NOAA FISHERIES
NATIONAL MARINE FISHERIES SERVICE

Authorizations and Permits for Protected Species (APPS)

File #:

Applicant Information

Affiliation:	Green Diamond Resource Company
City,State,Zip:	Korbel, CA 95550

Project Information

File Number:	17351
Application Status:	Application Complete
Project Title:	Implementation of biological monitoring and research under Green Diamond Resource Company's Aquatic Habitat Conservation Plan
Project Status:	Renewal
Previous Federal or State Permit:	1060-Mod 1
Permit Requested:	• ESA Section 10(a)(1)(A) permit (Pacific fish/invertebrates)
Where will activities occur?	California (including offshore waters)
State department of fish and game/wildlife:	N/A
Research Timeframe:	Start: 12/23/2015 End: 12/31/2020

Sampling Season/Project Duration:	Green Diamond is seeking approval for five projects: (1) Fish Occupancy Surveys (i.e., Fish Presence/Absence Surveys), which began in 1994, have a year-round sampling season, and a continuous duration, (2) Out-migrant Smolt Trapping, which began in 1999, has a sampling season that may range from February - June and a duration that may extend through June 2057 (i.e., through the life of the AHCP), (3) Summer Juvenile Salmonid Population Estimates, which began in 1995, have a sampling season that may range from August - October and a duration that may continue through June 2057, (4) Spawner Surveys, which began in 1995, have a sampling season that may range from October - June and a duration that may continue through June 2057, and (5) Riparian Canopy Modification Experiment, which is new and has repeated sampling that may occur year-round.
Abstract:	Green Diamond Resource Company is operating under an Aquatic Habitat Conservation Plan (AHCP). The AHCP was approved by the U.S. Fish & Wildlife Service and the National Marine Fisheries Service in 2007 and implementation is expected through June 2057. This plan identifies potential threats to 6 species (4 fish and 2 amphibians, hereafter covered species) and their habitats that may result from Green Diamonds' timber harvest activities and describes the minimization and mitigation measures and effectiveness monitoring to address potential threats. The covered species include three ESA listed species: (1) the California Coastal (CC) evolutionarily significant unit (ESU) of Chinook salmon, (2) the Southern Oregon/Northern California Coast (SONCC) ESU of coho salmon, and (3) the Northern California (NC) distinct population segment (DPS) of steelhead trout. The area covered by the AHCP (hereafter plan area) is located on timberlands within five 4th field hydrologic units including: the Chetco, Smith, Lower Klamath, Mad-Redwood, and Lower Eel watersheds. The AHCP effectiveness monitoring is designed to assess Green Diamonds' minimization and mitigation measures. The take limits requested in this permit will allow for implementation of the required AHCP monitoring and research activities requiring the handling of fish associated with implementing the AHCP. Five projects will result in take of the ESA species and will include the following take types: Observe/harass, Capture/handle/release, Observe/sample tissue dead animal, and Capture/mark, tag, sample tissue/release live animal. Capture methods include electrofishing, snorkel surveys, spawning surveys, kick net sampling and trapping. Captured fish will be immediately released or held in cold well oxygenated water. Data collected will be used to document long-term population trends and better understand the potential impacts on the covered species and their habitats that may result from the AHCP covered activities.

Project Description

Green Diamond is seeking coverage for four projects under this permit. The objective(s) of each project are as follows:

1. Fish Occupancy Surveys: The objectives of this project are to (1) classify stream reaches of interest as Class I (fish bearing) or Class II (non-fish bearing) watercourses and (2) determine fish species distributions. These surveys are primarily employed in association with proposed Timber Harvesting Plans (THP) or road management projects and are intended to assist with proper classification of watercourse reaches within and immediately adjacent to the proposed projects. Both situations will serve to help Green Diamond better understand and manage for the public trust resources located within the Plan Area. In addition to determining fish occupancy, evaluation of habitat suitability for fish is also conducted to help properly classify watercourses when fish are not detected. Note: A key assumption of these surveys is that only the presence of fish species can be proven but absence of fish can only be inferred from a lack of detection.

2. Out-migrant Smolt Trapping: The objectives of the out-migrant trapping project are to monitor the abundance, size, and timing of out-migrating smolts, and to look for long term trends in any of these variables. This trapping program is conducted to obtain annual population estimates on emigrating salmonid smolts (coho salmon, Chinook salmon, steelhead trout and coastal cutthroat trout) and has been conducted on several Plan Area streams since 1999. The results of the out-migrant trapping are used in conjunction with the summer population monitoring to estimate an apparent overwinter survival in those streams monitored. The juvenile out-migrant trapping also helps to identify factors affecting smolt emigration timing, and establish baseline and long-term trend data on the abundance of juvenile salmonid populations in the watersheds monitored.

This project is part of the AHCP effectiveness monitoring program, the purpose of which is to track the success of the AHCP conservation program in relation to the biological goals and objectives and provide a basis for adaptive management. Past findings from this project under the original permit have provided valuable baseline data which has been used by

agency and non-profit groups for several purposes (e.g., development of restoration projects, drafting of the SONCC coho recovery plan, and drafting of the Chinook and steelhead recovery plan).

Purpose:

3. Summer Juvenile Salmonid Population Estimates: The objectives of the population estimates are to estimate summer populations of young-of-the-year coho salmon and 1+ steelhead and cutthroat trout and track trends in these populations over time. This project is a long-term monitoring project under the effectiveness monitoring program of Green Diamond's AHCP. The purpose of the Effectiveness Monitoring Measures is to track the success of the AHCP conservation program in relation to the biological goals and objectives and provide a basis for adaptive management. Past findings from this project under the original permit have provided valuable baseline data which has been used by agency and non-profit groups for several purposes (e.g., development of restoration projects, drafting of the SONCC coho recovery plan, and drafting of the Chinook and steelhead recovery plan).

4. Spawner Surveys: The objectives of this project are to determine habitat use and relative numbers of spawning adult salmonids of all species, as well as watershed conditions during the winter months. This project does not attempt to generate any form of formal population or escapement estimates due to the limitations of time, water conditions, and weather. This project is intended to assist with proper identification of species distribution in watercourses throughout the plan area. Past findings from this project under the original permit have provided valuable baseline data which has been used by agency and non-profit groups for several purposes (e.g., development of restoration projects, drafting of the SONCC coho recovery plan, and drafting of the Chinook and steelhead recovery plan).

5. Riparian Canopy Modification Experiment: The objectives of this project is to study the response of stream aquatic systems to modifications of the riparian canopy that would increase the amount of solar radiation reaching the stream. The fundamental premise is that increases in sunlight will increase primary productivity in the stream ecosystem. This experiment is being designed to determine if modifications of the riparian canopy can be done in such a way that potential benefits from increased primary productivity will not be offset by negative impacts to aquatic life or water quality. The potential benefit of additional sunlight to resident salmonids has already been demonstrated in north coastal California. This study will involve fish sampling to quantify growth, movements, and habitat use of non-ESA listed salmonids (e.g., steelhead and coastal cuthroat trout) but coho salmon may be captured. This study is a cooperative effort that will involve collaboration with affiliates of Oregon State University and Humboldt State University. The following description of this project is limited to methods, anticipated effects, and minimization measures regarding fish sampling.

Below is a brief description of the four projects conducted under Green Diamond's AHCP. Each description if presented in bulleted form and addresses the following requested information: (a) description of all methods used and handling procedures, (b) summary of study design and sampling frequency, locations, and dates, (c) intrusive procedures and sample size requirements, (d) plans to transport animals elsewhere, and (e) provision of supplemental details about the projects (see Project Supplemental Information below).

1. Fish Occupancy Surveys:
(a.) A combination of visual observations, which may involve snorkeling, and electrofishing are the methods used for this project. Visual observations are the primary approach to determine fish occupancy and categorize habitat suitability. Electrofishing is a secondary approach and is used sparingly to confirm the results of the visual assessment (i.e., when fish are not seen).
(b.) There is no formal study design for this project. Since these surveys are primarily employed in association with proposed THPs or road management projects they are conducted on an as needed basis. Typically one survey is conducted on any section of stream unless supplemental survey(s) are requested from a project supervisor or regulatory agency representative during the project review process. Surveys may be conducted in watercourses within properties owned by GDRCo. These surveys are conducted year-round. However, these surveys are limited during winter months to small headwater streams (i.e., those with low probability of encountering spawning adults and redds).
(c.) No intrusive procedures (i.e., tagging or tissue samples) are used for this project.
(d.) No transport of fish will occur for this project.
(e.) Supplemental information about this project has been provided in the attached document entitled "Attachment2_FishOccupancyProtocol_AHCP2006.pdf".

2. Out-migrant Smolt Trapping:

Description:

(a.) Three capture methods are used for this project including two trapping techniques and electrofishing. Two trapping methods are used because stream habitat conditions are different between sites and each method employed is the best available technique where it is used. The primary method is a V-notch weir and is used at all but one monitoring site. This methodology uses a combination of a weir, pipe, McBane's ramp, and live-box. The secondary method is a rotary screw trap. As part of the former Ryan Creek out-migrant smolt monitoring there was an overwinter growth study component, which required using electrofishing to capture young-of-year fish during the fall. We anticipate initiating a similar overwinter growth study to the out-migrant smolt monitoring in Little River. Captured fish are handled by net and hand during the data collection and marking procedures. Temporary retention of fish in buckets, containers, and a release device is also part of our handling procedure.
(b.) This project was originally designed to estimate annual smolt production in Ryan Creek and Little River watersheds; however, future efforts will only include monitoring at four trap sites in Little River (Mainstem Little River, Lower South Fork Little River, Upper South Fork Little River, and Carson Creek). This methodology requires visiting each trap at least once/day, 7 days a week, potentially 150 days of the year (February to July). The proposed overwinter growth study component of this project requires sampling once per year in September or October.
(c.) Intrusive procedures are conducted for this project and include: passive integrated transponder (PIT) tagging, fin clips, tissue sample collection, and scale sample collection. All of these procedures are used during the out-migrant trapping season and most are used for the proposed overwinter growth study component. During out-migrant trapping, a random sample of up to 30 smolts/species/day are measured, weighed, marked (to calculate trap efficiency), and tissue sampled. Additional tissue samples may be collected from indirect mortalities. Quantifying growth rates is planned for sites monitored in Little River and would involve electrofishing to capture a random sample of up to 250 YOY/species in the fall; all of which would be measured, weighed, marked, and tissue sampled to calculate growth rates.
(d.) No transport of fish will occur for this project.
(e.) Supplemental information about this project has been provided in the attached document entitled "Attachment3_OutMigrantTrappingProtocol_AHCP2012.pdf".

3. Summer Juvenile Salmonid Population Estimates:
(a.) This project uses a modified Hankin and Reeves (1998) protocol [Mohr and Hankin 2005 (in draft)] for obtaining a probability based estimate of summer juvenile fish populations in individual streams. This sampling approach uses a combination of snorkel surveys and electrofishing techniques. This sampling design, with reduced electrofishing, is especially useful for listed fish species where mortalities need to be minimized and was specifically designed for use in small clear water streams of the California north coast. Fish are captured while electrofishing and are handled by net and hand during the data collection procedures. Temporary retention of fish in buckets, containers, and mesh hampers (in situ) are also part of handling. Minnow trapping is a supplemental method that may be used in habitats (e.g., deep complex pools) where the other methods of sampling can not.
(b.) The Mohr and Hankin (2005, in draft) sampling uses a stratified-random selection method to identify shallow units and deep pool habitats and a random systematic selection method to identify riffles that will be sampled for fish. This approach ensures that habitat units will be selected from throughout the entire sampling reach and prevents the potential for field personnel to predict the units to be sampled. The number of units selected for sampling is predetermined using sampling rates which vary among the habitat types sampled and the two types of sampling (i.e., snorkel or electrofish). Sampling rates for deep pools are 50% for single pass snorkel survey and 100% for multi-pass snorkel survey. Shallow units are sampled at a rate of 50% for both single pass snorkel survey and multi-pass snorkeling or electrofishing calibration. Riffles are sampled, using electrofishing, at a rate of 8.5% with a random start. Efforts are made to maintain consistent sampling rates among years and sites; however, atypically high numbers of fish may warrant reducing the sampling rate(s) in an effort to minimize the potential impacts from electrofishing and improve work efficiency. The frequency of sampling for this project is once per year, is planned at 11 creeks (Ah Pah Creek, Cañon Creek, Hunter Creek, Little Surpur Creek, Lower South Fork Little River, South Fork Ah Pah Creek, South Fork Rowdy/Savoy Creek, South Fork Winchuck River, Sullivan Gulch, Upper South Fork Little River, and Wilson Creek) sampled, and sampling typically occurs from late July through early October. Past monitoring efforts have occurred at other sites including but not limited to East Fork Hunter Creek, Heightman Creek, Railroad Creek, and Tarup Creek.
Minnow trapping may be used at the sites listed above to sample "other" habitats (e.g., deep complex pools) and efforts will be made to minimize the sampling rate and trapping duration. When used, each unit would be trapped for up to five consecutive days. Each trap would be baited, fully submerged when set, tethered, and checked daily.
(c.) No intrusive procedures (i.e., tagging or tissue samples) are used for Mohr and Hankin (2005, in draft) sampling. However, marking with a caudal fin clip would be used for minnow trapping to distinguish between new and recaptured fish. Additional tissue samples may also be collected from indirect mortalities.
(d.) No transport of fish will occur for this project.

(e.) Supplemental information about this project has been provided in the attached document entitled "Attachment4_SalmonidPopulationEstimatesProtocol_AHCP2012.pdf".

4. Spawner Surveys:
(a.) Spawner surveys are conducted by two people walking a sample reach (i.e, section of stream) and visually searching for adult fish, redds, and carcasses. Sample reaches are generally surveyed in an upstream direction and involve traveling on the stream banks and in the wetted channel. Efforts are made to minimize disturbing adult fish and avoid redds. To minimize disturbing adult fish, surveyors maintain distances appropriate to allow for accurately counting and identifying individuals to species and sex but unlikely to alter their natural behaviors. To avoid negative impact to redds, surveyors avoid walking in stream habitats where fish tend to spawn (e.g., riffle crests). Live fish are not handled for this project; however, carcasses are handled, marked, and at times tissue samples may be collected. Carcasses are handled using a gaff and by hand.
(b.) The sampling design for this study is opportunistic and variable. The reason for this type of design is due to the limitations of time and staff and variability of water conditions (e.g., flow and turbidity) resulting from weather. Because of these constraints the surveys are somewhat inconsistent among years, with respect to the number of visits to each location. On average, each reach may be sampled four times and at best upwards of ten. Eighteen streams that may be sampled annually including: Maple Creek, North Fork Maple Creek, Pitcher Creek, Cañon Creek, Carson Creek, Danielle Creek, Little River, Upper South Fork Little River, Lower South Fork Little River, North Fork Mad River, Railroad Creek, Rowdy Creek, Salmon Creek, Savoy Creek, South Fork Rowdy Creek, South Fork Winchuck River, Sullivan Gulch, and Wilson Creek. For each site, the entire anadromous reach accessible to coho salmon is surveyed for adult fish, redds, and carcasses. Additional streams may be sampled in the future as opportunities arise. Green Diamond Resource Company works cooperatively with the California Department of Fish and Game (DFG) and Oregon Department of Fish and Wildlife during the spawner survey season to broaden the survey effort and avoid duplicate survey effort. Sample reaches within Green Diamonds' ownership that are selected by DFG for adult monitoring, as part of the California Coastal Salmonid Monitoring Plan (CMP) or for other purposes, will not be surveyed by Green Diamond. Spawner surveys are generally conducted from November through April but may vary on either end depending on observed run timings.
(c.) No intrusive procedures (i.e., tagging or tissue samples) are used on live fish but intrusive procedures, including marking and tissue samples are collected on carcasses. Sexing carcasses may require cutting open the body cavity. Carcasses are marked using zip-ties, affixed to the head, tail, or other skeletal remains. Zip-ties are used to identify previously counted carcasses and to avoid pseudoreplication during repeated surveys. Carcasses are scanned for PIT tags and scale samples are collected from PIT-tagged carcasses. Scale samples are submitted to the NOAA Southwest Fisheries Science Center, Fish Ecology Division.
(d.) No transport of live fish will occur for this project. In the Rowdy Creek watershed, heads from adipose fin-clipped carcasses are collected and submitted to the Rowdy Creek Fish Hatchery on the same day collected. This collection and transport of fish heads is conducted in cooperation with a request from the California Department of Fish and Game.
(e.) Supplemental information has been provided in support of collecting heads from ad-clipped carcasses in the attachment entitled "Attachment10_SmithRiverDFG_Memo2004".

5. Riparian Canopy Modification Experiment:
(a.) Multi-pass electrofishing and kick net sampling are two methods used for this project to capture trout (e.g., steelhead and coastal cuthroat trout) and macroinvertebrates, respectively. Fish captured while electrofishing will be handled by net and hand during the data collection procedures. Temporary retention of fish in buckets, containers, and mesh hampers (in situ) are also part of handling. Coho salmon are not a target species for this project but may be captured while implementing these methods and will be counted and released when captured.
(b.) A before-after-control-impact study design is planned for this project. Each study site will be comprised of paired control and treatmtne reaches. Comprehensive sampling of all habitat types may occur in each study reach to ensure adequate recapture rates and samples sizes can be attained to quantify growth rates and movements of fish, as well as, sampling macroinvertebrates. The frequency of sampling for this project is multiple times/year and may occur year-round and will occur relative to the timing of when the riparian canopy is reduced in the treatment reach. All paired reaches will be sampled during each sampling effort. The initial sampling will occur prior to treatment and additional sampling will occur following treatment. Study site are planned to occur in four watersheds including: Ah Pah Creek, Little Surpur Creek, Tarup Creek, and Tectah Creek.
(c.) No intrusive procedures (i.e., tagging, tissue samples, or gastric lavage) will be used on coho salmon for this project.

(d.) No transport of coho slamon will occur for this project.
(e.) Because coho salmon is a non-target species for this project, supplemental information about this project has not been provided but is available upon request.

Supplemental Information

Status of Species:

Based on data collected from out-migrant trapping conducted from 1999–2011, SONCC smolt population estimates in Little River are generally stable among the three different cohorts. The strong, moderate, and weak smolt cohorts were first documented in 2001, 2000, and 1999, respectively. Smolt estimates for the strong and weak cohorts have generally been consistent over time. The cohort with moderate strength shows the highest degree of variation in smolt estimates over time. NC steelhead trout smolt estimates have also been calculated from 1999–2011. Smolt estimates in Little River have been very low since 2009. This decrease suggests a decline but whether this trend is part of a natural sinusoidal pattern remains unclear. Based on counts of 0+ CC Chinook, no clear trend is apparent.

Based on summer juvenile population estimates calculated for SONCC coho salmon at 13 streams from 1995–2011, there are clearly three distinct cohorts with varying strength (i.e., strong, moderate, and weak) at all sites. However, there is a lot of variation in the strength of each cohort among the monitoring sites. For example, at Cañon Creek the strongest cohort first occurred in 1995 and population estimates have generally been highest every third year but in Upper South Fork Little River that same cohort has had the lowest population estimates. These data suggest that cohort strength is based on site specific conditions. These data also suggest that the juvenile populations of each cohort may have a sinusoidal pattern with a wavelength of 12-15 years. This pattern may become more evident with continued monitoring. Based on steelhead summer juvenile population estimates calculated from 1995–2011, populations at thirteen sites appear to be stable or in some cases increasing slightly in recent years.

More detailed results can be found in the attached reports (Attachment6_GDRCo2012a.pdf, Attachment7_GDRCo2012b.pdf, & Attachment8_GDRCo2012c.pdf).
The detailed methods used for the four projects/activities covered under this permit are as follows:

(1) Fish Occupancy Surveys: Visual encounter surveys (VES) and electrofishing are the primary methods used to document fish occupancy, capture, and identify fish for this project. VES surveys involve walking in or adjacent to the stream channel while visually searching for fish in pools and other straeam habitats. Electrofishing is employed in suitable fish habitats varify the results from visual observation when fish are not detected or to determine fish species when visually detected. The NMFS guidelines for electrofishing ESA listed salmonids (NMFS 2000) are followed while operating an electrofisher. Water temperature and conductivity are measured prior to and during electrofishing to confirm that temperatures are less than or equal to 18°C and/or water conductivity is less than or equal to 350 microS/cm. GDRCo fisheries staff typically use two different models of Smith-Root (Smith-Root Inc., Vancouver, WA) electrofishers: Model LR-20B, and Model 15-C POW. The Model LR-20B is a battery operated electrofisher, capable of outputs of 50 - 990 volts. It is operated primarily at the DC setting and 200 volts. The Model 15-C POW is a generator (Honda EX-350) operated electrofisher, capable of outputs of 100 - 1100 volts. It is operated primarily at the P-16 setting (i.e., straight DC current) and either 200 or 300 volts. This method of sampling is only implemented by experienced GDRCo fisheries staff members (i.e., co-investigators).

At times snorkel surveys may be conducted rather than VES surveys and electrofishing to determine occupancy. For example, in large streams with low fish densities, this technique could be used to survey more efficiently with adequate detection probability. Alternatively, this method could be used during the winter period to avoid electrofishing spawning adults and their redds. Snorkeling would provide flexibility in limited circumstances to reduce potential stress of electrofishing. During snorkel observations animals would be identified to species to the best of our ability and not chased or captured.

A baitwell dip net (3/16" sq. knotless nylon mesh measuring 10" X 6" X 7" deep) is used to capture fish while electrofishing. Nets are sufficiently wetted prior to capturing fish. Once netted, fish are briefly retained in the bag of the net (i.e., with the net opening above the water surface), while submerged in the stream channel, to allow for counting and species identification. Captured individuals are then immediately released in situ. This handling procedure allows for collecting the necessary data while minimizing handling time. No other procedures are performed on fish for this project.

(2) Out-migrant Smolt Trapping: Two trapping methods are used to capture fish for this project. Two methods are used because stream habitat conditions are different between sites and each method is the best available technique where it is used. Details on each of these trapping methods are below.

The primary trapping method is a notch weir which is used at all but one monitoring site. This methodology uses a combination of a weir, pipe, McBane's ramp, and live-box. Substrate composition determines what material will be used in weir construction. Depending on whether there is a sandy bottom with loose gravels or a large cobble/boulder dominant reach, the weir can be fashioned from fence posts and pallets or boulders taking advantage of on-site material. Where on-site material is unavailable weirs may consist of sandbags and panels construction of wood and hardware cloth. The weir is shaped as a "V", with the point oriented downstream. A small shallow channel at the edge of the weir is provided at each site to serve as a bypass area for steelhead adults. The weir funnels outmigrating fish into a pipe (3-6, 20' long X 8" diameter PVC), located at the apex of the weir. Water traveling through the pipe carries fish onto a McBane's ramp. The McBane's ramp is made out of perforated sheet metal, and is designed to dissipate the water's energy exiting the pipe while capturing and transporting fish into a live-box (i.e., box trap). Frequent adjustments to the ramp are necessary with changes in stream flow to ensure a smooth sheet of water flows over the surface of the ramp to safely deliver fish to the trap. Fish exiting the McBane's ramp enter the live-box trap (dimensions = 49"L X 28" W X 19" D, composition = plywood and hardware cloth) where some fish are retained prior to sampling. The live-box is positioned in the wetted channel, partially submerged, and secured in place. A screened opening (mesh opening size =1/2" diagonal) is provided in the back side of the live-box to minimize the predation potential by allowing smaller fish to exit the live-box. Exclusion tubes are placed in the live-box to help further minimize predation potential of YOY fish. These tubes (1/2" sq. plastic coated wire mesh, dimensions = 12" L X 9.5" W) are positioned vertically in the water and used to provide refugia for juveniles.

The secondary trapping method is a 1.5 m rotary screw trap with the capabilitiy of being powered by an electric motor. The rotary screw trap is made up of seven general components; a screened cone, two pontoons, cross members, live-box, A-frame, rails, and weir panels. A motor may be required to operate this trap if stream flows are insufficient to rotate the trap cone. The weir is constructed of sandbags and panels made of wood and hardware cloth. The trap is positioned in the creek with the opening of the cone facing upstream. Weir panels are installed upstream from the trap opening to help guide out-migrating fish into the trap. Fish that enter the cone are gently guided by an auger inside the cone into a live-box (dimensions = 56" L X 40" W X 20" D) at the rear of the trap. Screened openings (mesh opening size =1/2" diagonal) are provided in sides and the back of the live-box to minimize the predation potential by allowing smaller fish to exit the live-box. Exclusion tubes are placed in the live-box to help minimize predation potential of YOY fish. These tubes (1/2" sq. plastic coated wire mesh, dimensions = 12" L X 9.5" W) are positioned vertically in the water and used to provide refugia for juveniles.

Each trap is visited at least once per day. There are three basic steps to the daily monitoring procedure: (1) remove fish from box, (2) process fish (i.e., identify, measure, mark, and sample) and (3) release. All fish captured are recorded including incidental catches of non-target species such as lamprey, sculpins and amphibians. Prior to checking traps, all required sampling equipment is unpacked and set up. The day's catch is sampled by sweeping a dip net through the each live-box until all fish are captured and transferred to buckets for temporary holding. Details on the procedures for handling, anesthetizing, marking, and tissue sampling are provided below.

Water temperature is monitored throughout the trapping season to ensure that stream water temperatures in the trap box are maintained below the NOAA upper temperture limit (70 degrees F (21 degrees C) for listed salmonids. Water temperatures are measured at a 72 minute interval using HOBO® Water Temp Pro v2 data loggers (Onset Computer Corporation, Bourne, MA). All other out-migrant trapping activities maintain water temperatures below the NOAA upper limit when handling fish.

Accumulations of debris are cleaned and removed daily from the McBane's ramp, interior of live-boxes, behind the weir and screens that segregate the fish. The majority of mortality is caused by debris accumulations on the ramp or inside the live boxes. The weir is checked for leaks or debris accumulations that may have piled up. During high winds and alder catkin release the traps are cleaned again in the evenings when necessary.

Electrofishing is a supplemental method and may be used to capture young-of-year salmonids in the fall, as part of the Little River out-migrant smolt monitoring. Juevniles captured using this method are measured and marked to calculate a growth rate after recapture during the out-migrant trapping season. The NMFS guidelines for electrofishing ESA listed salmonids (NMFS 2000) are followed while operating an electrofisher. Water temperature and conductivity are measured prior to and during electrofishing to confirm that temperatures are less than or equal to 18°C and/or water conductivity is less than or equal to 350 microS/cm. GDRCo fisheries staff typically use two different models of Smith-Root (Smith-Root Inc., Vancouver, WA) electrofishers: Model LR-20B, and Model 15-C POW. The Model LR-20B is a battery operated electrofisher, capable of outputs of 50 - 990 volts. It is operated primarily at the DC setting and 200 volts. The Model 15-C POW is a generator (Honda EX-350) operated electrofisher, capable of outputs of 100 - 1100 volts. It is operated primarily at the P-16 setting (i.e., straight DC current) and either 200 or 300 volts. This method of sampling is only implemented by experienced GDRCo fisheries staff members (i.e., co-investigators).

Three types of nets are used to handle fish for this project. All nets are sufficiently wetted prior to capturing fish. A baitwell dip net (3/16" sq. knotless nylon mesh measuring 10" X 6" X 7" deep) is used to capture fish and remove them from the live-box at sites in Little River. A custom dip net (1/16" sq. knotless polyester mesh measuring 10" X 11" X 14" deep) is used to capture and remove fish from the screw trap live-box. Once netted, fish are briefly retained in the bag of the net and immediately transferred to a bucket with creek water for temporary holding. A bucket dip net (1/8" sq. nylon mesh measuring ~3" X ~4" X 3" deep) is used to capture and transfer fish among holding containers or to sampling equipment for data collection.

Some procedures conducted on live fish for this project require sedation. These procedures include measurement of weights, lengths, and marking. Fish are anesthetized using Alka-Seltzer® Gold or a Food and Drug Administration/Association of Fish and Wildlife Agencies/American Fisheries Society approved preferred-alternative may be used. In contrast to details described in Attachment 3, MS-222 will not be used as a anesthetic. When using Alka-Seltzer® Gold, one tablet is fully dissolved into a 3-gallon container with 2-3 inches of creek water. The time elapsed from initial exposure to the anesthetic until entering the fresh water recovery container is ~ 10 minutes for each individual processed. The manufacturer's instructions for use and any agency guidelines will be followed if using any approved alternative anesthetic.

Two marking techniques are used during outmigrant trapping. Coho salmon smolts, steelhead trout smolts and cutthroat trout smolts are marked with either a caudal fin clip or PIT tag (Oregon RFID, half duplex [HDX], 12 mm or Allflex USA Inc., full duplex [FDX-B], 12 mm). Fin clips (size = 1-3 mm) are used to mark fish no less than 45 mm FL using clean scissors and may occur at one of four locations: horizontal upper caudal, vertical upper caudal, vertical lower caudal and horizontal lower caudal. PIT tags are implanted into fish (FL at least 70 mm) by way of a ventral incision posterior to the pectoral fin. The incision (length = ~ 2 mm) is made using a sterilized stainless steel surgical blade (size = No. 11). The blade is disinfected prior to each incision by submersion in a dilute Argentyne (Argent Chemical Laboratories, Redmond WA) solution (concentration = 100:1). PIT tags are used to quantify overwinter growth rates and to help quantify movement patterns of fish between trap sites. Only smolts considered healthy (i.e., free of abrasions, undamaged tail, and normal coloration) are marked. When possible, up to 20 smolts/species/day are marked to calculate trap efficiency. However, in an effort to increase the overall percentage of marked coho, occasionally up to 30 coho smolts/day will be PIT tagged when high numbers of coho smolts (e.g., > 100) are captured on a single day.

Methods: Fin clips and scale samples are two types of tissue samples collected during this project. The locations and method of collection for fin clips are described above. Scale samples are collected using a clean pair of scissors. Scales are collected from mid-body below the dorsal fin using the edge of the scissors. Scales are collected from the left side of the body during the fall sampling and the right side of the body during the out-migrant trapping season. Each sample is placed in a separate properly labeled envelope. Collected

samples are submitted to the NOAA Southwest Fisheries Science Center, Fish Ecology Division (Contact: Dr. John C. Garza).

(3) Summer Juvenile Salmonid Population Estimates: Two methods may be used to capture fish for this project. Invertebrate captures are infrequent and incidental using these methods and they are immediately released when captured. Snorkeling is another survey method used to count fish for this project; however, it does not require capturing fish. Minnow trapping is a supplemental method that may be used to estimate juvenile salmonid populations in complex and deep habitat where the other methods are ineffective. Detailed description for each of these methods are provided below and additional details on this project can be found in the attached protocol ("Attachment4_SalmonidPopulationEstimatesProtocol_AHCP2012.pdf").

Electrofishing is used to capture fish in randomly selected riffle and shallow unit habitats. Each habitat unit selected for electrofishing is searched multiple times (e.g., typically four) to achieve a depletion in captures. The NMFS guidelines for electrofishing ESA listed salmonids (NMFS 2000) are followed while operating an electrofisher. Water temperature and conductivity are measured prior to and during electrofishing to confirm that temperatures are less than or equal to 18°C and/or water conductivity is less than or equal to 350 microS/cm. GDRCo fisheries staff typically use two different models of Smith-Root (Smith-Root Inc., Vancouver, WA) electrofishers: Model LR-20B, and Model 15-C POW. The Model LR-20B is a battery operated electrofisher, capable of outputs of 50 - 990 volts. It is operated primarily at the DC setting and 200 volts. The Model 15-C POW is a generator (Honda EX-350) operated electrofisher, capable of outputs of 100 - 1100 volts. It is operated primarily at the P-16 setting (i.e., straight DC current) and either 200 or 300 volts. This method of sampling is only implemented by experienced GDRCo fisheries staff members (i.e., co-investigators).

Snorkel surveys are used to count fish in selected shallow habitat units and deep pool habitats. In accordance with the Mohr & Hankin (2005, in draft) sampling protocol, both "Phase I" (single pass) counts and "Phase II" (multi-pass) repeated counts are conducted on randomly selected units. To sample a unit, the diver(s) enter the unit from the lower end without disturbing the fish and progress through the length of the unit counting the fish as they go. A "clicker" is carried to record fish numbers for abundant species. Dive lights are used to increase detection probability. When conducting a multi-pass snorkel survey, a brief (~ 5 minutes) wait is required to allow water clarity and fish behavior to equalize between passes.

Three types of nets are used for this project. All nets are sufficiently wetted prior to capturing fish. A baitwell dip net (3/16" sq. knotless nylon mesh measuring 10" X 6" X 7" deep) is used to capture fish while electrofishing. Once netted, fish are briefly retained in the bag of the net and immediately transferred to a bucket with creek water for temporary holding. A bucket dip net (1/8" sq. nylon mesh measuring 3" deep) is used to capture fish and transfer to and from other holding containers or to sampling equipment for data collection. Block nets (1/4" round or square DELTA or ACE mesh netting, measuring 4-6 feet deep) are used during electrofishing. These nets are installed at the upstream and downstream ends of each sample unit, perpendicular to the stream channel and span the wetted width, to prevent fish immigration or emigration during sampling. Nets are installed prior to electrofishing and remain in place until electrofishing is complete.

When fish are retained in buckets or other containers, the water inside each container may be periodically refreshed to ensure maintenance of appropriate oxygen levels and cool water temperatures (< 70 degrees F [21 degrees C]). Captured individuals are released in situ after the necessary procedure(s) are completed. Sedated individuals are allowed to recover, in mesh containers placed in the stream channel prior to release. This handling procedure allows for collecting the necessary data while minimizing handling time.

Only one procedure is conducted on live fish for this project. A subset of fish captured during electrofishing are measured and weighed. Fish that are to be measured and weighed are first anesthetized. Fish are anesthetized using Alka-Seltzer® Gold or a Food and Drug Administration/Association of Fish and Wildlife Agencies/American Fisheries Society approved preferred-alternative may be used. When using Alka-Seltzer® Gold, one tablet is fully dissolved into a 3-gallon container with 2-3 inches of creek water. The time elapsed from initial exposure to the anesthetic until entering the fresh water recovery container is ~ 10 minutes for each individual processed. The manufacturer's instructions for use and any agency guidelines will be followed when using any approved alternative anesthetic.

Minnow trapping may be used to sample "other" habitats (e.g., deep complex pools) and efforts will be made to minimize the sampling rate and trapping duration. Trapping will only take place when water temperatures are below the NOAA upper limit when handling fish (< 70 degrees F [21 degrees C]). When used, each unit would be trapped for up to five consecutive days. Each minnow trap is constructed with 1/4" black vinyl coated wire. There are 1" entrance openings at both ends. Trap dimensions are: 16 1/2" long, 9" diameter at center, 7 1/2" diameter at ends. Each trap would be baited, fully submerged when set, tethered, and allowed to soak for no more than 5 hours before being checked daily. Captured fish will be handled and processed as described above, with one exception. Fish captured prior to the last trap set would be marked using a caudal fin clip.

In the event of an unintentional mortality, a fin-clip tissue sample and scale samples will be collected. Caudal fin clips (size = 1-3 mm) and scale samples are collected using a clean pair of scissors and are collected from the caudal fin. Scales are collected from mid-body below the dorsal fin using the edge of the scissors. Each sample is placed in a separate properly labeled envelope. Collected samples are submitted to the NOAA Southwest Fisheries Science Center, Fish Ecology Division (Contact: Dr. John C. Garza).

(4) Spawner Surveys: No fish or invertebrates are captured or handled for this project. Nonetheless, minimization measures are used during spawner surveys to reduce disturbing adult fish and avoid impacting redds. To minimize disturbing adult fish, surveyors maintain distances appropriate to allow for accurately counting and identifying individuals to species and sex but unlikely to substantially alter their natural behaviors. To avoid negative impact to redds, surveyors avoid walking in stream habitats where fish tend to spawn (e.g., riffle crests).

Despite no handling of live fish, handling of fish carcasses does occur. Carcasses are handled by hand or using a gaff. Procedures performed on fish carcasses may include body cavity inspections, body measurements, tagging and tissue samples. Sexing carcasses may require cutting open the body cavity to look for eggs or milt. Carcasses are marked using zip-tie tags, affixed to the head, tail, or other skeletal remains. Zip-ties are used identify previously counted carcasses and to avoid pseudoreplication during repeated surveys. Carcasses are scanned for PIT tags and scale samples are collected from PIT-tagged carcasses. Using a clean knife, twenty scales are scraped from the left side of the body between the dorsal fin and the lateral line. In the Rowdy Creek watershed, heads from adipose fin-clipped carcasses are collected and submitted to the Rowdy Creek Fish Hatchery on the same day collected.

(5) Riparian Canopy Modification Experiment: One method is used to capture fish and one method used to capture macroinvertebrates may inadvertently capture fish. Capture of coho salmon are anticipated to be infrequent using these methods within the planned study watersheds and when captured this species will be counted and released. Detailed description for each of these methods are provided below.

Multi-pass electrofishing is used to capture fish in all available habitats within study reaches. Each habitat unit is searched multiple times (e.g., typically four) to achieve a depletion in captures. The NMFS guidelines for electrofishing ESA listed salmonids (NMFS 2000) are followed while operating an electrofisher. Water temperature and conductivity are measured prior to and during electrofishing to confirm that temperatures are less than or equal to 18°C and/or water conductivity is less than or equal to 350 microS/cm. GDRCo fisheries staff typically use two different models of Smith-Root (Smith-Root Inc., Vancouver, WA) electrofishers: Model LR-20B, and Model 15-C POW. The Model LR-20B is a battery operated electrofisher, capable of outputs of 50 - 990 volts. It is operated primarily at the DC setting and 200 volts. The Model 15-C POW is a generator (Honda EX-350) operated electrofisher, capable of outputs of 100 - 1100 volts. It is operated primarily at the P-16 setting (i.e., straight DC current) and either 200 or 300 volts. This method of sampling is only implemented by experienced GDRCo fisheries staff members (i.e., co-investigators). If sampling occurs during the spawning season, a spawner survey and/or snorkel survey will occur prior to electrofishing to ensure no adult fish or redds are present in habitat units scheduled for sampling.

Three types of nets are used for this project. All nets are sufficiently wetted prior to capturing fish. A baitwell dip net (3/16" sq. knotless nylon mesh measuring 10" X 6" X 7" deep) is used to capture fish while electrofishing. Once netted, fish are briefly retained in the bag of the net and immediately transferred to a bucket with creek water for temporary holding. A bucket dip net (1/8" sq. nylon mesh measuring 3" deep) is used to capture fish and transfer to and from other holding containers. Block nets (1/4" round or square DELTA or ACE mesh netting, measuring 4-6 feet deep) are used during electrofishing. These nets are installed at the upstream and downstream ends of each habitat unit, perpendicular to the stream channel and span the wetted width, to prevent fish immigration or emigration during sampling. Nets are installed prior to electrofishing and remain in place until electrofishing is complete.

When fish are retained in buckets, the water inside each container may be periodically refreshed to ensure maintenance of appropriate oxygen levels and cool water temperatures (< 70 degrees F [21 degrees C]). Captured individuals are released in situ after the necessary sampling procedure(s) are completed. Handling procedures will allow for collecting the necessary data while minimizing handling time.

Procedure will be conducted on target fish species (i.e., steelhead and coastal cutthroat trout) but none will be conducted on coho salmon. Coho will only be counted and released.

In the event of an unintentional mortality, a fin-clip tissue sample and scale samples will be collected. Caudal fin clips (size = 1-3 mm) and scale samples are collected using a clean pair of scissors and are collected from the caudal fin. Scales are collected from mid-body below the dorsal fin using the edge of the scissors. Each sample is placed in a separate properly labeled envelope. Collected samples are submitted to the NOAA Southwest Fisheries Science Center, Fish Ecology Division (Contact: Dr. John C. Garza).

Lethal Take: Not Applicable

Anticipated Effects on Animals: Green Diamond acknowledges that the methods, equipment and procedures used to conduct the requested monitoring and activities may have negative effects on ESA listed fish and other animals. Potential effects may occur from the use of anesthetics, block nets, electrofishing, holding, snorkel and spawning surveys, marking, trapping, and tissue sampling. Effects from anesthetic may include suffocation, eye clouding, and predation but none are anticipated. Effects from using block nets may include temporarily limiting movement or limiting access to available habitats. Effects from electrofishing may include injury (e.g., banding or stress) or death. Effects from holding fish in containers may include predation, heat stress, or suffocation but only predation is anticipated. Effects from snorkeling may include harassment. Effects from spawning surveys may include harassment and redd disturbance. Effects from marking may include injury, infection, or death but are not anticipated. Effects from tissue sampling may include injury or infection but only injury is anticipated. Effects from tissue sampling may include injury and infection but are not anticipated. Effects from trapping may include injury, predation, suffocation/desiccation, or limiting adult upstream migration.

Measures to Minimize Effects: The following minimization measures are used to mitigate the anticipated effects described above. Minimizing effects from anesthetic use include: (1) minimize exposure time, (2) allow tablets to fully dissolve before sedation and (3) allow ample recovery time before release. Minimizing effects from using block nets include removal after completion of work. Minimizing effects from electrofishing include strict adherence to the NMFS (2000) electrofishing guidelines. Minimizing effects from holding fish include: (1) holding fish in separate containments based on size class and (2) holding in cold well-oxygenated water and avoiding overcrowding. Minimizing effects from snorkeling and spawning surveys include: (1) working efficiently and collect only necessary information and (2) avoiding walking in suitable spawning habitats (e.g., riffle crests). Minimizing effects from marking include: (1) minimizing the number of fish marked, (2) minimizing incision size, (3) using sharp scalpel blades, and (4) sterilizing equipment between animals. Minimizing effects from tissue samples include: (1) minimizing the number of fish sampled (e.g., same as those marked), (2) minimizing size of tissue sample collected, (3) cleaning equipment between animals, and (4) using sharp scissors. Minimizing effects from trapping include: (1) separating different size classes of fish (e.g., back box and exclusion devices), (2) proper trap installation and maintenance of proper operation at least daily (e.g., adjust pipe flow and remove debris in trap boxes), (3) eliminate fish access to pinch points and contacting abrasive surfaces and provide cover, and (4) daily monitor for presence of adult fish below weirs and report findings to confirm no substantial delays to upstream migration.

Resources Needed to Accomplish Objectives:	The resources needed for the requested projects/activities include: personnel, equipment, general supplies, and routine repair and maintenance. Four full-time fisheries technicians and one seasonal technician are required to collect data, maintain equipment, proof data, and assist with drafting data summaries. Two additional staff are needed to supervise, coordinate field activities, analyze data, and write reports. Green Diamond is committed to maintaining staff to satisfy the objectives of the proposed projects/activities required by the AHCP. Green Diamond owns all of the necessary equipment and ensures that all necessary routine maintenance, repair, and calibration are completed as needed. General supplies are budgeted for and purchased annually.
Disposition of Tissues:	All collected tissue samples are submitted to the NOAA Southwest Fisheries Science Center, Fish Ecology Division, care of Dr. John C. Garza, Phone: (831) 420-3903, Email: Carlos.Garza@noaa.gov.
Public Availability of Product/Publications:	Green Diamond has a website to host biennial reports which include information for the proposed projects. The URL for this website is https://greendiamond.com/responsible-forestry/california/. Project specific annual reports are available to the public if requested through the National Marine Fisheries Service (Contact person: Lisa Roberts, Lisa.Roberts@noaa.gov), Fish and Wildlife Service (Contact person: James Bond, james_bond@fws.gov), or Green Diamond Resource Company (Contact: Matthew House, mhouse@greendiamond.com or Ryan Bourque, rbourque@greendiamond.com).

Federal Information

Federal Agency	Type	Authorization Number and Title	Date Signed	Expiration Date	Listing Units/Stocks Covered	Comments
U.S. Fish and Wildlife Service (FWS)	Section 10 permit	Enhancement of Survival Permit (Permit #: TE156839	06/12/2012	07/01/2057	N/A	This permit is associated with the Candidate Conservation Agreement with Assurances (CCAA) and covers resident rainbow trout, coastal cutthroat trout, tailed frog, and southern torrent salamander. The effective date of this permit is 07/01/2007.
National Marine Fisheries Service (NMFS)	Section 10 permit	Incidental Take Permit (Permit # 1613)	06/12/2007	06/30/2057	Coho Salmon, Southern Oregon/Northern California Coast (NMFS Threatened);Steelhead, Northern California (NMFS Threatened);Chinook Salmon, California Coastal (NMFS Threatened)	This Incidental Take Permit is associated with the AHCP and also covers non-federally listed fish species inclusing: Upper Klamath/Trinity Rivers ESU Chinook, and Klamath Mnts. Provience ESU steelhead. The permit effective date is 07/01/2007.

Location/Take Information

Location

Study Number 1, 2, 3, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Mad-Redwood Stream Name: Little River
Location Description: Projects/activities will include P#2-outmigrant trapping (OMT), P#3-summer salmonid population estimates (SSE), and P#4-spawner surveys (SS). Another activitiy may include P#1- fish occupancy surveys (OS). See attachment L34835T3APPS for details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Run	Transport Record	Begin Date	End Date
1		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	200	4	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
2		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	10	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
3		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	200	4	Capture/Handle/Release Fish	Trap, Not listed here	Anesthetize	Fall	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
4		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	1900	38	Capture/Handle/Release Fish	Trap, Not listed here		Fall	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
5		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	200	4	Capture/Handle/Release Fish	Trap, Screw	Anesthetize	Fall	N/A	12/23/2015	12/31/2020
6		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Smolt	Male and Female	1000	20	Capture/Handle/Release Fish	Trap, Screw	Anesthetize	Fall	N/A	12/23/2015	12/31/2020
7		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	1900	38	Capture/Handle/Release Fish	Trap, Screw		Fall	N/A	12/23/2015	12/31/2020
8		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Smolt	Male and Female	1000	20	Capture/Handle/Release Fish	Trap, Screw		Fall	N/A	12/23/2015	12/31/2020
9		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	100	2	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Fall	N/A	12/23/2015	12/31/2020

10		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	90	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
11		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Fall	N/A	12/23/2015	12/31/2020
12		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		Fall	N/A	12/23/2015	12/31/2020
13		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	50	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Fall	N/A	12/23/2015	12/31/2020
14		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	6040	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
15		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	60	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
16		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	450	9	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
17		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	35	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020

18		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	250	5	Capture/Handle/Release Fish	Trap, Not listed here	Anesthetize	N/A	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
19		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	100	2	Capture/Handle/Release Fish	Trap, Not listed here	Anesthetize	N/A	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
20		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	4000	80	Capture/Handle/Release Fish	Trap, Not listed here		N/A	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
21		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	50	1	Capture/Handle/Release Fish	Trap, Not listed here		N/A	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
22		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Smolt	Male and Female	3700	74	Capture/Handle/Release Fish	Trap, Not listed here		N/A	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
23		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Smolt	Male and Female	4200	84	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Not listed here	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020

		Details: V-notch weir													
24		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	250	5	Capture/Handle/Release Fish	Trap, Screw	Anesthetize	N/A	N/A	12/23/2015	12/31/2020
25		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	300	6	Capture/Handle/Release Fish	Trap, Screw	Anesthetize	N/A	N/A	12/23/2015	12/31/2020
26		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	4000	80	Capture/Handle/Release Fish	Trap, Screw		N/A	N/A	12/23/2015	12/31/2020
27		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	50	1	Capture/Handle/Release Fish	Trap, Screw		N/A	N/A	12/23/2015	12/31/2020
28		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Smolt	Male and Female	8400	168	Capture/Handle/Release Fish	Trap, Screw		N/A	N/A	12/23/2015	12/31/2020
29		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Smolt	Male and Female	4950	99	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Screw	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	N/A	12/23/2015	12/31/2020
30		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	3450	69	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	N/A	12/23/2015	12/31/2020

31		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	50	1	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	N/A	12/23/2015	12/31/2020
32		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	1650	33	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	N/A	12/23/2015	12/31/2020
33		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	50	1	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	N/A	12/23/2015	12/31/2020
34		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	1000	20	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Electrofishing, Backpack	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
35		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	300	0	Observe/Harass	Spawning surveys		N/A	N/A	12/23/2015	12/31/2020
36		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	75	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
37		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	200	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020

38		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	450	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020
39		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	4450	133	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
40		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	170	5	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
41		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	150	3	Capture/Handle/Release Fish	Trap, Not listed here	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
42		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	1600	48	Capture/Handle/Release Fish	Trap, Not listed here	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
43		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	2400	48	Capture/Handle/Release Fish	Trap, Not listed here		Winter	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
44		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	3000	90	Capture/Handle/Release Fish	Trap, Not listed here		Winter	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
45		Steelhead	Northern California (NMFS Threatened)	Natural	Smolt	Male and Female	100	3	Capture/Handle/Release Fish	Trap, Not listed here		Winter	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													

46		Steelhead	Northern California (NMFS Threatened)	Natural	Smolt	Male and Female	250	7	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Not listed here	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
49		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	100	1	Capture/Handle/Release Fish	Trap, Not listed here		Winter	N/A	12/23/2015	12/31/2020
		Details: V-notch weir													
50		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	150	3	Capture/Handle/Release Fish	Trap, Screw	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
51		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	1600	48	Capture/Handle/Release Fish	Trap, Screw	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
52		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	2400	48	Capture/Handle/Release Fish	Trap, Screw		Winter	N/A	12/23/2015	12/31/2020
53		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	10000	300	Capture/Handle/Release Fish	Trap, Screw		Winter	N/A	12/23/2015	12/31/2020
54		Steelhead	Northern California (NMFS Threatened)	Natural	Smolt	Male and Female	100	1	Capture/Handle/Release Fish	Trap, Screw		Winter	N/A	12/23/2015	12/31/2020

55		Steelhead	Northern California (NMFS Threatened)	Natural	Smolt	Male and Female	1250	37	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Screw	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle; Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020
56		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	150	4	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Screw	Anesthetize; Finclip - mark; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020
59		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	100	1	Capture/Handle/Release Fish	Trap, Screw		Winter	N/A	12/23/2015	12/31/2020
60		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	400	12	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
61		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	100	3	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Electrofishing, Backpack	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020
62		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	900	27	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Electrofishing, Backpack	Anesthetize; Tag, PIT; Tissue Sample Fin or Opercle; Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020

63		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	150	4	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Winter	N/A	12/23/2015	12/31/2020
64		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	2000	60	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Winter	N/A	12/23/2015	12/31/2020
65		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		Winter	N/A	12/23/2015	12/31/2020
66		Steelhead	Northern California (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020
67		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	90	2	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Fall	N/A	12/23/2015	12/31/2020

Location

Study Number 1, 3, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Mad-Redwood Stream Name: Maple Creek
Location Description: Projects/activities here will include: P#3-summer juvenile salmonid population estimates (SSE) and P#4-spawner surveys (SS). Another activity may include P#1-fish occupancy surveys (OS). See attachment L34835T3A for details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Run	Transport Record	Begin Date	End Date

1		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
2		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	5	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
3		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	15	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
4		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	5	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
5		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Adult	Male and Female	25	0	Observe/Harass	Spawning surveys		Fall	N/A	12/23/2015	12/31/2020
6		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
7		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
8		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	5	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
9		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	15	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020

10		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	5	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
11		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	25	0	Observe/Harass	Spawning surveys		N/A	N/A	12/23/2015	12/31/2020
12		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
13		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	1050	21	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
14		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	425	12	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
15		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	50	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020
16		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	50	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020
17		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	50	2	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
18		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	75	2	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
19		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	15	0	Observe/Harass	Spawning surveys		Winter	N/A	12/23/2015	12/31/2020

20		Steelhead	Northern California (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	10	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020

Location

Study Number 1, 3, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Mad-Redwood Stream Name: Mad River
Location Description: Projects/activities here will include: P#3- summer juvenile salmonid population estimates (SSE) and P#4-spawner surveys (SS). Another activity may include P#1-fish occupancy surveys (OS). See attachment L34835T3APPS for details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Run	Transport Record	Begin Date	End Date
1		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	80	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
3		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	40	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
4		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	210	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
5		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	500	10	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Fall	N/A	12/23/2015	12/31/2020
6		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	100	2	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Fall	N/A	12/23/2015	12/31/2020
7		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	25	1	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Fall	N/A	12/23/2015	12/31/2020

8		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Adult	Male and Female	1250	0	Observe/Harass	Spawning surveys		Fall	N/A	12/23/2015	12/31/2020
9		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	800	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Fall	N/A	12/23/2015	12/31/2020
10		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	50	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
12		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	40	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
13		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	1460	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
14		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	500	10	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	N/A	12/23/2015	12/31/2020
15		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	650	13	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	N/A	12/23/2015	12/31/2020
16		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	100	2	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	N/A	12/23/2015	12/31/2020

17		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	75	0	Observe/Harass	Spawning surveys		N/A	N/A	12/23/2015	12/31/2020
18		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
19		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	3400	102	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
20		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	275	8	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
21		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	300	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020
22		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	150	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020
23		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	250	7	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Winter	N/A	12/23/2015	12/31/2020
24		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	400	12	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Winter	N/A	12/23/2015	12/31/2020

25		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	1250	37	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Winter	N/A	12/23/2015	12/31/2020
26		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	250	7	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	Winter	N/A	12/23/2015	12/31/2020
27		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	75	0	Observe/Harass	Spawning surveys		Winter	N/A	12/23/2015	12/31/2020
28		Steelhead	Northern California (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020
29		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	20	1	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	Fall	N/A	12/23/2015	12/31/2020
30		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	25	1	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	N/A	12/23/2015	12/31/2020

Location

Study Number 1, 3, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Smith River Stream Name: Wilson Creek, South Fork Rowdy Creek, Savoy Creek, Dominie Creek, and potentially others on GDRCo ownership.
Location Description: Projects/activities conducted in this basin may include P#1-fish occupancy surveys (OS), P#3-summer juvenile salmonid population estimates (SSE), and P#4- spawner surveys (SS). See attached file for more location details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Transport Record	Begin Date	End Date
1		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	3550	0	Observe/Harass	Snorkel/Dive surveys		N/A	12/23/2015	12/31/2020
2		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	150	0	Observe/Harass	Snorkel/Dive surveys		N/A	12/23/2015	12/31/2020
3		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	1025	21	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
4		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	125	3	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
5		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	1100	22	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	12/23/2015	12/31/2020
6		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	850	17	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	12/23/2015	12/31/2020
7		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	50	1	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	12/23/2015	12/31/2020
8		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		N/A	12/23/2015	12/31/2020

9		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	100	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	12/23/2015	12/31/2020

Location

Study Number 1, 3, 4, 5 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Lower Klamath River Stream Name: Ah Pah Creek, South Fork Ah Pah Creek, Hunter Creek, Little Surpur Creek, and potentially others on GDRCo ownership.
Location Description: Projects/activities conducted in this basin may include P#1-fish occupancy surveys (OS), P#3- summer juvenile salmonid population estimates (SSE), P#4-spawner surveys (SS) and P#5-riparian canopy experiment. See attached file for more location details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Transport Record	Begin Date	End Date
1		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	2250	45	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	12/23/2015	12/31/2020
2		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	100	2	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	12/23/2015	12/31/2020
3		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	4540	0	Observe/Harass	Snorkel/Dive surveys		N/A	12/23/2015	12/31/2020
4		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	60	0	Observe/Harass	Snorkel/Dive surveys		N/A	12/23/2015	12/31/2020
5		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		N/A	12/23/2015	12/31/2020

6		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	100	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	12/23/2015	12/31/2020
7		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	640	13	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
8		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	60	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
9		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	900	18	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	12/23/2015	12/31/2020
10		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	100	2	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	12/23/2015	12/31/2020
11		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	25	1	Capture/Handle/Release Fish	Net, Kick		N/A	12/23/2015	12/31/2020

Location

Study Number 1, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Illinois Stream Name: Elk Creek and Broken Kettle Creek
Location Description: Projects/activities conducted in this basin may include P#1-fish occupancy surveys (OS) and P#4-spawner surveys (SS).

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Transport Record	Begin Date	End Date

1		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	90	2	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
2		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
3		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		N/A	12/23/2015	12/31/2020
4		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	100	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	12/23/2015	12/31/2020

Location

Study Number 1, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Lower Eel Stream Name: Stevens Creek and potentially others on GDRCo ownership.
Location Description: Projects/activities conducted in this basin may include: P#1-Fish occupancy surveys (OS), and P#4-spawner surveys (SS). See attached file for more location details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Run	Transport Record	Begin Date	End Date
1		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	40	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
2		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
3		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		N/A	N/A	12/23/2015	12/31/2020

4		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	100	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
5		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	40	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
6		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
7		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		N/A	N/A	12/23/2015	12/31/2020
8		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	100	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
9		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	30	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
10		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	20	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
11		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		Winter	N/A	12/23/2015	12/31/2020
12		Steelhead	Northern California (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	100	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020

Location

Study Number 1, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Mad-Redwood Stream Name: McDonald Creek
Location Description: Projects/activities conducted in this basin may include P#1-fish occupancy surveys (OS) and P#4-spawner surveys (SS). See attachment L34835T3APPS for details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Run	Transport Record	Begin Date	End Date
1		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	30	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
2		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	5	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
3		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	10	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
4		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	5	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
5		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Adult	Male and Female	25	0	Observe/Harass	Spawning surveys		Fall	N/A	12/23/2015	12/31/2020
6		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Fall	N/A	12/23/2015	12/31/2020
7		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	30	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020

8		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	5	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
9		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	10	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
10		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	5	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
11		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	25	0	Observe/Harass	Spawning surveys		N/A	N/A	12/23/2015	12/31/2020
12		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
13		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	30	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
14		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	20	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
15		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	30	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020
16		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	20	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020

17		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	50	0	Observe/Harass	Spawning surveys		Winter	N/A	12/23/2015	12/31/2020
18		Steelhead	Northern California (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020

Location

Study Number 1, 4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Mad-Redwood Stream Name: Humboldt Bay Tributaries
Location Description: Projects/activities here will include P#1-fish occupancy surveys (OS), and P#4-spawner surveys (SS). See attachment L34835T3APPS for details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Run	Transport Record	Begin Date	End Date
1		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	5	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
2		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	5	0	Observe/Harass	Snorkel/Dive surveys		Fall	N/A	12/23/2015	12/31/2020
3		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Fry	Male and Female	20	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
4		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Juvenile	Male and Female	5	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Fall	N/A	12/23/2015	12/31/2020
5		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Adult	Male and Female	50	0	Observe/Harass	Spawning surveys		Fall	N/A	12/23/2015	12/31/2020
6		Salmon, Chinook	California Coastal (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Fall	N/A	12/23/2015	12/31/2020

7		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	50	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
8		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	35	0	Observe/Harass	Snorkel/Dive surveys		N/A	N/A	12/23/2015	12/31/2020
9		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	40	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
10		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	N/A	12/23/2015	12/31/2020
11		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	400	0	Observe/Harass	Spawning surveys		N/A	N/A	12/23/2015	12/31/2020
12		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	150	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	N/A	12/23/2015	12/31/2020
13		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	70	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020
14		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	50	0	Observe/Harass	Snorkel/Dive surveys		Winter	N/A	12/23/2015	12/31/2020

15		Steelhead	Northern California (NMFS Threatened)	Natural	Fry	Male and Female	100	3	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
16		Steelhead	Northern California (NMFS Threatened)	Natural	Juvenile	Male and Female	50	1	Capture/Handle/Release Fish	Electrofishing, Backpack		Winter	N/A	12/23/2015	12/31/2020
17		Steelhead	Northern California (NMFS Threatened)	Natural	Adult	Male and Female	50	0	Observe/Harass	Spawning surveys		Winter	N/A	12/23/2015	12/31/2020
18		Steelhead	Northern California (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	25	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	Winter	N/A	12/23/2015	12/31/2020

Location

Study Number 1,3,4 Research Area: Pacific Ocean State: CA Sub Basin (4th Field HUC): Chetco Stream Name: South Fork Winchuck River
Location Description: Projects/activities conducted in this basin may include P#1-fish occupancy surveys (OS), P#3- summer juvenile salmonid population estimates (SSE), and P#4-spawner surveys (SS). See attached file for more location details.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Transport Record	Begin Date	End Date
1		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	40	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
2		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack		N/A	12/23/2015	12/31/2020
3		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	40	1	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	12/23/2015	12/31/2020

4		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Handle/Release Fish	Electrofishing, Backpack	Anesthetize	N/A	12/23/2015	12/31/2020
5		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	450	0	Observe/Harass	Snorkel/Dive surveys		N/A	12/23/2015	12/31/2020
6		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	50	0	Observe/Harass	Snorkel/Dive surveys		N/A	12/23/2015	12/31/2020
7		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Fry	Male and Female	40	1	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	12/23/2015	12/31/2020
8		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Juvenile	Male and Female	10	1	Capture/Mark, Tag, Sample Tissue/Release Live Animal	Trap, Minnow	Anesthetize; Finclip - mark; Tissue Sample Fin or Opercle	N/A	12/23/2015	12/31/2020
9		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Adult	Male and Female	100	0	Observe/Harass	Spawning surveys		N/A	12/23/2015	12/31/2020
10		Salmon, coho	Southern Oregon/Northern California Coast (NMFS Threatened)	Natural	Spawned Adult/ Carcass	Male and Female	100	0	Observe/Sample Tissue Dead Animal	Spawning surveys	Tissue Sample Scale	N/A	12/23/2015	12/31/2020

NEPA Checklist

1) If your activities will involve equipment (e.g., scientific instruments) or techniques that are new, untested,or otherwise have unknown or uncertain impacts on the biological or physical environment , please discuss the degree to which they are likely to be adopted by others for similar activities or applied more broadly.

The activities described in this application do not involve equipment or techniques that are new, untested or otherwise have unknown or uncertain impacts on the biological or physical environment. In contrast, all of the equipment and techniques used in association with the activities described in this application are well established in the primary scientific literature, effective, and broadly applied

in the field of fisheries science.

2) If your activities involve collecting, handling, or transporting potentially infectious agents or pathogens (e.g., biological specimens such as live animals or blood), or using or transporting hazardous substances (e.g., toxic chemicals), provide a description of the protocols you will use to ensure public health and human safety are not adversely affected, such as by spread of zoonotic diseases or contamination of food or water supplies.

The activities described in this application do not involve collecting, handling, or transporting potentially infectious agents or pathogens and do not involve using or transporting hazardous substances. Material Safety Data Sheets were reviewed and on file for all materials used association with the activities described in this application are used in accordance with all applicable federal, state, and local laws.

3) Describe the physical characteristics of your project location, including whether you will be working in or near unique geographic areas such as state or National Marine Sanctuaries, Marine Protected Areas, Parks or Wilderness Areas, Wildlife Refuges, Wild and Scenic Rivers, designated Critical Habitat for endangered or threatened species, Essential Fish Habitat, etc. Discuss how your activities could impact the physical environment, such as by direct alteration of substrate during use of bottom trawls, setting nets, anchoring vessels or buoys, erecting blinds or other structures, or ingress and egress of researchers, and measures you will take to minimize these impacts.

According to the Protected Areas Database of the United States (USGS 2011), the locations associated with this application will require work in and/or near (i.e., within 0.5 mile) the following unique geographic areas: State Parks, National Parks, Wild & Scenic Rivers, designated Critical Habitat for endangered or threatened species, Marine Protected Areas, National Forest-National Grassland, National Wildlife Refuge, National Landscape Conservation System-Non Wilderness, Native American Land, Protective Management Area (Feature, and Land, Lake or River), Habitat or Species Management Area, Recreation Management Area, Resource Management Area, Wilderness Area, Research Natural Area, State Trust Lands, Local Conservation Area, Local Recreation Area, and Essential Fish Habitat. Out-migrant trapping is the only activity that may have impacts to the physical environment. The installation of trap sites requires disturbing stream bed substrates to construct the v-notch weirs. Efforts are made to keep substrate disturbance to a minimum and the trapping sites are returned to their original conditions at the end of the trapping season.

4) Briefly describe important scientific, cultural, or historic resources (e.g., archeological resources, animals used for subsistence, sites listed in or eligible for listing in the National Register of Historic Places) in your project area and discuss measures you will take to ensure your work does not cause loss or destruction of such resources. If your activity will target marine mammals in Alaska or Washington, discuss measures you will take to ensure your project does not adversely affect the availability (e.g., distribution, abundance) or suitability (e.g., food safety) of these animals for subsistence uses.

Scientific and cultural resources may occur in the project area. Several Native American tribes and Rancherias occur near the project area and may have cultural resources within. Native American Tribes include: Yurok, Hoopa Valley, Karuk, Wiyot, Wailaki, and Round Valley Indian Tribes. Rancherias include: Elk Valley, Resighini, Smith River, Big Lagoon, Trinidad, Bear River Band of Rohnerville, and Blue Lake. According to the National Register of Historic Places (NRHP, 2012), historic resources do not occur in the project area associated with this permit. Work associated with this permit will not cause loss or destruction of scientific, cultural, or historic resources, therefore, no measures will be taken. However, in the unlikely event that such resources are observed, they will be avoided and left undisturbed. Protocols and procedures are in place for protection of archeological resources associated with timber harvesting, road upgrading and road decommissioning activities on Green Diamond Resource Company properties in California and would be followed if necessary.

5) Discuss whether your project involves activities known or suspected of introducing or spreading invasive species, intentionally or not, (e.g., transporting animals or tissues, discharging ballast water, use of equipment at multiple sites). Describe measures you would take to prevent the possible introduction or spread of non-indigenous or invasive species, including plants, animals, microbes, or other biological agents.

Transporting equipment among sites is an activity associated with this permit and has the potential to introduce or spread invasive species. Measures to prevent the possible introduction or spread of non-indigenous or invasive species are a required condition stipulated by the California Department of Fish and Game, under approved Scientific Collection Permits. Both procedural and chemical measures are used and are applied to provide the highest level of prevention against introduction and spread of invasive species (see Attachment 9 for details).

Project Contacts

Responsible Party: Neal Ewald
Primary Contact: Ryan M Bourque
Principal Investigator: Matthew House

Other Personnel:

Name	Role(s)
Ryan M Bourque	Co-Investigator
Jonathan Hollis	Co-Investigator
Charles Holt	Co-Investigator
Matthew Nannizzi	Co-Investigator
Jonathon T Pini	Co-Investigator
Pat Righter	Co-Investigator
David Roon	Co-Investigator
Michael J Zontos	Co-Investigator

Attachments

Certification of Identity - P17351T1117351_GDRC_03-20-2013.pdf (Added Mar 21, 2013)
Contact - Charles Holt C16269T5Holt_Charles_2012CV.pdf (Added Nov 9, 2012)
Contact - David Roon C18681T5David Roon CV.pdf (Added May 8, 2015)
Contact - Jonathan Hollis C18682T5HollisResume2015.pdf (Added May 8, 2015)
Contact - Jonathon T Pini C19219T5JPini_Resume_1282015.pdf (Added Dec 8, 2015)
Contact - Matthew House C14153T5House_Matthew_Resume2012.pdf (Added Mar 19, 2013)
Contact - Matthew Nannizzi C14946T5Nannizzi_Matt_2012CV.pdf (Added Nov 9, 2012)
Contact - Michael J Zontos C19218T52015Resume_MichaelZontos.pdf (Added Dec 8, 2015)
Contact - Pat Righter C14161T5Righter_Patrick_2012CV.pdf (Added Nov 9, 2012)
Contact - Ryan M Bourque C15473T5Ryan Bourque_CV.pdf (Added Aug 26, 2011)
Federal Authorization - P17351T220070612_NMFS_ITP_for_GDRCo_AHCP.pdf (Added Nov 12, 2012)
Federal Authorization - P17351T220070612_USFW_ESP_for_GDRCo_AHCP.pdf (Added Nov 12, 2012)

Federal Authorization - P17351T2NMFS_Permit1060Mod1_Amended2011.pdf (Added Nov 12, 2012)
Location - L34835T3APPS_ProjectLocations_Mad-Redwood.pdf (Added Mar 20, 2013)
Location - L34836T3APPS_ProjectLocations_SmithRiver.pdf (Added Mar 20, 2013)
Location - L34837T3APPS_ProjectLocations_LowerKlamath.pdf (Added Mar 20, 2013)
Location - L35527T3APPS_ProjectLocations_ChetcoRiver.pdf (Added Mar 20, 2013)
Location - L36159T3APPS_ProjectLocations_LowerEelRiver.pdf (Added Mar 20, 2013)
Project Description - P17351T1Attachment10__SmithRiverDFG_Memo2004.pdf (Added Feb 6, 2015)
Project Description - P17351T1Attachment2_FishOccupancyProtocol_AHCP2006.pdf (Added Nov 13, 2012)
Project Description - P17351T1Attachment3_OutMigrantTrappingProtocol_AHCP2012.pdf (Added Nov 13, 2012)
Project Description - P17351T1Attachment4_SalmonidPopulationEstimatesProtocol_AHCP2012.pdf (Added Nov 13, 2012)
Project Description - P17351T1Attachment5_AHCP_Section6_2006.pdf (Added Nov 13, 2012)
Project Description - P17351T1Attachment6_GDRCo_2012a.pdf (Added Feb 21, 2013)
Project Description - P17351T1Attachment7_GDRCo_2012b.pdf (Added Feb 21, 2013)
Project Description - P17351T1Attachment8_GDRCo_2012c.pdf (Added Feb 21, 2013)
Project Description - P17351T1Attachment9_InvasiveSpeciesProtocol.pdf (Added Nov 13, 2012)
Project Description - P17351T1References.pdf (Added Mar 18, 2013)

Status

Application Status:	Application Complete
Date Submitted:	May 8, 2015
Date Completed:	May 11, 2015
FR Notice of Receipt Published:	July 29, 2015 Number: 2015-18600
Comment Period Closed:	August 28, 2015 Comments Received: No Comments Addressed: No
Last Date Archived:	December 28, 2015

• ESA Section 10(a)(1)(A) permit (Pacific fish/invertebrates)
Current Status: Issued Status Date: December 23, 2015
Section 7 Consultation: Formal Consultation
NEPA Analysis: Categorical Exclusion
Expire Date: December 31, 2020

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Reports