



## **Logging in the Deroche Creek Community Watershed**

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*Complaint Investigation 100969*

**FPB/IRC/176**

July 2011



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# Introduction

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In August 2010, the Board received a complaint about logging by Tamihi Logging Co. Ltd. in the Deroche Community Watershed, approximately 15 kilometres east of Mission, BC. The complainant was concerned about the impact Tamihi's operations were having on water quality in the area. The complainant was also concerned that the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO)<sup>1</sup> was not adequately overseeing the operation.

In December 2008, an initial public meeting to view an amendment to the licensees' forest stewardship plan (FSP) was held in the community of Deroche. The amendment was to include the Deroche Creek watershed in the FSP. A second public meeting to view the logging plans was held in January 2010. However, despite these meetings, the complainant said that he and some others in the community were not aware of the licensee's plans to harvest, and that they were surprised when activity started. Road construction began in the watershed in the spring of 2010, and shortly thereafter, while walking in the watershed to look at the operations, the complainant observed what he believed to be drainage issues and a fluid spill. The complainant contacted the Chilliwack Forest District office with his concerns in May, at which point the district manager arranged for a field trip so compliance and enforcement staff, along with both the complainant and the licensee, could discuss operations in the area. However, remaining concerned—and wanting improvement in the quality of practices in the watershed—the complainant then contacted the Board.

## Background

The community of Deroche is located in the Fraser Valley. Deroche Creek originates in the mountains north of Deroche and flows through relatively steep terrain before reaching the Fraser River floodplain, eventually emptying into the Fraser River. According to a 2009 watershed assessment report,<sup>2</sup> conducted to determine the impacts of proposed harvesting and road-building, Deroche Creek is an S2 fish-bearing stream, with lower reaches containing salmonid species, such as chum, coho and cutthroat trout, as well as other fish, including stickleback and sculpin.



**Photo 1.** View of watershed above the community of Deroche.

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<sup>1</sup> Formerly the Ministry of Forests and Range.

<sup>2</sup> Madrone Environmental Services Ltd. August 2009. Watershed Assessment Deroche Creek Community Watershed.

Deroche Creek was given community watershed status in 1995, though the town currently uses a well system for water and not Deroche Creek itself. However, there are two other water licences for consumptive use on the creek.

Due to repeated harvesting in the area, the watershed has a history of problems related to terrain instability. Several logging operations, active between approximately 20 and 50 years ago, have left a legacy of old roads that have contributed to drainage problems and numerous landslides. A study of debris flooding conducted in 2000<sup>3</sup> noted half-a-dozen significant floods that occurred at Deroche Creek between 1962 and 1990.

Both the 2000 debris flow study and the 2009 watershed assessment concluded that poorly constructed, old logging roads were the main cause of past landslides, and were likely contributing to sedimentation of Deroche Creek. The 2000 report recommended deactivation of all existing roads to stabilize the upper watershed. The 2009 watershed assessment report further added that effective water management on any new roads is the best way to reduce sediment potential and debris flood hazard.

Increased flood risk from the new operation is a concern for the complainant. The assessment found that the peak flow hazard, due to roads, was already high with the existing old road density and would remain high with the additional one kilometre of new road planned. The peak flow hazard was low, due to proposed harvesting. The report noted that the new harvesting operation could reduce the overall hydrologic hazard through reconstruction of portions of the old roads and improved access to deactivate other portions of the old road.

## Discussion

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When the *Forest and Range Practices Act* (FRPA) came into effect in 2004, it established broad objectives for resource values, to be addressed during forest operations. Generally, the protections for drinking water apply in watersheds where holders have licences for consumptive water use. Most of the protections apply to designated community watersheds with the intent to reduce the potential for impacts from forestry activities.

FRPA contains specific objectives for community watersheds. Section 8.2.2 of the *Forest Planning and Practices Regulation* (FPPR) states that “the objective...for water being diverted for human consumption through a licensed waterworks in a community watershed is to prevent...the cumulative hydrological effects of primary forest activities<sup>4</sup> within the community watershed from resulting in a material adverse impact on the quantity or the timing of the flow of water from the waterworks; or the water from the waterworks having a material adverse impact on human health that cannot be addressed by water treatment...”

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<sup>3</sup> EBA Engineering Consultants Ltd. Feb. 2000. Deroche Creek Debris Flow and Debris Flood Study.

<sup>4</sup> Timber harvesting; silviculture treatments; and, road construction, maintenance and deactivation.

Further, section 59 of FPPR requires that forest activity not cause material harmful to human health to be transported to water being used for human consumption. While turbid water itself is not necessarily harmful to humans, it may contain microorganisms that are. Health Canada recommends using filtering mechanisms when diverting surface water as a way to reduce turbidity to the lowest level possible.<sup>5</sup>

And finally, specific to fish, section 57 of FPPR says that an authorized person conducting a primary forest activity must do so at a time and in a manner unlikely to harm fish or fish habitat. Additional requirements are discussed later in this report.

## Field Trip

On September 16, 2010, the complainant, licensee staff, MFLNRO staff and a Board investigator met at the site to discuss the operations and examine two locations along a newly built access road. In the first location, hydraulic fluid had leaked from machinery near an active cutblock and the complainant was concerned about cleanup, the potential for health issues if the fluid reached Deroche Creek and that the use of old equipment had caused the leak.

During this part of the investigation, the investigator found that the licensee had already removed the contaminated soil from the site. The licensee said that the spill was less than 100 litres in volume, which is the threshold above which reporting is required by the *Spill Reporting Regulation* of the *Environmental Management Act*. Observation on site indicated that the spill was localized and there was no evidence that fluid had moved to a water source.



**Photo 2.** Location of new culvert.

At the second location, the complainant was concerned that he had seen no culvert in a section of the newly built road and felt a culvert was needed. This concern relates to section 39 of FPPR, which requires that a person constructing a road or a temporary or permanent access structure must, “maintain natural surface drainage patterns on the area both during and after construction.” The investigator found that the licensee had since installed a culvert at the location.



**Photo 3.** Upslope end of culvert.

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<sup>5</sup> Guidelines for Canadian Drinking Water Quality: Supporting Documentation – Turbidity.  
<http://www.hc-sc.gc.ca/ewhsemt/pubs/water-eau/turbidity/index-eng.php>

In the Board's opinion, the two specific issues discussed on the field trip had been addressed. However, the complainant remained concerned about ongoing potential impacts to the watershed and was interested in ensuring that good practices are used. The investigation then considered ministry oversight and enforcement.

## **Ministry Oversight and Adequacy of Enforcement**

In the complainant's view, MFLNRO did not provide adequate oversight of the licensee's road-building and harvesting procedures. The ministry is responsible for monitoring compliance and implementing enforcement actions when it determines this to be necessary. The goal of enforcement actions is to promote compliance.

To monitor forestry operations, MFLNRO uses a 'priority' system, assigning a risk rating to each project undertaken by a licensee, such as building a road or harvesting in a cutblock. This risk assessment tool is used to determine whether or not the ministry will subsequently do a field inspection, and the frequency of such inspections. In this case, district staff considered several values when doing their risk assessment, including the sensitivity of the watershed, and assigned a very high risk rating to the operations.

Under the FRPA model, government generally provides less direction and monitoring before and during operations than it did with the past. District staff explained that the first ministry inspection is normally done only after the harvest phase is completed. However, in this case, the district manager was on-site with the licensee in April (in conjunction with a visit to another operation), shortly before the complainant's initial May 2010 contact with the ministry. During that first visit, the district manager noted few culverts in the road and advised the licensee to install culverts during road construction.

In response to the complainant's concerns, the district manager asked compliance and enforcement (C&E) staff to inspect the site again. Some drainage issues were noted and subsequent follow-up inspections occurred. Altogether, between the district manager's first visit in April 2010 and October 12, 2010, the ministry was on site nine times, including the Board field trip in September.<sup>6</sup> While most of these visits were by C&E staff, the district manager attended a second field visit to the site, with both the complainant and the licensee, to examine the drainage and oil spill issues. The Board has subsequently been advised that, following major rain events, C&E staff have been visiting the site regularly since October 2010, continuing into March 2011.

At this time, there are no enforcement actions underway, though ministry staff had issued six notices to the licensee advising of potential non-compliance, primarily related to drainage. All but one of these notices has been addressed by the licensee; the exception is for a site outside of the community watershed where an original appraisal indicated that a culvert would be installed. The licensee decided that the culvert was not necessary, and so did not install it.

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<sup>6</sup> May 19, 28, June 30, August 19, September 13, 16, 22 and October 12.



## Finding

In the Board's view, the level of ministry oversight of the operations at Deroche Creek was appropriate and exceeded what is normally expected in such situations.

## Remaining Issues – Sediment Control During Operations

As noted earlier, the licensee is required to maintain drainage patterns.

In the fall of 2010, C&E staff asked a ministry geoscientist to assess part of the road construction within the watershed and consider erosion hazards, which was done with district staff and the licensee in attendance. The geoscientist noted some erosion hazard concerns, and, in particular, commented on glaciofluvial sediments seen in parts of the road cutslope that contained silt, presenting a potential hazard to drinking water quality. Of concern were two sites where the road crossed two small tributary streams to Deroche Creek.

The geoscientist provided some options for the licensee to consider in order to reduce the potential for sediment getting into Deroche Creek, one of which was to install culverts on the road above the two tributary streams to divert drainage from the ditches onto vegetated areas before the sediment could enter the streams. The licensee initially addressed this by placing hay bales into the ditches to slow water and catch sediment, rather than by diverting the ditch flow. However, later, during winter when the road was temporarily deactivated, open cross ditches were cut into the road surface to divert water from the ditchline.



**Photo 4.** Hay bales in ditch leading to feeder creek during winter deactivation.

As well, in response to another concern from the geoscientist that the log culvert may not have the capacity to handle peak flows, the licensee also took the surface structure off of a log culvert at one of the stream crossings to increase flow capacity during the heavier rain periods of the winter months while the road was inactive.

Board staff revisited the watershed in March 2011, and viewed the sediment control activities associated with the winter road deactivation. The licensee had placed several hay bales within the ditch and the tributary stream to control sediment. Hay bales are intended to function as check dams to slow the velocity of water within a ditch, allowing sediment to drop out of suspension. However, to be effective, check dams need to be embedded in the ground, must span the entire width of the ditch, and must be monitored regularly.

During the March site visit, Board staff observed that not all the hay bales were functioning as intended because they were not embedded and did not span the width of the ditch, which allowed water and sediment to get around them. The licensee advised the Board, and provided evidence, that it is replacing old hay bales with new ones.



**Photo 5.** Opened log culvert where feeder creek crosses road deactivation.



**Photo 6.** Water getting around hay bale.

## Continuing Work and Improvements

In late March 2011, the licensee reactivated the road and dry-seeded the road cut and fill to stabilize the surfaces. The cross ditches were filled in and a new metal culvert was placed above the creek (shown in photo 4), at the location suggested by the geoscientist. With a ditch block in place, this is expected to divert flow from the ditch line onto a stable slope and prevent sediment from the ditch and cutslope above the culvert from entering the feeder stream.

The licensee covered the log culvert again (shown in photo 5) and excavated a sump at the entrance to the culvert, within the tributary stream, to trap sediment and increase the flow capacity for entrance of the culvert. Geotextile material has been placed at the entrance of the culvert to trap sediment. In the Board's view, relying on geotextile material for this purpose is

not effective. A recent information bulletin on sediment control recommends against using this material directly as a filter in water.<sup>7</sup>

## Road Deactivation and Long-Term Erosion Control

The long term management of sediment in Deroche Creek remains an issue. After forest operations (harvesting and silviculture) are completed, roads are to be maintained to a wilderness road standard or deactivated to a natural stable condition. Section 82 of the FPPR requires that, during deactivation, operators must stabilize the road prism and clearing width to reduce the likelihood of any material adverse effects on resource values such as soils, water and fish, as outlined in section 149(1) of FRPA.

The licensee has advised that active operations in the watershed may continue through 2013, with temporary deactivation occurring each fall. It will have a specialist develop a deactivation plan to manage sediment.

The Board notes that the steep cutslopes containing glacial fluvial sediments (photo 7) will likely continue to erode and fill in the ditch with sediment and silt, and this will need to be considered in the deactivation plan.

MFLNRO is currently considering plans to deactivate old roads in the watershed, not under the licensee's responsibility. This work will be subject to available funding.



**Photo 7.** Cutslope above tributary creek in photo 6.

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<sup>7</sup> FPInnovations. April 2010. Water Crossing and Erosions Control. Number 18.

## Conclusion

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The key water issue with this watershed—control of drainage related to roads and logging—was identified early, in the 2000 debris flow report. Unstable old logging roads have caused sediment problems due to inadequate drainage management.

The initial site-specific issues looked at during the field assessment were addressed. The licensee removed the identified contaminated soil from the spill and installed a culvert at the location indicated by the complainant, before the Board investigation was conducted.

As well, the Board found that MFLNRO is actively monitoring operations in the watershed and making recommendations to the licensee. In the Board's view, the level of monitoring is appropriate and has exceeded what is expected under FRPA. This higher level of oversight is largely due to the district recognizing the values and sensitivity of the watershed.

In response to comments from both the complainant and MFLNRO about improving drainage control, the licensee has taken some action, including recently installing a new metal culvert above one tributary stream, which should divert ditch flow and sediment from it. However, the Board remains concerned about the reliance on hay bales for filtering sediment, which require proper placement and a commitment to regular monitoring and maintenance.

It is appropriate to emphasize that this is a community watershed and the public expects a high level of attention to minimizing impacts to water resources. The ministry's actions highlight the high level of risk in this watershed and make clear a need for continuing improvements, including the use of additional culverts and more effective sediment control measures. The responsibility for addressing potential adverse impacts to water users lies with the licensee, who, in building and maintaining logging roads, must ensure an adequate drainage pattern.