrophic event, the permittee shall notify agencies of the loss in the annual report. The permittee will repair up to the percentage of fencing they committed to replace in the Individual Site Plan, and request funding assistance for the remaining repairs beyond the percentage of its commitment. Cattle shall not have access to areas of riparian areas normally excluded through other provisions of the AMM's.

#### **1. Monitoring Protocols**

All maintenance of riparian fencing shall be monitored as follows:

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

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.

#### **1. 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.

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 armored with rock. Fencing should be installed to guide the cattle to the crossing and across the stream on the armored 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.

### 1. 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.

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.

### **1. 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**

### **I.**

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.

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.

### **1. 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.**

<b>Beneficial Management Activity</b>	<b>Monitoring Techniques</b>
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, Tailwater 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.

## 1. 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 has 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 dam modification.

## 1. 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.

#### **1. 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.  
[http://www.habitat.noaa.gov/toolkits/restoration\\_center\\_toolkits/forms\\_and\\_guidance\\_documents/orig\\_monit\\_sheet\\_w\\_guidance.pdf](http://www.habitat.noaa.gov/toolkits/restoration_center_toolkits/forms_and_guidance_documents/orig_monit_sheet_w_guidance.pdf)

#### **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.

### **1. 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.

## **1 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/or\\_i\\_monitoring\\_sheet\\_w\\_guidance.pdf](http://www.habitat.noaa.gov/toolkits/restoration_center_toolkits/forms_and_guidance_documents/or_i_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 tailwater 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).

### **1. 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.

### **1. 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.)

## H. Riparian Restoration and Revegetation

This category includes revegetation of riparian areas and only other types of restoration that are consistent with the methods specified in the most current edition of the CDFW Salmonid Stream Habitat Restoration Manual, or as otherwise approved in writing by CDFW. The most current edition of the manual is available at [www.dfg.ca.gov/fish/resources/habitatmanual.asp](http://www.dfg.ca.gov/fish/resources/habitatmanual.asp).

Typically, riparian vegetation is planted within or adjacent to the active channel, and often in or near the wetted channel. Plantings include native herbaceous perennials, emergent species, grasses, trees, and shrubs. Planting methods vary by species, site, and size of material planted, ranging from hand planting to using a backhoe or excavator. For riparian trees, planting densities range from 130 to 300 plantings per acre, depending on the restoration goals (e.g., shading, sediment trapping, and bank stabilization), substrate, soil chemistry and hydrology. Trees and cuttings range in size from small rooted plugs to large diameter pole plantings. When installing pole plantings, heavy equipment may be used to excavate to or below water table depth. Maintenance activities include the occasional use of hand tools, portable pumps, pick-up trucks and/or water trucks in or near the bed, bank, or channel, for irrigation, debris removal, and replanting of restoration sites.

### 1. 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. Photo point locations will be selected to give a sense of extent of planting and survival. These locations will be likely located along the fence line and revisited yearly, for 5 years, to establish qualitative success rates.
- 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.

### **1. 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.

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

This BMA addresses water storage that results from storage of water diverted from surface or groundwater sources and tailwater 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.

### **1. Monitoring Protocols:**

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

## **J. Piping Ditches**

Piping projects consist of constructing a pipe 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.

### **1. 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.

## **K. 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).

### **1. 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.

### **L. 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.

### 1. 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.

### M. Optimizing cold water spring inputs

Cold water springs are an important habitat feature on the Shasta River and can provide both local and reach scale benefits to the Covered Species. Projects to optimize cold water spring inputs may include developing alcoves (described in the off channel section above), installing spring boxes or piping springs to the river to improve habitat conditions at a specific location. All spring optimization projects will be designed to maintain fish passage, minimize erosion, comply with water laws, and improve, or not impair, water quality conditions. All spring optimization projects will be reviewed and approved by a NMFS/CDFW engineer to ensure that these conditions have been met.

### 1. Monitoring Protocols:

- If any infrastructure is constructed to convey spring water to the river 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.

#### **N. 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.

##### **1. 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.

## **O. Water Exchanges**

Water exchanges may be done in certain reaches where additional stream flow can be diverted in lieu of a cold water source. The act of diverting additional water at a point of diversion must not impact bypass flow requirements past that point of diversion or any downstream point. These exchanges must be monitored sufficiently to document the exchanges are of equal amounts (stream diversion to spring water) to ensure dewatering of the channel is not occurring. The State Water Board will require any exchanges to be documented through a 1740 and 1707 process.

### **1. Monitoring Protocols:**

- Temperature Monitoring Protocol (TBD) as specified in an individual Site Plan Agreement or in the Flow Management Plan.
- Real time water diversion monitoring protocol (TBD) as specified in individual Site Plan Agreement or in the Flow Management Plan.

## **P. 1707 Dedications**

Permittees who divert water under any legal basis of right, including riparian, permitted, and licensed water rights, may petition the State Water Board pursuant to Water Code section 1707 for a “change for purposes of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation in, or on, the water.” The section 1707 petition may be coupled with an application for a water right or a petition to amend an existing permit or license in order to modify an existing project so that diversion will occur in a manner that improves conditions for Covered Species and fish and wildlife.

## 1. Monitoring Protocols:

- Temperature Monitoring Protocol (TBD)
- Real time water diversion monitoring protocol (TBD)

## 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 1st 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

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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  
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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 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 ( $\mu\text{S}/\text{cm}$ ) or when instream water temperatures exceed  $18\text{ }^{\circ}\text{C}$ . 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  $18\text{ }^{\circ}\text{C}$ ., 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

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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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- 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

The Baseline Conditions for the Agreement and this Site Plan are described in terms of the condition of habitat for the Covered Species in the Agreement Area and on Enrolled Properties. The condition of habitat for the Covered Species is used for describing baseline conditions because, given their life histories, population numbers within the Agreement Area at any given time are difficult to accurately estimate, their abundance is highly variable, and because their population numbers are highly influenced by factors outside Permittee's control. The Agreement and this Site Plan's baseline condition is composed of habitat parameters, which are important

for the Covered Species and are the metrics that may discern any present or future beneficial or adverse effect to Covered Species or their habitat resulting from the actions and activities described in the Agreement and this Site Plan, or which might result as an unintended effect of improvements to the baseline conditions.

Baseline conditions under the Agreement and Site Plan consist of two components: the present baseline and elevated baseline conditions. Habitat parameters that are included in present baseline are those that are currently in suitable condition for the Covered Species and that are influenced or controlled by the Permit Holder. The Permit Holder will be obligated to maintain present baseline conditions over the duration of the Agreement and Site Plan. Habitat parameters that are included in elevated baseline are those habitat parameters that are currently not in suitable condition for the Covered Species, that are influenced or controlled by the Permit Holder, and that must be achieved in accordance with the schedule identified in this Site Plan.

This Site Plan is specific to PARKS CREEK RANCH's Enrolled Property. The present baseline and elevated baseline for the Enrolled Property may, pursuant to the mutual agreement of the Parties as described in Section 6.7.4 of the Template Agreement, be adjusted if, during the term of the Agreement and Site Plan and for reasons beyond the control of the Permit Holder, the present baseline or elevated baseline condition is reduced. An adjusted present baseline or elevated baseline condition for the Enrolled Property must still provide a net conservation benefit for the Covered Species.

The PARKS CREEK RANCH is located in along Upper Parks Creek. Existing instream and riparian habitat conditions in this reach are described in detail in the Agreement (section 7.2). Existing instream and riparian habitat conditions in this reach are described in detail in the Template Agreement (Appendix 2). Table 3 (below) lists the existing instream and riparian habitat conditions that will be maintained (present baseline) and those that will be improved (elevated baseline) on the enrolled property as well as the Beneficial Management Activities. Section E below provides more details on the activities.

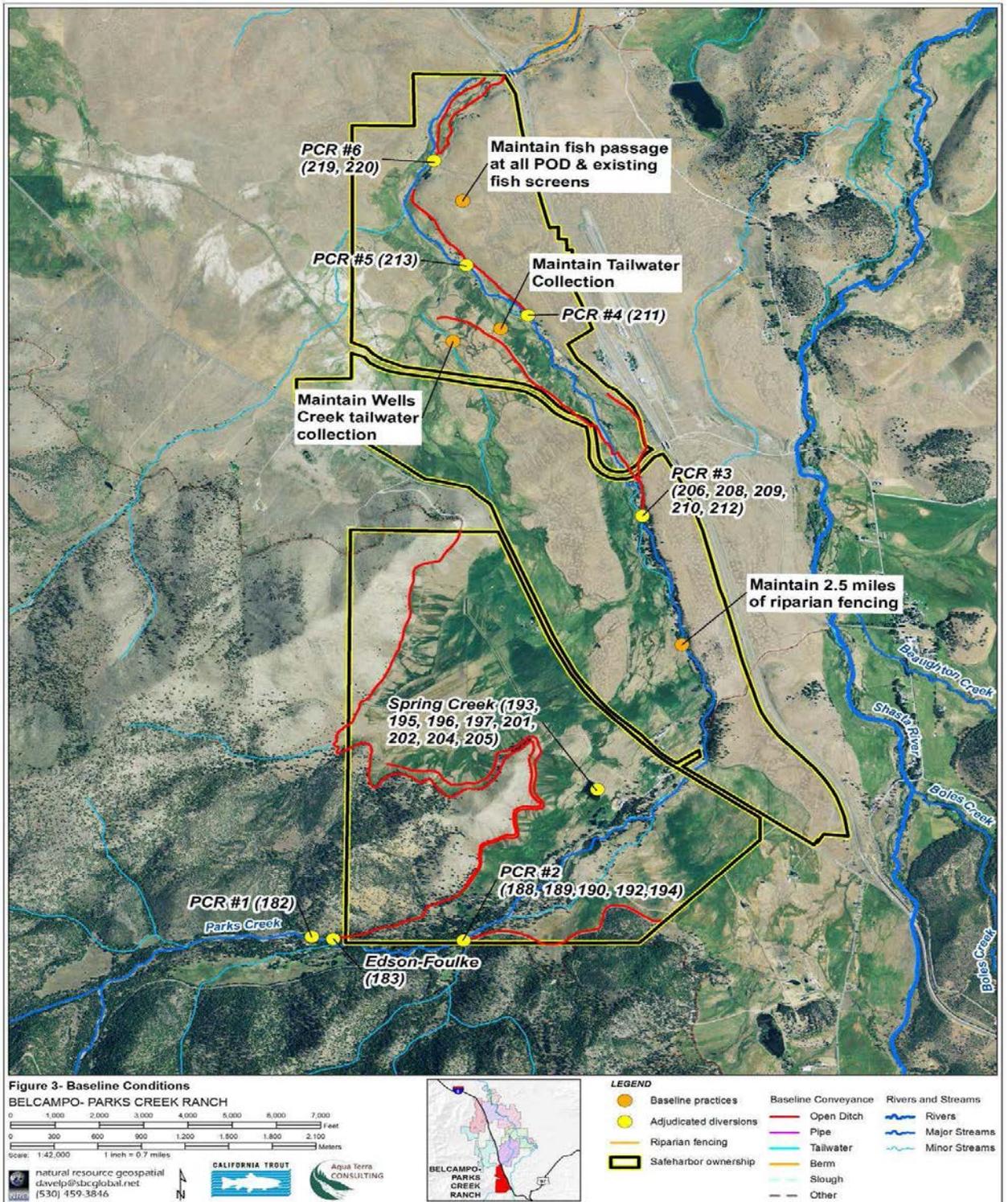


Figure 3. Parks Creek Ranch- Current Baseline Conditions Map

Table 3- Summary of Baseline and Net Conservation Benefits.

Habitat Parameter	Net Conservation Benefit Actions		
	Present Day Baseline (Maintain)	Elevated Baseline Condition (Restore)	Other Beneficial Management Activities (Restore; Measures to Avoid and Minimize Impacts)
Hydrology/Water Quality	<p>-Maintain existing tail-water collection and re-use systems as described in E.1.a1.</p> <p>- Continue to maintain crossings and stock watering lanes as described in Section E.1.a2.</p>	<p>-Tail-water collection and re-use project #1 will be constructed and maintained, to reduce/eliminate tail-water re-entering Parks Creek near the northern end of the property above diversion #6. Collected tail-water will be used in lieu of diverting stream flow at site #6. Project will eliminate up to 0.85 cfs of tail-water re-entry. E.2.a1</p>	<p>-Participate in a reach-wide flow management strategy as outlined in E.3a1</p> <p>-Participate in diversion facilities assessment, design and implementation to combine operate and maintain diversions #1, #2 and the Parks Creek Ranch Edson-Foulke right. The project would include significant installation of pipeline and flood irrigation risers to improve irrigation delivery efficiency and irrigation efficiency to conserve water and meet the objectives of the Upper Parks Creek Flow Strategy. Site may also include Edson-Foulke Ditch Parks Creek Diversion. 2.8 cfs (1.2 cfs 1st priority, 1.6 cfs 23rd priority) would be provided for instream</p>

			<p>benefit prior to diverting the water in priority for irrigation. diversion point combination and infrastructure is a necessary implementation component in order to verify and abide with the flow strategy and commitments of conserved water E.3.a2.</p> <p>Participate in diversion facilities assessment, design and implementation to combine, operate, and maintain diversions #3, #4, #5 and potentially #6 to improve irrigation delivery efficiency and irrigation efficiency to conserve water and meet the objectives of the Upper Parks Creek Flow Strategy. Likely site would be near existing diversion point of diversion PCR #3. 0.6-1.45 cfs will be provided depending on inclusion of diversion #6 (.6 cfs 9th priority, .85 cfs 18th priority).would be provided for instream benefit prior to diverting the water in priority for irrigation.</p>
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		<p>diversion point combination and infrastructure is a necessary implementation component in order to verify and abide with the flow strategy and commitments of conserved water E.3.a3.</p> <p>-Assess, design and if mutually agreeable, provide additional cold water (.2-.6 cfs) to the proposed over-summering reach via by-pass water from Diversion #1 or from Spring Creek . E.3.a4</p> <p>-Assess, design and implement efficient alternative livestock watering system to aid adult migration and spawning by reducing diversion volume to 1.2 cfs.E.3.a5</p> <p>-Soil Moisture Sensors: Install soil moisture sensors per UC Extension Service guidance to improve water efficiency resulting in instream benefit. Section E.3.a6</p> <p>-E.3.a.7 Forbearance Agreement: Permittee agrees to enter into a Forbearance Agreement</p>
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			with SWCG members for the purpose of improving habitat for covered species in the Shasta River.
Passage/Migration/Screening	<p>-Maintain unimpeded fish passage conditions at all ranch diversions as described in Section E.1.b1</p> <p>-Operate and maintain the existing panel fish screens at all of the PODs as described in Section E.1.b2</p>	If diversion combination projects are determined infeasible, existing fish screens will be assessed for refurbishment or replacement. E.2.b1	<p>-Allow reasonable access and amendment to easement for MWCD to reconstruct, operate, and maintain its POD on Parks Creek to allow for a compliant fish screening and passage facility as long as there is no operational impact to Parks Creek Ranch. E.3.b1</p> <p>-After review of design, allow reasonable access and amendment to easement for Edson-Foulke to reconstruct, operate, and maintain its POD on Parks Creek to allow for a compliant fish screening and passage facility as long as there is no operational impact to Parks Creek Ranch.E.3.b2</p> <p>Assess, design and if mutually agreeable, implement a channel and floodplain restoration project near the RxR crossing which appears to have</p>

			created an incised channel. E.3b3
Instream Habitat Complexity			<ul style="list-style-type: none"> <li>- Construct an alcove area at the existing Spring Ck. System outlet below MWCD POD to enhance over-summering and over-wintering habitat as described in Section E.3.c1</li> <li>-Allow access to involved agency staff and approved contractors to implement habitat improvement projects as specified on the Habitat Improvement Map and as described in Section E.3.c2</li> <li>-Implement beaver BMPs as described in E.3.c3</li> </ul>
Riparian Condition/ Acres	-Continue to perform yearly maintenance on existing 2.5 miles of riparian fencing as described in E.1.d.	-Continue to seek funding and implement riparian fencing along the west side of Parks Creek for approx. 2.9 miles of Parks Creek that does not have riparian fencing. E.2.d1	<ul style="list-style-type: none"> <li>-Work to develop and Implement the riparian grazing plan with UC Extension service.E.3.d1</li> <li>-Seek funding, provide materials and assist with riparian planting from Old Hwy 99-I-5 E.3.d2</li> </ul>
Substrate Quality	-Continue to avoid sedimentation as		

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	described in Section E.1.e.		
Pasture Management			
Assessment/Studies			<p>- Allow access for reasonable studies that support SHA objectives and approved by applicant as described in Section E.3.g1.</p> <p>-Allow access and support stream channel and floodplain restoration feasibility study for the RR crossing reach of Parks Creek. If feasible and mutually agreed upon, allow the project to be implemented to improve passage and channel function. E.3.g2</p>
Supplementation			-Allow access for salmonid supplementation as described in Section when SHA agreement is completed and protection projects are in place. E.3.h.

## E. Beneficial Land and Water Management Activities

This section provides a detailed description of the Conservation and Habitat Enhancement Activities to be implemented on the enrolled property for the benefit of the Covered Species.

Parks Creek Ranch typically has sufficient water in early spring through late spring to irrigate the property and provide by-pass. As the snowmelt period tails off, irrigation demand remains high as instream needs also become critical through early-mid June snow melt flows tail of into a long low flow condition that can last from late June into November. Parks Creek Ranch typically is diverting 3-5 cfs during base flow conditions (late July-mid October), which is a majority of the available flow.

The objective of Parks Creek Ranch is to develop an irrigation strategy that coincides with life stage needs for Coho salmon, to improve habitat conditions for critical life stages. This includes cooperating with other Permittees to maintain flows per life stage to improve access, distribution and habitat conditions for Coho Salmon. The largest potential to contribution to flow by Parks Creek Ranch will be achieved by improving irrigation and distribution efficiency yielding conserved water for instream benefit. Parks Creek Ranch irrigation occurs during spawning, rearing and juvenile out-migration/redistribution life stages. The proposed projects aid in reducing diversion volume and improving water quality. Parks Creek Ranch's contribution to the reach wide flow strategy improves consistency of flow establishes minimum flow targets per season/life stage and establishes cold water refugia reach for over-summering. The management activities proposed herein will contribute to improved habitat conditions for the Covered Species within a valuable stream reach that is expected to respond to the proposed projects resulting in habitat improvements over time that will contribute to recovery of coho salmon populations.

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

This section details the actions required to maintain Baseline Conditions. This includes any land and/or water management activities that are being implemented, or have been implemented on the enrolled property that benefit the Covered Species and will be maintained over the duration of the Template Safe Harbor Agreement.

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

#### *Tailwater Reduction*

-Permittee will maintain the following constructed tail-water/ water quality projects:

- 1.) Northern Bottom tail-water collection facility: The adjustable water control structure allows collection of tailwater to be re-used and incorporated in a collection ditch below diversion ditch #3.
- 2.) "Lower corrals" tailwater collection and piping allowing for re-use. The lower corrals system allows tailwater to be collected prior to entering Parks Creek and used rather than increasing the volume of water diverted by diversion #3

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

Permittee diverts water from 7 active points of diversion on Parks Creek, including sharing the Edson-Foulke Ditch. Edson-Foulke is another participating Permittee and is therefore addressed in a separate site plan. Permittee agrees to continue efforts to maintain passage at all of the diversion points. Current diversion structures consist of tarp and/or gravel dams. PCR diversion #1 and PCR diversion #2 uses a backhoe positioned from the edge of the stream to construct low elevation diversion dams to divert water as flows reduce during late spring/early summer. All other diversion structures are constructed by hand and are minimal. All structures use less than 5 cubic yards of material per site. Fish passage is provided per site by constructing a channel through the diversion structure for passage and by-pass flows. By-pass flows are typically congregated into one channel this has minimal slope and sufficient width and depth for juvenile passage. E.1.b1.

All sites on Parks Creek have fish screens although the existing fish screens on diversions #4, #5 and #6 have been damaged by high flows, are difficult to maintain and don't function in this applied setting. Permittee currently operates and maintains all fish screens and commits to continue to do so.

The active diversion points within the Spring Creek system include a collection reservoir and diffuse springs. The diffuse springs are routed via established ditches but the flow volumes are less than .2 cfs feeding grassy waterways where fish presence seems highly unlikely. Regardless, passage is not impacted by the established ditches. E.1.b2

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

No current instream projects exist

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

##### *Riparian Fencing*

-Riparian fencing has been completed on a 1.0 mile reach of Parks Creek downstream of the lower corrals and for approximately 1.7 miles above Old Hwy 99. 2.9 river miles remain unfenced below Old Hwy 99. The participant will continue to perform the yearly maintenance (replace posts, functioning gates, etc) of the existing riparian fence over the duration of the Agreement and will not intentionally damage riparian existing plantings within the current fenced area. E.1.d1

##### *Riparian Habitat*

-Within the existing fenced area downstream of Old Hwy 99 (exclusion zones), Parks Creek Ranch has planted approximately 0.75 acres. Cuttings were taken from existing trees along Park Creek. Permittee agrees to maintain and protect riparian cuttings. E.1.d2

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

Permittee has potential spawning habitat available. Parks Creek Ranch will manage to protect and maintain spawning sites.

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

Permittee will continue to manage livestock using current grazing rotation.

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

No active studies or assessment are currently ongoing

## **E.2. Elevated Baseline**

This section describes the actions required to achieve and maintain Elevated Baseline conditions. This includes any land and water management activities that will be implemented and maintained on the enrolled property to improve unsuitable habitat conditions for the Covered Species for the duration of the Template Safe Harbor Agreement. (Note: land and water management activities that will be implemented on the enrolled property to improve unsuitable habitat conditions for the Covered Species).

### **E.2.a. Hydrology/Water Quality**

#### *Tailwater Reduction:*

-Parks Ck. Tailwater Project #1: Lower Reach of Parks Creek: Permittee will collect and re-route tail-water prior to entering Parks Creek. Collected tail water will be delivered for irrigation purposes downstream to replace or reduce the volume of water diverted at PCR diversion #6 rather than entering Parks Creek. Scope includes developing a tail-water collection facility and installing pipe and a siphon under Parks Creek to deliver tailwater to diversion #6 with the collection system. The tailwater is expected to replace diversion of water from 3/1-to 5/15. Parks Creek Ranch will assist in development of the design, seek funding, and assist with implementation if funds are secured. Design and permitting will begin within two years after issuance of permit with intended implementation by the close of the fourth year of the issuance of the permit. E.2.a1

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

Conduct Fish screen evaluation if E.3a2 and/or E.3a3 are determined infeasible: The Permittee is proposing diversion combination projects reducing the number of diversion sites from 7 to 2 or 3 diversion points. Irrigation efficiency projects focusing on piping to improve delivery efficiency projects will accompany the diversion combination proposals described in E.3.a. The proposal concept will be initiated with a design and assessment phase, including diversion structures, fish screen analysis and pipeline alignment and design. Existing fish screens at diversions 1, 2 and Edson-Fouke, are not in compliance but would be potentially

replaced/improved under the proposal described in E.3.a2. Existing fish screens at diversions 4, 5 and 6 are not in compliance but would be potentially replaced under the proposal described in E.3.a3. If the project described in E.3.a2 and/or E.3.a3 are determined infeasible, the existing fish screens would require compliance evaluation correction or replacement. In the event evaluation and compliance work is necessary, Permittee will assist evaluators and seek assistance in refurbishing or replacing the existing fish screens within 4 years of the issuance of the permit. Permittee will operate and maintain any new compliant fish screens installed in the future.  
E.2.b1

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

*No actions are proposed in for Instream Habitat Complexity in elevated baseline for this Permittee.*

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

Riparian Fencing: Permittee will seek funding and assist with installation of riparian fencing along the approximately 2.5 river miles of Parks Creek that does not have riparian fencing. Fencing placement will be in accordance with Parks Creek Ranch management objectives and a Riparian Grazing Plan produced with UC Extension Service. Parks Creek Ranch will pursue development of fencing layout, seek funding to implement riparian fencing and assist in implementation of riparian fencing beginning in the first year of the issuance of the permit and intending to have riparian fencing completed by the close of the 4th year of the issuance of the permit E.2.d1

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

*No actions are proposed in for Substrate Quality in elevated baseline for this Permittee.*

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

*No actions are proposed in for Pasture Management in elevated baseline for this Permittee.*

### **E.2.g Assessments/Studies**

*No actions are proposed for Assessments/Studies in elevated baseline for this Permittee.*



### **E.3. Other Beneficial Management Activities**

This section summarizes any other land and water management activities that will be implemented on the enrolled property to benefit the Covered Species.

#### **E.3.a. Hydrology/Water Quality**

##### **E.3.a.1 Reach-wide Flow Management Strategy**

The Permittee will cooperate in water quality and water quantity projects within the Upper Parks Creek reach (outlined below):

Comprehensive Flow Strategy: Parks Creek Ranch and other permittees have cooperated in the development of the Upper Parks Flow Strategy. The Upper Parks Creek stream reach extends from the upstream boundary of Parks Creek Ranch, downstream to its lower (northeastern) property boundary near the Interstate-5 crossing over Parks Creek. The Parks Creek Flow Strategy establishes an annually variable minimum instream flow value, verified by a stream gage (CDEC gage PCE) located near I-5 crossing. Conservation projects proposed by Permittee include reducing diversion volume through diversion combination, delivery and irrigation efficiency measures through water conservation and irrigation improvements (Projects E.3a2 and E3a3). After project installation, estimated conserved water volumes will remain instream (prior to diversion) throughout the term of the agreement. In the event the by-passed water conserved by implemented projects does not meet the minimum instream flow target, Permittee agrees to curtail or even cease diversion to meet the identified minimum instream flow value for that time period (see table below). During the spring, the schedule has a staggered diversion/bypass schedule intended to proportionality share available water with instream and irrigation needs.

Permittee diverts water throughout the year for irrigation and livestock watering purposes. Due to water right priority, Permittee is the only entity diverting during base flow period from approximately mid-July through early October during average water years. Parks Creek Ranch commits to ensuring conserved water remains instream prior to diverting and curtailing or ceasing diversion to meet established instream flow volumes identified in Upper Parks Creek Flow Strategy. Conserved water will be protected through WC 1707, forbearance or equivalent. In stream commitments identified in the Upper Parks Creek Flow Strategy are contingent upon full implementation of water conservation projects prior to meeting the flow schedule.

##### Upper Parks Creek Flow Strategy:

The Upper Parks Creek Flow Strategy was developed in conjunction with NOAA and CDFW to achieve sufficient bypass flow as required during different life stages. The table below defines the Life Stages, corresponding date ranges and associated minimum flow targets, which are verified by a real-time streamflow gage (CDEC gage PCE) located at the base of the stream reach. After water conservation projects are implemented, Permittee will ensure conserved water remains instream prior to diverting and curtailing or ceasing diversion to meet established instream flow volume per identified life stage/calendar date.

<u>Life Stage:</u>	<u>Time Period</u>	<u>Minimum 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

\*\* Over summering reach extends from below MWCD diversion to PCR Diversion #3 where 2.0 cfs will be provided.

### **E.3.a.2. Diversion Combination of Diversions #1, #2 and Edson-Foulke rights**

Parks Creek Ranch diverts water from 7 active points of diversion on Parks Creek. The numerous points of diversion and varied priorities of rights makes assimilating and abiding by a reach wide flow strategy difficult. Further, the multiple points of diversion play into increased delivery loss.

Permittee proposes to assess, design and if mutually agreeable, seek funds to implement, operate, and maintain a combined point of diversion (POD) for PCR diversion points #1, #2 and rights in Edson-Foulke ditch. This proposal would include a diversion facility, including a fish screen, method to accurately measure volume of water by-passing the facility and volume of water diverted to the facility. The combined water rights are 11.3 cfs.

The project also proposes to design, install, operate, and maintain a pipeline to deliver water to the areas serviced for irrigation under those PODs to improve delivery efficiency. Further, the proposed pipelines will use irrigation flood risers to increase irrigation efficiency, where determined effective. In exchange for the combined point of diversion, increased delivery efficiency and irrigation efficiencies, Permittee agrees to by-pass 2.8 of the 11.3 cfs of water available for diversion to instream benefit for the life of the project or term of the permit, whichever is longest. In addition, when water conserved through conservation projects does not meet instream flow objective, Permittee will by-pass additional water as needed to meet instream flow objective. Design will begin by the end of the second year the permit is issued. If a project is mutually agreed upon funding will be sought by close of the 4th year the permit is issued.

### **E.3.a.3 Diversion combination of Diversion #3#4, #5 and potentially #6 3.**

Parks Creek Ranch diverts water from 7 active points of diversion on Parks Creek. The numerous points of diversion and varied priorities of rights makes assimilating and abiding by a reach wide flow strategy

difficult. Further, the multiple points of diversion play into increased delivery loss. Permittee proposes to assess, design and if mutually agreeable, seek funds to implement, operate, and maintain a combined point of diversion (POD) for PCR diversion points #3, #4, #5 and potentially #6. This proposal would include a diversion facility, likely near the existing point of diversion for diversion #3 including a fish screen, method to accurately measure volume of water by-passing the facility and volume of water diverted to the facility. The combined water rights for diversions 3-6 are 5.35 cfs.

The project also proposes to design, install, operate, and maintain a pipeline to deliver water to the areas serviced for irrigation under those PODs to improve delivery efficiency. Further, the proposed pipelines will use irrigation flood risers to increase irrigation efficiency, where determined effective. In exchange for the combined point of diversion, increased delivery efficiency and irrigation efficiencies, Permittee agrees to by-pass 0.6 -1.45 cfs (volume depends on design, inclusion of diversion #6) of the 5.35 cfs of water available for diversion for instream benefit for the life of the project or term of the permit, whichever is longest. In addition, when water conserved through conservation projects does not meet instream flow objectives, Permittee will by-pass additional water as needed to meet instream flow objectives. Design will begin by the end of the first year the permit is issued. If a project is mutually agreed upon funding will be sought by close of the third year the permit is issued.

#### **E.3.a.4 Cold Water Contribution for over-summering habitat reach**

Permittee will assess, design and seek mutual agreement of delivering cold water either from Spring Creek system or from Diversion #1 (under combined diversion concept or otherwise) to the identified over-summering reach downstream of MWCD diversion to aid in developing and enhancing cold water habitat for over-summering juvenile Coho salmon. A period of monitoring and measurement of available flows is necessary to determine the volume of cold water available. During base flows, the expected potential increase in flows will be 0.2 to 0.6 cfs of water under 18.5 C that will be provided to ensure flows exceed flow (2.0 cfs) and address temperature objectives within the over summering reach during the over-summering period.

In addition to the provided water, the Permittee will allow and participate in construction of an alcove habitat at the existing spring discharge (or where mutually agreed upon) that enters the over-summering. This project is expected to provide both summer rearing and winter off-channel habitat. Permittee will seek design and implementation funds by the close of the 5th year of the issuance of the permit.

#### **E.3.a.5 Efficient Alternative Livestock Watering System**

Permittee will assess, design and implement an efficient alternative livestock watering system to aid adult migration and spawning. In exchange for design and installation of efficient livestock water facilities, Permittee will to limit livestock diversion volume to 1.2 cfs rather than the 5.6 cfs stock water right. In pastures where livestock have access to Parks Creek, watering lanes may be used, depending on design. Permittee will provide map identifying need for watering sites by the close of the 2nd year of the agreement. Permittee will seek design and implementation funds with the intention to have the system constructed by the close of the fourth year of the issuance of the permit.

### **E.3.a.6 Soil Moisture Sensors**

Permittee will UC Extension Service advice and seek funding to install and operate soil moisture sensors per UC Extension Service guidance to improve water efficiency resulting in reduced diversion, instream benefit and improved pasture production. Permittee will coordinate this measure with delivery and irrigation efficiency projects proposed above (E.3.a.2 and E.3.a.3) with intention to have moisture sensors operating by the fifth of the agreement. This measure is also described in Section E.3.f.

### **E.3.a.7 Water Conservation (Early Actions)**

As a part of assessing and designing a water conservation project, Permittee will also assess how to provide early releases of water identified in E.3.a.1 at critical times of the year, prior to securing funding for a water conservation project. The volume, location, and the timing of such early releases will be determined by the parties within two years of permit issuance. Early flow releases will be undertaken in a manner that does not jeopardize the Permittee's ability to obtain grant funding for water conservation projects. In exchange for this commitment by the Permittee, the Agencies will work in good faith with the Permittee to locate grant funding sources to expedite completion of the water conservation project.

### **E.3.a.8 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**

Fish Screen Evaluation: Existing fish screens and diversion facilities will be evaluated under current fish screen and fish passage criteria if combined point of diversion projects proposed above are mutually not agreed upon and deemed infeasible. If diversion combination projects are determined infeasible, existing fish screens will be assessed for refurbishment or replacement. Permittee will operate and maintain any new compliant fish screens installed at diversions.

Allow for improved diversion facility for MWCD-E.3.b1: Permittee is agreeable in allowing MWCD to implement, operate, and maintain a compliant fish screening, fish passage and diversion facility so as long as there are no impacts to Parks Creek Ranch operations and Parks Creek Ranch is allowed to review and comment on design (and impacts are addressed during construction). The process will allow for negotiations including mutual agreement of the project design and terms of the easement, if revision of the easement is necessary. E.3.b1

Allow for improved diversion facility for Edson-Foulke-E.3b2:

Permittee is agreeable in allowing Edson-Foulke Ditch Company to make improvements necessary to construct, operate, and maintain a compliant fish screening, fish passage and diversion facility so as long as there are no impacts to Parks Creek Ranch operations and Parks Creek Ranch is allowed to review and comment on design (and impacts are addressed during construction). The process will allow for reasonable negotiations including mutual agreement of the project design and terms of the easement, if revision of the easement is necessary. E.3.b2

Allow access to conduct assessment of floodplain restoration project at stream reach below RxR

crossing E.3b3:

Assess, design and if mutually agreeable, implement a channel and floodplain restoration project near the RxR crossing. Current stream reach is incised potentially because of the railroad crossing limiting access to flood plain and constricting the channel. Current condition is limiting the potential enhancement of approximately .5 miles of Parks Creek. E.3.b3

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

*Habitat Complexity:*

Construct Alcove Habitat within over-summering reach -E3c1: Permittee agrees to construct an alcove at the existing spring outlet within the over-summering reach. The alcove will be designed to naturally scour and LWD will be placed to provide cover. The habitat will provide cold water over-summering habitat as well as overwintering habitat. This project is anticipated to be designed within 3 years after execution of the SHA and implemented within 5 years of execution of the SHA.E.3.c1

Construct numerous LWD sites to increase habitat complexity- E3c2: Permittee agrees to assist in development, provide available materials, assist in seeking funding and assist in implementation of habitat improvement projects as specified on the Habitat Improvement Map. Up to 15 LWD structures with 3-5 pieces each are proposed. Sites where active erosion is occurring within the over-summering reach are a priority for structures by Parks Creek Ranch. This project is anticipated to be designed within 2 years after execution of the SHA and implemented within 4 years of execution of the SHA.E3c2

Beaver Management for Instream Benefit-E3c3: Permittee agrees to encourage and allow the development of beaver dams on Parks Creek so as long as beaver activity does not affect operations. The Permit holder will adhere to the Beaver BMPs and contact CDFW if conflicts with beavers and diversion operation occur. E3c3

**E.3.d. Riparian Function**

Develop Riparian Grazing Plan: Permittee will work with UC Extension Service to define ranch objectives and develop a riparian grazing plan. Permittee will work with UC Extension Service to complete riparian grazing plan by the close of the second year of the issuance the Permit. E.3.d1.

Riparian Planting: Parks Creek Ranch will participate and provide cuttings materials for riparian planting as specified on the SWCG Habitat Improvement Map, and specifically in areas downstream of Old Hwy 99 to I-5. Permittee will seek funding and intends to plant four acres of riparian plantings within the first four years of the issuance of permit. E.3.d2

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

Ranch operation will protect spawning substrate and ensure riparian grazing plan is protective of potential redds.

**E.3.f. Pasture Management:**

Soil Moisture Sensors: Permittee will UC Extension Service advice and seek funding to install and operate soil moisture sensors per UC Extension Service guidance to improve water efficiency resulting in reduced diversion, instream benefit and improved pasture production. Permittee will coordinate this measure with delivery and irrigation efficiency projects proposed above (E.3.a2 and E.3.a3) with intention to have moisture sensors operating by year 5 of the agreement. Measure also described in Section E.3.a6.

**E.3.g. Assessments/Studies**

*Access for Studies:*

Permittee will review and allow access for reasonable studies that support SHA objectives.

E.3.g1

Permittee will allow access and support stream channel and floodplain restoration feasibility study for the RxR crossing reach as described in Section E.3.b. If feasible and mutually agreed upon, allow the project to be implemented to improve passage and channel function. E.3.g2

**E.3.h. Supplementation**

The ranch is open to salmonid supplementation when Incidental Take is authorized and in place through the Agreement and associated permit.

**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**

The Permittee agrees to the following AMMs and Monitoring actions:

## G.1. Avoidance and Minimization Monitoring Commitments

Parks Creek Ranch Covered activity	Parks Creek Ranch -AMM	AMM Monitoring Technique
Irrigation Management	A1 A2	<p>All maintenance of instream diversion structures shall be monitored as follows:</p> <ul style="list-style-type: none"> <li>-Log of what in-water work had occurred and what minimization measures were implemented will be included in the Annual SHA report</li> <li>-When construction or repair work is being done, three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002</li> </ul> <p><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>

<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 to 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</p>

		<p>include in the yearly Site Plan monitoring report. At a minimum, the 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>
<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 G5	- Permittee commits to log use of herbicide, fertilizer and pesticide activities carried out within the calendar year be included in the annual report.
<b>Flood Repair</b>	H1 H2	- Permittee shall take photographs of the emergency site repairs and a detailed description of the repairs to be included

		in the annual report.
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## G.2 Implementation and Effectiveness Monitoring Commitments

Habitat Parameter	Parks Creek Ranch Net Conservation Benefit Actions	Implementation Monitoring Technique	Effectiveness Monitoring Commitment? Technique?
<p><b>Hydrology/Water Quality</b></p>	<p>-Continue to manage tailwater production using existing collection and reuse system as described in E.1.a.</p> <p>-Eliminate/Reduce tailwater through proposed projects E.2.a.</p> <p>-Participate in design and implementation of diversion point combination of site #1,2 and Edson-Foulke right to enhance instream flows E.3.a</p> <p>-Participate in design and implementation of irrigation delivery assessments, design and seek funds to implement delivery efficiency projects to provide instream benefit. E.3.1</p> <p>Participate in design and</p>	<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 documenting functioning diversion, pipeline improvements and spring source enhancements.</p>	<p>- Flow monitoring station at PCE and upstream boundary. Share yearly data for the duration of the agreement</p>

	<p>implementation of contributing source water for cold water refugia as part of enhancing over-summering reach of Parks Creek. E.3.a</p> <p>Install soil moisture sensors throughout the ranch to improve water efficiency as a component of conserving water from instream benefit. Section E.3.a.</p> <p>Participate in a reach-wide flow strategy as outlined in. E.3.a1</p> <p>Manage fields to reduce tailwater returns from outside sources to reduce diversion as described in Section E.2.a.</p>		
<b>Passage/Migration/Screening</b>	<p>-Assess, design, and assist in seeking implementation funds to construct, operate, and maintain combined diversions and new fish screens at the diversion sites as described in Section E.2.b.</p> <p>-Operate and maintain existing Fish Screen as described in Section E.1.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 SB88 of diversion, submit diversion data.</p>	<p>Allow for installation of a PIT tag array near PCE to monitor movement of coho salmon into the Upper Parks Creek reach throughout the year. Allow access to agency staff to maintain the array and download data twice per month.</p>
<b>Instream Habitat Complexity</b>	<p>-Will participate in implementation of habitat enhancement projects (LWD for bank</p>	<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook,</p>	<p>Allow access to agency staff to conduct juvenile surveys to determine habitat use and distribution. Surveys will be</p>

	<p>stabilization) as shown on the attached Habitat Improvement Map and as described in Section E.3.c.</p> <p>- Will participate in the implementation of habitat enhancement projects as specified on Habitat Improvement Map and as described in Section E.3.c.</p> <p>-Implement beaver Best Management Practices BMPs as described in E.3.c.</p>	<p>2002 Habitat improvements</p>	<p>conducted between March and September.</p>
<p><b>Riparian Condition</b></p>	<p>-Continue to perform yearly maintenance on existing riparian fencing as described in E.1.d.</p> <p>-Permittee will maintain existing watering lanes for stock water as described in Section E.1.d.</p> <p>-Will participate in riparian planting projects as described in Section E.3.d.</p> <p>-Permittee will work with UC Extension to implement riparian grazing plan E.3.d</p> <p>-Permittee will provide additional watering lanes or install alternative stock watering systems to limit riparian access for watering purposes E.3.d.</p>	<p>- 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.</p>	<p>-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.</p>

<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>	-Permittee will continue to utilize pasture rotation to avoid over grazing as described in E.1.f.	- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 To document pasture condition.	
<b>Assessment/Studies</b>	- Continue to allow access for studies as described in Section E.1.g.  - Allow access for studies as described in Section E.3.g.	-Reports of studies will be written/summarized/obtained and provided in the annual report	-Access to maintain future? pit tag array and trap and tag fish as deemed feasible by agency staff
<b>Supplementation</b>	-The Permittee will allow access for salmonid supplementation as described in Section E.3.h.		

## H. Annual Report and Adaptive Management

The Participant will complete the Annual Report Form, attached in Appendix D, yearly and reported 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 Permittee 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 Permittee 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.

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

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**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.

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**CDFW**

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**Date**

**Appendix A- Legal Deed - Parks Creek Ranch**

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Siskiyou, County Recorder  
Mike Mallory, Assessor-Recorder  
**DOC - 2017 - 0004673 - 00**  
Acct 2 - Mt Shasta Title and Escrow  
**Wednesday, JUN 07, 2017 13:50:17**  
Ttl Pd \$7,624.00 Nbr-0000296974

MKF / C1 / 1-

**RECORDING REQUESTED BY:**  
Mt. Shasta Title & Escrow Company

**MAIL TAX STATEMENT  
AND WHEN RECORDED MAIL DOCUMENT TO:**  
Outpost M-R, LLC, a California limited liability  
company  
20 Trafalgar Square, Suite #205  
Nashua, NH 03063

Space Above This Line for Recorder's Use Only

File No.: 4702-5395812 (PAB)

A.P.N.: 020-350-270 and 020-350-340 and  
020-350-280 and 020-160-240 and 020-  
350-400 and 021-121-020 and 021-130-  
250 and 022-250-100 and 020-090-360  
and 020-090-430 and 202-100-240 and  
202-100-490 and 020-100-520 and 020-  
100-600 and 020-100-620 and 020-080-  
230 and 020-090-140 and 020-090-510  
and 020-100-610 and 020-100-640 and  
022-300-120 and 020-090-230 and 020-  
090-260 and 020-090-520 and 022-300-  
130 and 020-090-090 and 020-090-130  
and 020-090-600 and 020-090-630 and  
020-090-150 and 020-090-170 and 022-  
300-110 and 022-300-140 and 022-300-  
150 and 022-300-180 and 020-160-140  
and 020-160-160 and 020-340-130 and  
020-160-230 and 020-350-390 and 021-  
121-030 and 020-350-230 and 020-150-  
011 and 020-150-021 and 020-150-030  
and 020-150-080 and 020-150-091 and  
020-150-100 and 020-160-020 and 020-  
160-030 and 020-160-050 and 020-160-  
171 and 020-160-181 and 020-160-190  
and 021-130-021 and 022-310-101 and  
022-570-140 and 022-570-150 and 020-  
160-200

**GRANT DEED**

The Undersigned Grantor(s) Declare(s): DOCUMENTARY TRANSFER TAX \$7,590.00; CITY TRANSFER TAX \$;  
SURVEY MONUMENT FEE \$

- computed on the consideration or full value of property conveyed, OR
- computed on the consideration or full value less value of liens and/or encumbrances remaining at time of sale,
- unincorporated area;  City of , and

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, **Mole-Richardson Co., LTD., a California corporation formerly known as Mole Richardson Company, a California corporation** hereby GRANTS to **Outpost M-R, LLC, a California limited liability company** the following described property in the unincorporated area of the County of **Siskiyou**, State of **California**:

**PARCEL A:**

Mail Tax Statements To: **SAME AS ABOVE**

**PARCEL 1**, per the Parcel Map for "Raymond C. Dancer," located in the Section 33, Township 42 North, Range 5 West, M.D.M., filed December 7, 1976, in Book 4, Parcel Maps, page 147, Siskiyou County.

**PARCEL A-1:**

**TOGETHER WITH** a small water system easement, a portion being 15 feet wide and a portion being 25 feet wide as said easements are shown on the are shown on the Parcel Map for "Raymond C. Dancer," located in the Section 33, Township 42 North, Range 5 West, M.D.M., filed December 7, 1976, in Book 4, Parcel Maps, page 147, Siskiyou County.

Assessor's Parcel No.: 020-350-270

**PARCEL B:**

**PARCEL 4**, per the Parcel Map for "Raymond C. Dancer," located in the Section 33, Township 42 North, Range 5 West, M.D.M., filed December 7, 1976, in Book 4, Parcel Maps, page 147, Siskiyou County.

**PARCEL B-1:**

**TOGETHER WITH** a small water system easement, a portion being 15 feet wide and a portion being 25 feet wide as said easements are shown on the Parcel Map for "Raymond C. Dancer," located in the Section 33, Township 42 North, Range 5 West, M.D.M., filed December 7, 1976, in Book 4, Parcel Maps, page 147, Siskiyou County.

Assessor's Parcel No.: 020-350-340

**PARCEL C:**

All that portion of the Southwest quarter of Section 33, Township 42 North Range 5 West, M.D.M., described as:

**BEGINNING** at the intersection of the East side of the County Road, leading from Edgewood to Mount Shasta, byway of Durney's Mill, with the South side of the California State highway leading from Shastina to Gazelle; thence running approximately South 89° East and in line with an old fence and across the State highway to a point on the West line of the Northeast quarter of the South west quarter of Section 33; thence South and along said quarter section line approximately 800 feet to an angle in rail fence in Kassnafer Field; thence approximately South 72° 30' West, and in line with continuation of said fence to a point on the East line of the County Road, said point being approximately 810 feet Southerly from the intersection of the County Road with the California State Highway; thence Northerly along the East side of said County Road approximately 810 feet to the place of beginning.

**EXCEPT THEREFROM** those portions conveyed in the following deeds:

- a. To Frank Augustus King, recorded June 30, 1950 in Volume 262 in Official Records, page 83
- b. To IT. Krois and wife recorded December 27, 1956 in Volume 379 of Official Records, page 257.
- c. To the State of California recorded April 20, 1965 in Volume 515 of Official Records, page 300.

Assessor's Parcel No.: 020-350-280

**PARCEL D:**

That portion of the Northwest one quarter of Section 4, Township 41 North, Range 5 West, and those portion of the Southeast one quarter of Section 32 and the Southwest one quarter of Section 33, Township 42 North, Range 5 West, M.D.M., in the County of Siskiyou, State of California described as follows:

Beginning at the Northeast corner of land described in the Deed to Gino Gerimlia Michelin in Book 519 Page 646 of Official Records of said County, said point being a 3/4" Iron Pipe tagged R.C.E. 8433 as shown in R.S.B. 4 Page 75, from which the Northwest corner of said Section 4 bears N21°22'37" W 1469.40 feet, thence Northwesterly, and Southwesterly along the Northerly line of said land of Michelin the following bearing and distances, N73°45'47" W 161.03 feet, thence N41°26'237" W 136.65 feet, thence S50°25'27" W 178.23 feet to the Northwest corner of said land and the Northeasterly line of Parcel 1 of P.M.B. 1, Page 127, thence Northwesterly along said Northeasterly line N32°17'18" W 306.70 feet, thence continuing along said Northeasterly line N23°57'38" W 38.30 feet to the West line of said Section 4, thence North along said West N1°26'34"E 1040.45 feet to the Northwest corner of said Section 4, thence West along the South line of said Section 32, S89°49'02" W 1336.27 feet to the Southeast corner of the Southwest one quarter of the Southeast one quarter of said Section 32, thence North along the East line of said Southwest one quarter N00°03'50"E 408.00feet, thence leaving said East line S88°52'34"E 1530.55 feet, thence N84°58'01"E 661.01 feet to the centerline of pavement to Shasta Valley Road (County Road No 3L002) thence Southerly along the centerline of pavement of said Shasta Valley Road the following bearings and distances, thence S6°54'33"W 599.11 feet to the beginning of a tangent curve concave Westerly and having a radius of 2200.00 feet, thence Southwesterly along said curve through a central angle of 9°15'47" a distance of 355.68 feet, thence tangent to said curve S16°10'20"W 5.00 feet to the beginning of a tangent curve concave Easterly and having a radius of 2200.00 feet, thence Southwesterly along said curve through a central angle of 6°52'42" a distance of 264.11 feet, thence tangent to said curve S9°17'38"W 605.59 feet, thence leaving said centerline N80°42'22"W 16.99 feet to the point of beginning.

Assessor's Parcel No.: 020-160-240, 020-350-400 & 021-121-020

**PARCEL E:**

All that portion of the Northeast corner of said Section 5; thence South 89°49'02" West 487.74 feet to the Easterly line of Parcel 1 as shown on that certain Parcel Map recorded on January 24, 1973 in Parcel 1, Page 127, Siskiyou Records; thence South 24°00'14" East along the Easterly line of said Parcel 1 to the East line of said Section 5; thence North 1°24'09" East along the East line of said Section 5 to the point of beginning.

Assessor's Parcel No.: 021-130-250

**PARCEL F:**

The Northeast quarter of Section 33, Township 43 North, Range 6 West, M.D.B.&M.

Assessor's Parcel No.: 022-250-100

**PARCEL G:**

The Southwest quarter of the Northeast quarter, the West one-half of the Southwest quarter

of the Northeast quarter of the Northeast quarter of the Southeast quarter, the West one-half of the Northeast quarter of the Southeast quarter, and the West one-half of the Southeast quarter of the Northeast quarter of the Southeast quarter of Section 18, Township 42 North, Range 5 West, M.D.M.

Assessor's Parcel No.: 020-090-360 & 020-090-430

**PARCEL H:**

All that property conveyed in that Grant Deed to MOLE-RICHARDSON COMPANY, a California corporation, recorded July 31, 1990, as Instrument No. 90008825, Official Records.

Assessor's Parcel No.: 020-100-240, 020-100-490, 020-100-520, 020-100-600 & 020-100-620

**PARCEL I:**

All that property conveyed in that Grant Deed to MOLE-RICHARDSON CO., a California corporation, recorded November 25, 1987, as Instrument No. 87013915, Official Records.

EXCEPTING THEREFROM all that property described in that certain Boundary Line Adjustment for Mole-Richardson Company & Mills Ranch, Inc., Recorded October 12, 1990, as Instrument No. 90013357, Official Records.

AND FURTHER EXCEPTING THEREFROM all that property described in that certain Boundary Line Adjustment for Mole Richardson Company, Recorded March 22, 1993, as Instrument No. 93002965, Official Records.

Assessor's Parcel No.: 020-080-230, 020-090-140, 020-090-510, 020-100-610, 020-100-640 & 022-300-120

**PARCEL J:**

All that property described in that certain Boundary Line Adjustment for Mole-Richardson Company & Mills Ranch, Inc., Recorded October 12, 1990, as Instrument No. 90013357, Official Records.

EXCEPTING THEREFROM all that property described in that Grant Deed to Mills Ranch, a corporation, recorded October 12, 1990, as Instrument No. 90013358, Official Records.

ALSO EXCEPTING THEREFROM all that property described in that Grant Deed to Mills Ranch, a corporation, recorded October 12, 1990, as Instrument No. 90013362, Official Records.

AND FURTHER EXCEPTING THEREFROM all that property described in that certain Boundary Line Adjustment for Mole Richardson Company, Recorded March 22, 1993, as Instrument No. 93002965, Official Records.

Assessor's Parcel No.: 020-090-230, 020-090-260, 020-090-520, & 022-300-130

**PARCEL K:**

All that property described in that certain Boundary Line Adjustment for Mole Richardson Company, Recorded March 22, 1993, as Instrument No. 93002965, Official Records.

Assessor's Parcel No.: 020-090-090, 020-090-130, 020-090-600, & 020-090-630

**PARCEL L:**

All that property conveyed in that Grant Deed to MOLE-RICHARDSON CO., a California corporation, recorded April 6, 1987, as Instrument No. 87003561, Official Records.

Assessor's Parcel No.: 020-090-150, 020-090-170, 022-300-110, 022-300-140, 022-300-150, & 022-300-180

**PARCEL M:**

All that property conveyed in that Grant Deed to MOLE-RICHARDSON CO., a California corporation, recorded June 18, 1980, as Book 891, Page 244, Official Records.

Assessor's Parcel No.: 020-160-140, 020-160-160 & 020-340-130

**PARCEL N:**

All that property conveyed in that Grant Deed to MOLE-RICHARDSON CO., a California corporation, recorded January 26, 1981, as Book 908, Page 268, Official Records.

Assessor's Parcel No.: 020-160-230, 020-350-390, & 021-121-030

**PARCEL O:**

All that property conveyed in that Grant Deed to MOLE-RICHARDSON CO., a California corporation, recorded August 11, 1981, as Book 924, Page 130, Official Records.

Assessor's Parcel No.: 020-350-230

**PARCEL P:**

All that property conveyed in that Grant Deed to MOLE-RICHARDSON CO., a California corporation, recorded May 5, 1980, as Book 888, Page 233, Official Records.

Assessor's Parcel No.: 020-150-011, 020-150-021, 020-150-030, 020-150-080, 020-150-091, 020-150-100, 020-160-020, 020-160-030, 020-160-050, 020-160-171, 020-160-181, 020-160-190, 020-160-200, 021-130-021, 022-310-101, 022-570-140 & 022-570-150

Date: 06/02/2017

A.P.N.:

File No.: 4702-5395812 (PAB)

Dated: June 02, 2017

Mole-Richardson Co., LTD., a California corporation

By: Michael Parker  
Michael Parker, President

By: Charles L. Valdez  
Charles L. Valdez, Secretary

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA )SS  
COUNTY OF LOS ANGELES )

On JUNE 5, 2017, before me, Andrea G. Setterstrom, Notary Public, personally appeared CHARLES L. VALDEZ, MICHAEL C. PARKER, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature  
Andrea G. Setterstrom  
Notary Public

*This area for official notarial seal*



## Appendix B - Parks Creek Ranch - Riparian Grazing Plan

### Mole-Richardson Ranch

#### Draft Prescribed Riparian Grazing Management Recommendation (January 10, 2017)

#### Prepared by

Kenneth W. Tate, Professor and UCCE Rangeland Watershed Specialist, UC Davis

California Certified Rangeland Manager #79; CA Department of Forestry and Fire Protection

Certified Rangeland Professional #00-104; Society for Range Management

Carissa Koopmann Rivers, Livestock and Natural Resources Advisor, Siskiyou County, UCCE

### Riparian Areas on the Ranch

Approximately 7 miles of the Shasta River tributary, Parks Creek, flows through this property. There are five reaches of the Parks Creek that are divided into separate management zones. The southern portion of the ranch riparian corridor (Reach 1) has been adequately fenced on both sides since 2007 with one crossing and no water gaps. This area includes an abundance of gravel and large boulders with a dense stand of woody vegetation that continues into the middle reach (Reach 2) which contains cobbles and is heavily infested with blackberry and yellow starthistle throughout. Continuing south, Reach 3 is an eroded, channelized segment lying between the railroad bridge and the Bettencourt riparian pasture. The Bettencourt riparian pasture (Reach 4) is fenced on both sides and also has present blackberry and yellow starthistle which carries down into the southern-most reach (Reach 5). Reach 5 is similar to reach 4, containing some blackberry and yellow starthistle. (see Figure 1.).

There has been limited weed management effort within reaches 2, 3 and 4, and it is highly likely that invasive weeds are inhibiting recruitment of native riparian vegetation, and are substantially competing with sparsely established native riparian vegetation along the entire reach – which has potential to support riparian woodies (e.g., willows), *Juncas* and *Carex* spp.

### Riparian Grazing and Weed Management Recommendations

**Grazing Management Objective.** The ranch owner and manager have expressed interest in developing an adaptive grazing strategy to reduce weeds within the riparian corridor – while limiting negative livestock impacts to riparian native vegetation, streambank stability, and instream habitat quality. There is good reason to expect that prescribed riparian grazing with livestock can reduce the cover and competitive advantage of invasive weeds throughout the riparian corridor – improving odds for native riparian species recruitment. A primary target for riparian grazing in this case should be YST. Livestock impacts to other existing invasive species including; teasel, poison hemlock, and blackberry will primarily result from physical damage (i.e., lodging, breakage, trampling) during grazing bouts timed to target YST control. Strong research evidence demonstrates that timing (season) of grazing is key to effective YST management via livestock grazing. YST is a palatable and sought-after forage species for cattle at all growth stages prior to bolting and emergence of spiny seed heads (reproductive stage).

### Recommended seasons of grazing

The emergence of YST seed heads will vary annually on this site due to weather conditions, thus creating need for annual flexibility (i.e., adaptive management) in timing of grazing to target YST. Seed head emergence is

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likely between mid-May and late-June, creating an early growing season target grazing period between early April and late-June, depending upon annual weather conditions and YST development. Spring grazing bouts are an excellent period to avoid unwanted livestock browse or physical damage on riparian woody species and herbaceous riparian species. During this time YST and non-native forage grasses will be at their most palatable and nutritious; thus, livestock will preferentially browse these species over the riparian species we desire to enhance. Certainly, browse on non-target riparian species must be monitored, and grazing adjusted in response (see recommended livestock management decision triggers section below).

Senescent YST plants can form barriers (i.e., “skeletons”) in fall and deter livestock and native ungulates from foraging on growing YST during the following spring – reducing subsequent spring target grazing effectiveness. Thus, short term, intensive fall grazing by livestock can be used as a tool to physically breakdown YST “skeletons” and facilitate spring targeted grazing as needed. Fall grazing bouts must be monitored carefully to ensure limited livestock browse or physical damage on riparian woody species. During this time YST skeletons and forage grasses will have relatively low palatability and nutrition; thus, livestock could preferentially browse woody species over the weedy species we desire to reduce. Fall grazing bouts may be most effective following a germinating rain, softening of dry YST skeletons, and emergence of winter annual grasses and forbs – but soils should not be too wet and subject to excessive hoof damage and compaction.

### **Riparian Grazing Infrastructure.**

At this point in the recommendation process, the riparian area through the Mole-Richardson ranch is divided by natural barriers and fences, into five zones; Reach 1, reach 2 (Lemos), Bettencourt riparian pasture, and reach 2.

*Reach 1* – The goal at the upper zone is to maintain healthy woody riparian recruitment and to continue winter grazing to reduce invasive plant species cover. This riparian area has been fenced separately from the upland area since 2007. The current livestock watering source on the south side of Parks creek (Stewart Springs Pasture) is discharge from #2 via ditches/sump or down-stream creek access. The north side of Parks creek has access to Spring creek ponds, irrigation ditches and sumps.

*Reach 2* – The goal of the middle zone is to encourage weed suppression and to create a riparian upland pasture for spring grazing on the east side of the creek. This can be accomplished by constructing a fence on the west side leaving sufficient space for feasible grazing management. This new pasture will need water access and designated crossing points to be determined after a season of monitoring livestock behavior. Grazing this east pasture and riparian area during spring months will be beneficial for weed management and will allow utilization of the upland rangelands while forage is valuable. This east pasture can also benefit from fall/winter grazing with use standards in place (see below). The current livestock water access in reach 2 is Parks creek, ditch discharge into sumps and ponds. Once this area is fenced, drinking water will be provided through sumps/ponds and ditch via Spring Creek and/or #1 diversion tailwater. During dry portions of the year Parks creek crossing at the last resort will be accessible.

*Reach 3* - The Lemos zone has unique elements including a railroad crossing that is undercutting, with signs of erosion. Here it is recommended that riparian standards are watched using standard management triggers (see below) and that the land manager observe closely and monitor. The railroad will need some constructive attention in the future and this has potential to alter management of the reach. The current water source at reach 3 is the Parks irrigation ditch.

*Reach 4 (Bettencourt riparian pasture)* – has been an existing riparian pasture since 2014 and has traditionally been grazed in the late fall, however, this pasture would benefit from spring and fall grazing for effective weed management of Yellow starthistle predominately, with secondary control on blackberry. The current livestock watering source at reach 4 is Parks creek or the Parks irrigation ditch.

*Reach 5* –Creating a spring riparian pasture that will include riparian and upland grazing in the lower zone to increase weed management can be done by including a wire fence at the high water mark on the west side from the Bettencourt riparian pasture fence down to the north boundary of ranch. Monitor using the triggers below and rotate grazing with surrounding upland irrigated pastures as necessary. The current livestock watering access in reach 5 is Parks creek, irrigation ditches and ponds.

At this time the establishment of fixed, hardened livestock river crossings or drinking access points is not recommended. Livestock crossing/drinking behavior should be monitored during the first year of riparian grazing and this recommendation revisited and adapted as needed based upon livestock behavior and extent/intensity of stream channel disturbance.

**Table 1. Management objectives**

<b>Riparian Reach</b>	<b>Optimal Grazing season</b>	<b>Objective</b>
1	Fall, Winter	Maintain healthy woody recruitment, reduce invasive species cover.
2	Spring	Reduce invasive species cover, create upland pasture.
3	Observe and monitor	Observe and monitor
4	Spring, Fall	Reduce invasive species cover.
5	Spring	Reduce invasive species cover, create riparian/upland pasture.

**Recommended Livestock Management Decision Triggers.**

Managers must have real-time indicators they can observe directly on the ground to make decisions about the readiness of riparian grazing units for grazing (e.g., sufficient forage, YST actively growing and ripe for grazing), and when livestock need to be moved from a riparian unit to achieve conservation goals (e.g., excessive browse on recruiting riparian woody plans <5ft in height, excessive streambank disturbance). For this site we recommend that browse on recruiting riparian woody plants (< 5ft in height – below cattle maximum browse height) during a grazing bout (spring or fall) be limited to no more that 20% of current year’s leader growth within the riparian unit. We also recommend that physical hoof damage to streambanks be limited to no more than 20% of streambank per each side of stream. Once either one of these triggers are hit, livestock should immediately be rotated out of the riparian unit.

**Table 2. Management triggers**

<b>Indicator</b>	<b>Trigger</b>
Browse use on recruiting riparian woody	20% of current years leader growth

species < 5 ft. in height	
Streambank Hoof action	20% of each side of a streambank

Recommended Grazing Monitoring and Documentation. Siskiyou County UCCE and UC Davis will collaborate annually to provide hands-on, in-the-field training on assessing real-time status of the livestock management decision triggers recommended in the section above. We will base this training on standard, national methods developed in the “Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation” (<http://www.blm.gov/nstc/library/pdf/MIM.pdf>). We recommend progress towards these management triggers be assessed every 1 to 2 days during all riparian grazing bouts. We recommend, and will provide training on, the establishment of permanent photo monitoring points in each riparian grazing unit. Photos should be taken at the beginning and end of each grazing bout (certainly within the first few years of grazing). Photo points should be established so that riparian woody species, weedy species, and streambank conditions can be clearly observed and thus conditions and outcomes documented. Finally, we recommend that dates on and off, and numbers of livestock species and class of livestock used during each grazing bout be recorded for each riparian grazing unit.

Recommended Supplementary Riparian Weed Management Practices. Grazing alone will likely not achieve the desired level of control on the weedy species on this site. Practices such as targeted herbicide application and burning are valuable components of an integrated weed management strategy. For example, prescribed low intensity burning to remove YST skeletons during fall or winter is an excellent practice to prepare a site for efficient spring targeted grazing, and/or targeted spring herbicide application. Targeted herbicide use should be considered a conservation practice on this site – with herbicide type, timing, and rates selected based upon real-time site specific conditions. Targeted mowing is another key practice that should be available to managers on this site. As with grazing, all of these practices should be implemented in a manner that does not negatively impact native riparian species recruitment and survival, or streambank stability and instream habitat conditions. Technical support for site specific integrated weed management is available from Siskiyou County UCCE and other local technical service providers.

Note: Siskiyou County UCCE and UC Davis will collaborate in the coming year to provide workshops on integrated riparian weed management for conservation and agricultural outcomes.

