

2012 Nadina District FREP Summary: Water Quality

Water quality assessments measure the effectiveness of forest practices at preventing sedimentation and erosion. Water quality assessments are designed to determine if forestry is impacting: (1) stream channel morphology through sediment delivery or (2) sedimentation and turbidity that could affect drinking water.

Water quality data analysis is based on the year when a road system is evaluated. Fine sediment is generated from bare soil where it can be transported to connected streams, lakes and wetlands. The amount of potential sediment generated depends on many factors, including road construction and maintenance, amount of exposed soil, and soil texture and type. Some of these factors can change over time or with specific ongoing activities (eg. road maintenance), and therefore the evaluation year is used as the primary evaluation date.

This report summarizes key findings and provides recommendations to improve on-the-ground resource management practices and decision making.

Key Findings:

- **153** Water quality impact ratings were conducted at crossings between 2008 - 2011. **16%** of these were classified as “very low” ($<0.2\text{m}^3$) in terms of fine sediment delivery, **32%** as “low” (0.2m^3 to 1m^3); **41%** as “moderate” (1m^3 to 5m^3); **10%** as “high” (5m^3 to 20m^3) and **1%** as “very high” ($>20\text{m}^3$).
- **20** sampling areas were surveyed for impacts to water quality; **3%** of cutblocks surveyed had harvesting adjacent to a stream.
- There are no distinct trends (as shown in Figure 1) for sediment generating potential by evaluation year, although the very low ranking has decreased by 2012, with the low and moderate ranking increasing overall.



Recommendations for Continued Improvement of Water Quality Management:

- Armouring, seeding and protecting bare soil immediately after construction or deactivation.
- Reducing water build-up and erosive potential by shunting water off roads and into the understorey, which filters suspended sediment, with the use of cross-ditches, kick-outs, shorter ditch lines, natural dips, swales or grades.
- Avoid long gradients approaching streams.
- Increasing the use of strategically placed culverts and road sloping for:
 - Capturing/collecting intercepted groundwater and channelling it to the other side of the road so that it can be reabsorbed into the forest floor.
 - Collecting ditchline and road surface water and shunting it across a road (by in-sloping/out-sloping a road, and (or) with a ditch block and a culvert) where it can be absorbed/filtered into the ground to prevent it from entering a stream.
- Avoiding ditch lines ending at creeks.
- Following well-established best management practices concerning fine delivery to streams and stream crossings (see *Forest Road Engineering Guidebook*; *Erosion and Sediment Control Practices for Forest Roads and Stream Crossings*; and the *Fish-stream Crossing Guidebook*).



Figure 1. Water quality monitoring results showing sediment generation potential classes by evaluation year

