UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

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In response refer to:
151416WCR2019SR00221

Nick Kent
Gualala Redwood Timberlands
P.O. Box 197
39951 Old Stage Road
Gualala, California 95445

Dominik Schwab
California Department of Forestry and Fire Protection
135 Ridgeway Avenue
Santa Rosa, California 95401

Dear Messrs. Kent and Schwab:

The purpose of this letter is to provide Technical Assistance to Gualala Redwoods Timberlands (GRT) and California Department of Forestry and Fire Protection (CalFire) from NOAA's National Marine Fisheries Service (NMFS) for the proposed "Little" timber harvest plan 1-18-095-MEN (Little THP). GRT proposes to harvest redwood trees along the Little North Fork Gualala River (LNFGR) in a manner that is consistent with the California Forest Practice Rules (CFPRs) and that will not adversely affect Endangered Species Act (ESA) listed anadromous salmonids. CalFire and GRT has requested technical assistance from NMFS before approving the Little THP.

NMFS' technical assistance is based on: (1) our review of information supplied by Gualala Redwoods Incorporated (GRI)[1] during a meeting on July 1, 2011; (2) two Pre-harvest Site Inspection (PHIs) visits by NMFS staff to the proposed Little THP on July 11, 2019 and August 29, 2019; (3) a project description supplied by GRT via emails from July to September 2019; (4) a meeting with Matt O'Connor of O'Connor Environment Inc., (OEI) on August 15, 2019; (5) NMFS' administrative record regarding the CFPRs (ARN 151416SWR2010SR00347); (6) NMFS final Central California Coast (CCC) coho salmon Recovery Plan (NMFS 2012) and final Multi-Species Recovery Plan (NMFS 2015); and (7) NMFS comments on the Cassidy THP (1-00-101 MEN).[2]

The available information indicates the following ESA-listed species (Distinct Population Segment [DPS]) and (Evolutionarily Significant Unit [ESU]) may be affected by the proposed Little THP:

[1] In April 2015, GRI was sold to GRT. NMFS understands that GRT will continue harvesting under the same management regime utilized by GRI. Therefore, for purposes of this letter, GRI is synonymous with GRT.
[2] This administrative record includes the Lily THP in 2004 (1-04-032-MEN), which was found to be materially the same as plan as the Cassidy THP.

Northern California (NC) steelhead (*Oncorhynchus mykiss)*
Threatened (71 FR 834; January 5, 2006);
Critical Habitat (70 FR 52488; September 2, 2005);

Central California Coast (CCC) coho salmon (*O. kisutch)*
Endangered (70 FR 37160; June 28, 2005);
Critical Habitat (64 FR 24049; May 5, 1999).

Harvest prescriptions under the Proposed Little THP

Implementation of the Little THP is part of GRT's larger floodplain management plan (FMP). In 2011, GRT shared its forest production modeling of harvesting trees under their FMP relative to a no harvest option. GRT's FMP is intended to achieve the conditions of a "fully functioning forest" as defined by Ligon et al. (1999) and a "properly functioning" forest as described in NMFS and U.S. Fish and Wildlife Service's (USFWS) Aquatic Properly Functioning Conditions Matrix (NMFS and USFW 1997). NMFS and USFWS (1997) describe a "properly functioning" forest as having about 18 trees per acre larger than 40" in diameter at breast height. In general, GRT's FMP will harvest half of the growth that occurs in a stand of trees between harvest intervals (*i.e.*, about 15 years). Using the results of the model, GRT estimates that they will achieve these forest conditions under the FMP and the no harvest option in about 100 years.

The Little THP encompasses approximately 251 acres of floodplain along approximately 3 miles of the LNFGR. There are approximately 21 Class III watercourses that are tributary to the LNFGR. Many of these watercourses never reach the river and instead disappear into the soils of the flood prone area adjacent to the river. As a result, these Class III streams do not directly deliver sediment to the LNFGR. The plan also includes 15 Class II standard watercourses, three Class II large watercourses and one Class I watercourse. Much of the THP Area is within the Watercourse and Lake Protection Zones (WLPZ) of the Class I LNFGR.

In compliance with CFPRs, we understand GRT will implement the following measures as part of the proposed THP for purposes of protecting ESA-listed salmonid species:

1.) A 30-foot (ft.) no harvest buffer (Core Zone) as measured from the Watercourse Transition Line (WTL), as defined in the CFPRs. This comprises about 46 acres of the plan area.
2.) A 120-ft buffer (Inner Zone A) measured from the landward edge of the Core Zone. Inner Zone A is approximately 120 acres of the plan area and will:
    a. retain post-harvest 80% overstory conifer canopy cover;
    b. retain post-harvest the 13 largest trees per acre; and
    c. increase Quadratic Mean Diameter (QMD) of the post-harvest forest stand.
3.) Where Inner Zone A does not encompass the entire 20 year floodplain, Inner Zone B rules will be implemented within that portion of the floodplain[3]. An exception applies to the area in valley constriction point near a spotted owl circle, where Inner Zone B rules will be implemented outside of the 20 year floodplain and extend to the toe of slope.

[3] The area occupied by Core Zone, Inner Zone A, and Inner Zone B are part of what the CFPRs refer to as the "Flood Prone Area."

Inner Zone B comprises about 25 acres of the plan area and will have the following post-harvest levels:

a. 50% overstory conifer canopy cover;
b. retain the 13 largest trees per acre; and
c. increase QMD.

4.) About 54 acres falls outside any of these protection zones; regular selection harvest will occur in these areas.
5.) GRT estimates that 17% of the conifer basal area will be harvested, leaving about 175-225 sq. ft. of basal area per acre. This remaining basal area is comprised of mostly conifer and some hardwood species.
6.) Tractor use and yarding will be limited to existing skid trails, which minimize adverse effects (e.g., compaction of floodplain soils, diversion of high flows onto roads, etc.). Existing skid roads were selected for reuse where possible to minimize impacts and to protect the hydrologic functions of the flood plain. GRT estimates that only 38% of the existing skid roads are selected for reuse.
7.) There are no new logging roads proposed for construction.
8.) Water drafting may occur at either Horse Shoe Bend on the North Fork Gualala River or at Groshong floodplain hole near the green bridge. At either location, water drafting will be conducted in compliance with NMFS water draft guidelines (NMFS 2001) and by excavating a hole in the gravel bar to divert groundwater (rather than drafting water directly from the active channel).
9.) Timber operations associated with the Little THP will not occur in the winter period, nor any time when saturated soil conditions exist.

Two dimensional modeling for the delineation and mapping of the Flood Prone Area[4] along the LNFGR

Since the adoption of the anadromous salmonid protection rules (ASP rules), the Flood Prone Area (FPA) has been delineated using the field indicators described in the CFPR's definition of a FPA. However, GRT has proposed an alternative way of delineating the FPA along the LNFGR for this THP. Specifically, GRT has utilized a publically available digital terrain Light Detection and Ranging (LIDAR) data set and hydrology data to develop a two dimensional (2-d) hydraulic model that maps out a 20 year recurrence interval flood flow event in the LNFGR. This map is the basis for setting the FPA boundaries in the Little THP. We believe that this is the first time a 2-d hydraulic model has been used for this purpose, at least in this region.

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[4] The CFPRs define the Flood Prone Area as "an area contiguous to a Watercourse Channel Zone that is periodically flooded by overbank flow. Indicators of flood prone areas may include diverse fluvial landforms, such as overflow side channels or oxbow lakes, hydric vegetation, and deposits of fine-grained sediment between duff layers or on the bark of hardwoods and conifers. The outer boundary of the flood prone area may be determined by field indicators such as the location where valley slope begins (i.e., where there is a substantial% change in slope, including terraces, the toes of the alluvial fan, etc.), a distinct change in soil/plant characteristics, and the absence of silt lines on trees and residual evidence of floatable debris caught in brush or trees. Along laterally stable Watercourses lacking a Channel Migration Zone where the outer boundary of the flood prone area cannot be clearly determined using the field indicators above, it shall be determined based on the area inundated by a 20-year recurrence interval flood flow event, or the elevation equivalent to twice the distance between a thalweg riffle crest and the depth of the channel at Bankfull stage. When both a Channel Migration Zone and flood prone area are present, the boundaries established by the Channel Migration Zone supersede the establishment of a flood prone area."

Ultimately it is CalFire's responsibility to determine whether to accept 2-d modeling results or field indicators as a way to delineate the FPA, consistent with the CFPRs. Based on discussions that occurred during the focused PHI, the 2-d hydraulic model could produce a different FPA boundary than what is mapped with traditional field indicators. For example, the Little THP's FPA boundary informed by the 2-d model is narrower than the FPA boundary informed by the field indicators. Consequently, CalFire's determination of the Little THP's FPA boundary could influence how FPA boundaries are drawn by THP applicants in the future. Given the current state of technology used for 2-d hydraulic modeling, data used to inform modeling, and the prospect of CalFire seeing more 2-d hydraulic models in the future, we recommend the following general principles to consider when using any 2-d hydraulic model to delineate the FPA:

- Although LIDAR are available now and LIDAR Digital Terrain Models (DTM) facilitate 2-d hydraulic modeling, there is often limited hydrology data to input into those models. The lack of hydrology data is a significant limitation for using hydraulic models in forestlands. While it is possible to scale hydrology data from a nearby watershed when no data exists, there is unquantified uncertainty and error inherent in that approach.

- Any hydraulic model used to specify a water surface elevation requires model verification with field data, specifically regarding discharge and water surface elevations. This can be expensive and difficult to obtain.

- The difference in water surface elevation between the 20-year reoccurrence interval flow and a 100-year reoccurrence interval flow is usually within the range of model accuracy in a forested floodplain.

- The standard accuracy for modeled water surface elevations is 0.5ft (+/-), and can be up to 1ft. However, we often see model output with water surface elevations reported to an unrealistic accuracy (*e.g.*, 0.01 ft). CalFire should consider how the FPA boundaries may change within the range of the model's standard accuracy. In a wide low gradient valley, the difference of 0.5ft (+/-) in water surface elevation can result in a significant horizontal distance in inundated area.

- Because it is unlikely that resource agencies will have the capacity to adequately review complex hydraulic models, CalFire should consider the precedent that could be established by accepting a 2-d hydraulic model to delineate the FPA.

- A 2-d hydraulic model can be manipulated to reach a desired outcome, whereas field indicators may provide a more objective assessment of physical variables.

- 2-d hydraulic modeling can be a highly effective tool for identifying, planning, and implementing salmonid habitat restoration and recovery, a key tenant of the ASP Rules.

Review of the 2-d Model and Enhancement measures in the proposed Little THP for ESA-listed salmonids

In reviewing the 2-d hydraulic model for the LNFGR, we have found the modeled floodplain may not substantially support salmonid rearing because large areas of the floodplain are only inundated for a brief period of time (less than 24 hours) and inundation only occurs at infrequent reoccurrence intervals. The model results indicate that the *current*[5] use of this floodplain by anadromous fish is limited to flood refugia, rather than off-channel rearing habitat, and that refuge may be risky due to the very short duration. This is a physical/geometric condition of the channel and floodplain and is likely independent of storm distribution and/or frequency. Specifically, the channel has incised into its floodplain (*i.e.*, the floodplain is not functionally connected to its stream channel). The incised condition in the LNFGR is likely a product of 100 or more years of poor watershed management including, historic logging, historic wood removal from streams, grazing, historic road construction and maintenance, and other historic land use practices described in Church (2012). The LNFGR will likely remain in this condition unless active channel restoration is undertaken.

One of the actions necessary to recover the NC steelhead DPS and CCC coho salmon ESU is more frequent and increased periods of inundation on the LNFGR's floodplain throughout the wet season. The Gualala River represents an independent population for both species. Delisting NC steelhead and CCC coho salmon requires viable independent populations throughout their range and that each independent population meet all the recovery criteria set forth in their respective recovery plans (NMFS 2012, 2015). The LNFGR is located low in the Gualala River watershed just upstream of the confluence of North Fork Gualala River and South Fork Gualala River, which together comprise 98% of Gualala River's basin. In flood events, a backwater forms at the confluence and inundates the LNFGR's floodplain. The inundated floodplain within the backwater has very low velocity relative to the main channel and tributaries. During these flood events, juvenile salmonids from both forks emigrate from the tributaries and can use the floodplain habitat in the lower portion of the watershed as refuge from the high flow velocities during the winter. Therefore, we expect this habitat to be critical for Gualala River's salmonid population when the LNFGR's floodplain is inundated. The LNFGR's floodplain can create ideal conditions for juvenile salmonid growth because the slow water velocity reduces their energy expenditures and the newly inundated terrain increases the abundance and diversity of prey items. Maximizing these conditions can significantly improve opportunities for juvenile salmonid growth. Increases in juvenile salmonid growth increases the probability of ocean survival and adult returns (Quinn 2005). Therefore increasing the frequency and inundation period of the LNFGR's floodplain is expected to produce population benefits in the Gualala River that aide the recovery of the NC steelhead DPS and CCC coho salmon ESU.

For that reason, GRT is currently working with NMFS to implement up to eight Large Woody Debris (LWD) projects to improve these conditions. GRT and NMFS identified the location of the eight LWD projects based on the results of the 2-d model described above. These LWD projects are expected to be relatively large and occupy a high portion of the cross-section area of the active

[5] We note that OEI 2019b states that model result "indicates that **potential** use of floodplain habitat by anadromous fish (e.g., coho salmon that could hypothetically be present in the watershed) would be limited primarily to flood refugia rather than off-channel rearing habitat." We believe the potential use of floodplain habitat by anadromous fish should not be measured by the channel's current condition. The LNFGR floodplain offers great potential for off channel rearing habitat in the future.

channel so that side channels on the floodplain will be activated during moderate flow evens. Each of the projects will incorporate a mix of key pieces, medium pieces, and slash. These projects will enhance the hydraulic connection among the LNFGR's main channel, floodplain, and associated side channels. A key objective of these projects is to increase the inundation area and duration of the 20-year return interval as modeled by OEI (2019a, b). The purpose of these projects is to enhance salmonid habitat in the LNFGR by creating habitat complexity in the active channel, increase the frequency and duration of inundation on the floodplain, increase the network of anastomosing channels, and improve winter/spring rearing habitat.

We expect these projects will also recruit additional riparian trees through bank scour and by capturing fallen trees from upstream reaches that have transported downstream. The recruited LWD will provide essential cover for migrating adults and for juvenile fish rearing throughout the year. More importantly these habitat features are expected to help retain spawning gravels, reduce redd scour during winter storms, and improve winter rearing habitat. These efforts are consistent with specific recovery actions for the Gualala River identified in the NMFS CCC coho salmon Recovery Plan (*i.e.*, Recovery Actions 6.1.1.1, 6.1.1.2, 6.1.1.3, and 6.1.2.1).

Potential Effects of the Little THP to Listed Salmonids

NMFS' administrative record regarding the CFPRs indicates many of the specific rules may not adequately protect listed salmonids in all circumstances. A review of this administrative record as well as other reports noting the effects of timber harvest (*i.e.*, Ligon *et al.* 1999, Liquori *et al.* 2008, Hicks *et al*. 1991) demonstrates that the potential adverse effects of timber harvest on listed anadromous salmonids results from alterations in watershed hydrology, LWD recruitment to streams, increases in stream temperature, elevated sediment load, and increased nutrient loading. In the following sections we describe the potential effects of the Little THP on key environmental factors, which are relevant to sustaining good quality habitat conditions for steelhead and salmon.

Hydrology

The hydrology of a watershed is controlled by many complex interacting factors. Increases in runoff and peak flows can result from soil compaction along skid trails, harvesting activity, and road construction and drainage that intercepts hillslope hydrology (either from individual harvesting activities or from the combined effects of multiple harvesting operations in drainages that are temporally or spatially related). Such increases in runoff and peak flows could in turn result in incidental take of listed salmonid species or adverse effects to critical habitat.

The effects of temporary changes in watershed hydrology on these species and their habitats are difficult to assess. However, a harvesting-related increase in peak flow could increase the frequency of storm events that mobilize channel substrates and damage developing eggs and alevins in redds. Increased peak flows could also affect the survival of over-wintering juvenile salmonids by displacing them out of preferred habitats. Displacement of juveniles could result in take if the displacement results in killing or injuring individuals.

The extent to which watershed hydrology is altered by the Little THP is a function of the amount and timing of those activities in conjunction with timber harvest activities elsewhere in a sub-basin or watershed. Given the cumulative relationship among those timber harvest activities and increased peak flows, the potential for the Little THP to alter hydrology itself must be viewed as its ability to contribute to cumulative effects.

The potential impacts of altered hydrology due to timber harvest are highly complex; their severity depends on watershed size, type of precipitation, season, flood magnitude (Zeimer and Lisle 1998), density of hydrologically connected roads (Coe 2004) and silvicultural practice (Zeimer 1998). Literature describing the effects of forest management on hydrology has focused on clear-cut harvesting (Zeimer 1998, Lisle *et al.* 2008, Lisle *et al.* 2009). Zeimer (1998) reported a 9% increase in 2-year peak flows following clear-cutting approximately 50% of the North Fork Caspar Creek watershed (5 square kilometers), located in western Mendocino County near Fort Bragg, California. Lisle et al. (2008) reported that clearcutting in Caspar Creek watershed has increased the drainage network by as much as 28%. Munn and Cafferata (1992) suggest timber harvest exceeding 20% of a watershed within a 10-year period could result in consideration of a watershed as "sensitive." Tuttle (1992) recommends that harvesting 15% of a watershed's area with even-aged management (clearcut) within a decade (equating to an annual harvest rate of 1.5%) be used as a threshold for triggering examination of impacts on beneficial uses of water, including for fisheries. In 2006, the North Coast Regional Water Quality Control Board ordered that harvest rates in Elk River and Freshwater Creek (two Humboldt County streams) be limited to approximately 2% per year to minimize harvest-related landslide sediment discharges and reduce nuisance flooding of downstream landowners caused by channel aggradation (North Coast Regional Water Quality Control Board 2006).

In comparison, about 12.8% of the Doty Creek planning watershed area has been subject to timber harvest, including the Little THP, in the past ten years. This is 1.28% per year, a rate of harvest well below any of the thresholds described previously. In addition, the historic rate of harvest in this same area is far greater than the current rate (1.28% per year). The previous THPs that proposed harvesting in this footprint were the Cassidy THP in 2001 (1-00-101 MEN) and the Lily THP in 2004 (1-04-032), which was identical in nature to Cassidy THP. NMFS commented on both plans, stating: "The rate, extent and type of harvesting were found to be extensive and significant. Over a 15-year period [1986-2001], the Little North Fork had 83% of its watershed under timber harvest plans," or 5.53% per year. The historic harvest rate of 5.53% per year not only exceeds all of the thresholds mentioned earlier, but is also nearly five times more than the current rate of harvest.

The Little THP does not propose clearcutting and proposes measures to minimize the potential for this project to alter hydrology (*e.g.*, including overstory conifer canopy requirements, avoiding winter operations, minimizing use of existing skid trails, avoiding skidding or yarding logs across watercourses, treating skid trails). Considering this information, the techniques proposed, and the minimization measures, the Little THP reduces the probability of significant impacts to watershed hydrology, which could adversely affect listed salmonids or their designated critical habitat.

LWD Recruitment

Timber harvesting can reduce short- and long-term recruitment of LWD. Long-term reductions in LWD can result in less stream complexity and reduce the amount of high quality rearing habitat for salmonids. LWD in a watercourse provides for sediment storage and sorting that benefits salmonid habitat. A decline in pool density, pool depth, in-stream cover, and gravel retention is likely to result from reduced levels of LWD. Harvesting practices that result in low levels of instream LWD may, accordingly, impact the growth, survival, and total production of listed salmonids.

Over the long term, much of the LWD that creates and maintains aquatic habitat elements is likely derived from significant geologic events such as major floods, avulsion, and landslides. However, LWD is also recruited frequently when individual trees fall into the stream channel from adjacent riparian forest stands. Therefore, harvesting trees from a floodplain or along a stream may result in a failure to allow short-term and long-term natural recruitment of wood for future habitat. Such habitat alterations may constitute significant modification or degradation of habitat elements that would result in adverse effects to listed salmonids.

The Little THP proposes measures to minimize the potential for short term or long term reduction in LWD recruitment (*e.g.*, placing up to eight LWD structures, retaining the 13 largest trees per acre, placing a no-cut buffer, increased basal area retention in the WLPZ). The implementation of these minimization measures reduce the probability of adverse effects to listed salmonids and their designated critical habitat.

Nutrient Inputs and Shading

Timber harvest in riparian areas can affect productivity of streams in several ways. Removal of canopy cover increases the amount of sunlight reaching the stream and can increase periphyton (algal) production (unless it is limited by nitrogen). This activity may increase the abundance of invertebrates because algae is a higher quality food than leaf or needle litter. However, a beneficial effect to production would only be realized if reduced shading of the riparian vegetation did not also lead to unsuitable water temperatures.

Because site-specific data on nutrient levels in streams within the Little THP is not available, it is unknown whether nutrient levels in area streams are a limiting factor. However, the riparian management for this project will provide effective shading to the LNFGR in the THP area. Based on review of numerous investigations, Johnson and Ryba (1992) concluded that forested buffer widths greater than 100 ft. generally provide the same level of shading as that of an old-growth forest stand. Other authors (*e.g.*, Beschta *et al*. 1987; Murphy 1995) have also concluded that buffers greater than 100 ft. provide adequate shade to stream systems. In addition, the generalized curves from FEMAT (1993) suggests that 100% effective shading is achieved with a riparian buffer of 0.75 site potential tree height. Assuming a site potential tree height of a redwood tree in a site Class I for a 100-year site index is between 180 ft. and 240 ft. (Lindquist and Palley 1963), 100% effective shading is achieved with a riparian buffer of approximately 150 ft. Beschta *et al.* (1987) found that 80% to 90% shade canopy is representative of unmanaged forests in the Pacific Northwest (Beschta *et al.* 1987).

The Little THP has a 30 ft. no cut core zone and a 120 ft. Inner Zone A, which must have 80% overstory conifer canopy for a total buffer of 150 ft. Therefore, measurable increases in the amount of sunlight reaching the streams are unlikely to increase nutrient production that would result in adverse effects to listed salmonids.

Altered Stream Temperatures

Timber harvest in riparian areas is known to result in increased solar radiation, which may cause increased daytime summer stream temperatures as well as potentially reduce nighttime and winter stream temperatures. Increases in water temperatures during summer can have negative impacts on salmonids (Beschta *et al.* 1987). Potential impacts of elevated temperatures include a reduction in growth efficiency, increase in disease susceptibility, change in age of smoltification, loss of rearing habitat, and shifts in competitive advantage over non-salmonid species (Hughes and Davis 1986; Reeves *et al.* 1987; Spence *et al.* 1996). Much less is known of the potential impacts of colder nighttime and winter temperatures on streams with reduced canopy and aggraded channels. However, given the moderating climate along the coast of central California, the likelihood that there will be colder water temperatures due to timber harvesting and resultant effects to salmonids is low.

The impact of elevated water temperature tends to be cumulative on a temporal scale, such that short-term increases are less likely to be harmful compared to more chronic increases in water temperature. The potential cumulative or chronic effects associated with temperature would primarily influence juvenile coho salmon and steelhead rearing during summer and early fall.

The rate at which heat and water are delivered to the stream system is generally dictated by external drivers, which form the physical setting of the stream. These drivers include solar radiation, topographic and vegetative shade, air temperature, groundwater temperature and stream discharge (Sullivan et al. 1990, Poole and Berman 2001). Generally timber harvest on floodplains most heavily influences vegetative shade relative to the other variables that affect stream temperature.

Riparian vegetation moderates stream temperatures by providing canopy, which shades the water and reduces the amount of insolation (*i.e.* direct solar radiation) that reaches the water surface (Beschta 1991). Riparian vegetation also minimizes the temperature differential between the air and the water by creating a cool and moist microclimate near the water surface. The influence of riparian vegetation on radiation inputs also generally diminishes in a downstream direction (Spence *et al*. 1996). As streams become larger and wider, riparian vegetation shades a progressively smaller proportion of the water surface (Beschta *et al.* 1987, Gregory *et al.* 1991). The influence of heat energy transfer diminishes as stream flows increase (Beschta *et al.* 1987). Hyporheic flow can affect stream temperature and is influenced by increases in sediment loading and decreases in LWD.

Although the Little THP is relatively low within the watershed, the riparian buffers retained are expected to minimize increases in stream temperatures by retaining shade. Additionally, the Little THP also proposes to implement up to eight LWD structures within the LNFGR to enhance habitat complexity in the active channel, increase the inundation area and duration on the floodplain, increase the network of anastomosing channels, and improve winter rearing habitat. Promoting these features may enhance hyporheic flow through pools and promote stream temperature refuge within specific habitat areas. These measures to minimize effects to stream temperature and hyporheic flow are likely to reduce the probability of adverse effects to listed salmonids.

Sediment Inputs

Floodplains are generally features along a river where sediment is deposited rather than transported (Montgomery and Buffington 1993), provided that the primary beneficial features of the floodplain are not degraded (*e.g.*, thick leaf litter layer, dense canopy cover, and uncompacted soils).

The proposed Little THP contains measures for riparian management, road management, and skid trails, which will minimize sediment input. The riparian management measures are designed to reduce potential harvest-related sediment inputs into the stream channel network through tree retention within WLPZs. Timber operations will not occur in the winter period or during any time period when saturated soil conditions exist, thereby reducing the potential for sediment discharge to the LNFGR. Tractor use and yarding logs along skid trails on the floodplain may degrade some of these features by compacting soils and disturbing the forest floor. However, minimization measures (*e.g.*, limiting tractor use, the yarding of logs using existing skid trails and avoid skidding and yarding across watercourses) will reduce the potential for high flows to cause scour and sediment delivery from the floodplain to the LNFGR.

Safe Harbor Agreements

During our discussions regarding the Little THP, NMFS, and GRT also discussed our interest in salmonid recovery actions within the North Fork Gualala River more generally, including: (1) habitat restoration; (2) coho salmon re-introduction, which could be significantly advanced by reconstruction of the rearing pens on Doty Creek; and (3) fisheries and habitat monitoring. To advance these elements, GRT proposed partnering with NMFS in a Safe Harbor Agreement. We encourage GRT to continue this dialogue and are available to provide assistance.

Summary

Please be advised this letter does not authorize or exempt "take" under the ESA. Incorporating the proposed minimization measures in the Little THP will reduce the probability and magnitude of adverse effects and potential take of listed salmonids that would otherwise occur in the absence of those measures. In addition to this Technical Assistance, please also refer to our Recovery Plans (NMFS 2012 and NMFS 2016) to assist you in identifying biological goals and objectives for recovery of the Gualala River coho salmon and steelhead populations.

Thank you again for the opportunity to comment on the proposed Little THP. Please contact Mr. Dan Wilson at (707) 578-8555, or via email at dan.wilson@noaa.gov should you have any questions concerning this letter.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

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