



January 18, 2016

Via Electronic Mail

Mr. John W. Corbett, Chair

Board Members

Mr. Matthias St. John, Executive Officer
North Coast Regional Water Quality Control Board
5550 Skylane Blvd. Ste. A
Santa Rosa, CA 95403

Re: Proposed Order No. R1-2016-0004 Waste Discharge Requirements For Nonpoint Source Discharges and Other Controllable Water Quality Factors Related to Timber Harvesting and Associated Activities Conducted by Humboldt Redwood Company, LLC in the Upper Elk River Watershed, Humboldt County

Dear Chairman Corbett, Members of the Regional Water Quality Control Board, and Mr. St. John:

Humboldt Redwood Company (HRC) appreciates the opportunity to comment on draft watershed-wide waste discharge requirements (WWDRs) for its ownership and forestry activities in the upper Elk River watershed (Proposed Order No. R1-2016-0004). As the Board is aware, HRC has applied for new WWDRs, in large part to reflect changes in timber harvest operations brought about by change in ownership in 2008; most significantly a reduction in rate of harvest and a change in silvicultural practices including an end to traditional clearcutting.

As part of this application, HRC submitted a Report of Waste Discharge (ROWD) to the NCRWQCB on September 22, 2015 (HRC ROWD 2015). The ROWD describes the forestry activities occurring on HRC timberlands in the upper Elk River including detailed sediment prevention and minimization measures (ROWD Section 5.0), a long term landscape plan for forest and watershed management (Section 4.0), and a robust monitoring and reporting program (Sections 6.0, 7.0, and 8.0). Results from over a decade of monitoring and reporting are referenced in the ROWD as they relate to the known effectiveness of the sediment prevention and minimization measures already in practice, many of which originate from HRC's Aquatic Habitat Conservation Plan (AHCP) established in 1999. The contents of the ROWD, including additional new measures to be implemented, represent many years of dialogue with NCRWQCB staff and are comprehensive in addressing the specific concerns brought forth related to potential for discharge from our forestry activities.

HRC is very supportive of the proposed Order (draft WWDRs) to the extent they reflect the findings and practices presented in the ROWD and seek mutually agreeable and collaborative requirements. However, there are also numerous findings and requirements within the proposed Order to which HRC objects, or requests the NCRWQCB further clarify, as they are either inconsistent with the submitted ROWD, appear to be inaccurate, or are based on assumptions that are either unexplained, speculative, or otherwise in our opinion, not well founded.

Enclosed as a separate attachment to this letter, you will find comments and recommendations *embedded* in the current proposed Order (**Attachment A**) in a track changes format. Overview and organization of these comments and recommendations, along with additional information where necessary, is provided *separate from Attachment A* at the end of this letter, with the intent being that these two documents be reviewed together.

You will note HRC comments and recommendations generally fall into one of two categories:

- (1) Request for *removal or modification* of some of the more significant proposals (requirements) found in the draft WWDRs inconsistent with the ROWD and Water Code Section 13360, including but not limited to:
 - a. Harvest Prohibition across one-fifth of HRC ownership in the watershed
 - b. Establishment of an annual average 2% harvest rate limitation for HRC's ownership in all sub-watersheds throughout the upper Elk River
 - c. Expansion and changes to HRC's existing Riparian Management Zone protection measures
 - d. No timber operations to be permitted annually for over six months of each year (October 15 through May 1)
 - e. Requirement for a Feasibility Study for Control of *Instream* Sediment Sources
 - f. Requirement to participate in the *voluntary* Stewardship Program
 - g. Separate and discretionary enrollment of THPs that demonstrate compliance with the WWDRs

- (2) Request for factual correction, clarification, or inclusion of additional information; mostly relative to WWDR findings

We acknowledge and appreciate that comment in regard to the Proposed Order has also been provided by two HRC HCP Signatory Wildlife Agencies, NOAA Fisheries and the California Department of Fish and Wildlife (CDFW). While we agree with the content of the NOAA Fisheries letter (NOAA, January 15, 2016), we found the CDFW letter to base many of its conclusions on findings presented in the Tetra Tech Report which have not as of yet been thoroughly vetted. We also note an inaccurate statement in the CDFW letter claiming that NOAA Fisheries (NMFS) "support(s) specific conservation and restoration measures proposed by the draft Order, which are above and beyond what are required within the HRC HCP and associated ERSC WA prescriptions" (CDFW Memorandum, January 14, 2016, page 2, paragraph 2). Direct communications with NOAA Fisheries indicates that Agency *does not support* measures above and beyond the HRC HCP and ERSC WA prescriptions as necessary for remediation of downstream conditions, but rather as the

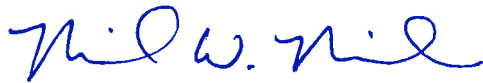
NOAA letter itself states, recommends downstream restorative actions to address conveyance problems in the lower Elk River below HRC's ownership. Furthermore, the contents of CDFW's letter suggest the author did not review and consider the HRC ROWD and the measures and information it presents pertinent to achieving TMDL objectives in a manner consistent with California Water Code.

As the WWDRs ultimately adopted by the Board will affect HRC's business, we have spent significant time reviewing the proposed Order and the referenced Tetra Tech Report and other related documents. We hope the comments and recommendations enclosed with this letter, as well as those provided separately by our legal counsel prove informative and useful to the Board in drafting and adopting final WWDRs that are *scientifically and legally sound, effective, and efficient* in erosion control and sediment delivery prevention and minimization from HRC's timber operations.

We will be submitting separate detailed comment at a later date with regard to the analysis, assumptions, and findings presented in the Tetra Tech Report upon which much of the WWDRs and TMDL implementation plan are based.

Again, we thank you for the opportunity to comment and look forward to a collaborative effort in finalizing for adoption new WWDRs for HRC ownership in the upper Elk River. We appreciate the recent meeting we had with Mr. Fred Blatt and Mr. Jim Burke to discuss our concerns, and their commitment to consider the merit of our request for specific modifications to the current proposed Order. We hope the Board upon careful review, will also encourage these changes be made.

Sincerely



Michael W. Miles
Director Forest Science
Humboldt Redwood Company LLC
Mendocino Redwood Company LLC



HRC Proposed Order No. R1-2016-0004 Waste Discharge Requirements Comment Summary
- Companion to and in Support of Attachment A

Comment 1 (page 2): date correction

Comment 2 (page 2): additional detail

Comment 3 (page 2): Clarify intent of language; accuracy

Comment 4 (page 2): Accurate representation of field conditions and trends

We note the findings of the recent Class I Stream Aquatic Trends Monitoring 2014 Annual Report (HRC 2015), provided to the NCRWQCB on September 15, 2015:

- NOAA Aquatic Properly Functioning Condition (APFC) targets for pool habitat are generally being met on HRC lands
- Large wood targets being met in most of the North Fork and South Fork ATM stations
- Cold water temperature targets consistently met throughout the watershed due in part to a high degree of over stream riparian canopy cover (effective Riparian Management Zones; 'RMZs')
- Fine sediment reduction trend being observed in the mid and upper watershed ATM sites; not in lower depositional sites where geology, channel roughness (primarily large wood and vegetation in-growth), very low channel gradient, and downstream off-property infrastructure reduces stream flow velocity and constrains transport

We also note:

- Only 3.4% of the total Class I and II RMZ area on HRC's ownership in the upper Elk River experienced any harvest over the 11 year period of 2001-2011 (106 out of 3,100 acres); minimal streamside harvest is occurring under current practices and is constrained to light selection only (HRC 2014, Elk River/Salmon Creek Watershed Analysis Revisit Report, Section 5.0)
- The AHCP allows only one harvest entry per every 20 years into riparian areas (HCP ERSC Prescriptions Sections 6.3.4.1.2 and 6.3.4.1.3)
- Riparian forests are growing into late seral conditions over time consistent w/ the AHCP strategy, benefitting cold stream temperatures, LWD recruitment, and an effective sediment filtration strip (HRC 2014, Elk River/Salmon Creek Watershed Analysis Revisit Report, Section 5.0)

Comments 5, 20, 23, & 28 (pages 3, 19, & 31): Harvest Prohibition

Establishing an indefinite harvest prohibition for any portion of HRC ownership, particularly absent any demonstration of harvest related discharge, is inconsistent with state law (See Wayne Whitlock Letter, January 18, 2016). HRC is happy to discuss specific scheduling of additional harvest in the 5 watersheds and underlying water quality concerns. However the company strongly objects to both the harvest prohibition the NCRWQCB *has already affected* by refusal to enroll the state approved THP 1-12-110 HUM (McCloud Shaw THP), and the proposal to establish this prohibition across 20 percent of HRC's timber management zoned ownership in the Upper Elk River watershed as a WWDR requirement.

Implementation of the McCloud Shaw THP is not only a HRC business necessity, but also allows for continuance of an ongoing Best Management Practices (BMP) study being conducted by HRC in collaboration with Humboldt State University and CAL-Fire. This study is testing multiple hypothesis regarding sediment prevention and minimization BMPs recognized as of interest to the NCRWQCB. Fully initiated in 2014, the study involves paired sub-watersheds and before/after timber operation monitoring and analysis.

We note specific additional sediment prevention and minimization measures were described and proposed in the HRC ROWD for all timber operations occurring within these specific sub-watersheds to address variability in geology, and have been incorporated into the McCloud Shaw THP.

We request the Board replace the Harvest Prohibition Language currently found in the draft WDRs with the measures proposed in the ROWD addressing the site specific conditions found in what the ROWD refers to as sub-basins containing 'sensitive bedrock terrain' (HRC ROWD 2015, Section 5.4).

Specifically, these include:

- Slopes with gradients equal to or greater than 50% and within 300 feet of a Class I or II watercourses shall be field reviewed by a state license professional geologist.
- Retention of a minimum of 150 square feet of basal area (of any commercial species) per acre shall be required on headwall swales that envelope Class III watercourse source areas as identified in THP geologic reports.
 - Headwall swales are steep areas of concave, convergent topography (inversed 'tear-drop') found at the head of, and connect linearly to, low order Class III and II watercourses. These drainage features should not be confused with other hill slopes concavity such as small zero order draws, bodies of large landslides, tree throw depression, or low-gradient hollows.
- Maintain a minimum of 100 square feet of conifer basal area on unstable slopes identified in THP geologic reports as potential point of sediment delivery.
- No timber will be marked for harvest within 10 feet of a Class III watercourse unless associated with a stump clump. Removal of timber associated with road construction, re-construction, or decommissioning may be harvested.
- All new road construction alignments shall be reviewed by a state licensed geologist. Findings will be documented in a CGS Note 45 compliant report.

- Road surfaces sloped at 10% or greater that contour across Hookton deposits will be storm proofed in accordance with a high or extreme erosion hazard rating. Ratings will be determined by the project forester in conjunction with project geologist.
- Haul road water bar outlets within 150 feet of a downslope Class I or II watercourse will be rock armored or slash packed with sound woody debris.
- All temporary road surfaces within Class I, II and IIIs RMZ shall be slash packed at the completion of operations with sound woody debris or equivalent type material. A walking or quad trail may be kept open on the inside (upslope) edge of the road facilitating safe access if desired.
- All skid trail surfaces within 50 feet of a watercourse shall be slash packed with sound woody debris or equivalent type material.

Comments 6&7 (page 3): Clarification of finding

Comment 8 (page 4): Correction/Accuracy

Comment 9 (page 4): Recognition of PRC 4582.71

Under the WDR section titled *Regulatory Actions in the Upper Elk River*, and what amounts to explanation and history of the laws and regulations governing timber operations on HRC ownership in the watershed, it seems appropriate to recognize the authority RWQCBs have to direct Cal Fire to not approve a THP *if based on substantial evidence*, timber operations will result in discharge in violation of RWQ control plan (PRC 4582.71).

WDR Finding 14 (page 5): Pertinent additional information

Comment 10 (page 6): Clarifying reference is to existing WWDRs and not the proposed Order

Comment 11 (page 6): Crux of the scientific disagreement; comment only unless WDR wants to acknowledge that aggradation, periodic evulsion, and channel meander are all natural processes that occur on floodplains, and that strategic flood control can only be effectively addressed by downstream actions (HRC 2014 Elk River/Salmon Creek Watershed Analysis Revisit Report, Section 6.0).

HRC's pending comments regarding the TMDL Tetra Tech Report will include further discussion of the conditions and processes inherent to the mid and lower Elk River watershed flood plains.

Comment 12 (page 6): Clarification of finding/recognition of sediment reduction activities associated with active management

The AHCP, existing WDR and CAO requirements, and the FPRs all require control of existing sediment sources as part of active forest management. This is a factual matter of record.

- To date, over 350,000 cubic yards of historic logging road and skid trail related sediment has been prevented from entering, or removed from, the Elk River stream system on HRC lands since 1999 in compliance with HCP, FPR, and CAO

requirements (HRC ROWD 2015, Section 6.2.1). To put in perspective, this is the equivalent of a NFL football field (100 yards long x 50 yards wide) piled 20 stories high with dirt.

- 'Zero net discharge' at the project level has been a standard of practice for all THPs in the watershed since 1999. This means the control of existing or potential sediment sources, typically related to historic road and skid trail construction, has resulted in the prevention or removal of sediment delivery far outweighing the delivery which is estimated to have entered the stream system as result of contemporary timber harvesting activities.

Comment 13 (page 11): Pertinent additional detail; results of trend and effectiveness monitoring relative to HRC landslide avoidance strategy as supporting rationale for specific requirements. This information has been provided to the NCRWQCB as part of the HRC 2014 Elk River/Salmon Creek Watershed Analysis Revisit Report (Section 4.1.2), the 2015 ROWD (Sections 5.8, 6.1.1), and in annual Tier 2 landslide monitoring reports provided since 2007.

Comment 14 (page 12): Please consider clarification – what does this mean – as peak flows are typically measured on a storm by storm event not over 10 year periods. And 'less than 10%' ... compared to what, no timber operations?

Comment 15 (page 12): Sections 4.2 and 4.3 of the HRC ROWD (2015) presents analysis of HRC's harvesting activities and planned 20 year harvest schedule potential to affect peak flows using multiple approaches. The cumulative results of this analysis found that HRC's planned rate of harvest will not result in forest conditions likely to cause a significant increase (> 10% above background) in winter peak flows.

Furthermore, finding 36 appears to contradict itself, as *WQ staff's own analysis* of HRC's long term 20 year harvest schedule (aka landscape plan) included in the ROWD (Section 4.0) *found no potential for peak flow to be increase by 10% or more above background as result of planned timber operations at the rate HRC proposes.*

Further discussion of this matter will be presented in HRC's forthcoming comments regarding the Tetra Tech Report.

Comments 16 & 27 (pages 12 & 31): WDR Proposes average annual harvest rate for any sub-watershed not to exceed 2.0% CEA during any 10 year period

WDR Finding 37, and the subsequent proposed specific requirement to prohibit an average annual harvest rate of greater than 2% clearcut equivalent acres (CEA) per year during any 10 year period, appear to be based on reference to a 'threshold' believed critical to controlling cumulative harvest related impacts and achieving unspecified numeric targets recommended in the Tetra Tech report.

The assumption that significant cumulative impact will occur, perhaps in the form of elevated peak flows as result of timber harvest, is a concept 'peppered' throughout the Tetra Tech Report, however there is no actual relevant peak flow analysis cited in the report to support this assumption, despite there being both discharge and harvest records provided to the NCRWQCB regularly as required under existing WWDRs (HRC Annual Hydrology Monitoring Reports; HRC Annual Harvest Summaries), and therefore available for review and analysis.

In contrast, the HRC ROWD (ROWD Sections 4.2 and 4.3) does analyze the actual potential for canopy related peak flow effect of implementing the HRC 20 year planned harvest schedule using actual stand data and CRYPTOS and FORSEE forest modeling programs. The modeling found no significant changes in canopy cover over time as likely to occur as maintenance and growth of a continual forest canopy, including multiple canopy layers, under the unevenage silvicultural management regime (selective harvest instead of clearcutting) offsets temporary canopy reduction associated with partial harvest. There is no significant change in canopy condition other than the number of acres in forest plantation age 15 years and less *diminishes* over time (ROWD, Figure 4-5) due to the elimination of clearcutting practices, which is a positive trend relative to the hydrologic recovery of the forest condition.

Independently, RWB staff analyzed peak flow effect based on HRC's ROWD submitted harvest rate at the sub-watershed level using the regression equation developed by Cafferata and Reid. The finding of this analysis (WDR finding 36) was also that the planned HRC harvest over the next 20 years would have no significant peak flow effect, and in all instances would be less than 10 percent above background (i.e., no harvest). This NCRWQCB finding is consistent with the findings made by CAL-FIRE hydrologists during the multi-agency THP review process for several Elk River THPs in recent years. These findings were also based on use of the Cafferata and Reid regression equation cited in the draft WDRs, and included consideration of cumulative past harvest in addition to the planned subject THP harvest.

There appears to be no scientific basis for the annual 2% CEA limitation. We note that in recent discussion with NCRWQCB staff, this requirement is being reconsidered and may be removed.

We note the annual rolling average watershed-wide harvest rate proposed by HRC its ownership in Elk River over the next 20 years is approximately 1.5% equivalent clearcut acres.

Comment 17 (page 13): Clarification

WWDR Pages 13 and 14: Additional relevant information regarding Riparian Management Zones recommended for insertion into Findings

Comments 18, 21, and 29 (pages 14, 19, 32-34): Proposed Changes to HRC Riparian Management Zone Protection Measures

There is no empirical evidence or process based argument supporting the need to augment or otherwise change existing HRC riparian protection measures being applied to THPs.

Please consider the following:

1. HRC Riparian Management Zone (RMZ) strategy combines **riparian reserves** (No Timber Harvest Inner Bands) with **restricted selective management** (Outer Bands) and **proactive enhancement** (instream large wood placement). ***Enforceable requirements are discussed in detail in Section 5.0 of the HRC ROWD.***
2. Minimum 50 foot and 30 foot wide Inner Band No Cut Zones already exist for Class I and II watercourses minimizing disturbance in these areas closest to watercourses and ensuring effective sediment filtration strips are in place mitigating upslope timber harvest. Typically no ground disturbance occurs within these zones. We note the *Scientific Literature Review of Forest Management Effects on Riparian Functions for Anadromous Salmonids* (September 2008) prepared by Sound Watershed Consulting for the State Board of Forestry (BOF) found that establishing 30 foot or greater no disturbance zones adjacent to watercourses is an effective method for preventing sediment delivery, provided due consideration is given to topography and slope stability. HRC RMZs provides an additional buffer (Outer Band) out to 75, 100, and 150 feet or greater, immediately adjacent the inner band in which ground disturbance is minimized through application of an equipment exclusion zone (EEZ), no removal of down wood, and allowance for only moderate to light selection harvest.
3. *Through the existing AHCP watershed analysis process an 8 mile reach of the Lower North Fork Elk River has a 150 foot no cut riparian RMZ in place established by the HCP wildlife agencies in 2005. This is one example of the site-specific nature of the existing HRC riparian protection measures.*
4. Ephemeral Class III watercourses are also protected by Equipment Exclusion Zones (EEZs) within in which no pre-existing large down wood is permitted for removal. Trees within and immediately adjacent Class III channels are restricted from timber harvest, as are trees located on unstable banks and slopes immediately adjacent Class III watercourses.
5. Estimated harvest-related surface erosion using disturbed WEPP for the period of 2001-2011 is 4.5 cubic yards per mi². As the draft WWDR notes, HRC's proposed CEA is a decrease from that allowed under the current WWDRs. A previous instream effectiveness monitoring study in Freshwater found actual harvest related sediment delivery was only 5% of WEPP prediction (Sullivan, K. and D. Manthorne. 2012). If using the cautionary principal we double this delivery to 10% of predicted WEPP, delivery is approximately 0.45 yds³/mi²/yr (less than one-half cubic yard). Very little sediment is passing through the existing RMZs.
6. Despite much scrutiny over the last 15 years, there is no recorded of WQ Notice of Discharge (NOD) for surface erosion sediment delivery originating from, or passing through, existing HCP RMZs. Nor is HRC aware of any other reports by WQ or HRC staff documenting surface delivery from open slope harvest units through RMZs.
7. Open slope landslide delivery rates from HCP managed areas are **significantly less** than historically (pre 1999) managed areas; in fact they are near nil over the last 15 years (HRC ROWD 2015, Section 6.1). Effective licensed geologist review and established enforceable prescriptions for certain geomorphic conditions result in expanded riparian buffers and/or increased harvest restrictions on a site specific basis.

8. The Sound Watershed Scientific Literature review (September 2008), cited above, found streamside bank erosion in California forests to contribute 40-60% of large wood recruitment. One hundred (100) percent of this large wood recruitment source is maintained under current HRC RMZs through establishment of the enforceable no harvest inner bands protecting stream banks. The report also found that seventy to ninety (70-90) percent of LWD recruitment in California forests originates from within 30 to 100 feet of streams; and riparian area beyond 100 feet has a relatively small effect on wood recruitment function in most cases.

However, recognizing that Wood fall recruitment can be effected by topography, the HRC RMZ strategy for Class II zones results in an increased riparian distance for slopes >50%, beneficial to both LWD recruitment and surface erosion. Class I watercourses are provided a minimum 150 foot RMZ with existing specific enforceable requirements for retention of all trees exhibiting high recruitment potential (e.g. leaning towards the watercourse, live cull or snag, susceptible to delivery by bank erosion or streamside landslide)

9. Long term trends monitoring stations provide evidence that there is no water temperature issue in Elk River (HRC 2014 Elk River/Salmon Creek Watershed Analysis Revisit Report).
10. Pre and Post-harvest inspections ensure that a moderate to dense canopy is maintained in the riparian areas where actual harvest is proposed and occurs. Note: less than 3.5% (106 acres) of total Class I and II riparian area (3,100 acres) in Elk River actually experienced harvest over the 10 year period of 2001-2011 (HRC 2014 Elk River/Salmon Creek Watershed Analysis Revisit Report, Section 5.2.2). Under the proposed HRC harvest scheduled discussed in the ROWD, a similar riparian harvest rate is anticipated for the next 20 years. Also please note, existing RMZ prescriptions only allow one entry into any given riparian area every 20 years limiting the frequency of disturbance (HCP ERSC Prescriptions Sections 6.3.4.1.2 and 6.3.4.1.3).

HRC Request: Limit WWDR expansion of riparian zone protection to what is proposed in the HRC ROWD: specifically, the establishment of a 10 foot no harvest zone adjacent Class III watercourses in the ROWD identified Sensitive Bedrock Terrain sub-basins.

HRC is amenable to the insertion of WWDR language requiring additional protection measures when deemed necessary to prevent or further minimize delivery based on *site-specific evaluation* through the existing THP development and multi-agency THP PHI review process. Here too, reference to PRC 4582.71 is relevant.

Comment 19 (page16): Clarification; improve accuracy of finding

Comments 20, 21, and 23 (page 19): see previous discussions (Harvest Prohibition and Expanded RMZ)

Comment 22 (page 19): Review with Comment 31 (Timber Operation Prohibition for six months out of each year)

Comment 24 (page 22): Additional relevant information (SHN 2013, Streamside Landslide and Bank Erosion Survey, Summer 2012)

Comment 25 (page 22): See comment 35 regarding requirement for feasibility study for reducing instream sediment transport

Comment 26 (page 27): See comment 45 below regarding WDR THP enrollment procedure

Comment 27 (page 31): See comment 16 above regarding sub-watershed rate of harvest limitation

Comment 28 (page 31): See previous discussion Harvest Prohibition

Comment 29 (page 32): See previous discussion regarding Expanded RMZ; recommend WDR rely upon Riparian Management Strategy presented in ROWD

Comment 30 (page 35): Clarification re: THP Geologic Review

Geologic report submittal and review should be consistent with THP review process, not separate; CGS plays an important role in geologic review and is available for consultation during THP review process.

Comments 22 and 31 (pages 19 and 36): WDR proposes no timber operations October 15 – May 1

We request that specific timber operation restrictions designed to address seasonal wet weather conditions as described in the ROWD be established in place of a total six month plus timber prohibition:

- Significant investment in the millions of dollars have been made to establish a permanent haul road system in the Elk River watershed suitable for use year around under certain conditions
- The close proximity of the watershed to a paved county and state road system makes the watershed ideal of fall through spring operations under appropriate climatic conditions
- Limitations on number of available LTOs to conduct operations and Endangered Species Act (ESA) wildlife restrictions requires opportunity to operate year around where infrastructure and weather conditions permit
- *HRC measures recommended for inclusion in the WWDR as described in detail on page 36, including those described in Section 5.5. and Appendix B of the ROWD and found in the FPRs, are effective at controlling timber operation related sediment delivery during coastal California's 'wet weather season', with the timing and allowance of specific activities prior to, during, and following rainfall events based on soil conditions and potential for sediment delivery to occur*

- Note: no log hauling is permitted during or following rainfall events until road conditions are no longer saturated and potential for road use related delivery has subsided

Comments 25 & 32 (pages 22 and 37): WDR proposes required Feasibility Study for Control of In-stream Sediment Sources

HRC objects to the requirement of a 'feasibility study' for addressing pre-existing instream sediment sources including stored sediment. Sediment prevention and minimization measures already in place address concerns related to bank erosion and peak flow effect. Requiring a landowner to mitigate already in-channel stored sediment, for which the historic source (natural versus management related) and timing of delivery is uncertain, is unprecedented and legally questionable at best. This research requirement is completely separate and unassociated with the activities to which we currently seek coverage. As has been demonstrated by actions taken and testimony given, HRC is a proactive steward of the watersheds within which the company operates and is not opposed to voluntarily supporting feasibility assessments for instream restoration activities; however that is different than the NCRWQCB requiring research as part of WDRs.

We believe this study would be more appropriately addressed through the Elk River Recovery Assessment Pilot Project Program and/or the Stewardship Project.

Comment 33 (page 38): Request that a one year extension for completion of all remaining road related CSDS in the watershed may be granted by the EO upon request. This would allow for final 'clean up' should weather or other issues prevent meeting the 2018 date.

Comment 34 (page 38): Clarification

Comment 35 (page 40): Clarification

Comment 36 (page 42): Landslide Monitoring Requirements

The last three requirements for landslide monitoring and reporting are unnecessarily prescriptive and minimize flexibility for improvements in technology or methods. The same end results can be achieved with the recommended language shown on page 42. Discussion with Mr. Blatt and Mr. Burke suggest this requested change can be accommodated.

Comment 37 (page 44): Participation in a *voluntary* Stewardship Program is presumably *voluntary* and should not be linked to the WWDRs, other than potentially as a finding to the extent that HRC has already voluntarily provided funds and other support for this effort along with a general commitment to participate.

Comments 38 and 39 (page 45): Clarification

Comment 40 (page 45): See Comment 37

Comment 41 (page 45): Five Year Summary Report

We recommend minor modification of language so that it is clear the periodic 5 year 'check-in' as referred to by staff, focuses on trends and effectiveness evaluation relative to water quality and aquatic habitat conditions (beneficial uses).

We note pursuant requirements and strategy of the HRC HCP, a detailed analysis of this sort of information is currently required at 10 year intervals, most recently presented in 2014 as the Elk River Watershed Analysis Revisit Report, much cited in the HRC ROWD.

Comment 42 (page 47): See comment 37 regarding Stewardship Program

Comment 43 (page 47): Water Quality and Aquatic Trends Monitoring Analysis (5 Year Periodic Reporting). **See comment embedded in WDRs.**

Comments 44 and 45 (page 48): Application and Enrollment Procedure

We do not understand why there should be a five year 'break-in period' requiring application and enrollment of individual THPs? There is no history or record of HRC not abiding by all laws and regulations.

The Executive Officer already reserves the right to notify the Company in writing that a specific THP is not eligible for coverage (WWDR Section V, page 48). In addition the Executive Officer has statutory authority under existing state law (PRC 4582.71) to direct CAL-Fire not to approve a THP if based on substantial evidence timber operations will result in a discharge in violation of a RWQ Control Plan.

Requiring HRC to request individual THP enrollment into the WWDRs through a separate process is an unnecessary burden for the company and inefficient for the Agency which must then review and respond to the enrollment request, despite having just been through the THP review and approval process.

It would be much more efficient if the WWDR simply requires signed certification with every submitted THP that the Plan has been prepared in compliance with all WWDR requirements. This can then be confirmed by the NCRWQCB during the THP review and approval process.

We note increased efficiency and certainty in the enrollment process (i.e. automatic enrollment) is one of the typical benefits of watershed-wide waste discharge requirements where the landowner is taking on all the additional requirements associated with *watershed-wide monitoring and reporting*, independent of, and in addition to, individual THP monitoring and reporting.

References:

Elk River/Salmon Creek (ERSC) Watershed Analysis Forestry Prescriptions established by the USFWS, NMFS, and CDFW pursuant to the HRC HCP in 2005 (HRC ROWD Attachment A)

HRC 2015, Report of Waste Discharge, Elk River Watershed, Humboldt County, CA; August 28, 2015. Prepared by Humboldt Redwood Company, LLC. Scotia, California

HRC 2014, Elk River/Salmon Creek Watershed Analysis Revisited; June 13, 2014. Prepared by Humboldt Redwood Company, LLC. Scotia, California

HRC 2014, Class I Stream Aquatic Habitat Trends Monitoring 2014 Annual Report; September 2, 2015. Prepared by Humboldt Redwood Company, LLC. Scotia, California

HRC Habitat Conservation Plan 1999, Most Recently Revised August 12, 2015 in response to Adaptive Management and Minor Modification Provisions

SHN Consulting Engineers and Geologists 2013, Streamside Landslide and Bank Erosion Survey, Summer 2012. Elk River, Humboldt County, CA. January 2013. Provided as Appendix 6 of the Elk River/Salmon Creek Watershed Analysis Revisit Report, June 13, 2014.

Sound Watershed Consulting 2008, *Scientific Literature Review of Forest Management Effects on Riparian Functions for Anadromous Salmonids* (September 2008). Prepared for the California State Board of Forestry and Fire Protection

Whitlock, Wayne Letter to the NCRWQCB re: Proposed Order No. R1-2016-0004 Waste Discharge Requirements For Nonpoint Source Discharges and Other Controllable Water Quality Factors Related to Timber Harvesting and Associated Activities Conducted by Humboldt Redwood Company, LLC In the Upper

ATTACHMENT A

Humboldt Redwood Company Comments and Recommendations

Re: Proposed Order No. R1-2016-0004

Provided in Track Changes

January 18, 2016

Waste Discharge Requirements

For

**Nonpoint Source Discharges and Other Controllable Water Quality
Factors Related to Timber Harvesting and Associated Activities
Conducted by Humboldt Redwood Company, LLC**

In the Upper Elk River Watershed

Humboldt County

California Regional Water Quality Control Board
North Coast Region

ORDER NO. R1-2016-0004

Waste Discharge Requirements

For

Nonpoint Source Discharges and Other Controllable Water Quality Factors Related to
Timber Harvesting and Associated Activities Conducted by Humboldt Redwood
Company, LLC In the
Upper Elk River Watershed

Humboldt County

The California Regional Water Quality Control Board, North Coast Region, (hereinafter
Regional Water Board) finds that:

OVERVIEW

1. The Elk River, one of the primary tributaries of Humboldt Bay and an important salmon spawning and rearing habitat, was identified in 1998 as impaired due to excessive sedimentation/siltation and was subsequently placed on the federal Clean Water Act section 303(d) list. The Upper Elk River (UER) watershed has been utilized primarily for timber harvesting since the 1850s. Water quality impacts resulting from this history of timber management activities include:
 - a. Sedimentation and threat of sedimentation;
 - b. Impaired domestic and agricultural water quality;
 - c. Impaired spawning habitat; and
 - d. Increased rate and depth of flooding due to sediment.
2. The 44.2 square mile Upper Elk River (Attachment A) watershed is predominantly timberland. Humboldt Redwood Company (HRC) is the largest landowner, with 79 percent ownership. This comprises 11% of HRC's total ownership of 209,300 acres in the North Coast region. Discharges from most of HRC's ownership are permitted under the General Waste Discharge Requirements for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region (General WDRs), Order No. R1-2004-0030, or Categorical Waiver of WDRs, Order No. R1-2014-0011. Cumulative impacts in Elk, Freshwater, Bear, Jordan, and Stitz Creek watersheds, require watershed-specific permitting. In 2011, the Regional Water Board adopted R1-2011-0100, Bear Creek WDRs, and in 2014 adopted R1-2014-0036, Jordan Creek WDRs for HRC. No harvesting activities are currently taking place in Stitz Creek.

3. On July 29, 2015, pursuant to Water Code section 13260(a), HRC submitted a report of waste discharges (ROWD) for its timber harvesting and related management activities. The ROWD includes HRC's proposed long term strategy, including measures designed to prevent or minimize water quality impacts from activities associated with its forest management, including:
- Timber harvesting;
 - ~~Methods for r~~Road use, construction, reconstruction, decommissioning, and repair and maintenance;
 - Measures to prevent or minimize controllable sediment discharge from roads skid trails, landslides, and other sources related to timberland management;
 - Retention of riparian vegetation to preserve and/or restore shade, supply large wood, filter sediment from upslope sources, help maintain and restore channel form and in-stream habitat, and moderate peak flows;
 - Treatment of controllable sediment discharge sources;
 - In-stream and riparian zone habitat restoration by enhancement of in-stream large wood for habitat restoration; and
 - Implementation and Effectiveness Monitoring
 - Watershed trend monitoring.
4. Water quality impacts from logging and associated activities ~~are primarily can include~~ increased sediment production and elevated water temperature. These impacts result from a complex interaction between inherent watershed characteristics, such as geology and geomorphology, external natural processes, such as climate and timing of stochastic events (i.e. large storms, earthquakes, fires), type of management practices, and extent and rate of watershed area disturbed. Increased sediment production may occur as ~~ais the~~ result of greater incidence of landsliding, surface and gully erosion, and increases in channel erosion due to higher runoff rates. Much of the potential for increased sediment production is associated with roads, skid trails, and landings, with the highest-greatest potential for sediment discharge occurring at road watercourse crossings.
5. The purpose of this Order is to provide a water quality regulatory structure for HRC to prevent and/or address discharges of waste and other controllable water quality factors associated with timber harvest activities in the UER watershed. The Elk River has a long and strained history, and despite numerous efforts to improve conditions, ~~and~~ recent and promising changes in management strategies and headwater conditions, beneficial uses in the downstream reach remain ~~the watershed remains~~ severely impaired, ~~specifically the existing beneficial uses in the downstream reach.~~ This Order is informed by the *Elk River Sediment Technical Analysis* (Tetra Tech, 2015) (Attachment B) and overwhelming evidence pointing to the lack of any assimilative

Comment [HRC1]: September 22, 2015

Comment [HRC2]: Also key component of ROWD

Comment [HRC3]: As written, this finding appears to be a general identification of potential adverse impacts from logging and associated activities... if this is the intent language should be qualified... e.g. potential exists

If on the other hand this is actually meant to be a statement specific to Elk River, at minimum reference to elevated water temperatures should be removed... and much of the other findings noted no longer apply

Comment [HRC4]: It is more than just effort... No harvest and light selection riparian zones are resulting in the maturation and trend towards late seral forest conditions in riparian areas, similarly selection harvest is promoting a perpetual forested landscape, and we are seeing coarsening of stream channel conditions as sediment inputs are controlled and large wood recruited in channel

capacity in the impacted reach.¹ The Order provides for implementation of rigorous best management practices (BMP) prepared with the collaboration and cooperation of HRC, some that vary according to the sediment loading risk of subwatersheds. ~~It provides a five-year interim program where HRC will refrain from timber harvest activity in high risk subwatersheds to allow time for stewardship efforts to move forward and improve conditions in the impacted reach.~~

Comment [HRC5]: Point for discussion

UPPER ELK RIVER WATERSHED

6. In its sediment source analysis, the Regional Water Board evaluated the historical, management, and physical factors associated with timber management in the UER watershed that have influenced sedimentation throughout the watershed. The results of the analyses are described in the Tetra Tech (2015) report.
7. Over time, sediment transported from the upper tributaries has been deposited in low gradient downstream reaches and has resulted in ongoing aggradation, encroachment of riparian vegetation onto relatively recent fine sediment deposits, and an increased incidence of overbank flooding which has impacted the residential community for the past 20 years. It is estimated that approximately 640,000 cubic yards of sediment produced by management activities over the past two decades are stored within the low gradient stream reaches of the UER. In addition to elevated sediment loads, hydromodification from channel stabilization, increased channel roughness from encroaching vegetation and end to the historic practice of removal of large wood log jams and in-channel vegetation, maintenance of downstream agricultural lands, removal of large woody material, dredging, and channel constrictions in lower portions of the watershed, such as bridges and roads, have diminished the ability of the river to assimilate increased sediment loads.
8. High sediment production during the period between 1988-1997 is due to several factors, including an approximate four-fold increase in logging under new ownership of the primary landowner, the Pacific Lumber Company (PALCO). Additional factors include poorly regulated logging practices, a series of winters with above average precipitation and a series of large storm events, and potentially the effects of a magnitude 7.2 earthquake off Cape Mendocino in 1992.
9. In 1997, the Regional Water Board and other state agencies began to receive reports from downstream residents of increased turbidity, channel filling, and flood frequency. In December 1997, California Department of Forestry and Fire Protection (CAL FIRE), California Department of Fish and Wildlife (DFW, then California Department of Fish and Game), California Geological Survey (CGS) and the Regional Water Board determined, based on field observations and aerial photograph data, that

Comment [HRC6]: It is not the removal of large wood but rather the accumulation of large wood that is plugging up the channel

Comment [HRC7]: Not sure how dredging is part of the problem?

¹ The term "impacted reach" applies the North Fork Elk River below Browns Gulch, the South Fork Elk River below Tom Gulch, and the mainstem of Elk River from the confluence of the North and South Forks downstream to Bertas Road.

the Elk River Watershed was one of five watersheds owned by PALCO that were significantly cumulatively impacted by sediment discharges following the large storm events in late 1996 and early 1997. The other watersheds included Bear, Stitz and Jordan Creeks, which are also tributary to the Eel River in the same vicinity, and Freshwater Creek, the adjacent watershed directly north of Elk River, and also tributary to Humboldt Bay. Following this determination, a series of regulatory and non-regulatory actions designed to increased landuse controls to reduce sediment discharges from timber harvesting activities have been implemented.

10. This most recent period of increased disturbance, which peaked from the mid-1980s to ~~late 1990s~~ ~~the early 2000s~~ and gradually diminished through the present, is most closely associated with the degradation of conditions in the impacted reach.

Comment [HRC8]: Very little harvesting 1999 through 2001 (See Figure 3-3; HRC ROWD 2015)

REGULATORY ACTIONS IN THE UPPER ELK RIVER

11. CAL FIRE is the state agency responsible for overseeing timber harvesting activities through implementation of the Forest Practice Rules (FPR). (Cal. Code Regs., tit. 14, §§895 *et seq.*²) Under the Forest Practices Act, non-federal landowners proposing to harvest timber are required to have an approved timber harvest plan (THP) prior to commencing timber harvesting. The Regional Water Board, DFW, CGS, and other agencies are responsible agencies charged with the multidisciplinary review of THPs to ensure compliance with applicable state laws. Public Resource Code 4582.71 provides RWQCBs with authority to direct CAL-FIRE not to approve a THP if based on substantial evidence timber operations will result in discharge... in violation of a regional water quality control plan...
12. The FPRs include rules for protection of the beneficial uses of water, including rules for enhanced protection in watersheds with listed anadromous salmonids. The FPRs provide measures designed to prevent sediment discharge; (See FPR §§ 914, 934 [harvesting practices and erosion control]; §§ 923, 943 [prescriptions for construction, reconstruction, use, maintenance, and decommissioning of roads and landings]; §§ 916.4, 936.4 [requiring evaluation of sites that could adversely impact beneficial uses of water and treatment of such sites when feasible].) FPR section 916.9 requires that every timber operation shall be planned and conducted to comply with the terms of a total maximum daily load (TMDL). The FPRs also provide measures to limit reductions in riparian shade to protect water temperature. Full and proper implementation of the FPRs related to sediment discharge from timberlands can contribute greatly towards implementation of water quality standards. (See e.g. RB1-2013-0005 [FPRs are generally adequate to implement Basin Plan water quality standards if implemented correctly].) Accordingly, this Order relies in part upon the water quality protection provided by the FPRs. Additional protection measures are

Comment [HRC9]: Seems appropriate to reference this relevant authority

² Citations to the Forest Practice Rules contained in title 14 of the California Code of Regulations will be indicated by "FPR" followed by the relevant section number.

necessary to protect the beneficial uses of water for site-specific conditions and to comply with a TMDL load allocation.

13. In addition, HRC ownership in the Elk River watershed is covered by a multi-species state and federal Habitat Conservation Plan (HCP) approved in 1999. The HCP implements state and federal Incidental Take Permits (ITP) issued for aquatic species including Chinook salmon, Coho salmon, steelhead trout, southern torrent salamander, tailed-frog, red-legged frog, foothill yellow-legged frog, and the northwestern pond turtle in conformance with the state and federal Endangered Species Acts. The HCP includes a Watershed Analysis (WA) component for focused inventory and investigation of conditions and processes related to mass wasting, surface erosion, riparian function, stream channel, and aquatic habitat. The most recent WA iteration for the Elk River is the Elk River/Salmon Creek Watershed Analysis (ERSC WA) Revisited, prepared by HRC in June 2014. The ERSC WA establishes forest management prescriptions pertaining to slope stability and riparian forest protection are established in consultation with multiple state and federal resource agencies. While the HCP and WA cannot ensure full compliance with federal and state water quality laws, it does impose prescriptions and other requirements helpful for water quality protection needs and therefore can be relied upon in this Order.
14. Starting in 1997, the Regional Water Board issued a series of Cleanup and Abatement Orders (CAO) that required the inventory, prioritization, treatment, and monitoring of existing sediment sources associated with land management activities, prevention of creation of new sediment sources, and monitoring of instream sediment-related indices. Treatment of existing controllable sediment discharge sources (CSDS)³ have been conducted under CAO Nos. R1-2004-0028 (for the South Fork and Mainstem Elk River) and R1-2006-0055 (for the North Fork Elk River). By 2011, 80% of the top 100 sites with the greatest potential for environmental impact were treated. In 2012, HRC submitted a new master treatment schedule to inventory and schedule implementation of treatment to control sediment discharge of the remaining CSDSs in the watershed, which is included as Attachment C of this Order. To date, over 350,000 cubic yards of historic logging road and skid trail related sediment has been prevented from entering, or removed from, the Elk River stream system on HRC lands since 1999 in compliance with HCP, FPR, and CAO requirements.
15. In September of 1998, the Regional Water Board issued Cleanup and Abatement Order No. 98-100, requiring cleanup and abatement of THP-related discharges by restoring damaged domestic and agricultural water supplies in the North Fork Elk River. HRC currently provides drinking water service to twelve residences, while seeking final resolution and termination of the CAO.

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.

16. In addition, HRC currently operates under Order No. R1-2006-0039, Elk River Watershed-specific Waste Discharge Requirements (WWDR) issued by the Regional Water Board in 2006. Among other requirements, the WWDR includes receiving water limitations on peak flow increases and sediment discharge from harvest-related landslides. Rate of harvest (ROH) limitations were established based on two scientific models.
17. All Regional Water Board Orders that pertain to HRC's current activities were originally issued to PALCO and amended by Order No. R1-2008-0100 to reflect HRC's ownership of the former PALCO holdings.
18. The WWDR ([Order No. R1-2006-0039](#)) is not tailored to the management practices of HRC, and does not comprehensively address HRC's obligations for cleanups and TMDL implementation. An updated WDR would provide a more comprehensive permit that reflects current watershed conditions, changes in management practices, and new technical analyses of watershed sediment conditions. It is agreed that remaining requirements for erosion control from the two CAOs should be incorporated into this Order for a more efficient management of related monitoring and reporting.

Comment [HRC10]: Add for clarity that current existing WWDRs are being referenced; not the proposed Order

TMDLs AND REVISED WASTE DISCHARGE REQUIREMENTS

19. In spite of all of the efforts to control sediment discharge, conditions in downstream impacted reaches remain impaired and the stream channel continues to aggrade. It appears that the river's capacity to transport sediment out of the aggraded reach is limited by hydrologic and geomorphic constraints and sediment continues to work its way down through the fluvial system. In addition, even with implementation of current management practices and restrictions, and despite the zero net discharge approach to sediment management incorporated in each THP where feasible, ongoing timber harvesting and associated activities are likely to will result in increased some sediment discharge, further exacerbating the already impaired condition.
20. The Water Quality Control Plan for the North Coast Region (Basin Plan), last adopted in 2011, is the Regional Water Board's master water quality control planning document. It identifies beneficial uses and water quality objectives for waters of the state, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives.
21. The beneficial uses for the Upper Elk River and its tributaries include:

Comment [HRC11]: It's a depositional reach... that's why it is located within a large pre-historic flood plain. As noted in this finding, hydrologic and geomorphic constraints limit transport capacity. Reasons for aggradation have little to do with contemporary upstream forestry practices.

Comment [HRC12]: We are proposing less harvest than permitted under current WDRs, presumably that would lead to a decrease from the status quo

For accuracy and full disclosure, recommend mentioning the zero net discharge approach employed by HRC in Elk River

And

The benefits of active management such as road storm proofing and decommissioning (see addition to Finding #14 above, page 5)

Municipal - Domestic Water Supply (MUN)	Non-Contact Water Recreation (REC-2)
Agricultural Supply (AGR)	Commercial or Sport Fishing (COMM)
Industrial Service Supply (IND)	Cold Freshwater Habitat (COLD)
Industrial Process Supply (PRO)	Wildlife Habitat (WILD)
Groundwater Recharge (GWR)	Rare, Threatened, or

	Endangered Species (RARE)
Freshwater Replenishment (FRSH)	Migration of Aquatic Organisms (MIGR)
Navigation (NAV)	Spawning, Reproduction, and/or Early Development (SPWN)
Hydropower Generation (POW)	Aquaculture (AQUA)
Water Contact Recreation (REC-1)	

22. At least five of the identified beneficial uses are considered as impaired, including MUN, AGR, COLD, and to a lesser extent both REC-1 and REC-2. The primary beneficial uses of concern for this Order are domestic and agricultural water supplies and the cold freshwater habitat.
23. TMDLs must be established at levels necessary to attain and maintain water quality standards. A TMDL is the sum of individual waste load allocations (WLA) for point sources and load allocations (LA) for nonpoint sources and natural background. (40 CFR 130.2 (i).) Loading capacity is the greatest amount of loading that a waterbody can receive without violating water quality standards. (40 CFR 130.2(f).) A LA is the portion of receiving water's loading capacity that is attributed either to nonpoint source pollution or to natural background sources. Wherever possible, natural and nonpoint source loads should be distinguished. (40 C.F.R. § 130.2(g).)
24. The capacity of the UER for sediment is limited by the ongoing aggradation in the impacted reach and resulting nuisance conditions and compromised beneficial uses. The loading capacity of the impacted reach for additional sediment is defined as zero until its capacity can be expanded through sediment remediation and channel restoration, nuisance conditions are abated, and beneficial uses are supported. In the UER watershed, all the land use-related sediment delivered to the stream channel is attributed to nonpoint source pollution and natural background. Due to the lack of assimilative capacity in the receiving water reach, the nonpoint source load allocation is defined as zero.
25. Unlike a WLA that must be translated into a National Pollution Discharge Elimination System (NPDES) permit as an effluent limit, the Board has more discretion in how it chooses to implement the LA⁴. A LA is not independently enforceable and must be applied in the statutory context of the implementation mechanism, here Water Code section 13263. When water quality is already degraded, it may take time to achieve water quality objectives and immediate compliance may not be possible, even with complete cessation of a discharging activity. (See generally Nonpoint Source Policy at

⁴ Even for waste load allocations, dischargers may be granted additional time to come into compliance with TMDL requirements (see e.g. State Water Board Order WQ-2015-0075 [allowing a watershed-based planning and implementation approach as an alternative compliance pathway with TMDLs and receiving water limitations when issuing Phase I MS4 permits, subject to if rigor, accountability, and transparency requirements are met]).

- 13.) That said, WDRs must include requirements designed to show measurable progress toward improving water quality over the short term and achieving water quality objectives in a meaningful timeframe. Pursuant to Water Code section 13263, the Regional Water Board shall prescribe requirements as to the nature of any proposed or existing discharge with relation to the receiving water conditions. Requirements shall implement any relevant Basin Plan requirements and take into consideration beneficial uses of water, relevant water quality objectives, and other relevant factors. WDRs can prohibit the discharge of waste or certain types of waste, either under specific conditions or in specified areas. (Wat. Code, § 13243.) All requirements shall be reviewed periodically.
26. The following five subwatersheds have been identified as high risk to water quality: Clapp, Tom, and Railroad Gulches, McCloud Creek and the Lower South Fork Elk River. Sediment production from these subwatersheds, which are also located directly above and adjacent to the impacted reach of the South Fork Elk River, is among the highest observed throughout the UER. The relative risk rating informs specific protection measures applicable at a subwatershed scale, including a temporary prohibition on timber harvest activities in high risk subwatersheds. (See Order section I(A)(4).).
27. The findings below describe reasonable waste discharge requirements for HRC timber management and associated activities in the UER watershed. In this case, a significant portion of in-stream sources are likely to be mobilized and transported to the impacted reach over time, regardless of whether or not timber operations are conducted. In-stream sources include headward migration of low order channels, streamside landslides and unstable streambanks resulting from ground disturbances from past, and to some extent, on-going timber harvesting activities. Stringent controls are necessary to prevent exacerbation of these sources from continuing timber harvesting activities. The sediment source analysis estimated that approximately 74% of the sediment loading in the UER is from in-channel sources. This increases the need to further constrain any additional sediment inputs that are controllable in order to make progress toward attainment of the load allocation. Therefore, this Order includes stringent waste discharge requirements designed to minimize new sediment production and to control and remediate existing sediment inputs to the extent feasible. Monitoring will be required to determine whether implementation is leading to measurable improvements. In addition, a temporary prohibition on activities that are likely to generate additional sediment production in high risk areas is appropriate while active measures are taken to improve downstream beneficial uses.
28. Findings below provide a discussion of HRC's management plan addressing water quality controls, with additional requirements as deemed necessary by the Regional Water Board in order to implement the load allocations contained in the UER TMDL. The Order incorporates and includes the following components:
- Measures to Prevent Sediment Discharge;

- Forest Management;
- Riparian Zones Protection;
- Roads Management
- Landslide Prevention
- Wet Weather Restrictions
- Temporary Prohibition
- Inventory and Treatment of Existing Controllable Sediment Sources;
- Watershed Restoration Efforts; and
- Monitoring and Reporting Program.

Draft

SPECIFIC REQUIREMENTS AND RATIONALE

Measures to Prevent Sediment Discharge

29. Specific requirements to prevent new sediment discharge fall into several categories discussed below, including forest management (including harvest rate), riparian protection, roads management, landslide prevention, and wet weather prescriptions. Management measures in separate categories often overlap, and also provide benefits relevant to other categories. For example, riparian protections and proper road management can help reduce landslides. The categories are provided as a way to organize the discussion but should not be viewed in isolation.

Also, practices implemented to prevent and minimize elevated sediment discharges may also help control elevated water temperatures. While the UER is not listed as impaired for temperature, removal of trees providing shade to watercourses and decreased channel depth due to in-filling of pools with sediment can result in elevated water temperature. Due to the proximity of the UER to the ocean and the moderating effects of the marine influences, stringent BMPs for control of sediment, and harvest restrictions along all watercourses, elevated water temperatures are not anticipated to result from HRC's management activities.

Forest Management/Harvest Rate

30. Tree removal can result in reduced interception, evaporation, and evapotranspiration of rainfall by forest canopy and can therefore increase the volume of precipitation that infiltrates and remains in soils. Tree roots enhance the strength of shallow soils, increasing the soil's ability to resist failure. When trees are harvested, their roots gradually decay, reducing the reinforcement they provide and increasing the potential for shallow landslides. Harvesting trees can result in increased soil moisture and runoff and decreased root strength, which can contribute to landsliding and increased erosion throughout a watershed. These impacts can be reduced or prevented by limiting canopy removal through silvicultural prescriptions or harvest rates limits.
31. The rate of harvest in a watershed is an important management variable. 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 (Cedarholm et al. 1981, Gucinski et al. 2001, Trombulak et a, 2000), or equivalent clearcut area⁵ (USDA Forest Service, 1974).

⁵ 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.

32. HRC has implemented a significantly different silvicultural management strategy from PALCO that predominantly utilizes partial harvesting methods such as uneven-aged single-tree and small group selection (ROWD section 4.1). In addition HRC utilizes a comprehensive landslide avoidance strategy that involves licensed geologic review of landslide inventory maps, slope stability models, and field investigation for evidence of slope stability. Partial harvesting in combination with licensed geologic investigation and appropriate mitigation where warranted based results of the slope stability investigation results in post-harvest conditions that are less susceptible to mass wasting and increased erosional processes as compared to clearcut harvesting. HRC does not utilize the clearcut harvest method and does not harvest old growth⁶. Post-harvest field investigations required under current Waste Discharge Requirements have found no landsliding in HRC logging units. Air photo landslide inventories conducted for the 2014 Elk River Watershed Analysis Revisit identified two small landslides (<10 yds³ combined delivery) originating from PALCO logging units in 2003 (HRC 2014 Elk River/Salmon Creek Watershed Analysis Revisit Report). Monitoring to date finds the combined strategy of partial harvest and standardized licensed geologic review as an effective method for preventing harvest related landslide erosion.
33. Section 4.0 of the ROWD describes HRC's Forest Management Plan, including projected timber harvesting over a twenty year period between 2015 and 2034 based on multiple management factors such as growth and inventory, forest canopy, protection of critical terrestrial and aquatic habitat, and watershed analysis constraints. HRC's projected harvest can be described as 1) average annual harvest acreage (and equivalent clearcut acres⁷) and average overlapping crown canopy for each five year period throughout the UER (ROWD Figure 4-2) as well as 2) for individual subwatersheds (ROWD Figures 4-3 and 4-4). HRC projected harvest scenario shows increases in standing timber inventory and yield over 20 years.
34. Watershed-wide average annual harvest rates proposed in the ROWD for each five year period vary between 530 and 625 acres (265 to 312 equivalent clearcut acres). This equates to average annual harvest rates below 1.0% equivalent clearcut acres. These rates are lower than required under the 2006 WWDRs, which allowed annual harvest rates of 1.9% in the North Fork and 1.8% and upwards in the South Fork. Based on the transition to unevenaged management under HRC's ownership, the proposed average annual harvest rate throughout the UER is less than 1.5%

Comment [HRC13]: Consistent with the heading of this section of the WDR *Specific Requirements and Rationale*, we recommend adding this available trends and effectiveness monitoring data in support of the ROWD landslide avoidance strategy being endorsed by the WDR

⁶ Variable Retention may be used in some instances as an alternative silviculture to address certain stand conditions, such as high levels of whitewood or hardwood species, animal damage, or general poor form and vigor due to past logging history. Other silvicultural methods that may be applied infrequently include Rehabilitation of Understocked Areas, Seed Tree Removal, and Sanitation Salvage.

equivalent clearcut acres, the harvest rate above which Klein et. al (2012) found elevated chronic turbidity levels.

35. Figures 4-3 and 4-4 of the ROWD show projected harvest acreage and overlapping overstory canopy by subwatershed in each five year period. Modeled canopy changes for each five year increment over the 20 year period generally show a balance between reductions in canopy due to harvesting and increases from regrowth. For the majority of individual subbasins, canopy changes tend to be positive (increased canopy) for the first three five year periods, with some decreases. Decreases in canopy occur more frequently during the period between 2030 and 2034.

36. The Tetra Tech report recommends a numeric target for limiting increases in peak flows from timber harvesting in individual Class II and III catchment to less than 10% in ten years. Modeling suggests achievement implementation of this numeric target can generally be met through implementation of the submitted HRC 20 year harvest schedule and landscape plan which utilizes primarily unevenage selective silviculture applied at an overall rate of approximately 1.5% clearcut equivalent acres (CEA) on an average annual basis watershed-wide (HRC ownership) and less than 3.5% annual average CEA at the individual sub-watershed level over any ten year planning period, by limiting canopy reduction by allowing predominantly unevenaged silviculture, harvest rate limits, and the temporary prohibition on timber harvesting in high risk subwatersheds. Using the regression equation developed from the North Fork Caspar Creek (Lisle et al. 2000; Lewis et al. 2001; Cafferata and Reid, 2012), Regional Water Board staff have calculated changes in peak flow from canopy removal based on HRC's projected harvest rates for each subwatershed. Even without taking into account canopy regrowth following harvesting, modeled peak flow increases from HRC's proposed harvesting in individual subwatersheds are below 10%.

Comment [HRC14]: Point of discussion - what exactly does this mean? 10 percent as compared to what? And peak flows are generally measured on a storm by storm event rather than over a ten year period...

Comment [HRC15]: Point of discussion - seems arbitrary and unnecessary as a requirement in the context of limiting peak flows as multiple analyses have found limiting harvest related peak flow effect can be achieved without such a prohibition.

37. ~~HRC's projected harvest rates are generally reasonable, with the exception that projected average annual rates in some subwatersheds for specific 10-year periods exceed 2% equivalent clearcut acres. Therefore, section 1(A)(3) of this Order requires that the rate of harvest in any subwatershed shown in the UER not exceed 2% equivalent clearcut acres per year averaged over any 10 year period. This is to ensure that proposed harvest rates are generally below a threshold that would cause concern for contributing to ongoing cumulative impacts on water quality and contribute towards implementation of numeric targets recommended in the Tetra Tech report. Each timber harvest plan (THP) is evaluated individually for impacts to water quality and that review may reveal additional constraints. All conditions are subject to periodic modification by the Board based on the adaptive management and monitoring results.~~

Comment [HRC16]: Recommend deletion - there is no science (or code) supporting this requirement; in fact multiple analyses have found the requirement not necessary to constrain harvest related peak flow effect to less 10% above background.

Riparian Zone Protection

38.37. Properly functioning riparian areas in UER can promote complexity in stream channels, both in the steep upper watershed as well as in the depositional reach. A

riparian zone helps maintain healthy stream ecosystems and supports beneficial uses by:

- i. Stabilizing banks through provision of root cohesion on banks and floodplains;
- ii. Filtering sediment from upslope sources;
- iii. Filtering chemicals and nutrients from upslope sources;
- iv. Supplying large wood to the channel, which maintains channel form and improves in-stream habitat complexity;
- v. Helping to maintain channel form, in-stream habitat, and an appropriate sediment regime through the restriction of sediment inputs or metering of sediment through the system;
- vi. Moderating downstream flood peaks through temporary upstream storage of water;
- vii. Helping maintain cool water temperatures through provision of shade and creation of a cool and humid microclimate over the stream; and
- viii. Providing both plant and animal food resources for the aquatic ecosystem in the form of, for example, leaves, branches, and terrestrial insects.

39.38. Alteration of physical processes Historic harvest in riparian zones have led to reduced complexity, including reduction in the number of large trees available within riparian areas for recruitment to streams, increased surface erosion and landsliding, and destabilization of stream channels. Subsurface erosion of soil pipes is prevalent in the UER, particularly in swales above small headwater channels. Preferential flow through soil pipes results in internal erosion of the pipe, which may produce gullies by tunnel collapse. Considerations of the interactions between sediment processes, water temperature, and riparian trees are essential for evaluating and avoiding management related impacts to streams. Management of riparian zone must be designed to preserve and restore the function of riparian vegetation and hillslope processes, including retention of adequate riparian zone trees and avoiding use of roads and heavy equipment on vulnerable hillslopes and swales.

Comment [HRC17]: Not really physical processes... alteration of 'biological conditions' or more simply put... historic timber harvest

40.39. HRC's timber operations in Riparian Management Zones (RMZs) are subject to the ERSC WA prescriptions that prevent or minimize sediment delivery to streams and maintain and restore riparian forests for the benefit of shade canopy and large woody debris recruitment. These prescriptions are enforced through specific requirements for timber harvest and road construction, re-construction, and maintenance activities. ERSC WA prescriptions for RMZs include no harvesting within 150 feet of the lower eight miles of the North Fork Elk River and within 50 feet of all other Class I watercourses. No harvesting is permitted within 30 feet of Class II watercourses, and large tree, down wood, and canopy retention requirements are mandated throughout the remainder of the RMZ. Entry into Class I and II riparian zones permitted no more than once every 20 years. Hillslope prescriptions include further restrictions on harvesting (e.g. inner gorge slopes, headwall swales), road use and construction, and heavy equipment use. A "Hillslope Management Checklist" is used

by registered professional foresters (RPFs) to identify areas that are vulnerable to mass wasting. Silvicultural treatments in RMZs are managed to develop or maintain late seral forest conditions, such as thinning from below or individual tree selection. These RMZ measures have been in place since 2005; prior to which more restrictive HCP interim measures were in place beginning in 1999. The HRC HCP Watershed Analysis Revisit reports less than 5 percent of the total Class I and II riparian zone acres as having been experienced harvest between 2001 and 2011. Small streamside landslide and bank erosion surveys conducted along 26 miles of Class I, II, and III watercourses found no cause and effect link between contemporary HCP riparian forest management and streamside erosion. A broad, intact riparian zone was found present to buffer the stream from adjacent management areas in every stream reach surveyed (SHN 2012).

41.40. Section I(B) of this Order establishes protection measures for RMZs that incorporate ERSC WA prescriptions for riparian protection as minimum protection standards. In addition a 10 foot no harvest zone is established for Class III watercourses situated in the ROWD identified Sensitive Bedrock Terrain sub-basins. Additional protection measures may to be implemented on a THP by THP basis during the multi-agency THP review and approval process based on observed site specific conditions when deemed necessary to prevent or further minimize sediment delivery, include avoidance of tractor crossings and retention of trees in unchanneled swales; implementation of highest feasible level of erosion control on all RMZ road segment, landings, and skid trails; and requirements for post-harvest tree retention to protect slope stability and promote and maintain robust riparian stands in sensitive areas up to 300' on either side of the channel for Class I watercourse, 200' feet on either side of the channel for Class II watercourses, and 100' on either side of the channel for Class III watercourses.

Control of Sediment from Roads

42.41. Sediment TMDLs adopted for watersheds throughout the North Coast Region have identified logging roads as one of the most significant sources of anthropogenic sediment discharge. Logging roads can alter hillslope hydrologic processes and increase sediment discharge from surface and gully erosion and landslides. Roads can contribute to landsliding by undermining and oversteepening slopes and placing fill material on steep slopes. Roads also intercept and concentrate shallow groundwater and surface runoff, which can cause gully erosion and saturate vulnerable slopes, increasing the potential for failure. Road crossings of watercourses are subject to the force of high stream flows and failure usually results in direct delivery to streams. Road crossings of watercourses are one of the most common controllable sediment sources. Management practices have become standard in timberlands throughout the North Coast to reduce the potential for road related sediment discharge. Inventory and treatment of existing roads is addressed under a separate heading below.

43.42. A programmatic approach to road construction, reconstruction, maintenance, decommissioning, and regular inspections is essential to controlling sediment discharge from roads. A widely used reference document for planning, designing,

Comment [HRC18]: Recommend replacement of these additional requirements with discussion of additional riparian related requirements for Sensitive Bedrock Terrain sub-basins presented in the HRC ROWD, and existing opportunity for additional protection measures to be provided on a site specific basis as part of the multi-agency THP review process.

constructing, reconstructing, maintaining, and decommissioning roads on forestlands in the North Coast is the Handbook of Forest and Ranch Roads (Weaver and Hagans, 1994)⁸. The Handbook contains a comprehensive suite of measures for forestland roads that the Regional Water Board consider adequate and necessary to control sediment discharge from roads. Roads that have implemented all feasible site specific sediment control measures as described in the Handbook are referred to as "stormproofed."

Stormproofed roads incorporate the design features as summarized below into construction of new roads or reconstruction of existing roads:

- Hydrologically disconnecting road segments from watercourses and minimizing concentration of surface runoff by installing drainage structures at sufficient intervals to disperse runoff so as to avoid gully formation and minimize erosion of the road surface and inside ditches;
- Identifying and treating potential road failures (mostly fill slope failures) that fail and deliver to streams;
- Watercourse crossing shall be designed to minimize the potential for crossing failure and diversion of streams. Watercourse crossings shall be sized adequately to accommodate estimated 100-year flood flow, including wood and sediment;
- Inspecting and maintaining roads annually; and
- Wet weather road use shall be avoided or limited to well rocked, paved, or chip sealed surfaces.

44.43. Appendix B of the ROWD includes the description of sediment control measures for roads from HCP section 6.3.3, which largely rely on implementation of standards identified in Weaver and Hagans Handbook. By 2014, HRC stormproofed 206 miles of the approximately 260 mile active road system in the UER, and decommissioned 50 miles. Implementation of these road prescriptions are established as specific requirements in Section 1(C) of this Order. Section 1(C)(2) of this Order requires that all of HRC's roads in the UER shall be upgraded to stormproof standards by October 15, 2018.

Landslide Prevention

45.44. Due to the weak geologic bedrock underlying much of the watershed, relatively high rates of tectonic uplift, and high annual precipitation rates, hillslopes throughout much of the UER are naturally vulnerable to landsliding. Natural rates of landslide related sediment production vary based on the occurrence of landscape disturbance such as large storms, fires, earthquakes or other infrequent natural events. Timber harvesting and associated ground disturbance can result in increased rates of shallow landslides on vulnerable slopes due to decreases in root strength, increased soil

⁸ Handbook for Forest, Ranch, and Rural Roads, A Guide for Planning, Design, Constructing, Reconstructing, Maintaining, and Closing Wildland Roads. The handbook was updated in 2014, funded in part by a State Water Board 319(h) nonpoint source grant.

moisture, altering of hillslope hydrologic process, and oversteepening or loading slopes by cut and fill road construction.

- 46.45. Tree roots can enhance the strength of shallow soils, increasing the soil's ability to resist failure. When trees are harvested, their roots gradually decay, reducing the reinforcement they provide and increasing the potential for shallow landslides. The loss of root strength gradually increases over a period of several years, with the critical period of maximum loss occurring approximately 5 to 15 years after harvesting. As new roots grow into the space previously occupied by the older root system, the support they provide gradually increases. Loss of root strength varies with species and intensity of harvest. Interception, evaporation, and evapotranspiration of rainfall by forest canopy can reduce the volume of precipitation that infiltrates and remains in soils. Harvesting trees can therefore result in increased soil moisture and runoff, which can contribute to landsliding and increased erosion. Vulnerability to shallow landsliding processes varies throughout a hillslope, primarily as a function of soil depth, slope gradient, contributing drainage area, subsurface hydrology, and soil characteristics.
- 47.46. Construction of roads, skid trails, and landings can also increase landsliding. Excavations on vulnerable areas to construct roads and skid trails can undermine steep slopes. In addition, fill material placed on steep slopes on the outboard edge of roads can fail. Such failures can trigger larger failures on slopes below, often displacing large volumes of debris which can be transported considerable distances down slope.
- 48.47. The TMDL sediment source analysis found that landslide-related sediment production increased over two-fold above natural rates during the period between 1955 and 2001, with the highest rates (almost 5 times natural landslide rates) observed during the 1988 to 1997 time period. Open-slope landslides and road-related landslides were the dominant sediment sources during this period with the greatest delivery occurring in response to the 1997 and 1998 El Nino storm seasons. Landslide-related sediment production has declined significantly in the UER during subsequent time periods, notwithstanding large storm events that occurred in 2003 and 2006. Declines in landsliding rates are thought to be partially the result of the HCP mass wasting avoidance strategy, which limits or precludes operations on areas identified as high landslide hazard as well as the ERSC WA prescriptions for landslide prevention.
- 49.48. The 2006 WWDRs included a "zero landslide-related discharge" requirement for harvest acreage in excess of the landslide reduction model limits. In 2008, Regional Water Board staff in collaboration with PALCO staff and other interested parties developed a methodology for evaluating enrollment of harvest acreage in excess of the limits based on the landslide reduction model and monitoring compliance with the zero landslide discharge requirement. Applications for this additional acreage, referred to as "Tier 2" were evaluated in a watershed context, and were subject to a far more rigorous level of geologic review than standard THPs, including consideration of geomorphology, topography, engineering geologic characteristics, management history, and hydrology.

Comment [HRC19]: There was an El Nino driven pulse input at the end of this period

- | 50.49. In 2008, Regional Water Board staff developed Monitoring and Reporting Program (MRP) R1-2008-0071 in collaboration with PALCO and other interested parties to establish a process to ensure compliance with Tier 2 zero discharge requirements. The MRP specifies clear guidelines for application, review, and enrollment of THPs under Tier 2. The MRP also requires that following harvest all Tier 2 units be inspected at a minimum two times per year to identify new landslides or enlargement of existing landslides. HRC submits annual Tier 2 monitoring reports to the Regional Water Board. To date, no sediment discharge from harvest related landslides in units enrolled under Tier 2 has been reported. The current inventory of landslides based on interpretation of aerial photographs from 2003, 2006, and 2010 is discussed in the Landslide Prevention section of this Order and provided as Appendix C of the ROWD. Section IV of this Order requires HRC to maintain and update the landslide inventory according to the specifications described in the Monitoring and Reporting Program (MRP).
- | 51.50. In addition to periodic air photo analysis, monitoring and reporting requirements required in section IV of this Order rely upon annual field and helicopter fly-over inspections of harvested areas and road systems to evaluate the effectiveness of required measures to prevent landslides.
- | 52.51. HRC's approach for evaluating landslide hazards includes ERSC WA prescriptions. As part of THP planning, a review of pertinent technical data are conducted to denote potential high risk slopes, including landslide inventories, regional geomorphic maps, stereoscopic aerial photographs, and a shallow landslide potential map developed using the SHALSTAB landslide model. Appendix D of the ROWD (HCP section 6.3.3.7, ERSC WA) includes the following prescriptions for hillslope management mass wasting strategy:
- A hillslope management checklist is used to identify areas that are particularly vulnerable to mass wasting;
 - No harvesting or road construction or reconstruction on Class I inner gorges;
 - No harvesting or road construction or reconstruction on the following areas without characterization and development of measures to protect water quality prescribed by a California Professional Geologist (PG);
 - Class II or III inner gorges;
 - headwall swales;
 - other areas with very high mass wasting hazard (including slopes greater than 60%; and
 - earthworks (skid trails, landings, road prisms, or other earthen structures) exhibiting characteristics identified in the hillslope management checklist.
- | 53.52. In addition to the hillslope management mass wasting strategy described above, a comprehensive approach to preventing increases in landslide related sediment discharge resulting from timber harvesting and associated activities includes characterization of landslide hazards, designing projects to minimize impacts to slope

stability based on site specific hazards, and ongoing monitoring of landslide activity to better understand landslide patterns and modify management practices based on observed activity. The California Geological Survey Note 45 provides guidelines for Engineering Geologic Reports for Timber Harvesting Plans⁹, which must be prepared by PG who is familiar with watershed characteristics. Section I(D) of this Order establishes requirements for characterization of geologic hazards by a PG and development of site specific mitigations. Characterization of landslide hazard should at a minimum consider the following information:

- Existing hazard maps derived from slope stability models;
- Available maps and reports;
- Aerial photographs;
- Field investigation and mapping; and
- Applicable studies and technical models.

54.53. The Engineering Geologic report must include an evaluation of potential effects on slope stability, surface soil erosion, and landslide related sediment discharge from the proposed management activity, identify problem areas, and describe specific mitigation measures needed to minimize potential effects for identified areas of concern. The mitigations should be based on the potential hazard process (likelihood of landslide initiation or acceleration in sediment mobilization or water flow, and the potential risk to water quality or public safety). Where appropriate, mitigations shall include, but are not necessarily limited to, the following:

- Limit canopy removal in areas with elevated landslide hazard;
- Limit activities upslope of existing landslide and on vulnerable portions of deep seated landslides;
- Avoid road or skid trail construction on steep or vulnerable slopes; and
- Stabilization of existing landslides where applicable by methods such as planting, drainage manipulation, buttressing, and other feasible engineering techniques.

55.54. This Order establishes enforceable provisions to prevent increases in sediment discharge from landslides associated with HRC's timber harvest activities. The provisions entail an overall strategy that includes HRC's hillslope management mass wasting strategy from the ERSC WA, as well as additional measures included in their ROWD and those deemed necessary by Regional Water Board to prevent management related landsliding. These are summarized below as follows:

- Harvest rates throughout HRC's ownership in the UER that must be less than those allowed under the limits set by the landslide reduction model under the current WWDRs;
- Use of partial harvesting methods that retain a significant component of post-harvest root strength;

⁹ California Department of Conservation, California Geological Survey Note 50, 2013.

- ~~Temporary prohibition of harvesting in high-risk subwatersheds;~~
- Riparian protection zones, which include no harvesting within 50-150 feet of Class I watercourses, 30 feet of Class II watercourses, ~~20 feet of Class III watercourses and significant tree retention up to 300, 200, and 150 feet of Class I, II and III watercourses respectively;~~
- Review by PG of all proposed activities, including harvesting and construction or reconstruction of roads and watercourse crossings; and
- Implementation of HRCs ERSC WA hillslope management prescriptions.

Comment [HRC20]: Request removal of this requirement

Comment [HRC21]: Request removal of these additional proposed RMZ requirements

Wet Weather Restrictions

56.55. Conducting timber operations during wet weather increases the potential for sediment production and discharge from roads, landing, and skid trails. Use of trucks and heavy equipment during saturated soil conditions can result in soil compaction, create ruts which effect road drainage, and increase production of fine sediment. Typically the most effective way to prevent impacts from operations during saturated soil conditions is to avoid operations during the period of the year when rain is likely to occur. This allows for timely implementation of seasonal erosion control, and the completion and stabilization of construction and reconstruction of roads, landings, skid trails and watercourse crossings. In the North Coast, over 90% of average annual precipitation falls between October 15th and May 1st.

In order to minimize the impacts of conducting timber operations during wet weather, the following seasonal restriction shall apply:

- Road construction or reconstruction may not take place between September 15th and May 1st except in response to failure of a road segment or watercourse crossing that resulting in ongoing or imminent sediment discharge;
- ~~No timber operations between October 15th and May 1st.~~

Comment [HRC22]: Point of discussion

Temporary Prohibition

57. ~~Regional Water Board staff evaluated the relative risk of sediment production and discharge in each subwatershed in the UER based on probabilistic landslide hazard, bedrock geology, and observed sediment production from 2000-2011. This evaluation was used to establish a ranking of relative risk to water quality of low, moderate, or high for each subwatershed. Similarly, section 5.4 of the ROWD identifies five subwatersheds predominantly underlain by the Hookton Formation, a geologically young sandstone/siltstone bedrock unit that is highly vulnerable to surface erosion and mass wasting. These areas closely correlate with Regional Water Board assessment, and include: Clapp, Tom, and Railroad Gulches, McCloud Creek, and the Lower South Fork Elk River. Sediment production from these subwatersheds, which are also located directly above and adjacent to the impacted reach of the South Fork Elk River, is among the highest observed throughout the UER. The five subwatersheds identified above are therefore appropriately considered as high water quality risk for~~

Comment [HRC23]: Point of discussion

the purposes of this Order. The relative risk rating informs specific protection measures applicable at a subwatershed scale, including a temporary prohibition on timber harvest activities in high risk subwatersheds. (See Order section I(A)(4).) This temporary prohibition is necessary to make progress toward the TMDL zero load allocation while fully recognizing that halting all timber harvest activity in the UER watershed is not necessarily feasible or helpful in promoting HRC's participation in cleanup and restoration efforts. By refining water quality risk at a subwatershed scale, HRC can still engage in timber operations while refraining from activities in the most sensitive subwatersheds to allow active measures to be taken to improve downstream beneficial uses.

58. Exceptions may be made for allowing limited timber harvesting in high risk watersheds subject to approval by the Regional Water Board Executive Officer. HRC may request approval based on a project proposal that, when implemented, must make a meaningful contribution to correcting beneficial use impairment in the impacted reach. Project proposals may include:
- i. Flood flow routing improvement (e.g. replace earthen approaches to bridges with culverts and riparian plantation thinning);
 - ii. Sediment storage reduction (e.g. slowing, trapping, removing) of accumulated sediment in, or delivering to the impact reach;
 - iii. Water supply reliability (e.g. implement alternative supplies)¹⁰; and
 - iv. Infrastructure enhancement (e.g. roads, bridges, septic, houses) to elevate impacts from flooding.

Inventory and Treatment of Controllable Sediment Discharge Sources

- 59.56. Timber harvesting and associated road construction and use have left disturbed areas throughout the landscape that have the potential to discharge sediment over extended periods of time. These legacy sites, which should be treated as CSDS, may include failing or failed watercourse crossings, road failures, road surfaces, landslides, unstable watercourse banks, soil stockpiles, skid trails, landings, exposed harvest units, or any other site discharging or threatening to discharge waste or earthen materials.
- 60.57. The identification, evaluation, and treatment of CSDS are important components of a strategy to prevent or minimize ongoing sediment discharge, and also contribute towards achieving sediment TMDL load allocations. This Order supersedes the two existing CAOs No. R1-2004-0028 and R1-2006-0055. The CAOs required off-road surveys of large tracks of land known to have experienced significant ground based logging operations, in addition to inventories conducted during the development of

¹⁰ Note: A project that provides reliable, permanent water supplies to those residents whose water supplies have been impaired by excess sediment from timber operations may also be considered for final resolution and termination of the existing CAO No. 98-100

individual THPs. As a result, over 12,300 acres have been surveyed since 2007 and 143 off-road CSDSs, primarily associated with skid trails, were identified. As of 2014, corrective action had been implemented at approximately half of these sites.

Appendix C of this Order identifies the remaining potential sources to be treated. HRC will continue to treat these sites annually according to the prioritization described in the master treatment schedule, as well as concurrently with timber operations for those sites located in the vicinity of THPs. In order to demonstrate continued progress in treating remaining sites, monitoring and reporting requirements in section IV of this Order require that HRC provide annual reports identifying sites to be treated each year. Submittal of monthly status reports will no longer be required.

- 61.58. New active or potential sediment sources are also identified through implementation of an Annual Road Inspection Program (ARIP). This program requires that all accessible roads be inspected for maintenance needs at least once annually. CSDSs identified by ARIP, storm-triggered inspections, and active THP inspections are typically scheduled and treated within one year of discovery during the drier months of the year (May – November) and will be included in annual reports pursuant to section IV of this Order. HRC shall maintain an inventory to track these new CSDSs as they are identified and subsequently treated. Additional non-scheduled routine minor maintenance (i.e. shaping of road surface, cleaning of inboard ditches and culvert inlets, maintenance of energy dissipation/downspouts, and roadside brush maintenance) will also occur as needed in response to road inspection and results in directives by HRC management or Regional Water Board.
- 62.59. CSDSs not previously identified are also addressed by preparation and submittal of Erosion Control Plans (ECPs) for individual THPs. ECPs must include an inventory of CSDSs within the logging area of all THPs submitted by HRC. The inventory must include a description of each CSDS and corrective actions that can reasonably be expected to control sediment discharge from each site. Corrective action for each site must be implemented during the life of the THP.
- 63.60. In addition, HRC must conduct annual inspection requirements of the THP project area as outlined below, including appurtenant roads and harvest units where timber operations are or have been active. Inspections will be scheduled as follows:
- Prior to October 16th – to ensure erosion control measures are in place;
 - Between October 16th and April 1st – Storm-triggered inspections following any storm that generates over 3 inches of rain falling in a 24 hour period; and
 - After April 1st – Inspection of THP areas including all appurtenant roads to document any discharges resulting from the preceding winter period and to schedule any required road maintenance or other corrective action.

In-stream Sediment Sources

64.61. As described in Finding 27, the sediment source analysis estimates that in-stream sources such as low order channel incision, bank erosion, and streamside landslides, represent approximately 74% of the potential sediment load from UER. Due to limited access and the sensitive nature of riparian zones, controlling sediment discharge from these in-stream sources can be difficult. Twenty-six miles of stream survey found no evidence of a cause and effect relationship between contemporary HCP forest management and streamside landslide and bank erosion. Section I(G) of this Order requires that HRC conduct a feasibility study to evaluate potential methods to control, trap, or meter sediment from in-stream sources in the UER before it can be transported to the impacted reach.

Comment [HRC24]: Recommend adding this relevant key finding as discussed in ROWD and ERSC WA Revisit Report

65. The feasibility study should identify potential methods to reduce transport of sediment from tributaries in the UER to the impacted reach that may include design and implementation of small scale pilot projects. If the pilot projects demonstrate the success of methods, HRC shall develop a plan to implement these methods on a wider scale throughout the UER. If the feasibility study concludes that there are no, or limited, effective methods for control of in-stream sources in the UER, resources that would have been used for that work should be committed to projects to correct beneficial use impairment in the impacted reach.

Comment [HRC25]: HRC objects to this requirement for reasons detailed in a separate comment letter submitted by legal counsel (See Wayne Whitlock letter, January 18, 2016).

In-stream Restoration and Watershed Stewardship

66.62. In-stream restoration and enhancement work consisting primarily of large wood placement to provide increased aquatic habitat complexity (e.g. pool development, sediment sorting, shelter and refuge) has been implemented since the 1990s. In addition to on-property conservation, restoration, and enhancement activities, HRC is also partnering with the Regional Water Board, NGOs, and other agencies to address chronic downstream health and safety concerns relative to water quality, domestic water supply, and winter storm flooding. HRC's participation includes both financial and in-kind contributions to the Elk River Watershed Stewardship process. HRC has indicated a willingness to continue development and implementation of in-stream restoration projects in the UER as well as a long-term commitment to participation in Watershed Stewardship to address beneficial use impairments in the impacted reach. The Monitoring and Reporting Plan in section IV of the Order requires that HRC provide an annual report to the Regional Water Board summarizing its participation in Watershed Stewardship and other restoration efforts.

67.63. The purpose of the Watershed Stewardship Program is to convene a participatory program that engages community members, residents, scientists, land managers, and regulatory agencies in developing a collaborative planning process that seeks to enhance conditions in the Elk River watershed. The Watershed Stewardship Program will include the entire Elk River Watershed, and will work to accomplish the following goals:

- Promote shared understanding and seek agreements among diverse participants; and
- Identify strategies and solutions to:
 - Improve the hydrologic, water quality, and habitat functions of Elk River;

- Reduce nuisance flooding and improve transportation routes during high water conditions;
- Improve residential and agricultural water supplies; and
- Promote coordinated monitoring and adaptive management.

68.64. In addition to the work discussed in Finding 67, HRC may conduct various types of restoration projects intended to improve fish habitat and control sediment delivery from in-stream and near-stream sources. Restoration covered under the Order would include projects such as:

- Large wood augmentation for the purposes of improving fish habitat and sediment routing. Methods could include falling riparian zone trees or placement of logs using heavy equipment;
- Construction of in-stream or off-channel sediment detention basins;
- Streambank stabilization using large wood, excavation, planting, rip-rap, or other methods;
- Removal or reconstruction of watercourse crossings and near-stream road segments; and
- Excavation of in-stream sediment deposits.

GENERAL WATER QUALITY CERTIFICATION

69.65. Some of the actions described in findings 67 and 68, such as in-stream restoration projects that involve construction and other work in waters of the United States (that are not included under timber activities) may require a federal permit pursuant to section 404 of the Clean Water Act. Section 401 of the Clean Water Act requires each applicant for a federal license or permits to provide water quality certification from the state in which the activity will occur. The Regional Water Board Executive Officer may issue a decision on a water quality certification application. State water quality certification conditions shall become conditions of any federal license or permit for the project. This Order includes a general water quality certification for activities and associated discharges for in-stream restoration projects that require federal permits.

70.66. The Regional Water Board may issue a general water quality certification for a class or classes of activities that are the same or similar, or involve the same or similar types of discharges and possible adverse impacts to water quality if it determines that these activities are more appropriately regulated under a general certification rather than individual certifications. General certifications apply for a fixed term not to exceed five years, must be conditioned to require subsequent notice to the Regional Water Board at least 30 days prior to commencement of the activity, and include appropriate monitoring and reporting requirements. A fee is also required pursuant to California Code of Regulations, title 23, section 3833, sub.(b)(3).

71.67. In the event that the Army Corps of Engineers requires a Clean Water Act section 404 permit for a given restoration project in the UER, water quality certification coverage may be requested by submitting a Notice of Intent (NOI) to the Regional

Water Board. The NOI must include relevant portions of the application information required under California Code of Regulations, title 23, section 3856. If this information is already included in a THP enrollment application or annual report, it need not be duplicated; however, the NOI should specify where the information is located. The Regional Water Board will notify the discharger within 30 days if the project or activity does not meet the specified criteria for coverage. A list of projects covered by this General Water Quality Certification will be posted on the Regional Water Board's website. Unless the Regional Water Board determines that the project or activity does not meet the specified criteria for coverage under the general water quality certification, this Order will provide Clean Water Act section 401 certification for the federal permit required for that project.

72.68. The General Water Quality Certification contained in this order shall not apply to activities that will result in significant unavoidable environmental impacts including permanent impacts to wetlands and other waters from dredge and fill activities; result in the direct or indirect take of any listed species; or expose people and/or structures to potential adverse effects from flooding, landslides, or soil erosion. (Cal. Code Regs., tit. 23, §3861, subd. (d).)

MONITORING AND REPORTING

73.69. Section IV of this Order contains monitoring and reporting requirements to achieve the following objectives:

- a. Provide regular reports on all timber harvesting and associated activities covered under this Order, including harvesting, road use and construction, and implementation of corrective action to control sediment discharge, in order to evaluate compliance with requirements of this Order;
- b. Provide for a five year summary report to evaluate the effectiveness of this Order in contributing towards control of sediment discharge and watershed recovery and providing an efficient mechanism to ensure water quality requirements are implemented for timber harvesting and associated activities in the UER;
- c. Determine the effectiveness of management measures designed to protect water quality and inform adaptive management decisions;
- d. Identify potential new sources of sediment discharge and implement corrective action in a timely manner;
- e. Track HRC's participation in Watershed Stewardship efforts working towards recovery of beneficial uses in Elk River;
- f. Track water quality trends; and,
- g. Help inform re-evaluation of the system's assimilative capacity for sediment and sediment load allocations.

74.70. HRC conducts various types of monitoring, including water quality monitoring, and regular inspections of all roads; inspections for landslides, including annual and periodic aerial photographic flights; all treated sediment sources included in the

master treatment schedule (Attachment C) for road and non-road CSDS; and all CSDS identified in ECPs for individual THPs following implementation of corrective action.

Inspections and Inspection Reports

75.71. HRC conducts inspections of: 1) all harvest areas during the period a THP is active and throughout the three year erosion control maintenance period following completion of operations, 2) all treated CSDS, and 3) all roads on their ownership in the UER.

Regular inspection by HRC of those areas and activities described above are essential in ensuring the management practices designed to control sediment have been adequately implemented and are functioning properly, to identify areas where management practices are not functioning as intended or where additional corrective action is needed to control sediment discharge, and to allow for timely implementation of additional corrective action when needed.

Inspection reports serve to document that inspections have been conducted as required and to provide Regional Water Board staff with a mechanism to evaluate effectiveness of management practices designed to control sediment discharge.

Water Quality Monitoring

76.72. Water Quality Monitoring conducted by HRC includes the following:

- a. Aquatic trends monitoring of Class I stream habitat at 10 locations for channel substrate (pebble counts), pools, large wood, riparian canopy, water temperature, fish surveys, and channel cross sections; and
- b. Hydrology and suspended sediment trends monitoring at eight locations throughout UER for discharge, and suspended sediment concentration.

Collecting data on in-stream physical habitat characteristics and suspended sediment loads and discharge is essential for tracking watershed conditions and trends and the distribution and movement of sediment throughout the watershed. These monitoring data can also improve understanding of the spatial and temporal association between sediment loads and management activities such as timber harvesting, sediment control efforts, and restoration activities.

Annual Summary Report and Work Plan

77.73. By January 31 of each year, HRC must submit an annual summary report and work plan describing all activities covered under this Order conducted during the previous year and planned for the upcoming year. Annual reports will provide specific information on the following activities:

- a. The total harvest acreage by THP number, silviculture method, and subwatershed;
- b. Corrective action to treat CSDS from the master treatment schedule (Attachment C), ECPs for individual THPs, and any additional sites identified during required inspections;

- c. Road construction, reconstruction, or decommissioning;
- d. All inspections and water quality monitoring;
- e. In-stream Restoration and Riparian Restoration activities;
- f. Participation in Watershed Stewardship efforts; and
- g. Landslide Restoration activities.

HRC must certify in the annual work plan (and Regional Water Board staff verify during the CAL FIRE THP review and implementation process, including additional field inspections as warranted) that approved THPs comply with the requirements of the WDR. Annual reports provide a mechanism for Regional Water Board to review and comment on activities planned for the coming year, track compliance with Order requirements and progress in sediment control and restoration, and efficiently focus staff resources and prioritize inspection efforts.

Five year Summary Report

78.74. By March 15, 2021, and every five years thereafter, HRC shall submit a report summarizing current watershed conditions and any trends observed over the previous five year period, including water quality, effectiveness of measures to control sediment discharge, landslide rates and distribution, watershed recovery efforts, including Watershed Stewardship. This will allow Regional Water Board, HRC, and other stakeholders to evaluate the effectiveness of the requirements of this Order and the Regional Water Board to modify them if warranted.

79.75. HRC conducts additional monitoring as described below to evaluate the effectiveness of management practices in controlling sediment discharge.

Best Management Practice Evaluation Program (BMPEP)

HRC forestry staff inspects all completed stream crossing related roadwork to ensure HCP stormproofing standards are correctly implemented and that each work site has been properly treated for erosion control in advance of the wet weather season. In coordination with ARIP and Storm-Triggered Inspections, these newly treated sites are specifically inspected for sediment prevention and minimization performance following the first winter. Accessible sites then continue to be monitored over time per the ARIP and storm triggered inspection requirements.

Railroad Gulch BMP Evaluation Study

HRC has designed and is implementing a paired watershed study in the Railroad Gulch subwatershed. The objective of the study is to collect and evaluate specific sediment production, storage, and delivery data to test the effectiveness of HCP prescriptions in limiting sediment production and delivery from potential sources (roads, landslides, bank erosion, upslope stream channel head-cutting, and harvest unit surface erosion) as it relates to its management practices. The study presents eight hypotheses that are intended to test whether THP-related HCP and ERSC WA harvest prescriptions are effective at minimizing the impact that land management has on the delivery rate of fine sediment to Railroad Gulch. The hypotheses include

overall THP effectiveness relating to mass wasting, stream channel erosion, and road-related sediment delivery.

PROCEDURE

THP Enrollment and Administration

- | 80.76. Pursuant to this Order, during the first five years following adoption of this Order, HRC must apply to the Regional Water Board Executive Officer for coverage of individual THPs as described below. After January 2020, an enrollment process is not required to commence operations for CalFIRE-approved THPs that fully comply with requirements of this Order, unless notified in writing by the Regional Water Board Executive Officer that the plan is not eligible for coverage.
- | 81.77. HRC must submit a notice of commencement of operation to the Regional Water Board at least 10 days prior to commencement of operations for a specific THP. The Regional Water Board Executive Officer, upon finding that a plan may violate any of the terms of the Order, may at any time notify HRC that they must refrain from commencing, or cease, operations.
- | 82.78. Regional Water Board staff will continue to review and inspect all proposed THPs in the UER watershed as part of the CAL FIRE review team pursuant to the FPRs. In addition, staff will conduct regular inspections of harvest areas, roads, riparian zones, and unstable areas to verify and evaluate compliance with the requirements of this Order and watershed conditions.
- | 83.79. Prior to January 2020, before operations may commence on an approved THP, HRC must apply for enrollment of the THP under this Order by submitting an enrollment application to the Regional Water Board Executive Officer. The enrollment application must be signed by a designated representative of HRC certifying that the THP complies with the terms and provisions of this Order. Prior to enrollment, Regional Water Board staff will evaluate the THP for compliance with the Order, and at that time may require additional measures for water quality protection as warranted. Timber harvesting activities may not commence until HRC receives written notification from the Regional Water Board Executive Officer that the THP is covered under this Order.
- | 84.80. Water quality issues identified on any particular THP and not resolved prior to THP approval by CAL FIRE, shall be resolved to the satisfaction of Regional Water Board Executive Officer, prior to enrolling that THP under this Order.

Comment [HRC26]: Objection; point of discussion

ADDITIONAL FINDINGS

- | 85.81. The Regional Water Board finds that all the combined measures required under this Order, as itemized below, are protective of water quality standards within the UER watershed: the transition from evenaged to unevenaged management under HRC's ownership; harvest rate limits throughout the UER and for each subwatershed

that limit canopy reduction and anticipated peak flow changes; enhanced riparian protection; geologic review of all harvest activities; management practices designed to prevent or minimize sediment discharge; the temporary prohibition of timber harvest activities in high risk subwatersheds; ongoing oversight of HRC's management activities through participation in the THP review process; and the monitoring and reporting program,

86.82. State Water Board Resolution No. 68-16 Statement of Policy with Respect to Maintaining High Quality of Waters in California (Policy) requires that regional water boards, in regulating the discharge of waste, to maintain high quality waters of the state, require that any discharge not unreasonably affect beneficial uses, and not result in water quality less than that described in regional water board's policies. The Policy applies whenever a) there is high quality water, and b) an activity which produces or may produce waste or an increased volume or concentration of waste that will discharge into such high quality water. "Existing quality of water" has been interpreted to mean baseline water quality, the best quality that has existed since the Policy was adopted in 1968. Thus, the Regional Water Board must determine baseline water quality and compare with current water quality objectives. If the baseline water quality is equal to or less than the objectives, the water is not "high quality" and the Policy is not triggered. In this case the water quality objectives govern the water quality that must be maintained or achieved. (*Asociación de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board* (2012) 210 Cal. App. 4th 1255, 1270 (AGUA).)

87.83. If baseline water quality is better than water quality objectives, the Policy is triggered and baseline water quality must be "maintained" unless the Board makes the requisite findings. To permit a proposed discharge that will degrade high quality water, the Board must find that the discharge 1) will be consistent with maximum benefit to the people of the state; 2) will not unreasonably affect present and anticipated beneficial uses of the water; and 3) will not result in water quality less than that prescribed in water quality plans and policies. (*AGUA* at 1278.) In addition, the Board must ensure the discharge is utilizing the "best practicable treatment or control" to ensure pollution or nuisance will not occur and that the highest quality consistent with the maximum benefit to the people of the state will be maintained. (*Id.*)

88.84. Following a century of logging, and in particular, following the post-world war II era of intensive tractor logging, water quality conditions in Elk River in 1968 were impaired for sediment. Further impairment occurred after 1968 as a result of excessive and poorly-regulated logging and large storm events. The capacity of the UER for sediment is limited by the ongoing aggradation in the impacted reach and resulting nuisance conditions and compromised beneficial uses. Unless and until its capacity can be expanded through sediment remediation and channel restoration, nuisance conditions abated, and beneficial uses supported, the nonpoint source load allocation is defined as zero. Even with the implementation of current and much

improved management practices and stringent restrictions described, ongoing timber harvesting and associated activities will result in some sediment discharge, further exacerbating the already impaired condition. Therefore, in addition to addressing existing, ongoing discharges, this Order addresses water quality impacts that have already occurred.

89.85. This Order requires HRC to implement the zero load allocation in order to restore the beneficial uses, and requires compliance with water quality objectives in receiving water through implementation of stringent management practices designed to minimize discharges (including harvest rate restrictions, riparian protection, roads management, landslide prevention, and wet weather prescriptions), a temporary prohibition on logging activities in high-risk subwatersheds, and continued efforts to inventory, prioritize and implement cleanup and remediation of existing sediment source discharge sites. This Order authorizes discharges from certain cleanup and restoration activities as well as from ongoing timber harvesting and associated activities. Cleanup and restoration activities may result in small short term discharges associated with placement of large wood into streams or excavation to stabilize or remove fill material stored in channels and adjacent riparian zones. The potential impacts of minor short term discharges are outweighed by the benefits of long term sediment control derived by such projects.

90.86. To the extent that the UER had existing higher quality water in 1968, the Regional Water Board finds that the authorization of some sediment discharges from ongoing timber operations (subject to proper management and stringent restrictions) and cleanups is necessary to accommodate important economic and social development in the area and is consistent with the maximum benefit to the people of the state. The Regional Water Board recognizes that a significant portion of in-stream sources are likely to be mobilized and transported to the impacted reach over time, regardless of whether or not timber operations are conducted. Allowing some timber harvest activity to continue enables HRC's participation in cleanup and restoration efforts. The Order requires control and remediation of existing sediment inputs to the extent feasible, and monitoring to determine whether implementation is leading to measurable improvements. The Order also temporarily prohibits logging activity in the most sensitive subwatersheds to allow active measures to be taken to improve downstream beneficial uses. The Order ensures that any new discharges are subject to the best practicable treatment or control.

91.87. Compliance with the terms of this order should result in continued improvement in water quality in the UER and impacted reach. The monitoring and reporting program in section IV of this Order is designed to provide a feedback mechanism to ensure that management measures are implemented and functioning as intended and provide data on in-stream sediment conditions. This Order is consistent with Resolution No. 68-16 because it will result in a net benefit to water quality by improving existing environmental conditions currently impacted by past

logging activity. The Order is designed to protect or recover in-stream beneficial uses and does not promote or authorize the permanent lowering of high quality waters.

92.88. As lead agency under the California Environmental Quality Act (CEQA), the Regional Water Board provided notice of intent to adopt a mitigated negative declaration (SCH No. XXX) for this Order on March 10, 2016 (Cal. Code Regs., tit. 14, § 15072.). The mitigated negative declaration reflects the Regional Water Board's independent judgment and analysis. After considering the document and comments received during the public review process, the Regional Water Board hereby determines that the proposed project, with mitigation measures, will not have a significant effect on the environment. The documents or other material, which constitute the record, are located at 5550 Skylane Blvd, Suite A, Santa Rosa, CA 95403. The Regional Water Board will file a Notice of Determination within five days from the issuance of this Order. Mitigation measures necessary to reduce or eliminate significant impacts on the environment, and monitoring and reporting are incorporated as conditions of approval below.

93.89. The Regional Water Board has reviewed the contents of this Order, its accompanying Initial Study and Mitigated Negative Declaration, written public comments and testimony provided after notice and hearing. The Order prescribes requirements that implement the Basin Plan, in consideration of relevant factors pursuant to water code section 13263. The goal of this Order will be to establish requirements intended to implement the zero load allocation described above, while still permitting timberland management, including harvesting. It is the Regional Water Board's intent that compliance with the terms of this Order is the regulatory mechanism by which HRC will comply with the Upper Elk River TMDL. This WDR is a component of the Regional Water Board strategy to promote activities designed to restore ecosystem functions, abate nuisance flood conditions, attain ambient water quality objectives and recover beneficial uses. In-stream remediation and channel restoration is anticipated as a means of recovering the ecosystem functions of the impacted reaches of Elk River. In combination with reduction in sediment loads from the upper watershed, the recovery objective that guides the restoration of the impacted reach is a stream system capable of transporting sediment and flows in a manner that supports beneficial uses of water and abates the current nuisance flooding conditions.

THEREFORE, IT IS HEREBY ORDERED that pursuant to Water Code section 13263, the Regional Water Board hereby adopts Order No. R1-2016-0004, and directs the Executive Officer to file all appropriate notices.

IT IS FURTHER ORDERED that this Order supersedes Order No. R1-2006-0039 (Elk River WDR) (as amended by Order No. R1-2008-0100), *Monitoring and Reporting Program No. R1-2008-0071*, and Cleanup and Abatement Order Nos. R1-2004-0028 and R1-2006-0055.

IT IS FURTHER ORDERED that, no more than approximately five years after adoption of this Order, HRC and Regional Water Board staff shall provide an update to the Regional Water Board on the status of the Order implementation and watershed condition. The update shall include the evaluation of compliance and assessment of the efficacy of this Order based on review of the annual work plans and five-year report, progress of Elk River Stewardship Program efforts directed at remediation, and any other relevant information. Staff shall include any recommendations for modifying Order requirements.

IT IS FURTHER ORDERED that pursuant to Water Code section 13263, Humboldt Redwood Company, LLC, shall comply with the following:

I. SPECIFIC REQUIREMENTS

A. Forest Management

1. HRC shall utilize uneven-aged single-tree and small group selection silviculture as defined in California Code of Regulations, title 14, section 913.1 within its timberlands in the UER watershed. Variable Retention may be used in some instances to address certain stand conditions, such as high levels of whitewood or hardwood species, animal damage, or general poor form and vigor due to past logging history. Other silvicultural methods that may be applied infrequently include Rehabilitation of Understocked Areas, Seed Tree Removal, and Sanitation Salvage. HRC shall not utilize the clearcut harvest method.
2. HRC shall not utilize group selection harvest method as defined in California Code of Regulations, title 14, section 913.2 within Riparian Management Zones.
3. ~~The average annual harvest rate in any subwatershed in Table 4.3 of the ROWD shall not exceed 2% equivalent clearcut acres per year during any 10 year period.~~

4.3 ~~Harvesting in Sensitive Bedrock Terrain Sub-basins shall adhere to the following additional measures pursuant Section 5.4 of the HRC ROWD: High Risk Subwatersheds~~

- a. ~~Timber harvesting on HRC's timberlands in the high risk subwatersheds, Glapp, Tom and Railroad Gulches, McCloud Creek and the Lower South Fork Elk River, as described in Finding 57 of this Order, is prohibited.~~
- b. ~~Exceptions may be made for allowing limited timber harvesting in high risk subwatersheds subject to approval by the Regional Water Board Executive Officer. HRC may request approval based on a project proposal that when implemented must make a meaningful contribution to correcting beneficial use impairment in the impacted reach. Depending on the scope of the project proposed, a decision by the Executive Officer on whether to allow for limited timber harvesting in a high risk subwatershed may be subject to a 30-day public comment period. Project proposals may include:~~
- c.

Comment [HRC27]: HRC believes that this requirement is **not supported by scientific analysis or consistent with provisions of CWC. Requests removal.**

Comment [HRC28]: HRC requests elimination of this proposed harvest prohibition in favor of establishment of the additional measures proposed in the ROWD (Section 5.4)

- d. ~~Flood flow routing improvement (e.g. replace earthen approaches to bridges with culverts and riparian plantation thinning);~~
- e. ~~Sediment storage reduction (e.g. slowing, trapping, removing) of accumulated sediment in, or delivering to the compliance reach;~~
- f. ~~Water supply reliability (e.g. implement alternative supplies); and~~
- g. ~~Infrastructure enhancement (E.g. roads, bridges, septics, raise houses).~~
- h. ~~—~~
- i. ~~The prohibition on harvesting in the high-risk subwatersheds may be lifted following an opportunity for 30-day review and public comment and a subsequent determination by the Regional Water Board Executive Officer that significant progress towards improvement or restoration of impaired beneficial uses in the impacted reach has been achieved.~~

- a. Slopes with gradients equal to or greater than 50% and within 300 feet of a Class I or II watercourses shall be field reviewed by a state license professional geologist.
- b. Retention of a minimum of 150 square feet of basal area (of any commercial species) per acre shall be required on headwall swales that envelope Class III watercourse source areas as identified in THP geologic reports.
 - o Headwall swales are steep areas of concave, convergent topography (inversed 'tear-drop') found at the head of, and connect linearly to, low order Class III and II watercourses. These drainage features should not be confused with other hill slopes concavity such as small zero order draws, bodies of large landslides, tree throw depression, or low-gradient hollows.
- c. Maintain a minimum of 100 square feet of conifer basal area on unstable slopes identified in THP geologic reports as potential point of sediment delivery.
- d. No timber will be marked for harvest within 10 feet of a Class III watercourse unless associated with a stump clump. Removal of timber associated with road construction, re-construction, or decommissioning may be harvested.
- e. All new road construction alignments shall be reviewed by a state licensed geologist. Findings will be documented in a CGS Note 45 compliant report.
- f. Road surfaces sloped at 10% or greater that contour across Hookton deposits will be storm proofed in accordance with a high or extreme erosion hazard rating. Ratings will be determined by the project forester in conjunction with project geologist.
- g. Haul road water bar outlets within 150 feet of a downslope Class I or II watercourse will be rock armored or slash packed with sound woody debris.
- h. All temporary road surfaces within Class I, II and III's RMZ shall be slash packed at the completion of operations with sound woody debris or equivalent type material. A walking or quad trail may be kept open on the inside (upslope) edge of the road facilitating safe access if desired.
- i. All skid trail surfaces within 50 feet of a watercourse shall be slash packed with sound woody debris or equivalent type material.

B. Riparian Zone Protection

1. Class I Watercourse Riparian Protection

Comment [HRC29]: Replace the proposed WDR measures with those discussed in Section 5.0 and provided as Appendix A and B of the ROWD including reference to existing 150 no cut RMZ on lower NF Elk River. See letter comments for detailed discussion.

- a. ~~Riparian Management Zones (RMZs) for Class I watercourses extend to 300 feet on either side of the channel;~~
 - b. ~~No harvesting within 50 feet of Class I watercourses;~~
 - c. ~~Retain the 18 largest conifer trees per acre (measured along 435 feet of watercourse length and within 100 feet of the watercourse and lake transition line);~~
 - d. ~~Between 50 feet and 150 feet of Class I watercourses, retain a minimum of 200 square feet of basal area per acre; and~~
 - e. ~~Post-harvest basal area shall not be lowered below 150 square feet per acre between 150 feet to 300 feet from a Class I watercourses.~~
2. ~~Class II Watercourse Riparian Protection~~
- a. ~~Riparian Management Zones (RMZs) for Class II watercourses extend up to 200 feet on either side of the channel;~~
 - b. ~~No harvesting within 30 feet of Class II watercourses;~~
 - c. ~~Between 30 feet and 100 feet of Class II watercourses, retain a minimum of 60% post-harvest conifer canopy coverage watercourses; and~~
 - d. ~~Basal area shall not be lowered below 150 square feet per acre between 30 feet and 200 feet from a Class II watercourse.~~
3. ~~Class III Watercourse Riparian Protection~~
- a. ~~Riparian Management Zones (RMZs) for Class III watercourses extend to 100 feet on either side of the channel;~~
 - b. ~~No harvesting within 20 feet of Class III watercourses; and~~
 - c. ~~Basal area shall not be lowered below 150 square feet per acre between 20 feet and 100 feet from a Class III watercourse.~~
4. ~~Only single tree selection shall be utilized in RMZs for Class I, II, and III watercourses. No group clearing shall take place in these RMZs.~~
5. ~~No ground based equipment with the exception of at existing roads and permitted new road construction within:~~
- a. ~~150 feet of a Class I watercourses;~~
 - b. ~~100 feet of a Class II watercourse;~~
 - c. ~~50 feet of a Class III watercourse, or to the closest hydrologic divide.~~
6. ~~Erosion control practices in riparian management zones:~~
- a. ~~Implement highest feasible erosion control methods including surfacing all segments of road and skid trails within riparian areas with pavement, rock, slash, mulch, straw, or other adequate materials;~~
 - b. ~~Trap and filter all road and skid trail surface drainage within riparian areas to prevent the discharge of sediment to watercourse; and~~
 - c. ~~Cover all disturbed soil areas with slash, mulch, straw, or other adequate materials to minimize discharge sediment to a watercourse.~~

~~7. Avoid tractor crossings in unchanneled swales.~~

~~8. Retain trees along the center line of swales and areas of subsurface flow paths.~~

C. Road Management

1. HRC shall implement management practices and specifications described in Appendix B of the ROWD to prevent and minimize sediment discharge from active roads.
2. By October 15, 2018 shall upgrade all roads to meet the storm-proofed standard as described above in Finding 43 and Appendix B of the ROWD.
3. By October 15, 2018, HRC shall treat those road related controllable sediment discharge sources currently identified in Attachment C.
4. HRC shall maintain and update the inventory of controllable sediment discharge sources from roads, in accordance with the methods described in Section 6.2 of the ROWD.
5. HRC shall inspect all roads within their Elk River ownership at least annually between April 1 and October 15.
6. HRC shall inspect storm-proofed roads as soon as conditions permit following any storm event that generates 3 inches or more of precipitation in a 24-hour period, as measured at the Elk River rain gauge.
7. Within one year of identifying new sediment discharge sources from roads HRC shall document, notify the Regional Water Board, and implement measures to prevent or minimize sediment discharge at any new controllable sediment discharge sources identified during the road inspections.

D. Landslide Prevention

1. Prior to conducting timber harvesting activities or construction or decommissioning roads and watercourse crossings on its ownership in the UER, HRC shall prepare and submit an engineering geologic report to the Regional Water Board.

The report shall be prepared by a California Licensed Professional Geologist (PG) in conformance with the guidelines of California Geologic Survey Note 45 to evaluate the potential impacts of the proposed harvesting to water quality. At a minimum, the report shall characterize geologic hazards using a combination of the following data and methods of investigation:

- Existing hazard maps derived from slope stability models;
- Available maps and reports;
- Aerial photographs;
- Field investigation and mapping; and
- Applicable studies and technical models.

2. The PG shall evaluate potential effects on slope stability and surface soil erosion, and landslide related sediment discharge from the proposed management activity, identify vulnerable areas, and describe specific mitigation measures needed to minimize potential effects for identified areas of concern.

The mitigations shall be based on the potential hazard, and where appropriate, shall include, but are not necessarily limited to the following:

- Avoid or minimize canopy removal in areas with elevated landslide hazard;
- Avoid or minimize activities upslope of existing landslide;
- Avoid or minimize activities on vulnerable portions of deep seated landslides; and
- Stabilization of existing landslides where applicable by methods such as planting, manipulating drainage, buttressing, and other feasible engineering techniques.

3. The report may be submitted before or during the THP review process conducted by CAL FIRE, or by request of the Executive Officer. The Regional Water Board staff shall review the geologic report and if deemed necessary, may request additional information or require additional conditions be incorporated to further reduce or mitigate the potential for sediment discharge as part of the state THP review process. If additional information or mitigation is required, HRC shall not proceed with the proposed activity until demonstration that the potential impacts to the beneficial uses of water will be adequately mitigated.

3. ~~The Regional Water Board staff shall review the geologic report and if deemed necessary, may request additional information or require additional conditions be incorporated to further reduce or mitigate the potential for sediment discharge. If additional information or mitigation is required, HRC shall not proceed with the proposed activity until demonstration that the potential impacts to the beneficial uses of water will be adequately mitigated.~~

Comment [HRC30]: This slightly modified language makes clear geologic review is to be aligned with the multi-agency THP review process, consistent with recent discussion with Fred Blatt and Jim Burke.

4. HRC shall maintain and update the landslide inventory included in Appendix C of the ROWD according to the specifications described in the Monitoring and Reporting Program in section IV of this Order.

E. Wet Weather Restrictions

~~No timber operations shall occur between October 15th and May 1st, except in response to failure of a road segment or watercourse crossing that is resulting in ongoing or imminent sediment discharge.~~

~~1. Timber operations shall not occur during the 'Extended Wet Weather Period' (October 15th through May 1st) unless conducted in compliance with a 'winter period operating plan' included in the approved THP pursuant 14CCR 914.7 (b) and 916.9 (l) and at a minimum includes the following:~~

- ~~a. Between October 15th and May 31st, hauling shall only occur on roads that meet the permanent standard defined in Appendix B of the ROWD. Permanent roads must be rocked, chipsealed, or paved on hydrologically connected segments, road segments within 150 feet of a watercourse, or road segments that drain to locations within 150 feet of a watercourse.~~
- ~~b. Adhere to wet weather road use restrictions detailed in Appendix B of the ROWD~~
- ~~c. No new road construction during the 'Winter Period' (November 15th through April 1st). Road reconstruction during the 'Winter' Period shall only take place in response to failure of a road segment or watercourse crossing resulting in ongoing or imminent sediment discharge~~
- ~~d. No timber operations, other than timber felling, shall occur during the winter period (November 15 - April 1) in sub-watersheds with Sensitive Bedrock Terrain (Clapp, Lower South Fork, McCloud, Tom Gulch, and Railroad Gulch), except in response to failure of a road segment or watercourse crossing that resulting in ongoing or imminent sediment discharge.~~

Comment [HRC31]: Replace this proposed 6 month timber operation prohibition with the mitigation measures described in the ROWD Section 5.0 and Appendix B as recommended here

F. Erosion Control Plans

1. HRC shall prepare and submit an inventory of CSDS within, and in the vicinity of, the logging area for all THPs it submits in the UER. Any CSDS not previously inventoried and treated as part of the Road Management activities described in Section I(C) of this Order shall be inventoried and scheduled for treatment concurrently with THP operations, including those off-road sites from the master treatment schedule in the vicinity of the THP.
2. These CSDS will be subject to the following:
 - a. Each CSDS shall be inventoried in an ECP, which will include: a description of the current condition of each site, an estimate of the potential sediment volume that could discharge from the site, a narrative description of the proposed management measures, and a schedule for implementation;
 - b. Inventoried CSDS must be treated per the site specific ECP schedule;

- c. The ECP shall be submitted to the Regional Water Board for review with the THP it is associated with; and
- d. If treatment of such sites "strands" any other CSDSs, HRC does not relinquish responsibility for also treating the stranded sites. For logistical reasons, it is recommended that measures be taken to prevent sites from becoming stranded.

G. Feasibility Study for Control of In-stream Sediment Sources

HRC shall conduct a feasibility study to evaluate potential methods to control, trap, or meter sediment from in-stream sources in the UER before such sediment can be transported to the impacted reach. The feasibility study shall identify potential methods to reduce transport of sediment from tributaries in the UER to the impacted reach that may include design and implementation of small scale pilot projects. If the pilot projects demonstrate the success of methods to reduce sediment discharge from in-stream sources, HRC shall develop a plan to implement these methods on a wider scale throughout the UER.

1. By October 31, 2017, HRC shall submit to the Regional Water Board Executive Officer, an initial plan describing in-stream sediment sources, potential methods to control, meter, or trap sediment from these sources, and propose pilot scale projects to test the effectiveness of proposed methods.
2. Starting January 31, 2018, HRC shall submit to the Regional Water Board Executive Officer, annual updates on progress in implementing the feasibility study.
3. Starting January 31, 2020, HRC shall submit to the Regional Water Board Executive Officer, the final feasibility study, including results of pilot scale projects, description of feasible methods to control sediment from in-stream sources, and a detailed workplan to implement additional projects as warranted to control in-stream sediment sources throughout their ownership, including an implementation schedule.

Comment [HRC32]: While HRC is active in watershed restoration including placement of large wood in stream channels known to be important to the sorting of sediments and gravels, this proposed requirement arguably overreaches the statutory mandate and intent of Porter Cologne.

For one thing, in-stream stored sediment and related sediment sources are not typically considered 'controllable sediment discharge sources' (CSDS) because:

1. They are already located in the waters of the state and are therefore not being discharged into the waters as the result of regulated timber harvest activities
2. Determining their origin (management v. natural) is speculative
3. Porter Cologne requirements for clean up and abatement does not apply to activities conducted prior to 1981 unless violation of law can be demonstrated
4. Effective control of instream sources not related to contemporary forestry activities is speculative at best

HRC recommends the NCRWQCB consider pursuing this sort of feasibility study through existing non-regulatory programs such as the Elk River Recovery Assessment Pilot Project Program and/or the Stewardship Project

H.G. Implementation and Maintenance of the Sediment Reduction and Master Treatment Schedule

1. This Order supersedes and incorporates the requirements of Cleanup and Abatement Order (CAO) R1-2004-0028 for HRC's ownership in the Mainstem Elk River and South Fork Elk River and CAO R1-2006-0055, for HRC's ownership in the North Fork Elk River.
2. By October 15, 2018, HRC shall complete corrective action for all remaining road related CSDS described in the master treatment schedule in Attachment C. HRC will continue to prioritize and treat CSDS associated with legacy skid trails according to the schedule described in the master treatment schedule. The annual report described in section IV(B)(1) shall include a list of those sites

treated during the previous year and those scheduled for treatment during the upcoming year. A one year extension may be granted by the Executive Officer if requested by HRC.

Comment [HRC33]: Requested to address potential for unforeseen events such as weather or other issues that preclude meeting the 2018 date.

Discussed and agreed to in recent meeting with Fred Blatt and Jim Burke

II. GENERAL REQUIREMENTS

- A. HRC shall comply with all applicable water quality standards, requirements, and prohibitions specified in the Basin Plan as modified, and policies adopted by the State Water Board.
- B. HRC shall allow Regional Water Board staff entry onto all land within the Elk River Watershed covered by the WDR including appurtenant roads for the purposes of observing, inspecting, photographing, videotaping, measuring, and/or collecting samples or other monitoring information to document compliance or non-compliance with this Order.
- C. HRC shall comply with all water quality related HCP prescriptions, conditions included in an approved THP, and any additional mitigation measures identified and required pursuant to CAL FIRE CEQA process.
- D. HRC shall comply with all mitigation measures identified in the accompanying Initial Study and Mitigated Negative Declaration relative to watershed restoration activities addressed by this Order (Attachment X).
- E. This Order does not authorize discharges from the aerial application of herbicides or pesticides. HRC shall submit a ROWD prior to any proposed aerial application of pesticides that could discharge to waters of the State.
- F. HRC shall notify the Regional Water Board in writing at least 30 days prior to any proposed ground-based application of pesticides within 100 feet of a Class I or Class II stream. The notification shall include the type of pesticide(s), method and area of application, projected date of application, and measures that will be employed to assure compliance with applicable water quality requirements.
- G. Water quality issues identified on any particular THP and not resolved prior to THP approval by CAL FIRE, shall be resolved to the satisfaction of Regional Water Board Executive Officer, prior to commencement of that THP.
- H. HRC shall maintain copies of all correspondence and records collected and prepared to document compliance with this Order and provide access to Regional Water Board to review and copy.
- I. No discharge of waste into the waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to

Comment [HRC34]: Jim Burke clarified that the only known mitigation measures not listed in the WDR itself pertain to watershed restoration activities. Insertion of this additional or similar language would be helpful in clarifying.

continue the discharge. All discharges of waste into waters of the state are privileges, not rights. (Wat. Code, § 13262, subd.(g).)

- J. Prior to implementing any change to the project or activity that may have a significant or material effect on the findings, conclusions, or conditions of this Order, HRC shall obtain the written approval of the Regional Water Board Executive Officer.
- K. The Regional Water Board may add to or modify the conditions of this Order, with notice and as appropriate in response to monitoring results or to implement any new or revised water quality standards and implementation plans adopted and approved pursuant to the Porter-Cologne Water Quality Control Act or the Clean Water Act.
- L. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state law.
- M. Should it be determined by HRC or the Regional Water Board that unauthorized discharge of waste are causing or contributing to a violation or an exceedance of an applicable water quality requirement or a violation of a WDR prohibition (below), HRC shall:
 - 1. Implement corrective measures immediately following discovery that applicable water quality requirements were exceeded or a prohibition violated, followed by notification to the Regional Water Board by telephone or email as soon as possible, but no later than 48 hours after the discharge has been discovered. This notification shall be followed by a report within 14 days to the Regional Board, unless otherwise directed by the Executive Officer, that includes:
 - a. the date the violation was discovered;
 - b. the name and title of the person(s) discovering the violation;
 - c. a map showing the location of the violation site;
 - d. a description of recent weather conditions prior to discovering the violation;
 - e. the nature and cause of the water quality requirement violation or exceedance or WDR prohibition violation;
 - f. photos of the site documenting the violation;
 - g. a description of the management measure(s) currently being implemented to address the violation;
 - h. any necessary maintenance or repair of management measures;
 - i. any additional management measures which will be implemented to prevent or reduce discharges that are causing or contributing to the violation or exceedance of applicable water quality requirements or WDR prohibition violation;
 - j. an implementation schedule for corrective actions; and,

k. the signature and title of the person preparing the report.

N. HRC shall revise the appropriate technical report (i.e. ECP, Inventory, or other required information as applicable) immediately after the report to the Regional Board to incorporate the additional management measures that have been and will be implemented, the implementation schedule, and any additional inspections or monitoring that is needed.

O. Emergency Maintenance

If there is an imminent threat to life, property, or public safety, or a potential for sediment discharge with catastrophic environmental consequences, HRC will notify Regional Water Board staff of the emergency and the planned or implemented action within 14 calendar days. HRC shall meet with the Regional Water Board Executive Officer within six months of a major fire to discuss modifications to this Order as may be warranted due to changed conditions.

III. DISCHARGE PROHIBITIONS

- A. The discharge of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.
- B. The placing or disposal of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature at locations where such material could pass into any stream or watercourse in the basin in quantities which could be deleterious to fish, wildlife, or other beneficial uses is prohibited.

IV. MONITORING AND REPORTING

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code section 13267, subdivision (b) and requires HRC to implement the monitoring and reporting described below. The Regional Water Board has delegated its authority to the Executive Officer to revise, modify, and reissue the MRP.

A. Monitoring

HRC shall monitor watershed conditions according to the monitoring program described below.

1. Inspections

Roads

- a. HRC shall inspect all roads accessible by a standard 4-wheel drive vehicle within the UER according to the following schedule:
- i. At least once annually between April 1 and October 15 to ensure that drainage structures and facilities are intact and fully functional, and to identify any active or imminent road-related failures of the road prism, cutbanks, or fills which can deliver sediment to streams, and identify and schedule any corrective action needed to control sediment discharge;
 - ii. As soon as conditions permit following any storm event that generates 3 inches or more of precipitation in a 24-hour period, as measured at HRC's UER rain gauge.

Comment [HRC35]: Consistent w/
ROWD/HCP

THP areas

- a. HRC shall inspect the entire logging area of all active THPs, including roads, harvest units, and CSDS sites, a minimum of three times per year according to the following schedule:
- i. By October 15 to assure project areas are secure for the winter; and/or immediately following cessation of winter period timber harvest activities;
 - ii. Between October 15 and April 1 after at least 3 inches of cumulative rainfall has fallen within a 24 hour period, to assess the effectiveness of management measures designed to address controllable sediment discharges and to determine if any new CSDS sites have developed;
 - iii. Between April 1 and June 15 to assess the effectiveness of management measures designed to address existing CSDS sites and to identify if any new CSDS sites have developed.

2. Landslides Monitoring

HRC shall conduct the following monitoring to identify new or reactivated mass wasting activity:

- a. HRC shall maintain and update the landslide inventory included in Appendix C of the ROWD according to the specifications described below;
- b. HRC shall inspect harvest THP units at least annually during the life of the THP and through the three year erosion control maintenance period following completion of the plan. The inspections shall cover both harvested areas as well as RMZs and channel zones and shall be designed to identify any new, or reactivated mass wasting, including open slope landslides and streamside landslides;
- c. Additional on-the-ground monitoring and reporting to identify new, or reactivated mass wasting activity shall include HRC field staff (i.e. forestry, physical sciences), notifying the HRC Geology Department in the event a new

or recently active landslide is observed during the course of daily duties (i.e. road inspections, wildlife surveys, aquatics monitoring, THP layout and logging supervision);

d. HRC shall submit a Notice of Discharge within 72 hours of discovery of any timber operation related landslide

e.e. HRC shall provide an analysis of landslide trends including the results of both an air photo landslide inventory and streamside landslide field surveys by no later than end of year 2024. The trends analysis may be submitted as part of the next HRC HCP Watershed Analysis 10 Year Revisit Report.

d. HRC shall obtain new aerial photographs of the Upper Elk River watershed at intervals no greater than 5 years. The most recent aerial photographs of the Upper Elk River watershed were taken in 2010. The next aerial photographic flight shall be flown no later than 2015;

e. HRC shall utilize color, high-angle, stereo pair aerial photographs at a scale of 1:12,000 of the UER to update the landslide inventory; and

f. Pages 45-46. By June 15, 2022, HRC shall conduct a representative survey of streamside landslides.

3. Water Quality Monitoring

HRC shall continue to conduct the following water quality trend monitoring, including Aquatic Trends Monitoring (ATM) every three years and Hydrology Trends Monitoring (HTM) annually, according to the sampling procedures described in detail in Appendix F. of the ROWD for the following parameters:

- a. Pebble counts
- b. Pool dimension and frequency
- c. Large wood
- d. Riparian and overstory canopy measurements
- e. Water temperature
- f. Fish surveys
- g. Channel cross section measurements
- h. Hydrology and suspended sediment

B. Reporting

HRC shall provide the following reports to the Regional Water Board Executive Officer according to schedule specified below. Reports must contain sufficient information that Regional Water Board staff can clearly identify the types of work planned and monitoring conducted throughout the UER including key results, findings, problems encountered, and corrective actions taken. HRC shall summarize any information pertinent to corrective actions that have been or need to be taken to ensure adequate water quality protection.

1. Annual Summary Report and Work Plan

Comment [HRC36]:
Recommend replacing D, E, and F with the following two requirements:

1. Submit Notice of Discharge in the event of mgmt. related landslide
Provide Landslide Trends Report by 2024 including Air Photo and Streamside Landslide Analysis (HCP WA Revisit)

By January 31 of each year, HRC shall submit to the Regional Water Board a summary report of all management activities, including monitoring, conducted during the previous calendar year and a work plan, describing all management activities planned for the current calendar year (January 1 to December 31). HRC shall certify that the activities included in the report are in compliance with the provisions of this Order.

Regional Water Board staff will review and may provide written comments and or request additional information as necessary by February 15. If requested, HRC shall submit a revised final annual work plan to the Regional Water Board by March 1.

Regional Water Board and HRC staff shall also meet annually, if requested by either party, to review proposed work ~~to and~~ discuss the timing of and type of activities planned for the year.

The annual work plan is a planning document. The actual work conducted in the upcoming year may differ from what is described in the plan due to changes in conditions or other considerations. HRC shall notify the Regional Water Board no less than quarterly in writing when it becomes apparent that a deviation from the current annual work plan is necessary. The notification shall include a description of how the work differs from the annual work plan and an explanation for the change. The annual summary shall describe all of the management activities actually conducted during the previous year.

The annual report shall include, at a minimum, the following information:

- a. Timber harvest
The report shall at a minimum describe all harvesting conducted during the previous year as well as anticipated harvest planned for the coming year pursuant to Section 1(A) of the Order, including;
 - i. Acres by subwatershed;
 - ii. Silviculture method;
 - iii. THP name and number;
- b. Roads
HRC shall describe all road work conducted during the previous year and work planned for the upcoming year, including a description and map locations of all road construction, reconstruction, and maintenance work, pursuant to Section 1(C) of the Order.
- c. Inventory of CSDS
HRC shall provide a detailed list of CSDS sites treated during the previous year and sites that are proposed for treatment in the current year prior to that calendar year's winter period. This list of sites shall include remaining

CSDS from the master treatment schedule, road related CSDS identified during annual road inspections, CSDS identified in ECPs for individual THPs, and any other CSDS identified during the previous year, including those associated with watercourse crossings, roads, skid trails, gullies, road-related and non-road-related landslides, and any other sediment generating features associated with timber harvest activities. For each CSDS site scheduled for treatment, the annual work plan shall contain:

- i. A treatment site identification number and location shown on a scaled map;
- ii. The volume of sediment to be treated;
- iii. Treatment status (pending or completed); and
- iv. A description of the ~~selected treatment to be implemented~~ alternative.

d. Restoration Projects

HRC shall provide a description of any restoration projects conducted during the previous year and that are scheduled for implementation during the upcoming year including: ~~Restoration projects that should be included in the annual report include any projects implemented as part of the Feasibility Study for control of in-stream sediment sources or the Stewardship Program, including:~~

- i. Large wood augmentation for the purposes of improving fish habitat and sediment routing. Methods could include falling riparian zone trees or placement of logs using heavy equipment;
- ii. Construction of in-stream or off-channel sediment detention basins;
- iii. Streambank stabilization using large wood, excavation, planting, rip-rap, or other methods;
- iv. Removal or reconstruction of watercourse crossings and near stream road segments;
- v. Excavation of in-stream sediment deposits.

e. Inspections

The annual summary report shall describe all inspections of roads, erosion control plans associated with timber harvest plans, and landslides conducted during the previous year according to the specifications described in section IV(A). The annual summary report shall include at a minimum, the following information for each inspection:

- i. date of the inspection;
- ii. inspector(s) name;
- iii. area or sites inspected;
- iv. observations, including problems identified that result, or have the potential to result in controllable sediment discharge, including discharge notifications;
- v. actions needed to prevent or minimize sediment discharge;
- vi. actions taken to prevent or minimize sediment discharge;

Comment [HRC37]: All reference to Stewardship Program should be limited to FINDINGS, not Specific WDR Requirements

- vii. a brief evaluation of the causes of the erosional problems and the adaptive management measures that must be taken to prevent recurrence.

f. Landslide Reporting

The annual summary report shall include an updated landslide inventory, describing any landslide activity observed within the past year, including;

- i. A map showing locations of landslide activity;
- ii. Whether landslide is new or reactivation of existing landslide;
- iii. Estimated volume of sediment discharged; and
- iv. Management activities (such as timber harvesting or road work) that may reasonably be considered to have ~~contributed to caused or affected~~ landslide activity.

g. Water Quality Trends Monitoring Data

The annual summary report shall include ~~the synthesis of the results of water quality hydrology~~ monitoring data collected during the previous year as specified in Section IV(A), including: stream flow, turbidity, and suspended sediment, ~~water temperature, channel form, and large wood in the channel, according to the specifications of Appendix F of the ROWD. The synthesis shall highlight observed trends and provide analysis of the findings.~~

Comment [HRC38]: Synthesis (trend reporting) of water quality conditions should include a sufficient number of years to observe a trend; 5 years minimum.

Comment [HRC39]: These elements except for temperature are surveyed every three years as part of Aquatic Trends Monitoring (separate program from water quality trends monitoring), and reported upon at that interval. Recommend including both ATM and Water Quality trends reporting as these primary subject of the '5 year check in'.

~~h. Watershed Stewardship Report~~

~~The annual summary report shall describe HRC's participation in Elk River Watershed Stewardship. The report shall provide a brief description of its participation in meetings as well as its contributions supporting stewardship efforts.~~

Comment [HRC40]: HRC participation in Stewardship Program can be presented as a WDR Finding, but should not be listed as a Requirement

2. Five-year ~~Summary Water Quality and Aquatic Habitat Trends Report~~

Every five years following adoption of this Order, HRC shall provide a five year retrospective ~~summary and~~ evaluation of the required Water Quality and Aquatic Trends Monitoring program. The purpose of the evaluation is to examine the relationship between water quality and aquatic habitat conditions and management activity and to ascertain to the extent feasible the effectiveness of the WDRs in management activity in preventing and minimizing discharges of sediment and protection of water temperature increases that may impact the beneficial uses of water in UER.

Comment [HRC41]: HRC recommend this 5 year check in focus on trends and effectiveness analysis relative to beneficial uses.

By no later than March 15, 2021, HRC shall submit the first five year summary report to the Regional Water Board. The report content will be developed in consultation with Regional Water Board staff in order to assure that the report will be useful to evaluate the General and Specific requirements of the Order and

inform decisions regarding potential revisions to the Order. The five year update and evaluation shall include the following information:

a. Harvest Summary

HRC shall submit a summary of total acres harvested over the previous five year period, by subwatershed, silviculture, and yarding method.

- i. ~~Acres harvested by subwatershed;~~
- ii. ~~Silviculture method;~~
- iii. ~~THP name and number.~~

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b. Road update

HRC shall submit a summary report of roadwork conducted throughout their ownership in the UER. The purpose of the report is to provide a status report on the road network and the effectiveness of their program for controlling sediment discharge from roads. The report shall include the following:

- i. Total length of active roads, including total amount of seasonal and permanent roads;
- ii. Total length of road that meets the stormproofed standard (this should confirm that HRC's entire road network has been stormproofed);
- iii. Total length of road decommissioned over the previous five year period;
- iv. A map of the current road network.

c. Landslide Summary

An updated landslide inventory and evaluation of the effectiveness of management measures intended to reduce the potential for management related landslides. The updated inventory shall be prepared by a Professional Geologist (PG) and shall include a description of all landslide activity identified during the previous five years based on field observations, and interpretation of updated aerial photographs if available, and other available data sources, including:

- i. An updated landslide inventory, describing all landslide activity observed within the past five years and whether observed landslides are new or reactivation of existing landslides;
- ii. Estimated volume of sediment discharged by landslides over the previous five year period by subwatershed;
- iii. A map showing locations of landslide activity that has occurred during the previous five years;
- iv. A description of data sources (aerial photograph, road inspection, THP layout, etc);
- v. Copies of aerial photographs of the UER from the previous five year period (may be scanned); and

- vi. A discussion of overall landslide activity during the previous five years and any conclusions that can be made with respect to an association between management and landslide activity. This section should include a discussion of potential modifications to management practices necessary to further minimize management related sediment discharge.
- d. **Water Quality and Aquatic Trends Monitoring Analysis Summary**
HRC shall submit a water quality trends reports, providing a summary of water quality and aquatic habitat monitoring results for the previous five years. ~~This report shall be developed in coordination with the Watershed Stewardship Program.~~ The summary should provide a discussion of any observable water quality and aquatic habitat trends detected during the previous five years and any conclusions that can be made, in particular with respect to sediment loads, turbidity, peak flows, and anadromous salmonid habitat conditions, and any possible association between management activities and in-stream conditions. This section should include a discussion of potential modifications to management practices necessary to further minimize management related sediment discharge.
 - e. **Restoration Summary**
HRC shall submit a summary report of all restoration projects they have conducted, participated in, or contributed to, within the Elk River watershed. Restoration activities are those projects designed to improve salmonid habitat, control in-stream sediment production and transport, and improve water quality and improve beneficial uses of water, and may include, but are not necessarily limited to:
 - i. Stabilizing banks through provision of root cohesion on banks and floodplains;
 - ii. Filtering sediment, chemicals, and nutrients from upslope sources;
 - iii. Supplying large wood to the channel, which maintains channel form and improves in-stream habitat complexity;
 - iv. Helping to maintain or beneficially alter channel form, in-stream habitat, and an appropriate sediment regime through the restriction of sediment inputs or metering of sediment through the system;
 - v. Moderating downstream flood peaks through temporary upstream storage of water;
 - vi. Helping maintain cool water temperatures through provision of shade and creation of a cool and humid microclimate over the stream;
 - vii. Providing both plant and animal food resources for the aquatic ecosystem in the form of, for example, leaves, branches, and terrestrial insects.

Comment [HRC42]: Stewardship is voluntary and separate from WDRs. Tentatively agreed at recent meeting with Fred Blatt and Jim Burke that this line would be struck.

Comment [HRC43]: What is being evaluated is instream trend monitoring results, not typically suitable for reaching conclusions regarding hillslope Best Management Practice Effectiveness.

Better suited to achieve this goal are specific studies such as the Railroad Gulch BMP Effectiveness Study associated with the McCloud Shaw THP (see below).

f. Effectiveness Monitoring Summary

HRC shall submit a summary report(s) describing the results of their [HCP](#) effective monitoring programs for roads throughout the UER and timber harvest related management practices in Railroad Gulch. The reports shall include a description of monitoring methods used, the location of sites evaluated, the results of the monitoring, a discussion the results, and any conclusion regarding the effects of their management practices with respect to sediment production from roads, watercourse crossings, harvest units, landslides, in-channel sources, and sensitive riparian zones.

V. APPLICATION AND ENROLLMENT PROCEDURE

~~Pursuant to this Order, during the first five years following adoption of this Order, HRC must apply to the Regional Water Board Executive Officer for coverage of individual THPs as described below. After January 2020, an [An](#) enrollment process is not required to commence operations for CAL FIRE-approved THPs that fully comply with requirements of this Order, unless notified in writing by the Regional Water Board Executive Officer that the plan is not eligible for coverage.~~

~~Prior to January 2020, before operations may commence on an approved THP, HRC must apply for enrollment of the THP under this Order by submitting an enrollment application to the Regional Water Board Executive Officer. The enrollment application must be signed by a designated representative of HRC certifying that the THP complies with the terms and provisions of this Order. Prior to enrollment, Regional Water Board staff will evaluate the THP for compliance with the Order, and at that time may require additional measures for water quality protection as warranted. Timber harvesting activities may not commence until HRC receives written notification from the Regional Water Board Executive Officer that the THP is covered under this Order.~~

~~HRC must submit a notice of commencement of operation to the Regional Water Board at least 10 days prior to commencement of operations for a specific THP. The Regional Water Board Executive Officer, upon finding that a plan may violate any of the terms of the Order, may at any time notify HRC that they must refrain from commencing, or cease, operations.~~

Comment [HRC44]: This should suffice

Comment [HRC45]: Delete, HRC believes that the proposed first five year enrollment procedure is inefficient and unnecessary because:

1. WQ Staff will be involved in the review of the THP
2. WQ Board has the ability to override a Cal Fire approval of a plan if so warranted
3. Already existing WDR provision that the Executive Officer can notify HRC in writing that a specific THP is not eligible for coverage.

See HRC letter for additional comments

CERTIFICATION

All reports required by this Monitoring and Reporting program or other information requested by the Regional Water Board determination of compliance shall be signed by a duly authorized representative of HRC. Any person signing a document under this requirement shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system

designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Any person failing to furnish technical or monitoring reports or falsifying any information therein is guilty of a misdemeanor, and may be subject to civil liability. (Water Code section 13268)

THE REGIONAL WATER BOARD HEREBY CERTIFIES that projects in compliance with the conditions of the Order above will comply with sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable provisions of State law, subject to the following additional terms and conditions:

1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.
2. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. Certification is conditioned upon total payment of any fee required under California Code of Regulations, title 23, section 3833, subdivision (b)(3). Annual Fee Schedules are detailed in the California Code of Regulation, title 23, section 2200.
4. Dischargers other than HRC may seek coverage under this Order for similar activities subject to public notice and approval by the Regional Water Board Executive Officer.
5. A Discharger seeking water quality certification coverage shall notify the Regional Water Board prior to commencement of the activity and submit information regarding the construction schedule and other relevant information, and appropriate fee. Work may not commence until the discharger is provided authorization by the Regional Water Board either

through coverage under this Order or through individual water quality certification.

6. The authorization of this certification for any General Water Quality Certification or dredge and fill activities expires five (5) years from the date the activity commences.
7. Upon completion of the project, Discharger shall provide notice of completion certifying that all the conditions and monitoring and reporting requirements of this Order have been met.
8. All Order requirements, standard conditions, general terms and provisions, and prohibitions are enforceable conditions of this General Water Quality Certification.
9. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state law. For purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification.
10. This General Water Quality Certification portion of the Order may be modified as needed by the Executive Officer of the Regional Water Board.

VI. Certification:

I, Matthias St. John, Executive Officer do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, North Coast Region, on March 10, 2016.

Matthias St. John
Executive Officer

LIST OF ATTACHMENTS

Attachment A - Map

Attachment B - *Elk River Sediment Technical Analysis* (Tetra Tech, 2015)

Attachment C - Master Sediment Reduction and Master Treatment Schedule

Attachment D - HRC's Report of Waste Discharge

Attachments

Draft