Hydrology Best Management Practices (BMPs) for Fuel Reduction Projects

-Ground cover is considered anything that is not bare soil i.e. gravel, plants, organic matter.

-For the purposes of this document, chainsaws are considered hand tools.

-Riparian Reserves are specified as channels or drainages where riparian vegetation exists (e.g., sedges, willows, rushes, etc.), perennial water may be present or the channel shows signs of annual scour or waterflow.

Burning

1. Retain 40 percent ground cover after the burn with recruitment to 60 percent ground cover before the first rainy season following the burn.
2. Do not reduce perennial and intermittent channel shading more than 10 percent of the natural range of variability or by an amount that will take more than three years to recover, whichever is smaller.
3. Neither "burn" nor "feeder" piles will be made in any channel or swale as defined by the flood prone width of the feature (typically the width achieved when bank full depth is doubled). Please consult the district/forest hydrologist for an explanation or flagging of these areas.
4. Burned piles within riparian reserves will be left "messy" in order to retain sediment on site. Please consult the District/Forest Hydrologist for an explanation or flagging of these areas.
5. Ignitions will not occur within 15 feet of riparian reserves.
6. Any firelines created during burning operations would follow the The Five-D System for Effective Fireline Waterbars (Hauge et al., 1979).
7. Firelines that need to cross a riparian reserve would do so perpendicular to the channel and would not have more than 40 feet of hydrologic connectivity, total of 20 feet per side.
8. Cupped fire lines would have water gaps every 20 feet to allow captured water to exit.
9. Existing disturbance areas, such as roads and trails, would be used to the extent possible as fire lines both within the riparian reserves and outside of the riparian reserves.

Mechanical Treatments

1. Retain a minimum of 60 percent ground cover or pre-treatment level ground cover (if less than 60 percent) over the treatment area as measured by the line point intercept method.
2. Mechanical equipment would not cross live streams or those channels supporting riparian vegetation except at designated crossing sites that are agreed to by the District/Forest Hydrologist. Every effort to use existing crossings would be made.
3. Crossings would be as close to perpendicular to the channel as possible to limit the area of disturbance.
4. Hydrologic connectivity of crossings would be limited to 20 feet on either side of the stream course (40 feet total).

5. Any sediment or debris pushed into the channel to facilitate a crossing would be removed prior to seasonal rains beginning or October 15th whichever is earlier. The disturbed area would be rehabilitated to reduce erosion within the channel. This could include adding mulch, slash or debris from the project area to reduce flow and erosion potential.
6. Mechanical treatments would occur on the contour as much as feasibly possible.
7. Mechanical equipment would be limited to areas where slopes are less than 35 percent. Stretches of 100 feet or less on slopes of up to 40 percent may be treated to achieve unit objectives.
8. Mechanical equipment would not operate when the soil exceeds 15 percent moisture content, or when equipment is creating ruts deeper than seven inches in muddy soil. The District/Forest Hydrologist or Soil Scientist would be consulted to determine if soil moisture is low enough to operate or to flag wet areas as needed.

All Treatments

1. No sediment or slash will be introduced to the stream channels. All inadvertently introduced material will be removed except where it would cause more damage to retrieve it than will occur due to its remaining.
2. No road may be used, without repair, for a project if the use would cause the condition of the road to deteriorate (i.e., a road with a failing fill where the mobilization of project vehicles across the fill could cause additional fill to slump away, a perpetually wet area due to an adjacent seep). The District/Forest Hydrologist or Engineer would be consulted to determine if the road is usable or what improvements are needed.
3. Project caused damage to roads and their drainage features would be repaired before the next rain (30 percent or greater chance of precipitation) or the onset of winter, whichever is sooner.
4. Refueling of drip torches and other equipment would not occur within riparian reserves.
5. All USFS activities would follow FSH 2509.22 for wet weather winter operations.

References:

Hauge, C.J., M.J. Furniss and F.D. Euphrat. 1979. *Soil Erosion in California's Coast Forest District.* California Geology, June: 120-129.