

# Shasta Springs Ranch Site Plan between National Marine Fisheries Services and California Department of Fish and Wildlife for the Template Safe Harbor Agreement for Coho Salmon (*Oncorhynchus kisutch*)

May 3, 2019

## Introduction

This Site Plan for the Template Safe Harbor Agreement (Agreement) for Southern Oregon and Northern California Coast (SONCC) Evolutionarily Significant Unit (ESU) of coho salmon (the Covered Species) is between the Shasta Springs Ranch (Enrolled Property or Ranch), operated by Emmerson Investments, Inc. (hereinafter referred to as 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 Permittee are detailed in the 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 and management authority of the property, its baseline conditions, existing and, as available, proposed future land-use activities, and 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 the Covered Species.

## **Enrolled Property:** Location and Property Information

### **Location**

The Enrolled Property is located north of Edgewood, California, and east of Interstate 5. The headquarters are accessed from Slough Road, which roughly approximates the west boundary, though the easement is not exclusively on or associated with the property line (*Figure 1*). The Permittee's other properties, the Hole in the Ground and Seldom Seen ranches, share boundaries to the north and northeast. One other private landowner borders the Enrolled Property to the east, south, and west.

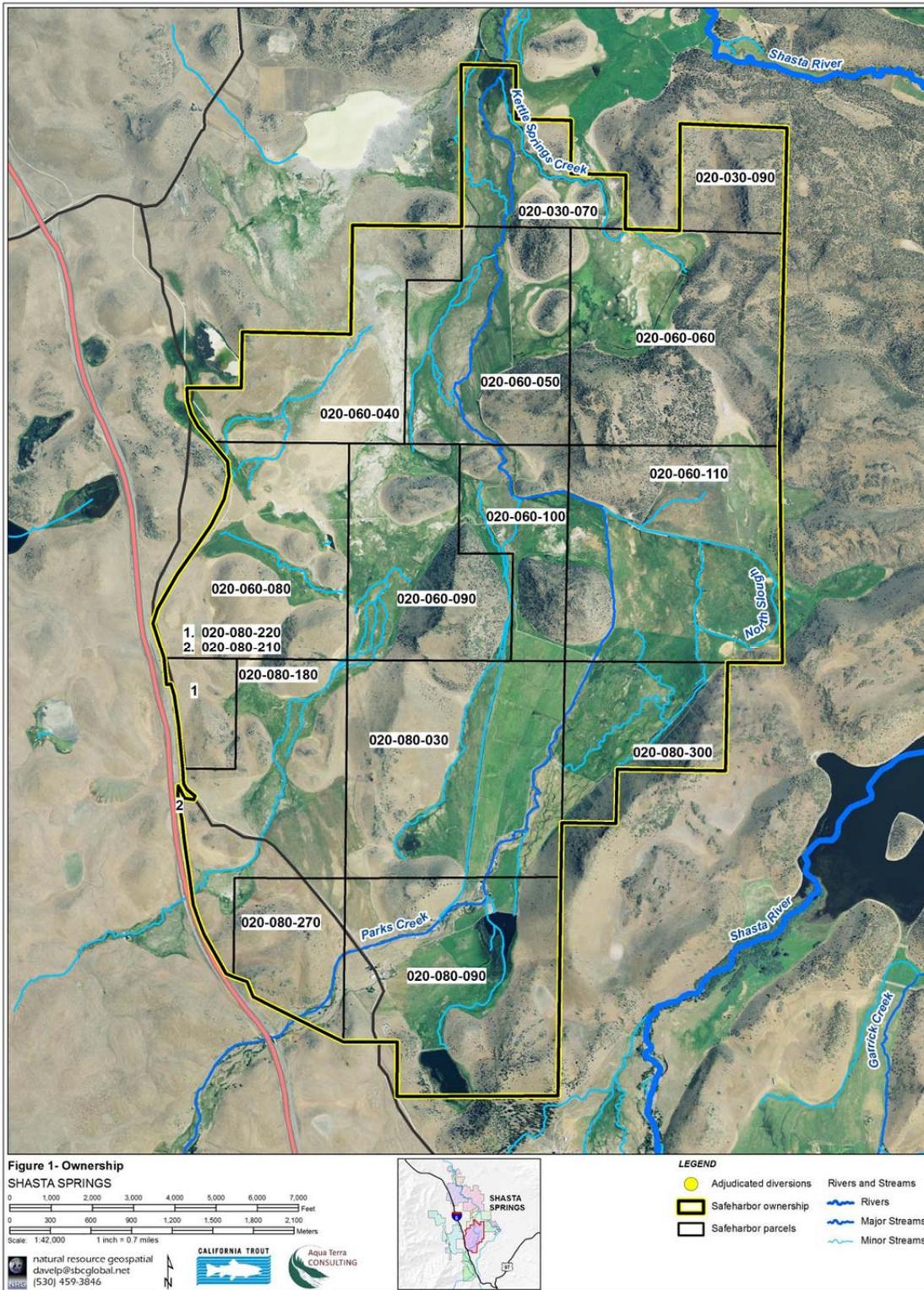
Named streams flowing through the Enrolled Property are Parks Creek and Kettle Springs Creek. Significant springs, two of which are sometimes referred to as Black Meadow and Bridge Field, emerge at the west margin of the ridge between Lake Shastina and the Enrolled Property. The water from these and other unnamed springs is collected in manmade and natural channels, eventually flowing into Parks Creek, approximately 4.5 miles upstream of the confluence with the Shasta River.

For the purposes of this Safe Harbor Agreement, activities on the Enrolled Property have the potential to influence the Mid- and Lower Parks Creek sub-reaches.

**Table 1. Legal Description of Property**

<b>APN</b>	<b>ASSESSED_ACRES</b>	<b>OWNER</b>	<b>REFERENCE</b>
020030070	240	EII	SHASTA SPRINGS
020030090	160	EII	SHASTA SPRINGS
020060040	390	EII	SHASTA SPRINGS
020060050	440	EII	SHASTA SPRINGS
020060060	640	EII	SHASTA SPRINGS
020060080	456	EII	SHASTA SPRINGS
020060090	400	EII	SHASTA SPRINGS
020060100	240	EII	SHASTA SPRINGS
020060110	640	EII	SHASTA SPRINGS
020080030	642	EII	SHASTA SPRINGS
020080090	600	EII	SHASTA SPRINGS
020080180	437.2	EII	SHASTA SPRINGS
020080210	0.1	EII	SHASTA SPRINGS
020080220	104.3	EII	SHASTA SPRINGS
020080270	199.5	EII	SHASTA SPRINGS
020080300	283	EII	SHASTA SPRINGS

**Figure 1. Shasta Springs Ranch: Property Ownership Description**



## Description of Water Rights

The Enrolled Property uses a combination of adjudicated, appropriative, and riparian rights to water for irrigation of permanent pastures and stock watering (*Table 2*).

The adjudicated water rights to the use of the natural flow of Parks Creek and various springs are described in paragraphs 89 through 99 of the Shasta River Adjudication Proceeding, Judgement and Decree entered December 30, 1932 (Shasta River Decree). The Shasta River Decree establishes the relative rights of the various claimants according to the doctrine of prior appropriation.

The Enrolled Property's adjudicated rights on Parks Creek range in priority date from 1854 to 1889 with a combined flow rate of about 16 cfs and a period of use from March 1st through November 1st each year. Actual use under these rights usually begins sometime after March 1st depending on spring weather conditions. However, because these rights tend to be of lower priority relative to other upstream Parks Creek rights, streamflow onto the Enrolled Property generally only lasts until late May or, on occasion into July, dropping off sharply as snowmelt diminishes and upstream senior diverters take their share. Whether sufficient flow to divert from Parks Creek lasts into the spring or early summer is based on hydrologic conditions each year.

There are five actively managed diversions (POD) on Parks Creek (*Figure 2 and Table 2*). Historically, at the time of the adjudication, the Ranch used as many as ten separate POD off the stream. Between the current Parks #4 and Parks #5, five POD are not actively managed, i.e. there is no functional infrastructure to divert water at those POD and the right is used, per the provisions of the Decree, at active POD. The present-day configuration of the POD and ditches is not necessarily the most efficient but reflects a compromise between the cost of replacing diversions susceptible to destabilizing flood flows, as often occurs in a snowmelt dominated stream like upper Parks Creek, and the value of a water supply that diminishes to un-divertible before the middle of the growing season.

There are three adjudicated POD from spring sources on the Enrolled Property (*Figure 2 and Table 2*). An unnamed spring is part of the water held in Upper Dennis Reservoir, east of Parks Creek in the south half of Section 8 (T42N, R05W). The reservoir did not exist at the time of the adjudication and the water right for up to 0.45 cfs (from DWR POD #223) was conveyed in a ditch to irrigate pasture in Section 8. Currently, Upper Dennis Reservoir captures the flow of the unnamed spring and impounds it with the waters of an unnamed tributary, proximate the spring source. The role of the reservoir will be further described below in a description of the post-1914 appropriative water rights for the Enrolled Property.

The Duke Spring is a small spring for which the Enrolled Property has an adjudicated right of up to 0.05 cfs for irrigation in the period between March 1 and November (DWR POD #234). In most years, the spring doesn't flow. Despite the blue line seen on USGS topographic maps, no surface flow connects the spring to Parks Creek.

The third adjudicated right to spring flow is for up to 1.15 cfs, March 1 to November 1, from an "unnamed spring" (DWR POD #234A) that emerges in the northeast quarter of Section 28 (T43N, R05W). This source is also known as "Kettle Springs". The springflow is captured by an

earthen dike. Historically, over a period of 3-4 days, using the head gate at the inlet of a culvert connecting the impoundment to Kettle Springs Creek, the outflow is reduced only enough to allow the impoundment elevation to inundate one or the other of the north or south ditch inlets. Irrigation of the pastures, north and south of Kettle Springs Creek, usually does not start until late May, and in years with abundant precipitation into late spring, the initiation of the irrigation cycle may not be until sometime in June. Irrigation ceases sometime mid-October or before November 1.

In 2017, with a SWRCB 319h grant through the Shasta Valley Resources Conservation District, a new spring source management structure was constructed at the outlet of the impoundment. The new structure provides a constant, priority discharge of 1 cfs of water to Kettle Springs Creek. In addition to this dedicated flow, valves distribute water to new pipelines that parallel the old ditches to irrigate the pastures. As Kettle Springs is documented to fluctuate seasonally in discharge, the structure includes an adjustable flow control valve that passively (i.e. not requiring operator input) and automatically discharges any spring flow in excess of the irrigation right and the 1cfs priority flow to the Creek, and all spring flow to the Creek during periods of non-irrigation.

The Enrolled Property water rights include a post-1914 appropriative right (License #11609) for winter and spring diversion and storage of the amount of water actually beneficially used for the stated purposes of irrigation, stockwatering, and recreational uses and shall not exceed 106 acre-feet of the water from two unnamed tributaries to Parks Creek. The season of collection is from October 1 to May 31 of the succeeding year. The maximum withdrawal in any one year shall not exceed 94 acre-feet from both Upper Dennis and Dennis reservoirs. .

The most upstream Shasta Springs diversion on Parks Creek, Parks#1 (the same POD as DWR POD #221), is used in the winter under a riparian claim to provide stockwater on the east side of the stream. Approximately 0.25 - 0.5 cfs is diverted from November 1 to March 1 of the succeeding year. The Statement of Use is filed with the State Water Resources Control Board, Division of Water Rights (SWRCB-DWR) through the eWRIMS and bears Appl ID S023971.

There is a diversion on the right bank of the North Slough used to flood wetland habitat for waterfowl in the fall to mid-winter period. Under a riparian water right claim (eWRIMS S025771), approximately 73 acres of wetlands are inundated to approximately 1.5 feet depth of water and maintained in that condition, with diverted water or accumulated precipitation, until the end of January.

Two unnamed springs are diverted under a riparian claim for irrigation and stockwatering (eWRIMS S018099 & S018105). These springs are often referred to as Bridge Field and Black Meadow springs. These are important sources of mid- and late season irrigation water as the flow of Parks Creek, as described above, is usually too low to divert for irrigation after June.

Bridge Field Springs emanate along the east edge of the valley floor in the north half of Section 04 (T42N, R05W). The springs flow at a rate that varies seasonally and annually with the highest flows generally emerging in summer. From October 2009 through September 2010, the 12-month period for which data is readily available (Davids Engineering, 2011), the rate ranged between 1.3 cfs in November to 5.7 cfs in August.

An earthen dike holds most of the springflow and controls the water elevation for use at any one of these points of re-diversion for irrigation. The downstream-most POD is a culvert with a headgate that controls the flow at the head of what is sometimes called Bridge Field Springs Creek. Another headgate (south of the POD just described) controls the outflow at roughly midway along the length of the impoundment for diverting water to another network of ditches at a slightly higher elevation from the outflow. The third outlet is the intake of a portable diesel pump that pumps the water upslope through approximately 5000 feet of pipe for irrigation to the highest fields on the east side of Parks Creek south of Dennis Reservoir. The decision to use this pump is made on an annual basis based on the water year, estimated stocking rates, and the price of diesel. It has not been used since 2011. Water from Bridge Field Springs is also re-diverted at Parks #5 (eWRIMS S019847) to irrigate the fields served by that POD. Approximately one acre-foot is diverted from November 1 to March 1 of the succeeding year for winter stockwatering.

Black Meadow Spring emanates in the SE of the SE of Section 33 (T43N, R05W), approximately 500 feet northeast of the downstream POD of the Bridge Field Springs and is diverted (eWRIMS S018105) north or west to irrigate pastures and provide stockwater. Less than an acre-foot is diverted for winter stockwatering.

All of the above described water rights for the Enrolled Property are presented in Table 2. Active and not actively managed POD are listed. The table displays the water right amounts, points of diversion, and irrigated acres served by those rights on the Ranch. The information presented in Table 2 is a good-faith effort to present the irrigation and stock water management by the Permittee for the purpose of understanding the possible changes through time and space from the ranch stewardship and the context for improving aquatic habitat conditions for the covered species. It may not be suitable for any other purpose. The variables displayed in the table are a compilation of data and estimates from a variety of sources and through a range of hydrologic conditions.

Figure 2 illustrates the irrigation infrastructure on the Enrolled Property. These are the POD and ditches for the water rights described above.

**Table 2. Shasta Springs Ranch – Water Rights, Amounts, Timing, Acres Irrigated, and Days Used by Diversion**

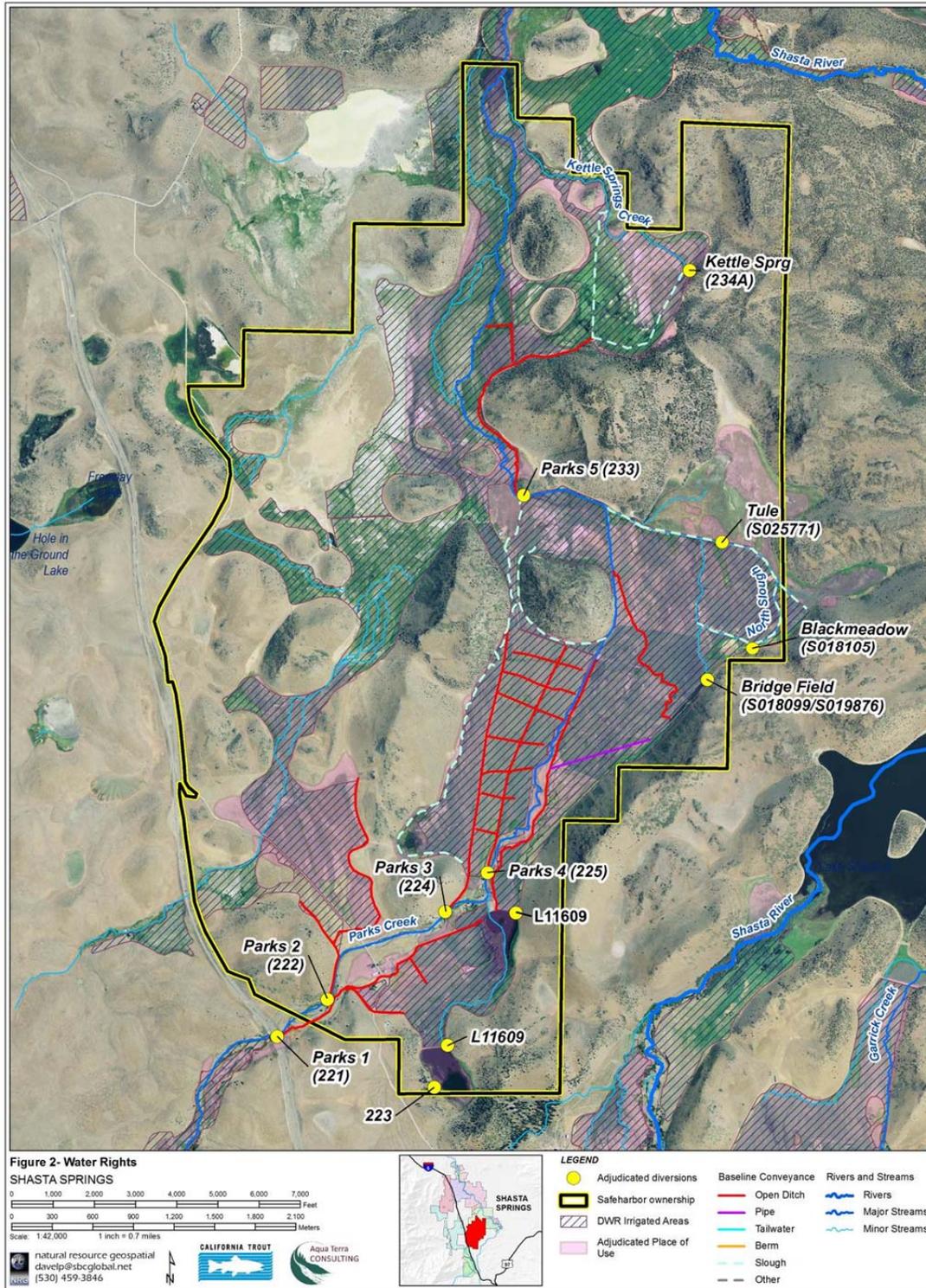
*Note: The information presented in this table is an estimate of potential use, is presented for the purpose of understanding how habitat conditions will be enhanced, and is not intended for any other use. The data below are a compilation of estimates from a range sources and hydrologic conditions.*

Report	Diversion #/Water Source	Description	Season	Licensed, Riparian, or Adjudicated Amounts (cfs)	Approximate Ac-Ft per Season Diverted	Approximate Days per Season Diverted	Approximate Acreage Irrigated with Diversion <sup>1</sup>
Watermaster	221/Parks Creek	Parks 1	Summer (March 1-Nov 1)	2.25	510	244	230
Watermaster	222/Parks Creek	Parks 2		2.5	350	122	230
Watermaster	223/unnamed spring	unnamed spring		0.45	215	244	125
Watermaster	224/Parks Creek	Parks 3		1.3	500	140	170
Watermaster	225/Parks Creek	Parks 4		1.65	110	60	185
Watermaster	226,228/Parks Creek	non-active; Div226 POD is opposite Parks 4		5.3	-	-	-
Watermaster	227,230/Parks Creek	non-active		1.2	-	-	-
Watermaster	231/Parks Creek	non-active		0.85	-	-	-
Watermaster	233/Parks Creek	Parks 5		0.8	518	183	128
Watermaster	234/Duke Spring	non-active		0.05	-	-	-
Watermaster	234A/unnamed spring	Kettle Springs		1.15	185	75	100

<sup>1</sup> Some diversions include Stock Watering as a Summer Season use

S018099	unnamed spring (divert)	Bridge Field Spring		1.8	900	244	365
& S019847	& 233 (redivert)						
S018105	unnamed spring	Black Meadow Spring		0.9	382	214	243
License 11609	Upper Dennis Reservoir & Dennis Reservoir/ two unnamed streams tributary to Parks Creek	Licensed use for irrigation, stockwater, and recreation	Oct 1-May31	NA	106	212	254
S025771	Tule Patch/North Slough	Fish & Wildlife, Preservation & Enhancement	Sept 1-Jan 31	NA	294	153	75
S023971	221/Parks Creek	Parks 1	Winter (Nov 1- March 1)	0.5	120	121	Stockwater
S018099	unnamed spring & Div233/ Parks Creek	Bridge Field Spring		0.7	168	121	Stockwater
S018105	unnamed spring & Div233/ Parks Creek	Black Meadow Spring		0.35	64	121	Stockwater

**Figure 2. Shasta Springs Ranch: Water Rights**



## C. Baseline Conditions

### C.1. Baseline

Baseline Conditions means the habitat conditions for the Covered Species on the Enrolled Property when NMFS approves this Site Plan Agreement. The Enrolled Property is within the Mid- and Lower Reaches of Parks Creek within the Agreement Area. Baseline Conditions for the Enrolled Property are the conditions described in the Agreement for these reaches of Parks Creek.

**C.2. Elevated Baseline** Elevated Baseline Conditions are certain Baseline Conditions improved as a result of certain Beneficial Management Activities, described below.

Table 3 summarizes the Beneficial Management Activities required to maintain Baseline Conditions, to achieve Elevated Baseline Conditions on the Enrolled Property for the term of the Site Plan Agreement. The Beneficial Management Activities implement habitat enhancement actions recommended in the Agreement for the Mid- and Lower reaches of Parks Creek. Section E below describes the activities in more detail.

**Table 2. Net Conservation Benefit Actions: Shasta Springs Ranch**

Habitat Parameter	Net Conservation Benefit Actions			
	Projects for Present Day Baseline (Completed)	Present Day Baseline (Maintain)	Elevated Baseline Condition (Upgrade)	Other Beneficial Management Activities
Hydrology/Water Quality	<p>Fencing completed in (or about 2011) excluding cattle from accessing channel and banks</p> <p>Modified irrigation practices to control tailwater and avoid its entering streamflow as surface water</p>	<p>Cattle access to the channel will be excluded or restricted to crossings and/or limited season/stocking/duration that conserves water quality, per riparian grazing plan developed with UCCE (<i>Shasta Springs Section E.1.c.; Attachment</i>)</p> <p>Continue maintenance of tailwater berms</p> <p>Continue irrigation practices to minimize/eliminate</p>	<p>Agree to conduct evaluation of water quality conditions in and in the vicinity of the road crossing over Kettle Springs Creek and implement projects to diminish/eliminate impacts from irrigation or pasture management. <i>Time Frame: Within 2 years of permit issuance</i></p> <p>Agree to construct enhanced tailwater berm if applied irrigation is found to still be creating</p>	<p>Agree to further evaluation to determine feasibility of getting spring water on east margins of fields east of the Mid-Parks Creek to alcoves or reconfigured Mid-Parks reach (Mid-Parks Creek Project) <i>Time Frame: 5 years from permit issuance with projects or Meet &amp; Confer to follow</i></p> <p>Participate in, including bypassing flow from Upper reach,</p>

Habitat Parameter	Net Conservation Benefit Actions			
	Projects for Present Day Baseline (Completed)	Present Day Baseline (Maintain)	Elevated Baseline Condition (Upgrade)	Other Beneficial Management Activities
	<p>(2010)</p> <p>Repaired and maintaining tailwater berms in pastures bordering stream channels</p> <p>Participated in Irrigation Efficiency Study to evaluate opportunities for additional instream flow for fish habitat (Davids Engineering 2011)</p> <p>Cooperated in Interim Instream Flow Needs study (McBain &amp; Trush, Inc, 2013)</p> <p>Completed project to rebuild Kettle Springs diversion system</p> <p>Participated in Parks Creek flow/diversion experiments to</p>	<p>tailwater</p> <p>Continue to operate and maintain new (2017) Kettle Springs spring source management structure, as designed</p> <p>Collaborating with UCCE in research testing applicability of soil moisture monitoring technology to improve irrigation efficiency</p>	<p>tailwater returning to Kettle Springs Creek as surface water <i>Time Frame: Within 5 years of permit issuance</i></p>	<p>Parks Creek Flow Strategy <i>Time Frame: for duration of permit</i></p> <p>Agree to bypass (leave instream) &gt;=1 cfs of Bridge Field Springs for 5 year interim period to complete Mid-Parks Cr Project feasibility study <i>Time Frame: 5 years from permit issuance</i></p> <p>Agree to include additional pastures in Study Area to research applicability of soil moisture monitoring technology and incorporate into irrigation management where appropriate <i>Time Frame: Within 5 years of permit issuance</i></p> <p>Agree to take part in project to improve Parks#4 POD to be able to divert on both sides of Parks Creek and leave irrigation demand, normally diverted at Parks #1, instream, depending on water quality objectives prescribed by annual implementation of</p>

Habitat Parameter	Net Conservation Benefit Actions			
	Projects for Present Day Baseline (Completed)	Present Day Baseline (Maintain)	Elevated Baseline Condition (Upgrade)	Other Beneficial Management Activities
	<p>develop Parks Creek Flow Strategy (2016)</p> <p>Ceased using Kettle Springs Impoundment (old configuration) as a drain for slough to south</p>			<p>Parks Creek Diversion Management</p> <p><i>Strategy Time Frame: Within 5 years of permit issuance</i></p>
<p>Passage/Migration/Screening</p>	<p>Until 2008, no known use of Parks Creek by the Covered Species. Permittee provided access for CDFW evaluation, subsequently documenting use of the sub-reach as rearing habitat (CDFW, 2009)</p> <p>Parks #5 Diversion, previously a flashboard dam, reconstructed with roughened channel configuration with grant through USFWS and</p>	<p>Continue to maintain and operate Parks#5 improved POD infrastructure, complying with current CDFW requirements for passage, bypass flows, and screening</p> <p>Continue to conduct redd/spawner surveys</p>	<p>Agree, as part of Mid-Parks Creek Project, to upgrade spring channel POD to current CDFW screening and fish passage standards <i>Time Frame: Within 10 years of permit issuance</i></p>	<p>Agree to conduct water quality investigation of Bridge Field Springs Creek and the North Slough <i>Time Frame: Within 2 years of permit issuance</i></p> <p>Agree to continue cooperation in project to eliminate potential salmon migration barrier on upstream landowner (Parks Cr under I-5) <i>Time Frame: Underway; Completion Estimated within 2 years of permit issuance</i></p> <p>Agree to re-evaluate for possible improvement to screen &amp; fish bypass configuration at Parks #3 diversion <i>Time Frame: funding for design and implementation will be</i></p>

Habitat Parameter	Net Conservation Benefit Actions			
	Projects for Present Day Baseline (Completed)	Present Day Baseline (Maintain)	Elevated Baseline Condition (Upgrade)	Other Beneficial Management Activities
	<p>design assistance from NRCS (2014);</p> <p>Provided access for previous construction and current planning for salmon passage barrier remediation on Parks Creek under I-5.</p> <p>Conducted first redd/spawning surveys in Parks Creek</p>			<p><i>sought within 5 years if permit issuance</i></p> <p>Agree to develop and implement beaver management plan to alter or provide access around potential migration barriers at dams (Section E.3.c.) Time Frame: Within 5 years of permit issuance.</p>
Large Wood/Channel Type/Capability	<p>Dam-building beavers are not discouraged except where crossings or fencing are impaired.</p> <p>Added large wood enhancement, in Kettle Springs Creek (Shasta Springs Section E.1.d.)</p>			<p>Collaborate with NMFS and CDFW for Mid-Parks Creek Project, which may include projects in this category. Time Frame: Within 10 years of permit issuance</p> <p>Agree to develop and implement beaver management plan (Section E.3.c.) Time Frame: Within 5 years of permit issuance</p>

Habitat Parameter	Net Conservation Benefit Actions			
	Projects for Present Day Baseline (Completed)	Present Day Baseline (Maintain)	Elevated Baseline Condition (Upgrade)	Other Beneficial Management Activities
Riparian Condition/ Acres	<p>Fencing completed on most the length of Parks Creek and tributaries excluding cattle from riparian habitat</p> <p>Riparian plantings were included as part of Parks #5 Diversion upgrade (2014)</p> <p>Re-aligned fence to protect riparian planting at Parks#5</p> <p>Riparian plantings were included as part of Kettle Springs Diversion upgrade (2017)</p>	<p>Agree to maintain existing riparian exclusion fencing or, if modified, riparian pasture fencing with associated grazing plan developed in consultation with UCCE Range Conservation Specialists</p> <p>Permittee agrees to monitor survival of riparian plantings At Parks#5 and replace damaged beaver exclosures until cuttings are established</p> <p>Will replace, out-of-pocket, up to 20% of riparian fencing damaged by high flow events and seek additional funding if necessary to complete repairs</p>	<p>In the sub-reaches of Parks Cr. without exclusion fencing, Cattle access to the channel and riparian zone will be restricted to crossings and/or limited season/stocking/duration that conserves habitat quality, consistent with recommendations of UCCE Range Conservation Specialists (<i>Attachment Tate &amp; Rivers, 2016</i>) <i>Time Frame: Within 2 years of permit issuance</i></p>	<p>Collaborate with NMFS and CDFW for Mid-Parks Creek Project, which may include projects in this category. <i>Time Frame: Within 10 years of permit issuance</i></p> <p>Post-alteration of Cardoza's POD, agree to work collaboratively with NMFS and CDFW on riparian enhancement projects in lower Mid-Parks Creek Reach (<i>Section E.3.d.</i>) <i>Time Frame: Within 5 years of completion of diversion alteration project</i></p> <p>Agree to develop and implement beaver management plan (<i>Section E.3.c.</i>) <i>Time Frame: Within 5 years of permit issuance</i></p>
Instream Habitat Complexity (alcoves, side channels and floodplains)				<p>Collaborate with NMFS and CDFW for Mid-Parks Creek Project, which may include projects in this category <i>Time Frame: Within 10 years of permit issuance</i></p> <p>Agree to develop</p>

Habitat Parameter	Net Conservation Benefit Actions			
	Projects for Present Day Baseline (Completed)	Present Day Baseline (Maintain)	Elevated Baseline Condition (Upgrade)	Other Beneficial Management Activities
				and implement beaver management plan ( <i>Shasta Springs Section E.3.c.</i> ) <i>Time Frame: Within 5 years of permit issuance</i>
Substrate Quality	Cooperated in study to evaluate gravel composition and quality (McBain and Trush, et al., 2010)	Seven livestock/vehicle crossings/watering access lanes will be maintained as rocked fords ( <i>Section E.1.c.</i> ) One instream stockwater only access point will be maintained with rock and panels, minimizing erosion potential to bank		Collaborate with NMFS and CDFW for Mid-Parks creek Project, which may include projects in this category. <i>Time Frame: Within 10 years of permit issuance</i>

## **D. Routine Land Use**

### **D.1. Present Routine Land Use**

The Enrolled Property consists of 5900± acres. The Enrolled Property is managed as a cow-calf operation running about 400-500 pairs. Together with replacement heifers and bulls, the Enrolled Property carries about 650 to 800 head. Calving typically begins in early October and lasts through December. Calves are weaned, beginning at the end of July and shipped in August and September before the next round of calving, with some heifers kept each year for replacements.

Cattle graze irrigated (actively and sub-) pastures and dry land range (See Table B4) supplemented by hay. Supplemental feeding begins about the end of November and lasts through the end of March, by which time pasture and range conditions are sufficient to sustain the herd.

The irrigated acres are grass pasture. Three-quarters of the twenty one hundred acres are flood irrigated while approximately 500 acres are subirrigated. Diverted water (including a small amount of stock water) is conveyed principally in open, unlined ditches.

As discussed above under Description of Water Rights for the Enrolled Property, there are also two ponds with a combined total of ±106 acre-feet, with a licensed use for irrigation, stock water, and recreation. They are used, as well, to create head to deliver water to fields on the east side of Parks Creek and/or catch tailwater for re-use. Wildlife, especially waterfowl, also use the reservoirs. Two smaller impoundments (Bridge Field and Kettle Springs) are not for storage but for management of spring flows.

In the fall and winter, approximately 73 acres are flooded and kept inundated to create wetland habitat for overwintering waterfowl.

There are four rocked ford vehicle crossings on the Enrolled Property, for crossing Parks Creek. These are also used as stock crossings. Three additional rocked fords across Parks Creek are used for stock and ATVs only. All wet crossings serve as stockwatering access as well. There are five crossings over culverts -- one across Bridge Field Springs Creek, one across Kettle Springs Creek, one across Parks Creek, and two across the North Slough. All five are used for livestock, ATVs, and vehicles, including heavy equipment over Parks Creek and Kettle Springs Creek, by which all the property west of the river may be accessed. One additional piped crossing (at Kettle Springs POD) is for livestock and ATV use, only. There is one stock watering access lane that is not a crossing. Management and maintenance of crossings and watering lanes are further addressed in the section regarding Avoidance and Minimization Measures.

There is one county road right of way, Slough Road, which includes a bridge over Parks Creek.

#### **D.1.a. Irrigation Management** *(Figure 2)*

Activities:

- Positioning and repositioning headgates for irrigation and stock watering throughout

irrigation season (and to a lesser extent through the winter season) as crop demand, stock water needs, and water supply dictate.

- When used, place portable pump at south end of Bridge Field Springs Impoundment, start pump, refuel pump
- Ongoing maintenance, management, and repair of boulder weirs
- Maintain measuring device(s)

#### **D.1.b. Irrigation Maintenance** (*Figure 2*)

Activities:

- Diversion intake maintenance and cleaning;
- Operation and maintenance of diversion measuring devices
- Board or tarp removal/placement in ditches;
- Pump maintenance;
- Ditch cleaning and maintenance
- Tailwater berm maintenance
- Pipeline maintenance

#### **D.1.c. Riparian Pasture Grazing Management**

Activities: None currently. See *Beneficial Management Activities* for proposal to implement riparian pasture grazing in two areas

#### **D.1.d. Fence Maintenance**

Activities:

- Maintain narrow-corridor riparian exclusion fencing
- Install and maintain temporary electric fencing for riparian pasture boundaries
- Install fixed fencing for riparian pasture boundaries
- Maintain panels and/or fencing in riparian zone to limit livestock access to channel at water gaps, crossings, and property boundaries
- Remove and/or replace panels and/or fencing at water gaps for high stream flow events

#### **D.1.e. Road Use and Maintenance**

Activities:

- Use and maintain four vehicle fords across Parks Creek, and six piped (CMP) crossings.
- There are approximately 2.3 miles of road segments within 150' feet of Parks Creek on the Shasta Springs. Except for crossings the balance of the road segments are much further from any perennial or seasonal stream. 1500 feet of road are on the east side of Parks Creek and used to access, maintain, and operate the Parks #5 diversion. The longest road segment is approximately 2 miles road running roughly parallel to Parks Creek from about the Parks #4 diversion to the crossing downstream from Goat Hill in the NW ¼ of Section 33 (T43N R05W). Another road segment access the Kettle Springs POD. These, like all of the internal roads on the Enrolled Property, receive light use, primarily by ranch ATVs or, occasionally, pickups or a backhoe. Use of the road

paralleling Parks Creek has increased significantly over the last ten years to accommodate personnel conducting fisheries and water quality investigations. Traffic is not expected to increase above current levels. Traffic is nevertheless light and the side slope between the road and the river is almost flat and covered with perennial grasses or riparian vegetation with very little sign of erosion. If used by heavier trucks or equipment, it would be to implement a Beneficial Management Activity and likely therefore not used during the wet season, except in an emergency.

#### **D.1.f. Livestock and Vehicle Wet Crossings and Watering Lanes**

Activities:

- Use and maintain four vehicle fords across Parks Creek
- Periodic use of wetted fords for crossing cattle at seven designated crossings (inclusive of four vehicle fords)
- Crossings will be maintained for crossing vehicles and watering and crossing livestock
- One instream stockwatering only point will be maintained using panels or other effective livestock management equipment to limit access to approximately twenty-five linear feet of wetted channel to meet watering needs for up to 250 pairs.

#### **D.1.g. Herbicide (Weed Management), Fertilizer, or Pesticide Use)**

Activities:

- Periodic use of herbicide by the Permittee or the County, with the permission of the Permittee
- The use of fertilizers is not a current practice but the Permittee chooses to retain the opportunity to use fertilizers at a future date by including AMMs for this activity in this agreement.

### **D.2. Avoidance and Minimization Measures**

### **D.2. Avoidance and Minimization Measures**

#### **D.2.a. Water Diversion and Diversion Facilities**

Per the Agreement for this section, the following AMMs will be applied on the Ranch:

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.

Fish passage will be provided for all life stages when sufficient flows are available

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.

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. Permittee 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.

### *Monitoring*

Log of what in-water work occurred and what AMMs were implemented shall be included in the annual report

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 that 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 that includes:
  - Site code
  - Photo's code (digital label)
  - Date photos were taken

- Description of what was being documented (riparian growth, project implementation, etc.)

#### **D.2.b. Irrigation Management and Maintenance**

Per the Agreement for this section, the following AMMs will be applied on the Ranch:

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.

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, 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.

When a bypass pipe is present, the bypass entrance(s) shall be installed and operated such that all life stages of the Covered Species including out-migrants 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.

When cleaning/maintaining irrigation or drainage ditches, 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 in a location where the materials cannot wash into any stream channel or Covered Species habitat.

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

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

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 other mutually agreed upon individuals

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 plan and/or the Permittee's individual site plan

### *Monitoring*

Log of maintenance activities carried out within the calendar year shall be included in the annual report

### **D.2.c. Riparian Pasture Grazing Management**

Pasture grazing is the prevailing land use. Riparian pasture grazing is proposed for along the Lake, Olms, Felix, Bridge, Hay (2), Black Meadow, Goat Hill, Wheat, and West Cattle fields.. Per the Agreement for this section, where grazing of riparian pastures occurs the following AMMs will be applied:

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

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 stream banks, riparian vegetation, spawning and rearing areas, and avoid direct impacts to spawning and rearing coho salmon.

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 CDFW or NMFS. 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 Permittee'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 and 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.

*Monitoring:*

Where riparian grazing occurs:

Three to five permanent photo points 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 report with at least the following two sections:

1. Photo Point monitoring map that 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

2. Photo Log that 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 annual SHA report. At a minimum, the log will include the following, 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 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 the riparian grazing management plan is effective..

#### **D.2.d. Fence Maintenance**

Per the Agreement for this section, the following AMMs will be applied on the Ranch:

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.

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 20% of fencing and request funding assistance for the remaining repairs beyond the percentage of its commitment.

*Monitoring:*

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

**D.2.e. Road Maintenance**

Per the Agreement for this section, the following AMMs will be applied on the Ranch:

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>.

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.

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.

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

*Monitoring:*

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

**D.2.f. Livestock and Vehicle Wet Crossings and Watering Access Lanes**

Per the Agreement for this section, the following AMMs will be applied on the Ranch:

Cross livestock and vehicles only at stable designated locations where potential spawning gravel, incubating eggs, and fry are not present. Wet crossings and

watering access for cattle should be armoured with rock. Fencing should be installed to guide the cattle to the crossing and, where necessary, across the stream on the armoured surface while minimizing impacts to the stream and stream banks.

Factors considered when selecting a crossing and/or watering access 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. Watering access lanes are of similar construction and may or may not span the width of the channel.

Angular rock will be applied to the crossing, or watering access lane, 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, or watering access lane, is established, the landowner will collaborate 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.

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

#### *Monitoring:*

All maintenance activities related to vehicle and livestock crossings and watering access lanes 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.)

#### **D.2.g. Herbicide (Weed Management), Fertilizer, and Pesticide Use**

Per the Agreement for this section, the following AMMs will be applied on the Ranch:

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 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.

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

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

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

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

#### *Monitoring:*

A log of herbicide, fertilizer, and pesticide use activities carried out within the calendar year shall be included in the annual report.

#### **D.2.h. Flood or Emergency Events**

Per the Agreement for this section, the following AMMs will be applied on the Ranch:

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.

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

*Monitoring:*

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

## **E. Beneficial Management Activities**

This section provides a detailed description of Conservation and Habitat Enhancement Activities that are ongoing and those that will be implemented on the Enrolled Property for the benefit of the Covered Species.

### **E.1. Completed and Sustained Beneficial Management Activities**

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 Safe Harbor Agreement. This section includes completed studies and research by Permittee and others that continue to contribute to the knowledge base informing the Agreement.

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

*Increased delivery and irrigation efficiencies (Completed and Sustained)*

- With funding provided by the Pacific States Marine Fisheries Commission under a grant from NOAA in cooperation with CDFW, undertook an irrigation efficiency study
- Cooperated in more than seven years of CDFW studies of juvenile salmonid distribution and habitat use with direct observations, PIT tag technology, water temperature and flow monitoring, etc.
- Permittee has completed project to design and construct a spring source management structure at the head of Kettle Springs Creek, including replacing 2300 feet of open ditch with pipe and alfalfa valves. Permittee agrees to operate and maintain the Kettle Springs Irrigation Management Structure that by design leaves flow in excess of water right instream
- Permittee is cooperating with UCCE to experiment with the use of soil moisture sensors and related technology to optimize applied water, which may result in a reduction of diversion and, ideally, improved instream water quality. Permittee agrees to implement modified irrigation practices if so informed by the findings of the research

*Tailwater Reduction (Completed and Sustained)*

- Permittee repaired and will continue maintaining tailwater berms at the low side of irrigated pastures
- Permittee agrees to continue to refine irrigation practices that minimize applied water accumulating at the low side of fields

*Participation in reach-wide Diversion Management Plan (Completed)*

- Participated in 2016 flow/diversion experiments in Parks Creek to evaluate

alternative diversion coordination scenarios

- Cooperated in McBain and Trush, Big Springs Complex Interim Instream Flow Needs study with access and data

*Upgrade/repair/maintain diversion facilities (Completed and Sustained)*

- Ceased using Kettle Springs impoundment and outlet as a drain for the slough to the south
- Permittee has completed redesign and upgrade of diversion structure at the head of Kettle Springs Creek to 1) provide uninterrupted flow of water from Kettle Springs, 2) preclude fish from swimming into ditches while still being able to irrigate, 3) increase efficiency, allowing more water to be kept instream for summer rearing habitat. Permittee agrees to operate and maintain the structure and pipelines

*Water exchanges* – No activities in this category

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

*Research (Completed)*

- Conducted for one year and participated in, for several years, spawner surveys for all reaches with suitable spawning habitat
- Cooperated in more than seven years of CDFW studies of juvenile salmonid population estimates, distribution, and habitat use with direct observations, PIT tag technology, water temperature monitoring, flow monitoring, etc.

*Remediation of identified on-site barriers (Completed and Sustained)*

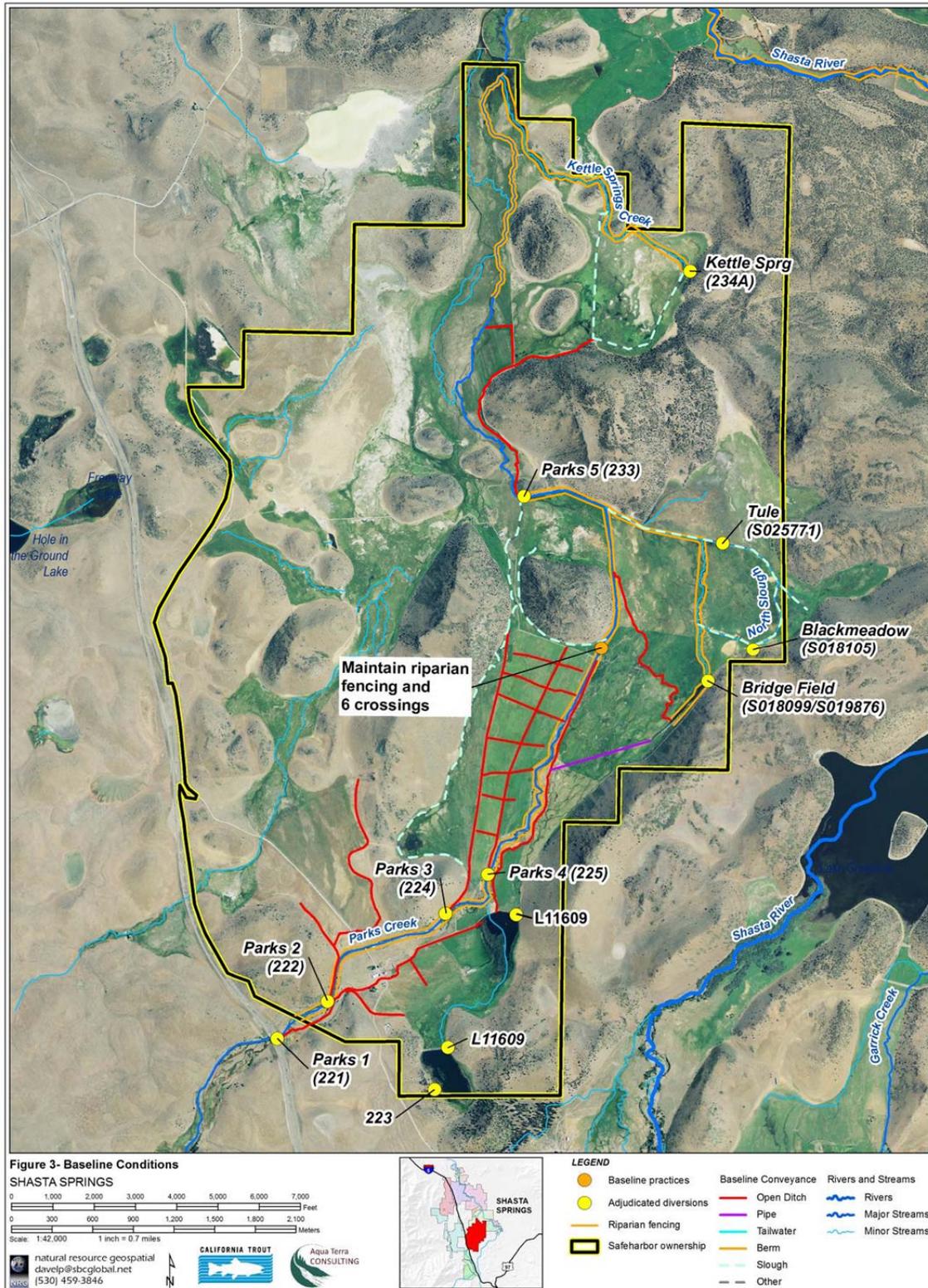
- With grant from USFWS Partners in Fish and Wildlife Program, and a match from the NRCS, modified Parks #5 Diversion from a flashboard dam to a roughened channel, eliminating a potential barrier to juvenile Covered Species springtime distribution
- Permittee cooperated in studies to reconstruct fish migration barrier located upstream of the Enrolled Property (under the I-5 bridge) with closest access through the property and agrees to continue cooperating to completion and for monitoring

**E.1.c. Riparian Function/ Channel Structure**

*Riparian Fencing*

- Permittee, with matching funding from USFWS Partners in Conservation Program and NFWF, has fenced 60% of Parks Creek, 100% of Kettle Springs Creek, and 80% of Bridge Field Springs Creek to exclude cattle grazing
- Permittee agrees to maintain riparian fencing
- Permittee agrees to replace, out-of-pocket, at least 20% of riparian fencing if needed due to high flow damage. Partners for additional funding to replace fencing to 100% will be sought, if necessary.

**Figure 3. Shasta Springs Ranch: Baseline Conditions**



*Crossings on Fish-bearing Stream Reaches (Completed and Sustained)*

- Permittee has limited cattle and vehicle fording across Parks Creek and tributaries to four vehicle/stock crossings and three stock only crossings.
- Permittee agrees to maintain crossings and cap the number of livestock and vehicle access points to current number

*Off-Channel Stock Watering (Completed)*

- Permittee realigned fencing to water cattle off-channel in pastures west of Parks Creek in Section 5

*Beaver management (Completed)*

No beaver-created fish passage barriers yet detected

- beaver-exclusion cages were added to riparian plantings at Parks #5 Fish Passage Improvement Project

*Riparian Habitat*

- Included woody riparian planting with Parks #5 Fish Passage Improvement Project, including re-alignment of exclusion fence at Permittee's expense
- Permittee agrees to monitor survival of plantings at Parks #5 and replace any damaged tree protection until cuttings are established
- Included woody riparian planting with Kettle Springs Improvement Project,

**E.1.e Spawning Substrate (Completed)**

- Cooperated in McBain and Trush study (*McBain & Trush, et al., 2010*) by allowing access for evaluation of gravel composition and quality

Riparian function measures, See Section E.1.c., above

**E.1.f. Sediment/Turbidity (Completed and Sustained)**

Riparian function measures, See Section E.1.c., above

Tailwater reduction measures, See Section E.1.a., above

**E.1.g. Floodplain Function** – No activities in this category

**E.1.h. Pasture Management**

*Pasture Grazing Management*

- Fall calving producing calves big enough to fully utilize upland, seasonal range, comprising more than half of the Enrolled Property
- Rotation and stocking rates in irrigated and non-irrigated pasture managed to maintain optimum forage cover and heights based on water year type

**E.2. Proposed Beneficial Management Activities**

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

*Increased delivery and irrigation efficiencies*

See Section E.3.a., below

*Tailwater Reduction*

Permittee agrees to construct and maintain enhanced tailwater berms to eliminate tailwater returning as warm surface flow to Kettle Springs Creek, if applicable. Time Frame: Within 2 years of permit issuance

*Soil Moisture Monitoring Program*

See Section E.3.a., below

*Participation in reach-wide Diversion Management Plans*

See Section E.3.a., below

*Upgrade/repair/maintain diversion facilities*

See Section E.3.a., below

*Water exchanges -- None proposed*

*Diversion relocation/combination*

See Section E.3.a., below

*Other*

Permittee agrees to conduct an evaluation of water quality conditions in and in the vicinity of the road crossing over Kettle Springs Creek to identify and eliminate any man-made variables contributing to elevated temperatures observed in this stream segment in past studies. Time Frame: Study will be completed within 2 years of permit issuance. Solutions for management-induced variables will be sought concurrently with findings and implemented within five years of permit issuance

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

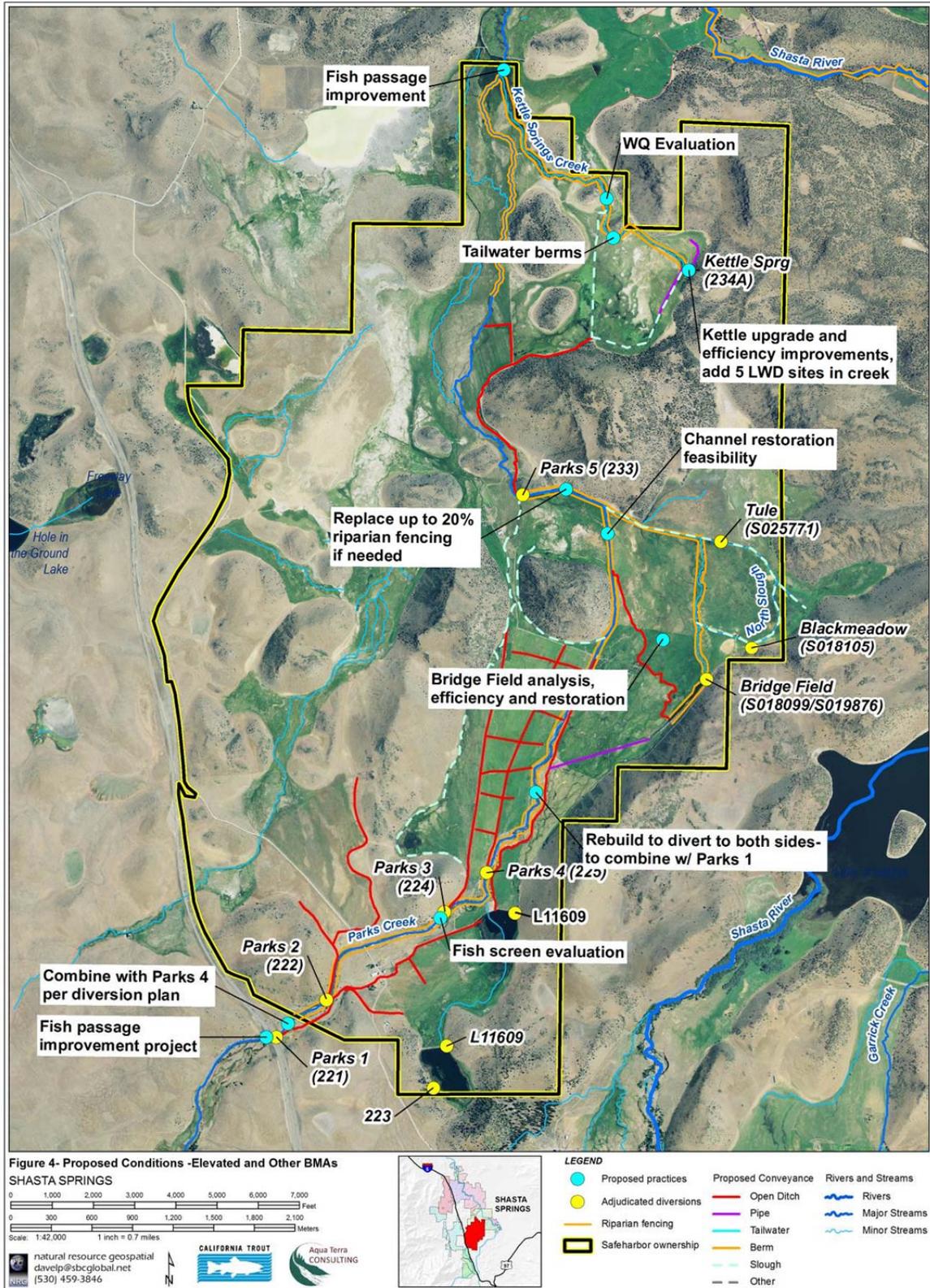
*Remediation of identified on-site barriers*

See Section E.3.c. "Beaver Management", below

*Diversion Screening*

See Section E.3.b., below

Figure 4. Proposed Conditions



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

*Remediation of identified on-site barriers*

See Section E.3.c. “Beaver Management”, below

*Diversion Screening*

With acquisition of funding, Permittee agrees to upgrade remaining POD to current fish passage and screening standards, post-evaluation that will be part of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. See Section E.3.

**E.2.c. Riparian Function/ Channel Structure**

*Riparian Fencing* – No additional proposed

*Prescribed Riparian Grazing Intensity/Frequency*

Permittee agrees to implement the riparian grazing plan developed in conjunction with UCCE Range Specialists for riparian pastures along Parks Creek in and upstream of the Wheatgrass Field. See Attachment: *Tate and Rivers, 2016* Time Frame: Within 2 years of permit issuance

Permittee agrees to implement the riparian grazing plan developed in conjunction with UCCE Range Specialists for riparian zone inside the corridor fencing along Parks Creek between the Lake Field and the North Slough. See Attachment: *Tate and Rivers, 2016* Time Frame: Within 2 years of permit issuance

*Crossings* – None proposed

*Off-Channel Stock watering* – No additional proposed

*Beaver management*

See Section E.3.c., below

*Riparian Habitat*

See Section E.3.c., below

*Riparian management (e.g., promote aquatic vegetation growth)* – None proposed

*Channel Structure Improvement (e.g., instream LWD additions)*

See Section E.3.c, below

**E.2.d. Spawning Substrate**

*Riparian function measures* – No additional proposed

*Providing access to potential augmentation projects*

See Section E.3.d., below

**E.2.f. Floodplain Function**

*Identification of potential floodplain habitat sites* – None proposed

*Beaver management to promote floodplain function*

See “Riparian Function/Channel Structure: Beaver Management,” Section E.3.c., below

## **E.2.g. Pasture Management**

*Pasture Grazing Management* – None proposed

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

Many of the Beneficial Management Activities proposed in the following sub-sections, are components of a larger project called, for now, the “Mid-Parks Creek, East Side Pastures and Spring Channels Renovation Evaluation Project” (Mid-Parks Creek Project, henceforth). While there are a number of projects on the Enrolled Property, referenced below, the complexity of this Project warrants an additional account of the setting and scope, which is the purpose of the following paragraphs.

The geographic vicinity of this project is a sub-reach of Mid-Parks Creek from the meanders alongside the Olms Field (*referencing Figure 2, about 0.5 mile downstream, or North, of POD Parks #4*) through to the confluence of the North Slough, and continuing downstream to POD Parks #5. The Parks Creek channel through this subsection may have been altered by past owners to improve drainage and control over flood events, at some un-quantified cost to stream ecology. All life stages of the Covered Species have been documented using this reach, including for summer rearing in at least one year with a wet to very wet hydrograph. Using elevations from USGS 1:24000 topographic models, the slope averages less than 0.25% through this sub-reach. Bed material, including potential spawning gravels, are often carried out of the channel by high flow events and deposited on the pastures bordering Parks Creek.

On the other side of the pastures, east of the stream, numerous springs and seeps emerge, on and off the property, at the interface of the block and matrix geologies of the Pleistocene Debris Flow Deposits which underlie the Enrolled Property (Davids Engineering, 2011). Generally the drainage away from these sources is north-northwesterly, with very flat slopes, similar to the Parks Creek channel. Past owners have made modifications to improve the drainage and ability to use flood irrigation to distribute water across the pastures. The Permittee has added infrastructure to improve the efficiency of the irrigation but maintenance of the distribution ditches and sloughs to keep water flowing is a significantly labor intensive task and leads to loss of productivity. The significant spring sources are on a contour with or downslope of a third of the pasture acreage on the east side of Parks Creek as well as the reach of Parks Creek that is documented as providing some summer rearing habitat.

Based on past experiences, e.g. the Kettle Springs Improvement Project, the Permittee believes there is the potential to improve habitat for the Covered Species while realizing an increase, or minimal net loss, in productivity of the pastures. In order to evaluate this potential for the Mid-Parks Creek reach through the Enrolled Property, the Permittee agrees to participate in the Mid-Parks Creek, East Side Pastures and Spring Channels Renovation Evaluation Project (Mid-Parks Creek Project, henceforth).

This will be a joint undertaking with NMFS and CDFW to define and evaluate alternatives, i.e. a feasibility study, for improving irrigation reliability and efficiency while increasing available instream habitat (cold water and habitat complexity) for especially summer rearing but also adult spawning coho and steelhead. Consideration will be given for the opportunity to improve Chinook habitat but that will not be the focus of the project.

During an interim period of five years during which the feasibility study will be conducted, the Permittee agrees to bypass (leave instream) at least one cfs of flow from Bridge Field Springs, assess leaving additional interim flows, and implement if feasible.

When the results of the feasibility study are completed (5 years), one of two potential outcomes is anticipated. The study may identify projects that successfully achieve all of the stated goals of the Mid-Parks Creek Project. In this case the Permittee will work collaboratively with the NMFS and CDFW to commit to implementation of the study recommendations. Alternatively, the results of the study may find that satisfactory improvement of the stream channel and floodplain cannot occur without adversely

impacting current levels of pasture productivity. In this second scenario, the Permittee will expect to meet and confer with the NMFS and CDFW to seek alternative solutions that would provide net conservation benefits for the Covered Species and provide an acceptable level of pasture production for the Permittee. At a minimum (to quantify conservation benefits), existing diversions will be brought up to passage and screening standards.

To summarize the Mid-Parks Creek Project...

Goals:

- 1) Increase the volume of self-sustaining, complex instream habitat for salmonids in Mid-Parks Creek reach and/or unnamed spring channels, including but not limited to safe passage at irrigation diversions in spring channels. The latter would be considered as part of “elevated baseline”;
- 2) Increase the reliability and quality of spring water inflow into Parks Creek from springs east of Parks Creek in the Mid-Parks Creek reach;
- 3) Increase the productivity of the pastures east of Parks Creek on the Shasta Springs Ranch through improved reliability of water and efficiency of irrigation;
- 4) Increase channel and floodplain function, minimize landowner emergency actions to protect property, and reduce overall maintenance during flood flows and the aftermath.

Actions:

- 1) Permittee agrees to collaborate with NMFS and CDFW on a feasibility study, to be completed in five years from permit issuance.
- 2) Permittee agrees to bypass at least 1 cfs of Bridge Field Springs for the interim period of five years from permit issuance, for the feasibility study. Permittee will also assess and, to the extent feasible, provide quantifiable additional (above irrigation demand) spring flows in this period.
- 3) Permittee agrees to work collaboratively with the NMFS and CDFW to commit to implementation of the study recommendations, if the above goals can be satisfactorily accomplished, per the findings of the feasibility study.
- 4) Failing to find satisfactory achievement of the above goals at conclusion of feasibility study, Permittee agrees to meet and confer with NMFS and CDFW to seek alternative solutions to provide net conservation benefits for the Covered Species.

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

*Increased delivery and irrigation efficiencies*

Assuming acquisition of additional funding for evaluation, design, permits, and construction, Permittee will reconstruct, operate, and maintain Parks #4 Diversion to supply irrigation to fields on both sides of Parks Creek (*Figure 5*). Fields on the east side of the creek are currently irrigated by diverting at Parks #1. Between ditch loss savings (of an undetermined quantity) and flow bypassed between Parks #1 and #4, stream habitat quality could benefit significantly, especially during the critical spring time-frame for smolt migration and juvenile Covered Species and steelhead redistribution. Critical riffles, for emigration of smolts and redistribution of fry, in and between the upper and middle reaches of Parks Creek lie between Parks #1 and Parks #4 POD. There is currently only one diversion opportunity for eastside pastures in this vicinity, thus there are limited options for assuring both irrigation demand and fish passage requirements are met. With a project to reconstruct the diversion at the location of Parks #4 to supply

irrigation water to both sides of the stream, as historically existed, flow could be bypassed at Parks #1 when water volume and temperature requirements are optimum for salmonid passage through the critical riffles. As flows and water quality diminish in late spring and early summer, typical of snowmelt streams such as Parks Creek, irrigation demand could be taken at either or both POD, mimicking seasonal change in instream aquatic conditions and responding to seasonal increases in crop and stock water demand. Time Frame: Within 5 years of permit issuance

Permittee agrees to take part in the Mid-Parks Creek Project (*Figure 5*). See account at start of Section E.3. Time Frame: Within 5 years of permit issuance for feasibility study; Implementation or “Meet and Confer” subsequent to study, based on study results.

*Tailwater Reduction* -- No additional proposed

*Soil Moisture Monitoring Program*

Permittee agrees to include additional Ranch pastures in Project Area for testing effectiveness of soil moisture sensor technology to increase irrigation efficiency, implement routine use where appropriate, and adjust irrigation management accordingly

*Participation in Parks Creek Diversion/Flow Management Plan*

Permittee agrees to continue taking part in Parks Creek Diversion Management Strategy with forbearance agreement to bypass (leave instream) water coming from participants in Upper Parks Creek reach. Time Frame: For duration of permit issuance

Permittee agrees to bypass  $\geq 1$  cfs of Bridge Field Springs water for a five-year interim period while feasibility study for Mid-Parks Creek Project is being conducted

*Upgrade/repair/maintain diversion facilities*

See above, “*Increased delivery and irrigation efficiencies*”, for project to restore the capacity of Parks #4 diversion (*Figure 5*). This is restoring diversion capacity to use Parks #4 in the spring on either or both sides of Parks Creek, thereby contributing to the diversion alternatives in the flow management strategy to improve instream flows for smolt emigration and juvenile redistribution. Time Frame: Within 5 years of permit issuance

*Water exchanges* -- None proposed

*Diversion relocation/combination*

See above, regarding Parks #4 POD (*Figure 5*). Time Frame: Within 5 years of permit issuance

*Forbearance Agreement*

Permittee agrees to enter into Forbearance Agreement with SWCG members for the purpose of improving habitat for Covered Species

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

*Remediation of identified on-site barriers*

Permittee agrees to conduct water quality investigation of Bridge Field Springs Creek and the North Slough to evaluate limitations to improving summer rearing conditions for juvenile salmonids. Time Frame: Within 2 years of permit issuance

## Figure 1 Proposed Conditions

Also See Section E.3.c. “Beaver Management”, below

### *Diversion Screening*

Permittee agrees to evaluate alternatives for screen placement at Parks #3 diversion (Figure 2). Existing screen and fish bypass are functioning but further down-ditch than current guidelines recommend. Assuming an improved design can be developed and funded, Permittee agrees to implement upgrade. Time Frame: funding for design and implementation will be sought within 5 years of permit issuance

Permittee agrees to continue cooperating in project to remediate fish migration barrier located upstream of the Enrolled Property (under the I-5 bridge)

### **E.3.c. Riparian Function/ Channel Structure**

*Riparian Fencing – No additional proposed*

*Prescribed Riparian Grazing Intensity/Frequency*

No activities are proposed except potentially as an outcome of Mid-Parks Creek Project

*Crossings – No additional proposed*

*Off-Channel Stock watering*

No additional projects are proposed except potentially as an outcome of Mid-Parks Creek Project

*Beaver management*

Permittee agrees to create a management plan to, at a minimum, not deter dam building beaver activity except where it damages infrastructure, e.g. impairs irrigation control structures, inundates crossings, etc. When necessary, Permittee will work in conjunction with fisheries management personnel to physically breach dams during smolt outmigration, juvenile redistribution, and/or adult spawning periods, generally April to mid-June and November to January or provide alternate passage opportunities through or around the beaver dams. Time Frame: Within 5 years of permit issuance

*Riparian Habitat*

Permittee agrees to take part in riparian planting projects where existing riparian habitat is less than site-potential along Parks Creek. No sites are currently planned however it is expected that sites will be identified as an outcome of Mid-Parks Creek Project,

Post-alteration of diversion at W122.44445, 41.56325, Cardoza’s POD, agree to work collaboratively with NMFS and CDFW on riparian enhancement projects in lower Mid-Parks Creek *Time Frame: within 5 years, post-completion of POD change*

*Riparian management (e.g., promote aquatic vegetation growth)*

No activities are proposed except potentially as an outcome of Mid-Parks Creek Project

*Channel Structure Improvement (e.g., instream LWD additions)*

No activities are proposed except potentially as an outcome of Mid-Parks Creek Project

**E.3.d. Spawning Substrate**

*Riparian function measures* – No additional proposed

*Providing access to potential augmentation projects*

No activities are proposed except potentially as an outcome of Mid-Parks Creek Project,

**E.3.e. Sediment/Turbidity-**

See “*Hydrology/Water Quality: Tailwater Reduction,*” Section E.2.a., above

**E.3.f. Floodplain Function**

*Identification of potential floodplain habitat sites*

No activities are proposed except potentially as an outcome of Mid-Parks Creek Project,

*Beaver management to promote floodplain function*

See “*Riparian Function/Channel Structure: Beaver Management,*” Section E.3.c., above

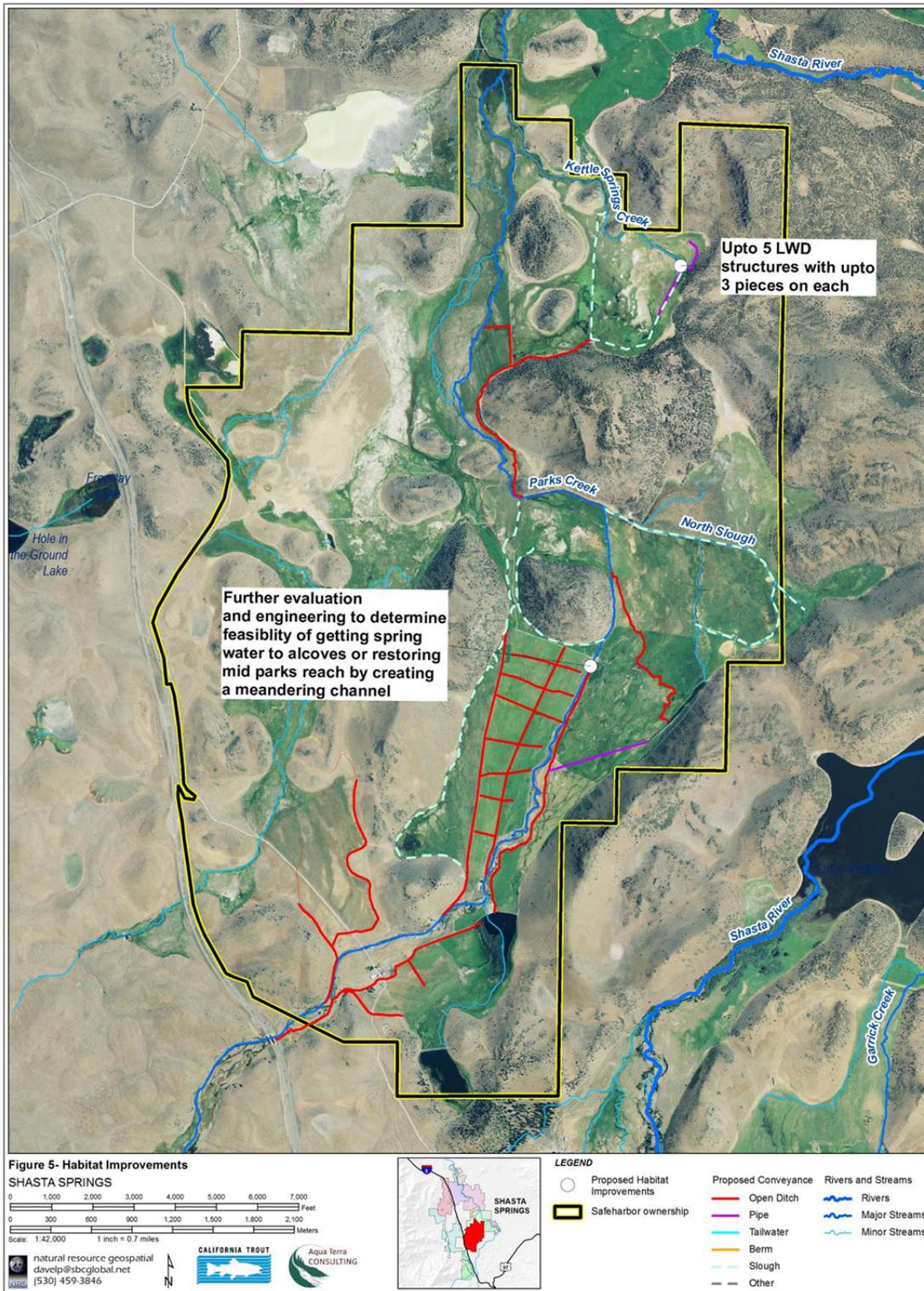
**E.3.g. Pasture Management**

*Pasture Grazing Management* – None proposed

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

The Template Safe Harbor Agreement, Site Plan Agreement and Permit take effect when signed by the Participants/Permittees, NMFS, and CDFW. 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.

Figure 5. Habitat Improvements



## G. Monitoring and Reporting

### G.1 Monitoring

Table 3 Summary of Monitoring Efforts

Beneficial Management Activity	Shasta Springs Ranch Projects	Implementation Monitoring Technique	Effectiveness Monitoring
A. Instream Habitat Structures & Improvements	No additional sites are currently planned however it is expected that sites will be identified as an outcome of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. See "Channel Structure," Section E.3.c.	one to two photopoints per LWD structure and per gravel placement site, will be established, before and upon completion of project, using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document	Reasonable access for maintenance of stream gage(s) <i>Time Frame: duration of agreement</i>  Reasonable access for monitoring salmonid use of LWD <i>Time Frame: until use is established; Adaptive Management Monitoring of, e.g. distribution, is addressed elsewhere</i>
B. Beaver Management	Agree to develop and implement beaver management plan ( <i>Shasta Springs Section E.3.c</i> ) <i>Time Frame: Within 5 years of permit issuance</i>	Completed plan to include parameters for seasonal dam monitoring for fish passage; dam removal or modification process when necessary; and variables to be reported; will be in Annual Report	
C. Barrier Modification for Fish Passage Improvement	Assuming acquisition of funding, Permittee agrees to upgrade remaining flashboard dam POD to current fish passage standards, post-evaluation that will be part of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. See Section E.2.c. <i>Time Frame: Within 10 years of permit issuance</i>  With additional funding, Permittee will reconstruct Parks #4 POD to facilitate Parks Creek Diversion/Flow Strategy to increase suitable in-stream habitat, especially for emigrating juvenile	Summary or reports of studies will be written/obtained and summarized/provided in the annual report	

	<p>salmonids (<i>Section E.3.a.</i>) <i>Time Frame: Within 5 years of permit issuance</i></p> <p>Permittee agrees to conduct water quality investigation of Bridge Field Springs Creek and the North Slough to evaluate limitations to improving summer rearing conditions for juvenile salmonids. (<i>Section E.3b.</i>) <i>Time Frame: Within 2 years of permit issuance</i></p> <p>Permittee agrees to evaluate alternatives for screen placement at Parks #3 diversion (<i>Figure 3</i>). <i>Time Frame: Within 5 years of permit issuance</i></p>		
<p>D./I. Bioengineering and Riparian Habitat Restoration</p>	<p>Permittee agrees to implement the riparian grazing plan developed in conjunction with UCCE Range Specialists for existing riparian pastures along Parks Creek (<i>Attachment: Tate and Rivers, 2016</i>) <i>Time Frame: Within 2 years of permit issuance</i></p> <p>No additional sites for bioengineering or restoration projects are currently planned however sites may be identified as an outcome of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. (<i>Section E.3.c.</i>) <i>Time Frame: Within 5 years of permit issuance</i></p>	<p>three to five photopoints will be established. Photos will be recorded annually for first five years of implementation of plan, as proposed. If changes are made through the Adaptive Management process, photos will be recorded annually for five years after any changes. If plan is unchanged after five years, photos will be taken every five years thereafter, or until any changes occur. Points will be established using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document</p> <p>three to five photopoints will be established, before and upon completion of discrete projects. Points will be established using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document</p>	<p>Reasonable access for monitoring salmonid use of created/restored habitat <i>Time Frame: until use is established; Adaptive Management Monitoring of, e.g. distribution, is addressed elsewhere</i></p>

F. Removal of Small Dams	NA	NA	
G. Creation of Habitat: Off-channel/Side Channel	No sites are currently planned however sites may be identified as an outcome of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. (Section E.3.c.) <i>Time Frame: Within 5 years of permit issuance</i>	three to five photopoints will be established, before and upon completion of project. Points will be established using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document	Reasonable access for monitoring salmonid use of created/restored habitat <i>Time Frame: until use is established; Adaptive Management Monitoring of, e.g. distribution, is addressed elsewhere</i>
H. Developing Alternative Stockwater Supply	No sites are currently planned however sites may be identified as an outcome of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. (Section E.3.c.) <i>Time Frame: Within 5 years of permit issuance</i>	three to five photopoints will be established, before and upon completion of project. Points will be established using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document	
I. Riparian Restoration and Revegetation	<i>see D (above)</i>	<i>see D (above)</i>	
J. Research: New	Permittee agrees to provide access and collaborate with CDFW & NMFS to conduct new, innovative studies of salmonids in the Parks Creek. on the Enrolled Property	reports of studies will be written, summarized, and/or obtained and provided in the annual report, consistent with author permission	
K. Water Storage and Tailwater Capture Systems	NA	NA	
L. Piping Ditches	No additional sites are currently planned however it is expected that sites will be identified as an outcome of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. (Section E.3.c.) <i>Time Frame: Within 5 years of permit issuance</i>	three to five photopoints will be established, before and upon completion of project, using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document	
M. Fish Screens	Assuming acquisition of funding, Permittee agrees to upgrade remaining	three to five photopoints will be established, before and upon completion of	

	flashboard dam POD to current fish screening standards, post-evaluation that will be part of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. (Section E.3.c.) Time Frame: Within 10 years of permit issuance	project, using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document	
N. Headgates and Water Measuring Devices	NA	NA	
O. Optimizing Cold Water Inputs	Permittee agrees to conduct evaluation of water quality conditions in and in the vicinity of the road crossing over Kettle Springs Creek (Section E.2.a.) Time Frame: Within 2 years of permit issuance	three to five photopoints will be established, before and upon completion of project, using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document  report of study will be written/obtained and summarized/provided in the Annual Report	Reasonable access for monitoring salmonid use of created/restored habitat <i>Time Frame: until use is established; Adaptive Management Monitoring of, e.g. distribution, is addressed elsewhere</i>
P. Combining and/or Moving Points of Diversion	No additional sites are currently planned however sites may be identified as an outcome of Mid-Parks', East Side Pastures and Spring Channels Renovation Project, proposed. See "Channel Structure," Section E.3.c. Time Frame: Within 5 years of permit issuance	three to five photos will be established, before and upon completion of projects, using SHA photo monitoring protocol described in the "Covered Activities and Avoidance and Minimization Measures" document;	
Q. Water Exchanges	NA		
R. 1707 Dedications	NA		

## G.2. Annual Report and Adaptive Management

The Permittee will complete a report form annually and report as stipulated in the Agreement.

## H. 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 they 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.

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

\_\_\_\_\_  
**Permittee**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**NMFS**

\_\_\_\_\_  
**Date**

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

\_\_\_\_\_  
**CDFW**

\_\_\_\_\_  
**Date**

**Attachment: UCCE Riparian Grazing Recommendations for  
EII Shasta Springs Ranch**

## Shasta Springs Ranch

### Draft Prescribed Riparian Grazing Management Recommendation (October 31, 2016)

#### 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 6.3 miles of Parks Creek flows through the middle of this ranch (see Figure 2). Parks Creek Reach 1 spans from north end of the ranch (immediately above Cardoza diversion) to the Wheat Field. Some of this reach is flooded by Cardoza diversion. This reach is fenced with permanent wire fence on the west side. This reach is open to grazing by livestock during grazing bouts in the east pasture. The fence is in excellent condition and effective at controlling livestock access to the creek from the west, and acts as an effective deterrent to cattle crossing or entering the creek from the east. The creek is relatively deep with steep banks along this reach – which is another deterrent to cattle crossing or entering the creek from the east. This is a low gradient, fine substrate reach with high water table supporting primarily wetland herbaceous species dominated by *Juncus* and *Carex* spp. Noxious weeds are of limited extent in this reach. This reach provides overwintering, early-spring rearing, out-migration, and emigration habitat for salmonids.

Parks Creek Reach 2 (see Figure 6) is contained within the “Wheat Field” pasture. This is a pasture that has been planted in the past to an upland perennial wheatgrass variety. This reach is open to grazing by livestock during grazing bouts in this pasture. Parks Creek is moderately entrenched throughout this reach with a riparian vegetation component occurring just at the stream edge (greenline). Due to relatively steep banks and deep water cattle only cross and enter the reach in a few locations. This reach provides overwintering, early-spring rearing, out-migration, and emigration habitat for salmonids. Noxious weeds are of limited extent in this reach.

Parks Creek Reach 3 is a short, unfenced reach similar to Reach 2 but outside of the Wheat Field.

Parks Creek Reach 4 (Figure 6) is the remainder of Parks Creek through the ranch. This reach is fenced on both sides as a series of management units. Irrigated pastures exist on both sides of this reach throughout most of its length. Noxious weeds and non-native pasture grass species are of concern in this reach. The riparian units along this reach are grazed periodically for vegetation management purposes. This reach provides coho spawning, overwintering, rearing, out-migration, and emigration habitat.

Kettle Springs Creek is narrow-corridor fenced from origin to confluence with Parks Creek to permanently exclude livestock, with two crossings over large CMP, on grade with the channel bottom for livestock, vehicles, and equipment. Stock water is available at off-channel watering sites. This reach provides coho rearing and emigration habitat. North Slough (see Figure 2) is fenced with permanent wire fence on the south side. This

reach is open to grazing by livestock during grazing bouts in the north pasture. The fence is in excellent condition and effective at controlling livestock access to the creek from the south (Black Meadow), and acts as an effective deterrent to cattle crossing or entering the creek from the north. The slough is relatively deep with steep banks along this reach – which is another deterrent to cattle crossing or entering the creek from the north. Bridge Field Springs Creek is narrow-corridor fenced to permanently exclude livestock, with one large water gap to allow livestock crossing and drinking water access (see Figure 3).

### **Riparian Grazing Management Recommendations**

**Kettle Springs Creek and Bridge Field Creek Riparian Corridors.** The ranch owner and managers have made a decision not to graze these riparian corridors with the current fencing configuration and the hazard posed to livestock by the treacherously boggy creek bed – maintaining these units as livestock enclosures. Our recommendation is that managers maintain the riparian corridor fences and water gaps in good working order, and check that the fences are excluding livestock during grazing bouts in adjacent irrigated pastures and rangelands.

**Parks Creek Reaches 1 through 3 and North Slough.** The conditions we observed along these reaches during our tour of the ranch indicate that ranch owner and managers already have grazing management strategies in place to improve streambank vegetation and habitat conditions within these reaches. Management goals include reducing bare streambank, enhancing *Salix*, *other native trees and shrubs*, *Juncus*, and *Carex* spp. cover and vigor at the stream's greenline. Accomplishing these shorter-term goals will in the longer-term lead to enhanced streambank stability, reduced stream channel width to depth ratio, and improved instream habitat conditions (e.g., cooler temperatures, more hiding cover). These reaches are not considered to be coho spawning habitat. Thus grazing bouts can generally occur in these grazing units at any time during the standard irrigation-growing season (spring through fall). The units should not be grazed season-long. They should be worked into the normal rotation of livestock throughout pastures on the ranch. Rest periods must occur during the growing season (i.e., early, mid, and/or late growing season rest from grazing should occur each year). Management decision triggers described below will ensure grazing intensity (e.g., stocking rate) and livestock impacts are in balance with short and long-term goals listed above. At this time the establishment of fixed, hardened livestock creek crossings or drinking access points is not recommended. Livestock crossing/drinking behavior should be monitored and this recommendation revisited and adapted as needed based upon livestock behavior and extent/intensity of stream channel disturbance. We recommend that the riparian grazing decision triggers and photo monitoring be integrated into the current management strategies for these reaches.

**Parks Creek Reach 4 Riparian Grazing Units.** The conditions we observed along these reaches during our tour of the ranch indicate that ranch owner and managers already have grazing management strategies in place to improve streambank vegetation and habitat conditions within the riparian management units along this reach. It is highly likely that invasive weeds and pasture grass species are inhibiting native riparian vegetation along much of this reach. Weeds include yellow starthistle (YST), teasel, poison hemlock, and blackberry. 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. Management decision triggers described below will ensure grazing intensity (e.g., stocking rate) and livestock

impacts are in balance with short and long-term goals listed above. This reach provides coho spawning habitat, so the timing of grazing should be restricted to 1) May 1 – October 31; or 2) when Parks Creek flow is continuous throughout the Mid-Parks Reach and regular spawning surveys between November 1 and January 31, at no less than weekly intervals have not detected redds or live coho; or 3) the instream flow at the sub-reach being proposed for grazing does not contain flow sufficient to provide access for adult coho, which must be balanced with optimal timing of grazing for weed management... At this time the establishment of fixed, hardened livestock creek crossings or drinking access points is not recommended. Livestock crossing/drinking behavior should be monitored and this recommendation revisited and adapted as needed based upon livestock behavior and extent/intensity of stream channel disturbance. We recommend that the riparian grazing decision triggers and photo monitoring be integrated into the current management strategies for these reaches.

**Recommended Seasons of Grazing and 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 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 plants less than 5ft in height, excessive streambank disturbance, etc.). For this site we recommend during any grazing bout that 1) physical hoof damage to streambanks be limited to no more than 20% of streambank per each side of stream; 2) minimum stubble height of browsed herbaceous vegetation at the stream greenline not go below 3 inches; and that 3) browse on recruiting riparian woody plants (less than 5ft in height – below cattle maximum browse height) be limited to no more than 20% of current year’s leader growth within the riparian unit. Once any of these three triggers is hit during a grazing bout, livestock should immediately be rotated out of the riparian unit.

If redds have been determined to be present, livestock may graze within the riparian pasture between November 1 and May 1 if a temporary electric exclusion fence or wire is installed and maintained between the riparian pasture and the stream bank, and provisions are made to supply off-channel stockwater.

**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 2 to 3 days during all riparian grazing bouts. We recommend, and will provide training on, the establishment of permanent photo monitoring points in the 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, herbaceous stubble height at the stream greenline, 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 by species and class used during each grazing bout be recorded for each riparian grazing unit.

Figure 2. Fields and Fences

