



North Coast Regional Water Quality Control Board

Pre-harvest Inspection (PHI) Report Timber Harvest Plan (THP) 1-19-098 MEN

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To: CAL FIRE, Second Review Team Chair, santarosareviewteam@fire.ca.gov
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Subject: Pre-harvest Inspection, THP 1-19-098 MEN, "EIk" THP

Introduction

On September 13, 2019, I participated in the pre-harvest inspection (PHI) for Timber Harvest Plan (THP) 1-19-098 MEN. Also present on this inspection were; Ken Margiott of California Department of Forestry (CAL FIRE); Adam Hutchins from the California Department of Fish and Wildlife (DFW); Kevin Doherty of the California Geological Survey (CGS); John Bennett, registered professional forester (RPF) and Jesse Weaver, RPF, both with Gualala Redwoods Timber, LLC (GRT); The weather was clear with moderate temperatures.

The primary purpose for Regional Water Board staff attendance on the pre-harvest inspection (PHI) was to evaluate the potential impacts to water quality from the proposed timber operations and to ensure compliance with the requirements of the Water Quality Control Plan for the North Coast Basin (Basin Plan).

General THP Information

The following is a summary of pertinent portions of the proposed THP. The complete THP documents may be accessed electronically at <https://caltreesv360.resources.ca.gov/>

The THP proposes to harvest approximately 157 acres using single tree selection (117 acres) and clearcutting (24 acres) located on both floodplain and adjacent hill slopes in the vicinity of the confluence between the North Fork and Little North Fork Gualala River. The THP is located within the Robinson Creek (1113.810002) and Doty Creek (1113.810003) CALWATER planning watersheds. Elevations range from approximately 20 to 480 feet above sea level.

303(d) Listing and Gualala River Technical Sediment TMDL

The Gualala River watershed is listed as an impaired waterbody under section 303(d) of the federal Clean Water Act due to excessive water temperature and sediment loads.

As a result of the 303(d) listing, the U.S. EPA has established a Total Maximum Daily Load (TMDL) for sediment for the Gualala River. The Gualala River Technical Support Document (TSD) (2001) includes a sediment source analysis, in which the amount of sediment delivered to watercourses throughout the watershed from various sources was estimated. The sediment source analysis concluded that approximately 1/3 of sediment delivery in the Gualala River watershed was due to natural processes and 2/3 of sediment delivery, or 200% of the natural load, due to anthropogenic sources, primarily related to roads and harvest related mass wasting. The TSD presents load allocations that estimate reductions for each category of anthropogenic sediment sources necessary to meet the loading capacity of 125% of the natural load.

The TSD also presents numeric targets based on indicators of stream health and targets based on sediment sources:

Short-Term Numeric Targets:

- Hydrologic Connectivity of Roads: $\leq 5\%$
- Stream Diversion Potential at Road Crossings: $< 1\%$
- Stream Crossings with High Risk of Failure: $\leq 1\%$

Mid-Term Numeric Targets and Indicators

- Stream Crossing Failures: Decreasing Trend
- Annual Road Inspection and Correction: Increased length to 100%
- Road Location, Surfacing, Sidecast: Decreased road length next to stream, increased percent of out-sloped and hard surfaced roads
- Activity in Unstable Areas: Avoid or eliminate
- Disturbed Area: Decrease, or decrease in disturbance index

Long-Term Numeric Targets and Indicators

- Large Woody Debris (LWD): Increasing distribution, volume and number of key pieces
- Road-Related Landslides: Decreasing Trend

Significant work has been conducted in the Gualala River watershed by many landowners, including the plan submitter, watershed groups such as the Gualala River Watershed Council (GRWC), and other stakeholders towards meeting sediment source targets. Because approximately 60% of the area in the North Coast Region contains waterbodies that are impaired by excess sediment due to similar histories and land management practices, the Regional Water Board adopted the Total Maximum Daily Load Implementation Policy Statement for Sediment Impaired Receiving Waters in the North Coast Region in 2004. The Sediment TMDL Implementation Policy, which is a significant part of the Regional Water Board's efforts to control sediment waste discharges and restore sediment impaired water bodies, directs Regional Water Board staff to ensure control of sediment pollution by using existing permitting and enforcement tools. The goals of the Policy are to control sediment waste discharges to impaired water bodies so that the TMDLs are met, sediment water quality objectives are attained, and beneficial uses are no longer adversely affected by sediment.

The Regional Water Board works towards attainment of TMDL targets through participation in the THP review process to evaluate the potential impacts of proposed timber harvesting operations under its own authority under the Porter-Cologne Water Quality Control Act and to

advise CAL FIRE on application of California Forest Practice Rules (FPRs) needed to ensure compliance with water quality requirements. The FPRs include specific provisions for protection of the beneficial uses of water, as well as enhanced protection in watersheds with listed anadromous salmonids such as the Gualala River watershed. Regional Water Board waste discharge requirements (WDRs) rely to the extent practicable upon the water quality protection provided by the FPRs. It is anticipated that timber operations on non-federal lands that fully and properly implement FPRs that provide water quality protection, and meet the enforceable provisions of the WDRs will contribute to implementation of sediment and temperature TMDLs, with additional protection measures necessary to protect the beneficial uses of water incorporated into THPs for site-specific conditions when recommended by the Regional Water Board.

The Gualala River also supports anadromous salmonids, listed as threatened or endangered under both State and Federal Endangered Species Act. As such the THP must demonstrate compliance with the FPRs for "Anadromous Salmonid Protection." Coho salmon were historically present throughout much of the Gualala River watershed. Coho salmon have not been observed in the Gualala River and are likely extirpated from the Gualala River watershed. Steelhead trout are present throughout much of the Gualala River watershed.

Basin Plan Temperature Objective

The Basin Plan contains the following water quality objectives for temperature that applies to all waters of the state:

The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature.

In 2014, the Regional Water Board adopted Resolution No. R1-2012-0013, Policy Statement for Implementation of the Water Quality Objective for Temperature in the North Coast Region. The policy states that the removal of vegetation that provides shade to a waterbody is a controllable water quality factor. Temperature TMDL load allocations for solar radiation in North Coast TMDL analyses are expressed in terms of site-potential effective shade. Site-potential effective shade is equal to the shade provided by topography and full potential vegetation conditions at a site, with an allowance for natural disturbances such as floods, wind throw, disease, landslides, and fire. Compliance with the temperature TMDL load allocations for solar radiation is generally achieved by not removing or hindering vegetation that provides shade to a waterbody. Temperature TMDL analyses completed to date have consistently found the same factors to be responsible for elevated water temperatures: increased exposure to solar radiation due to loss of stream shade, physical stream channel alteration in response to elevated sediment loads, and in some cases agricultural tail water, impoundments, and water diversions.

Specific THP Concerns

In-Lieu Practices

The THP proposes the following in-lieu practices to standard WLPZ rules, which are discussed in greater detail in sections below:

- Use of roads and skid trails or landings in WLPZs;
- Areas of bare soil exceeding 100 square feet in WLPZs and ELZ/EEZs will not be stabilized on areas with slopes less than 10%;
- Class II WLPZs that fall within Class I WLPZs will not be flagged.

Timber Operations in Flood Prone Areas

Portions of the proposed plan are located within floodplain and flood prone areas¹.

Such areas are considered particularly sensitive due to their important role in maintaining riparian functions and integrating hillslope and fluvial processes. Two beneficial uses included in the Basin Plan, Flood Peak Attenuation/Flood Water Storage (FLD) and Wetland Habitat (WET), most pertinent to flood prone areas are defined below:

Flood Peak Attenuation/Flood Water Storage (FLD) Uses of riparian wetlands in flood plain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters.

Wetland Habitat (WET) Uses of water that support natural and man-made wetland ecosystems, including, but not limited to, preservation or enhancement of unique wetland functions, vegetation, fish, shellfish, invertebrates, insects, and wildlife habitat.

Alluvial aquifers, which include the sediments underlying the riparian zone and the streambed, store large volumes of water. Solar radiation and exchange of water between the stream channel and the alluvial aquifer are important buffers of water temperature. Riparian trees perform important roles for adjacent streams, including providing shade to minimize increases in water temperature, enhance bank stability, recruit fallen trees into the stream to improve fish habitat and route sediment, and provide nutrients for aquatic organisms. In addition, flood prone areas can provide refuge for fish during high flow events. In recognition of the sensitive setting, during the PHI, review team members evaluated the plan area for the presence of wetland habitat or wet areas as well as measures to avoid impacts to those areas. Protection measures to avoid impacts to wetland areas consist of complete avoidance of all wetlands and no harvesting, or limited harvest, with buffers around them.

The United States Army Corps of Engineers (USACOE) Wetlands Delineation Manual includes the following definition and diagnostic characteristics for wetlands (USACOE, 1987):

"Definition: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

¹ The terms "floodplain" and "flood prone areas" are frequently, but not always, interchangeable. Floodplain is a formally defined geomorphic term, while flood prone area is a more generic term that often refers to the floodplain but can include non-floodplain areas adjacent to the river that are prone to flooding.

General diagnostic environmental characteristics of wetlands:

- Vegetation: The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions.
- Soils: Soils are present that have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions.
- Hydrology: The area is inundated either permanently or periodically at mean water depths of 6.6 ft, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation."

Regional Water Board staff typically use the USACOE "three parameter" wetland definition described above. The State Water Resources Control Board draft Procedures for Discharges of Dredged or Fill Material to Waters of the State (January 2019) would formally adopt the USACOE's wetland definition.

The U.S. Fish and Wildlife Service defines wetlands in a different manner. This definition states:

"Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year." (Cowardin, 1979)

Using the USFW service's definition, portions of the flood prone area within the proposed THP could be considered as temporarily flooded forested wetland. Deferring to the State Board and Regional Water Board's standard practice of using the USACOE's three parameter wetland definition and the State Board's draft procedures, the Regional Water Board does not consider those portions of the flood prone area that are not inundated on average at least two weeks out of the year to be wetland. However, the FLD and WET beneficial uses must be considered present throughout some or all of the flood prone area and must be protected. It is essential that timber operations in flood prone areas protect or enhance wetland and riparian functions. Of particular concern are the potential impacts resulting from the following specific proposed activities:

- Removal of riparian trees that could increase the amount of sunlight hitting the stream and result in increased water temperature;
- Removal of riparian trees could increase air temperature and result in increased water temperature and alteration of cool, moist riparian microclimate;
- Harvest of riparian trees that would reduce the potential for future recruitment of large wood;
- Ground disturbance that could alter floodplain hydrology by decreasing roughness, increase erosion, modify flowpaths, or compact soil.
- Destruction of sensitive hydrophytic vegetation and plant communities that provide breeding ground for insects that salmonids feed on.

Forest Practice Rules for Wet Areas and Flood Prone Areas

The California Forest Practice Rules (14CCR 916.4(a)) require RPFs to conduct a field evaluation and map the location of all lakes and Class I, II, III, and IV watercourses as defined in 14CCR 916.5. Wet Meadows and Other Wet Areas, as defined in 14CCR 895.1, means "those natural areas except cutover timberland which are moist on the surface throughout most of the year and support aquatic vegetation, grasses and forbs as their principal vegetative cover." This definition includes two of the three diagnostic characteristics of wetlands, vegetation and hydrology, from the USACOE Manual cited above. As such, "wetlands" as defined by the USACOE and "wet meadows and other wet areas" as defined by the FPRs are generally similar, but not necessarily identical features. Protection for meadows and other wet areas under the FPRs is described in 14CCR 916.3, "General Limitations Near Watercourses, Lakes, Marshes, Meadows and Other Wet Areas", and includes the following:

- (c) The timber operator shall not construct or use tractor roads in Class I, II, III or IV watercourses, in the WLPZ, marshes, wet meadows, and other wet areas unless explained and justified in the plan by the RPF, and approved by the Director, except as follows:
 - (1) At prepared tractor road crossings as described in 14 CCR § 914.8(b) [934.8(b), 954.8(b)].
 - (2) Crossings of Class III watercourses that are dry at the time of use.
 - (3) At new and existing tractor road crossings approved as part of the Fish and Game Code process (F&GC § 1600 et seq.).
- (d) Vegetation, other than commercial species, bordering and covering meadows and wet areas shall be retained and protected during timber operations unless explained and justified in the THP and approved by the Director. Soil within the meadows and wet areas shall be protected to the maximum extent possible.

FPR section 916.9, **Protection and Restoration of the Beneficial Functions of the Riparian Zone in Watersheds with Listed Anadromous Salmonids**, subsection f(3) describes minimum requirements for Class I watercourses with flood prone areas or channel migration zones, as described in FPR section 895.1 below:

Channel Migration Zone (CMZ) means the area where the main channel of a watercourse can reasonably be expected to shift position on its floodplain laterally through avulsion or lateral erosion during the period of time required to grow forest trees from the surrounding area to a mature size, except as modified by a permanent levee or dike. The result may be the loss of beneficial functions of the riparian zone or riparian habitat.

Flood Prone Area (FPA) means 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 percent 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.

No timber operations are permitted within the CMZ. Within the FPA, Section 916.9 establishes a core zone, and inner zones A and B.

The **core zone** is 30 feet wide measured from the watercourse and lake transition line (WLTL) and no harvesting is permitted.

Inner zone A encompasses the FPA and extends from the landward edge of the core zone up to 150 from the WLTL. Requirements within this inner zone A include the following:

- Focus on thinning from below;
- Minimum 80% post harvest overstory canopy;
- Retain the 13 largest conifers trees per acre.

If the FPA extends beyond 150 from the WTL, **inner zone B** will extend from the landward edge of inner zone A to the landward edge of the FPA. Requirements within inner zone B include the following

- Minimum 50% post harvest overstory canopy;
- Retain the 13 largest conifers trees per acre.

Within both inner zones, the following management practices should be considered:

- Implement actions to improved salmonid habitat conditions;
- Minimize yarding and skidding;
- Minimize soil erosion and site preparation;
- Avoid disturbance to critical flood prone area habitat.

Cumulative Impacts and Harvest Rate

THP section IV presents information on harvest history in the Doty Creek and Robinson Creek planning watersheds in the past 10 years, including the two recent plans currently in review, 1-18-095 MEN and 1-19-00095 MEN. Using the equivalent clearcut area² (ECA) method to normalize harvest acres based on their relative intensity and potential impacts to the landscape, the average annual harvest rate for the past 10 years would be approximately 9% and 5.4% ECA for the Doty Creek and Robinson Creek planning watersheds, respectively. The rate of harvest in a watershed is an important management variable that can be linked to cumulative watershed effects. Various studies cite specific thresholds for the rate of harvest, above which, cumulative impacts become more likely to occur and have linked specific processes to watershed impacts, such as increased peak flows from road and canopy removal (Lisle et al. 2000, Lewis et al. 2001), landslide related sediment discharge (Reid, 1998), road density

² Equivalent clearcut area is a widely used methodology developed by the USFS to account for the relative impacts of different types of silvicultural treatment. It assigns a weighting factor of one to clearcutting and a value less than one for partial harvesting silvicultural treatments. The weighting factor for a silvicultural treatment is multiplied by total area treated under each silviculture to arrive at a normalized disturbance calculation. Therefore, 100 acres of selection harvest, which is typically assigned a ECA factor of 0.5, would be counted as 50 equivalent clearcut acres.

(Cedarholm et al. 1981, Gucinski et al. 2001), or equivalent clearcut area (USDA Forest Service, 1974). Klein et. al (2012) reported elevated chronic turbidity levels in watersheds in which harvest rates exceeded 1.5% equivalent clearcut acres during the preceding 10-15 year period. Currently, with the exception of waste discharge requirements for several Humboldt County watersheds, no specific regulatory threshold has been established for harvest rates. The Regional Water Board recognizes that the rate of harvest must be considered along with that manner of harvest. Much of the prior scientific literature is based on studies of harvesting practices conducted under less protective management practices than currently being implemented in the region. However, the current harvest rates in these two planning watersheds are high enough as to warrant concern and continued scrutiny. It is important to ensure that excessive harvesting does not contribute to ongoing cumulative impacts on water quality and impaired beneficial uses of water.

Onsite Observations

The THP is comprised of area located within the floodplain terrace of the North Fork Gualala River and adjacent hillslopes. The active channel defines the THP boundary along portions of the plan area. The channel is incised into the floodplain and typically has sandy/silty banks up to 10 feet high. Bankfull width can extend up to 200 feet in places. Structural features that provide diverse habitat and cover for salmonids, such as channel bars and pools, and large woody debris (LWD), are variable along the river within the plan area and likely highly mobile, reorganizing frequently following high winter flows. Channel substrate ranges from cobbles and gravel to sand and silt.

The wide valley floor that the North Fork Gualala River flows through downstream from its confluence with the Little North Fork Gualala River is defined by the rift zone of the San Andreas Fault, a major active right lateral fault considered to currently accommodate a significant portion of relative movement between the North American and Pacific lithospheric plates.

During the PHI, I inspected watercourse classification and conditions, potential seasonal wetlands, roads within the planning watersheds, skid trails, landings, WLPZ operations, in-lieu practices, and watercourse crossings. Maps of the THP area can be viewed on THP documents on CAL FIRE's CALTREES site described above.

The forest stand in the plan area varies according to proximity to the river, hillslope position, harvest history, and other factors, and is comprised predominantly of mature second growth redwoods, with sparse Douglas fir, and various hardwood species. Within riparian areas visual estimates of existing overstory canopy typically exceed 80%. All trees proposed for harvest within the WLPZ were marked prior to the PHI. Due to the minimum requirements for post-harvest overstory canopy and basal area as well as the requirement to leave the 13 largest trees per acre, the number of trees marked for harvest was quite low compared to those that would be retained and tend towards the smaller to medium size trees, with some larger trees marked in areas where adequate numbers of large trees are present. Informal visual estimates of tree retention made by licensed foresters at numerous locations during the PHI tended to range from 200 to 300 square feet of basal area per acre or more.

Roads and Landings

The THP proposes use of an existing road system to provide access to the plan area for all vehicles and equipment, landings as well as hauling logs. The primary appurtenant road is GRT's mainline haul and access route for their timberlands in the North Fork and Little North

Forks of the Gualala River, primarily located adjacent to the river and flood prone areas, which has been upgraded to current standards as part of previous THPs and grant funded projects. Upgrades include measures to disperse runoff (removal of berms from the outside edge of roads, outsloping road surfaces, and construction of rolling dips) and construction of watercourse crossings to minimize the potential for failure during large storm events.

The Road Work table on pages 60 through 60.1 of the THP in Section II describes road points or segments where work is proposed. The table includes location information, site identifier, observed problem and proposed solution or repair, watercourse crossing information (such as culvert diameter), and stream classification where applicable. During the PHI, we evaluated a representative sample of these sites. Minimal repair or reconstruction work is needed as the road system is regularly used by the landowner for timber operations and associated activities and is well maintained.

Erosion Control Plan

Section V of the THP includes an Erosion Control Plan (ECP), to comply with a requirement for coverage under either the General Waste Discharge Requirements (GWDR) or Waiver of Waste Discharge Requirements (Waiver). The ECP includes an inventory and prioritization of Controllable Sediment Discharge Sources³ (CSDS) and a schedule for implementation of measures to prevent or minimize sediment discharge from inventoried sites. Five CSDS are identified in the plan area. All sites are designated as medium priority and proposed corrective action will be scheduled concurrent with timber operations in the vicinity.

Floodprone Area

Based on the presence of silt on the trees, the alluvial flats adjacent to the North Fork Gualala River channel and extending up to approximately 1,000 feet to the break in slope at the base of the hillslope, is all designated as flood prone area as defined by FPR section 895.1 and provided with appropriate protection pursuant to FPR section 916.9.f.3. Class II and Class III watercourses originating on the hillslopes above the floodplain cross through the Class I WLPZ, and therefore, are provided with the applicable Class I protection.

Channel Migration Zone

The review team evaluated the proposed harvest area for potential channel migration zones. The upstream portion of the THP on the floodplain adjacent to the left bank is a broad arcuate shaped area that likely formed at some point in the past by soil development and subsequent colonization of forest vegetation on a point bar on the inside of a meander bend in the river that was constrained by the current hillslope. It is unknown how long the channel has been in its current position, however, aerial photographs since 1953 show the channel has occupied the same general location up to the present time. At the base of the hillslope on the outer margin of the floodplain in this area, review team members observed a feature that could be interpreted as a remnant channel. The 1965 aerial photograph displays evidence that significant flow had occurred on the floodplain in the vicinity of the relict channel feature, likely during the December 1955 flood, which was estimated to be a 100-year recurrence interval event. The alluvial flat in

³ Sites that discharge or have the potential to discharge sediment to waters of the state in violation of water quality standards, that are caused or affected by human activity, and that may feasibly and reasonably respond to prevention and minimization management measures.

that area is clearly an active and dynamic floodplain and the possibility of an avulsion event cannot be discounted.

Further downstream on the same floodplain surface, an active side channel cuts off a gentle meander in the river. Review team members agreed that the potential for capture of the main channel or channel migration is present and that the area in the vicinity of the channel will be removed from the THP (**Recommendation 1**).

Wetland Areas

Well defined three parameter wetlands are not present within the harvest area. There are wetland type plant species growing throughout portions of the flood prone area, potentially indicating the presence of seasonal wetlands. Flagged skid trails avoid areas dominated by wetland plants, however, there will be some amount of incidental disturbance to these plants from tractor operations and log skidding. Regional Water Board staff are of the opinion that temporary impacts to seasonal wetlands may occur as a result of proposed timber operations on the flood prone area, but that the impacts are not significant as a result of management measures designed to minimize impacts.

Heavy Equipment on the Floodplain

Use of heavy equipment on flood prone areas should be avoided or minimized to the extent feasible to prevent adverse impacts to the proper functioning of the riparian zone. Heavy equipment can compact the ground, reducing the infiltration rate and inhibiting recharge of the alluvial aquifer. Ground disturbance by skid trails can alter flow in the floodplain during high flow events. Heavy equipment can also expose bare soil, which can be mobilized during storm events and transported to watercourses.

The plan proposes to use skid trails within the flood prone area. The flood prone area is generally nearly flat lying. A few small hills are scattered throughout the plan area. The plan proposes to use pre-flagged existing skid trails in the WLPZ, which is an in-lieu practice as shown on THP yarding maps. FPRs require that areas of bare soil in the WLPZ greater than 100 square feet must be stabilized with slash or grass seed and straw mulch. As discussed during review of previous flood prone areas THPs, review team members agreed that because skid trails on floodplain/terraces in the WLPZ are on mostly flat ground, erosion potential is low and it would be acceptable to let natural processes (revegetation and accumulation of leaf litter) cover areas of bare soil.

Skid trails constructed during previous entries typically required minimal or no cutting and filling. It is apparent that some old skid trails were constructed by excavating and remain on the landscape as subtle linear features slightly lower than the adjacent floodplain surface. These features can function as preferential flowpaths when water inundates the floodplain as well creating low spots for water to collect and potentially become wetlands. During the PHI, review team members and the RPF discussed the extent of ground disturbance likely to result from tractor yarding. Yarding may be conducted using rubber tired skidders or tracked vehicles. No cutting or filling is necessary. Tractor blades would only need to be lowered to push piles of logs and other debris that are ubiquitous throughout the flood prone areas in order to make skid trails passable. As per review team agreements from review of previous GRT flood prone area THPs, in order to ensure minimal ground disturbance from ground based yarding, THP item 38 specifies that tractors may not drive with their blade lowered, except as needed to move debris and that no excavation may occur on flood prone areas except at watercourse crossings as

described in Section II or as needed to improve drainage or resolve access problems resulting from previous logging operations.

During the PHI the review team discussed the potential for a proposed new road segment on the northeastern floodplain to capture high flows and lead to avulsion. While there was general agreement that the potential was low but could not be discounted, the RPF agreed to relocate a section of the proposed route. The modified proposed road would traverse that base of the hillslope for approximately 200 feet, resulting in a discontinuous road grade on the floodplain and hopefully reducing the potential for stream capture. The change was done in the field by relocating flags. CAL FIRE will recommend revising maps and any other THP items as necessary.

Conclusion:

The Report of the Scientific Review Panel on California Forest Practice Rules and Salmonid Habitat (Ligon et al, 1999) recommended that if the goal is to manage riparian stands with elements common to late-successional stands, it would be necessary to thin or selectively harvest such stands to promote growth of larger trees. The report qualifies that recommendation by clarifying that long term goals of growing larger trees should not create short term impacts, such as decreased shade or ground disturbance in sensitive riparian areas.

In addition, 14CCR 916.9(C)(2) states, "The primary objective for this zone is to develop a large number of trees for large wood recruitment, to provide additional shading, to develop vertical structural diversity, and to provide a variety of species (including hardwoods) for nutrient input. This is accomplished through the establishment of high basal area and canopy retention by retaining or more rapidly growing a sufficient number of large trees. Additional specific objectives include locating large trees retained for wood recruitment nearer to the Core Zone and maintaining or improving salmonid habitat on flood prone areas and CMZs [channel migration zones] when present."

In evaluating the potential impacts of the proposed harvest plan, the plan has adequately addressed the following objectives:

- prevent or minimize sediment discharges;
- minimize disturbance on the flood prone areas;
- retain adequate riparian canopy to preserve existing shade on watercourses and maintain microclimates;
- manage the riparian stand to maintain or improve existing conditions to promote large wood recruitment potential.

Waste Discharge Requirements

Following plan approval by CAL FIRE, and prior to beginning timber harvest activities, landowners must apply for coverage under the General WDRs ([Order No. R1-2004-0030](#)), the Categorical Waiver ([Order No. R1-2014-0011](#)), an individual waiver or WDR, or in some cases a Watershed-wide WDR. The following web link provides a copy of the Order:

http://www.waterboards.ca.gov/northcoast/water_issues/programs/timber_operations/

It appears that with inclusion of recommendations from review team agency PHI reports, the THP will likely avoid or minimize both short term and long term adverse impacts to beneficial uses of water. When considered with the light harvest mark observed on the PHI, the

requirements for post-harvest retention of overstory canopy, basal area and large trees, and minimal use of heavy equipment on flood prone areas, I believe the plan will comply with applicable water quality standards and therefore will be eligible for coverage under either the General WDR or Categorical Waiver.

Recommendations and comments are provided pursuant to the statutory authority contained in the Porter Cologne Water Quality Control Act (California Water Code Section 13000 et seq.), the Basin Plan, and the Z'berg Nejedly Forest Practice Act (PRC Section 4582.6), and in accordance with the Forest Practice Rules 14 CCR 1037.5(f).

Recommendations:

Please note that only portions of the proposed project were reviewed during the PHI due to time restrictions, limitations of the area covered and scope of the PHI.

1. Areas within 30 feet of the meander bend cutoff shown in Figure 1 of this report shall be removed from the THP. THP Maps and flagging in the field shall be revised to reflect this.

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