

## CAL FIRE Comments on the BOF WLPZ Feller Buncher Harvest White Paper

August 19, 2019

- 1) The draft white paper is a commendable work with obvious extensive effort. It follows the draft outline CAL FIRE commented on well.
- 2) The title appears as if it advocates WLPZ treatment before the document has a chance to outline impacts and benefits. The title should be framed in a more neutral manner (e.g., Impacts and Benefits of WLPZ Vegetation Treatments: Review of the Published Literature)
- 3) The document needs a short executive summary that stresses riparian management is appropriate in site-specific locations with required BMPs, along with appropriate CEQA analysis.
- 4) The size of the document could be shortened substantially if it was organized slightly differently. An organizational structure should be stepwise and hierarchical and should outline:
  - a) Processes and functions within riparian zones at various scales
    - i) Point scale – (e.g., infiltration)
    - ii) Stand/Hillslope scale (e.g., runoff, fire regime, etc.)
    - iii) Watershed scale
  - b) How treatments can affect process and function
  - c) Strategies that will reduce process and function alteration (e.g., BMPs)
- 5) There is no definition of “low ground pressure equipment” in the document. Is there a threshold that constitutes low pressure?
- 6) There is occasional use of imprecise technical language (e.g., “poor soil cover”).
- 7) It would be beneficial to list other ongoing California riparian study work besides Dr. York’s Blodgett Forest Research Station study to inform Board on WLPZ management (e.g., Green Diamond’s Ah Pah Creek Study, Green Diamond’s OSU PhD work, OSU Class II Large effectiveness study, etc.).
- 8) Some of the selected references are outdated (e.g., Burns 1972). Consider including Dwire et al. (2010), Dwire et al. 2016, Busse et al. (2014) for potential impacts from fuel treatments.
- 9) The Sidle (2004) citation used in the document regarding road/skid trail connectivity is from research conducted in a tropical forest in Malaysia. If research from a foreign country is going to be cited, research from the Australians (Croke, Mockler, Hairsine, etc.) should be included. There are greater similarities in climate (i.e., Mediterranean).
- 10) Expand the list of key BMPs listed in outline for paper (some are missing).
  - a) Canopy concerns on the south side of stream are greater than north side.
  - b) Limit use heavy equipment use to one pass where possible, enter WLPZ at a 90 degree angle.
  - c) Include Chris Zimny’s ASP Forest Practice Rule Preferred Management Practices in Flood Prone Areas (minimize turning of heavy equipment which would result in increased depth of ground surface depressions; use of

mechanized equipment which delimb harvested trees on pathway over which equipment would travel, use feller bunchers which do not drag/skid logs through the zone; heavy equipment limited to slopes less than 35%, etc.) (see 916.9).

- d) Avoid saturated soils that causes puddling.
  - e) Harvest on top of deep slash layers, if at all possible.
  - f) Identify higher risk soils (clay, clay loam soils) for compaction and elevate practices where needed.
  - g) Avoid harvesting on poorly drained soils.
  - h) Include large wood BMPs where appropriate (particularly in coastal streams with low wood loading and anadromous fish).
  - i) Include mastication BMPs.
- 11) The white paper is missing discussion on mastication and BMPs for mastication in WLPZs (see Busse et al. 2014). Discuss fire benefits of mastication.
  - 12) Include more discussion on the existing FPRs in place to address many of these concerns, including 916.9 site-specific riparian management. Treatments designed to reduce fire risk while improving riparian functions are stated as an appropriate class of proposals under Section V of the ASP rules. This should be highlighted and described in the document.
  - 13) A summary of VTAC and TAC findings, and the TAC Primers are missing for site-specific riparian management guidance. See Liquori et al. 2008, 2012.
  - 14) Consider including VTAC references for interior stands with high fuel loads: Murphy et al. 2007 (2007 Angora Fire), Stone et al. 2010, Kobziar and McBride 2006, North et al. 2009
  - 15) The concept of riparian zone wicking may be somewhat oversold, since it does not always occur (e.g., Loganbill 2013 MS thesis for 2009 Lockheed Fire). For 2012 Ponderosa Fire, high severity fire was not limited to riparian areas.
  - 16) Greater emphasis on regional differences should be included, with riparian management for catastrophic fire being more important for interior areas located in California. As stated in the 2012 VTAC document, areas outside the zone of coastal influence (coastal fog zone) is a greater problem (i.e., interior areas).
  - 17) Coastal forests with anadromous fishes may or may not benefit from WLPZ harvest, depending on many factors—elevated water temperatures (TMDL listed for temperature), zone of coastal influence (fog zone), etc. Include more discussion on where water temperature issues may require canopy to remain, particularly for 303(d) listed waterbodies for temperature (water temperature near biological thresholds).
  - 18) The document needs more discussion on large wood recruitment concepts (input mechanisms, and how that relates to riparian management approaches) (see Benda and Bigelow 2014). It would benefit from more discussion on the possible loss of wood in watercourse channels, and where possible loss of wood recruitment potential from the riparian zone is important. This has been a problem with riparian management in the past.

- 19) Expand the discussion on the benefits of site-specific riparian management for increased nutrient availability for primary productivity, and hence more salmonid production (ASP areas). Key on light-limited settings where temperature gains associated with canopy openings will not significantly affect water temperature.
- 20) Down the line, since any rule changes would likely be operational rule changes, they must apply only to plans run through the THP review process. We do not want them to apply to Exemption and Emergency Notices that don't have a CEQA review.
- 21) Include a brief statement on expected changes with climate change, and greater watershed impacts from high intensity wildfire. See Bladen 2018.
- 22) Page 6, third paragraph, 4<sup>th</sup> sentence – It's unclear if the reconstructed or current stands have lower torching and crowning indices.
- 23) Minor edits throughout document are needed.
- 24) Consider including photographs and figures/diagrams, similar to those in the VTAC document.

## References

- Benda, L. and P. Bigelow. 2014. On the patterns and processes of wood in northern California streams. *Geomorphology* 209: 79-97.
- Bladen, K.D. 2018. Rethinking wildfires and forest watersheds. *Science* 02 Mar 2018: Vol. 359, Issue 6379, pp. 1001-1002. DOI: 10.1126/science.aar8120
- Busse, M.D., KR. Hubbert, E.E.Y. Moghaddas. 2014. Fuel reduction practices and their effects on soil quality. Gen. Tech. Rep. PSW-GTR-241. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 156 p.
- Dwire, K.A.; Meyer, K.E.; Riegel, G.; Burton, T. 2016. Riparian fuel treatments in the western USA: Challenges and considerations. Gen. Tech. Rep. RMRS-GTR-352. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 156 p.
- Dwire, K.A.; Rhoades, C.C.; Young, M.K. 2010. Potential effects of fuel management activities in riparian areas. In: Elliot, W.J.; Miller, I.S.; Audin, L. eds. Cumulative watershed effects of fuel management in the western United States. Gen. Tech. Rep. RMRS-GTR-231. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 175–205.
- Kobziar, L.N. and J.R. McBride. 2006. Wildfire burn patterns and riparian vegetation response along two northern Sierra Nevada streams. *Forest Ecology and Management* 222: 254–265.
- Liquori, M., P. Cafferata, K. Boston, R. Gienger, and D. Hope. 2012. The VTAC committee: developing guidance for an alternative regulatory pathway to the Anadromous Salmonid Protection rules. Pp. 79-89 in: Standiford, R.B., Weller, T.J., Piirto, D.D.; Stuart, J.D, (Technical Coordinators) Proceedings of Coast Redwood Forests in a Changing California: A Symposium for Scientists and Managers. Gen.

Tech. Rep. PSW-GTR-238. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Liquori, M.K., D. Martin, L. Benda, R. Coats, and D. Ganz. 2008. Scientific literature review of forest management effects on riparian functions for anadromous salmonids. Final Report prepared for the California State Board of Forestry and Fire Protection. Sacramento, CA. 328 p.

Loganbill, A.W. 2013. Post-fire response of Little Creek watershed: evaluation of change in sediment production and suspended sediment transport. M.S. Thesis. Cal Poly State University, San Luis Obispo, CA. 132 p.

Murphy, K., T. Rich, and T. Sexton. 2007. An assessment of fuel treatment effects on fire behavior, suppression effectiveness, and structure ignition on the Angora Fire. USDA Forest Service R5-TP-025. Vallejo, CA. 32 p.

North, M., P. Stine, K. O'Hara, W. Zielinski, and S. Stephens. 2009. An ecosystem management strategy for Sierran mixed-conifer forests. Gen. Tech. Rep. PSW-GTR-220. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 49 p.

Sidle, R. C., Sasaki, S., Otsuki, M., Noguchi, S., and Abdul Rahim, N. 2004. Sediment pathways in a tropical forest: Effects of logging roads and skid trails. *Hydrological Processes*, 18, 703–720. <https://doi.org/10.1002/hyp.1364>

Stone, K.R., D.S. Pilliod, K.A. Dwire, C.C. Rhoades, S.P. Wollarb, and M.K. Young. 2010. Fuel reduction management practices in riparian areas of the western USA. *Environmental Management* 46: 91–100.

VTAC. 2012. Site-specific riparian zone management: Section V guidance. Final report prepared by the Anadromous Salmonid Protection Rule Section V Technical Advisory Committee (VTAC). California Department of Forestry and Fire Protection. Sacramento, CA. 171 p.