Greg, below are a few issues that we’ve identified as problematic in terms of fish passage on forest land. We’ve included suggested changes in the rule that could help address these and find workable solutions. These are unique to our work, and the solutions will allow forest landowners to continue to improve fish passage across our ownerships. Please introduce these to the RAC members working on fish passage. To the extent that there may be questions with any of these, we would be happy to make a forest engineer available for a future RAC meeting. Thank you.

Fish Passage on Forest Land
Issues and suggested corrections:

1. Issue: Bed material must be mechanically placed during installation of a stream simulation culvert.
   a. Citation: 612-412-0035 (3)(a)(A)(v)(IV) (Line 516)
   b. Stream simulation culverts installed in the woods are often small, and impractical (if not impossible) to fill by machine. This requirement would force the filling of the pipe to be done by hand which would be difficult and perhaps dangerous.
   c. Suggested change to ruled: Allow pipes to seed naturally over the first 1-2 winters with a monitoring requirement to allow for the fill material to be native to the stream. Agree to mechanically seed pipes that have failed to naturally seed after the 2\textsuperscript{nd} winter. Agree to seed pipes with a slope greater than 8%.
      i. Fallback could be 7 ft height limit (finished simulation streambed to top of pipe) for seeding as a way of introducing a human safety element into the discussion (7 feet allows for workers and tools to safely enter the pipe).

2. Issue: Pipes over 40 feet in length must have over-sized rock placed and buried.
   a. Citation: 612-412-0035 (3)(a)(A)(v)(III) (Line 515)
   b. Similar to the issue above, this requirement is often impractical due to the small diameter of the culvert, and perhaps even more dangerous to workers asking them to move heavy rocks by hand while bent over in a small culvert. This quickly becomes a worker safety issue. Additionally it is unnecessary if the slope of the pipe is low as bed material does not readily wash out of the structure.
   c. Suggested change to ruled: Change rule to pipes over 60 feet in length. Alternatively, a gradient limit (above 8% could be used), as low gradient streams have less energy for moving material and should not require large rocks to hold material in pipe.
      i. Again, fallback may be to introduce human safety element with 7 feet height threshold.

3. Issue: The slope of stream simulation culverts must match the slope of the stream as determined by the long profile
   a. Citation: 612-412-0035 (3)(a)(A)(ii) (Line 506)
b. Not a great solution for all streams.
c. Suggested change to ruled: Allow pipes in low-gradient streams (max 2%) to be installed at 0%, as long as full bank width is met/exceeded at both inlet and outlet.

4. Issue: All construction sites must be isolated from flow and fish
   a. Citation: 612-412-0035 (10)(d) (Line 632)
   b. Explanation: Forest installations may often be installed quickly. The fill is excavated to the pipe without any in-water work, or disturbance to the stream. Then the old pipe is removed, the bed regraded, and the new pipe installed quickly. Isolating the worksite with dams, which will then need to be removed, can be more disturbing to the stream than quickly installing the new pipe.
   c. Need to Maintain: Ability to use constructed sumps and utilize local material to intercept flow and redirect around construction site.
   d. Suggested change to ruled: Allow for quick installations to forego dewatering. This may be achieved through a time limit. For example, dewatering is only necessary when in-water work exceeds five hours.

5. Issue: Fish exclusion must be done by an “authorized person with a collection permit”
   a. Citation: 612-412-0035 (10)(e) (Line 633)
   b. Explanation: It is presumed that this requirement mandates the presence of a biologist with a permit for every installation. Due to the nature and remoteness of forest work, in addition to all the scheduling difficulties attendant to construction work, this is impractical. As above, the construction work is typically quick.
   c. Suggested change to ruled: Allow for operator to push fish out of construction site via seine – thereby avoiding the handling issue.
      i. Fallback: Operator must attend a certification training (Max ½ day, one time training) by ODFW on proper de-fishing to be allowed to exclude fish from site.

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