

# **Road Sediment Entering Fish Streams: Learning from the Little Lamb Creek Experience**

**Special Investigation 2005-03**



**FPB/SIR/18**

**June 2007**

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# Introduction

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A recent Forest Practices Board audit<sup>1</sup> found that road building and upgrading by a Timber Sale License holder (the TSL holder) had, or had the potential to, adversely affect fish streams in the Lamb Creek area of the Rocky Mountain Forest District. British Columbia Timber Sales' (BCTS) attempt to repair damage from the TSL holder's roadwork was well-intentioned but only partly successful.

Compliance and Enforcement (C&E) district staff of the Ministry of Forests and Range (MOFR) investigated and found that road drainage systems were inadequate, and sediment from roadwork had entered a fish-bearing stream. The district manager determined the TSL holder contravened the *Forest Practices Code of British Columbia Act*<sup>2</sup> and imposed a penalty of \$5,000.

This report further investigates the roadwork in the Lamb Creek area, focusing on the following issues that were outside the scope of previous Board and MOFR work:

- selection of an appropriate road location
- status and permitting of the road
- adequacy of monitoring of road practices, and
- coordination between BCTS and C&E.

The purpose of the Board's investigation is to reduce the risk of similar future outcomes, either here or elsewhere in the province by learning from the Lamb Creek experience. The Board's authority to conduct this investigation is provided by section 122 of the *Forest and Range Practices Act*.

## Background

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The Little Lamb Creek road likely originated as a mining road, which parallels a fish-bearing stream. The road is within the stream's riparian reserve zone for most of its length and encroaches on the stream channel in places. MOFR (previously the Ministry of Forests) used the road at times during the last 60 years for firefighting and timber extraction. In 2003, the Protection Branch of MOFR used the road to fight a forest fire in an area that includes Lamb Creek, Little Lamb Creek and Gold Hill Creek. Protection Branch staff subsequently deactivated the road, but left exposed sediment sources and water bars that emptied directly into the creek.<sup>3</sup>

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<sup>1</sup> Forestry Audit: BC Timber Sales Program, Rocky Mountain Forest District, April 2006

<sup>2</sup> Notice of Determination for DRM-24229, August 15, 2006

<sup>3</sup> *ibid*

In 2004, BCTS planned cutblocks and access roads to salvage fire-damaged timber and awarded harvesting rights under timber sale license (TSL) A69888. MOFR authorized the TSL holder to do roadwork under road permit R14267, including:

- reopening a 1.1 kilometre section of road near Gold Hill Creek (the Gold Hill spur road) to access Cutblock 22;
- constructing a 0.5 kilometre road within Cutblock 18, and
- building a new 0.6 kilometre “mid-slope” road, upslope and parallel to the Little Lamb Creek road, to provide access to cutblocks 18 and 20.

BCTS felt that a new mid-slope road would present a lower risk to Little Lamb Creek than reactivating the existing road in the riparian reserve zone.

BCTS reviewed the licence requirements with the TSL holder on May 11, 2004. Soon thereafter, the TSL holder started logging. A member of the public complained to C&E about the TSL holder’s work on the Gold Hill spur road and Cutblock 22. C&E and BCTS jointly inspected and observed eroded ditchlines, water running down the road surface, and an area strewn with refuse and equipment parts. C&E verbally instructed the TSL holder to fix the drainage issues.

To gain access to cutblocks 18 and 22, the TSL holder preferred reactivating Section 2 of the Little Lamb Creek road as a less costly alternative to building the mid-slope road recommended by BCTS. Ministry of Environment (MOE) staff field-reviewed the Little Lamb Creek road at the request of the TSL holder. MOE concluded that using the Little Lamb Creek Road for a few months, and then deactivating it to a higher standard, would present a lower risk to the creek than building a mid-slope road, providing the TSL holder took appropriate measures to minimize potential sedimentation.

In August 2004, the TSL holder requested the district manager’s permission to upgrade and use Section 2 of the Little Lamb Creek road. It stated that all harvesting and hauling would be completed by September 1, 2004, weather conditions permitting. It proposed the following mitigation measures:

- placing cross ditches in locations where significant vegetation occurred between the existing road and the stream;
- upgrading the road in a manner that ensured that water quality in the stream would not be negatively affected;
- placing log cribbing to ensure that material would not enter the watercourse; and
- putting other erosion control measures in place.

The district manager approved the roadwork in a letter to the TSL holder, conditional on the TSL holder implementing the proposed mitigation measures. However, the district manager did not issue a permit for the roadwork, believing that one had already been issued.

On May 5, 2005, the Board notified BCTS that it would be auditing forest planning and practices of BCTS and TSL holders in the district. In preparing for the audit, BCTS reviewed operations in

the Lamb Creek area on May 31. It observed plugged ditchlines, materials from the road eroding into the creek and fill materials pushed into the creek.<sup>4</sup> To prevent more sediment from entering the fish stream, BCTS immediately contracted an excavator to clean ditches, construct cross-drains and stabilize fill slopes. BCTS did not take photos or inform C&E of the potential contraventions or its remediation work.

Board auditors inspected the TSL holder's operations on June 15 and 16, 2005, and found problems on all three roads. The Gold Hill spur road had no cross drains or waterbars, the ditch dissipated water in only two locations, and material from the lower 400 meters of the road surface and ditch had eroded into Gold Hill Creek. The new road in Cutblock 18 lacked functioning ditches, cross ditches drained onto erodable fill slopes, and waste material stacked in oversteepened piles along the roadway was eroding. The upgraded portion of the Little Lamb Creek road had unstable cutslopes; plugged ditchlines; eroded road surfaces, cutslopes and fill slopes; and rutted road surfaces. The TSL holder had not implemented any of the proposed measures to reduce sediment delivery to Little Lamb Creek as required by the district manager's approval.

Auditors also observed problems related to BCTS's remediation work on the Little Lamb Creek road. BCTS had placed rocks to stabilize sections of fill slope. However, some of the BCTS cross ditches drained directly into the creek, potentially accelerating sediment delivery. Also, excavated materials placed on the creek side of the road were eroding into Little Lamb Creek.

On June 17, BCTS informed C&E of the problems associated with the TSL holder's operations, its own remediation work and the Board auditors' observations. BCTS and C&E staff jointly reviewed the TSL holder's road work on July 14 and documented the alleged non-compliances for a pending investigation.<sup>5</sup> C&E noted the mid-slope road location would have been a reasonable alternative compared with the problems evident with the upgrade of existing Little Lamb Creek road.

The Board released its audit report in April 2006. It found that planning and practices undertaken by BCTS and its timber sale license holders complied with legislative requirements in all significant respects, except for road work in the Lamb Creek area. The Board found that eroded materials from all three roads had entered fish streams. Furthermore, continued sediment transportation into the fish streams was likely, given the exposed fine-textured soils and improperly functioning drainage systems. The Board also found that BCTS's remediation works were well intended, but not sufficiently effective in minimizing sediment delivery into the stream.

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<sup>4</sup> Incident Description DRM-24229, Compliance and Enforcement Branch.

<sup>5</sup> Road Inspection Report 1D:110379

C&E completed its investigation in April 2006. The district manager determined the TSL holder had failed to ensure that the road drainage system intercepted surface drainage, controlled ditch erosion, and minimized sediment entering fish streams.<sup>6</sup>

BCTS has subsequently developed and implemented a full deactivation plan for the upgraded section of the Little Lamb Creek road and the new road in Cutblock 18.

## Issues Investigated

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### 1. Selection of an Appropriate Road Location

#### *Discussion:*

The Board considered whether the decision to upgrade and use the Little Lamb Creek road was, in retrospect, a sound one. Did the mid-slope road proposed by BCTS present a better option?

Participants of this investigation disagree regarding which road option was “best”. They supported their preferred choices with valid considerations including: proximity of the existing road to the fish stream, the opportunity to deactivate the Little Lamb Creek road to a higher standard and limiting new road construction upslope of the creek. Deciding on a “best” location is a matter of professional opinion, and more than one option may be suitable. The Board’s view is that, in specific situations, it can make more sense to re-open “old” roads that are within riparian reserve zones than to build new roads, providing that additional measures are taken to minimize the impact of activities on the stream.

In this case, the TSL holder proposed extensive measures to minimize impact of roadwork on the stream, but did not implement those measures. Furthermore, the TSL holder operated outside of the specified seasonal window. Damage to the environment resulted from the failure to implement adequate measures to minimize impact of road activities on the stream, rather than from the decision to use the existing Little Lamb Creek road.

#### *Conclusion:*

The Board did not decide on which road location was “best”, since either option was valid, provided it was executed with sufficient safeguards to prevent erosion. The choice of opening the “old” road within the riparian reserve zone was reasonable, providing that appropriate measures were taken to minimize sediment delivery into the stream. The TSL holder committed to, but did not implement, proposed measures to minimize the impact of roadwork on Little

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<sup>6</sup> Notice of Determination for DRM-24229, August 15, 2006

Lamb Creek. A higher standard of care was needed when operating on the pre-existing road in a riparian reserve zone.

## **2. Status and Permitting of the Road**

### *Discussion:*

A person who constructs or modifies a road on Crown land requires a district manager's or timber sale manager's authorization under a road permit. A road permit is typically preceded with requirements to identify the road in a forest development plan made available for public review. For an existing Forest Service Road, a district manager can authorize use under a road use permit.

The district manager believed that the Little Lamb Creek road was a Forest Service Road, as erroneously indicated in the Ministry's database for tracking roads, and so intended to approve work under a road use permit. However, a road permit was required, given that the road was no longer a Forest Service Road (it was a non-status road). The district manager approved the roadwork in a letter to the TSL holder, but neither the district manager nor BCTS issued a road permit authorizing the work, or amended BCTS's forest development plan to include the road.

### *Conclusion:*

Due to confusion about the status of the Little Lamb Creek road, neither the district manager nor BCTS issued a road permit or amended the forest development plan as required.

## **3. Adequacy of monitoring road practices**

### *Discussion:*

Both C&E and BCTS monitor licensee activities through field inspections, albeit for different purposes. A key purpose of inspections is to avert non-compliance before it occurs. BCTS monitors to ensure that timber sale license (TSL) holders conform to their contractual obligations for safety, slash disposal, road deactivation, orderly and sanitary conditions, and other commitments contained in the timber sale licence. C&E monitors statutory obligations (i.e. compliance with the *Forest Act* and *Forest and Range Practices Act*) for activities like timber harvesting and road building and maintenance. The two programs act cooperatively but independently to deliver on their respective mandates.<sup>7</sup>

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<sup>7</sup> C&E and BCTS Roles and Responsibilities—Reporting Non-Compliance and Sharing Information, C&E Advisory Bulletin, March 2006.

C&E has standardized inspection procedures to assess forest activities.<sup>8</sup> These procedures include assessing risk-based factors such as past performance of the TSL holder, the type of forestry activity, and the presence of resource features such as riparian areas/fish and wildlife habitat. Risk ratings are then used to develop a district inspection plan, which sets site inspection priorities for the district by each type of activity and risk. Essentially, a higher risk activity is a higher inspection priority. Risk assessments are normally done when road permits are approved and TSLs awarded.

While C&E had inspection procedures in place, it did not risk-rate the roads or cutblocks when TSL A69888 and road permit R14207 were awarded or when work to Little Lamb Creek road was approved. It did not determine whether inspections were warranted or develop a plan of inspections to detect potential non-compliances.

Instead, C&E completed inspections only in response to concerns identified by the public and the Board. When C&E identified issues on the Gold Hill spur road in response to the public concern, it still did not assess risk or develop and implement a plan of follow-up inspections. Furthermore, it did not take any steps to ensure the TSL holder implemented the conditions imposed by the district manager to reduce the risk of sediment delivery to the stream. While C&E responded to the Board's observations by initiating a comprehensive investigation of the TSL holder's road building practices, by that time substantial sediment delivery to the stream and potential damage had already occurred.

BCTS monitoring activities were limited to a pre-work conference with the TSL holder and, after concerns were identified by a member of the public, participation in the review of work on the Gold Hill spur road and block 22. It did not follow up to ensure that the TSL holder had cleaned up the worksite, monitor its contractor doing the remediation work on the Little Lamb Creek road, or undertake any other monitoring prior to the Board's notification of the pending audit.

Two factors affected BCTS and C&E monitoring. First, both programs experienced worker injuries, illness or other staffing issues. Second, confusion regarding the status and permitting of the Little Lamb Creek road led to a breakdown in inspection planning for the Little Lamb Creek road. Since MOFR did not follow its established process for tracking road status and issuing permits for that road, C&E was not prompted to complete a risk assessment or ensure that TSL holder implemented the conditions imposed by the district manager. Also, there were no contractual (permit) obligations for BCTS to monitor on the Little Lamb Creek road.

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<sup>8</sup> Compliance Procedures, Compliance and Enforcement Branch, April 2001.



### *Conclusion:*

For activities in the area of Little Lamb Creek and Gold Hill Creek, C&E did not develop a plan to detect non-compliances before they occurred, contrary to established procedures. BCTS did not assess risk or develop and implement a program of monitoring to detect compliance with contractual requirements. For activities specific to the Little Lamb Creek road, the district manager and its C&E program did not take any action to ensure the TSL holder implemented the measures specified to protect the fish stream. The ability of C&E and BCTS to monitor and inspect work on that road was hindered by MOFR not following established process for tracking road status and issuing permits. The systems that MOFR uses to monitor statutory obligations through C&E, and contractual obligations through BCTS, were not properly implemented, resulting in potential damage to fish streams.

## **4. Coordination between BCTS and Compliance & Enforcement**

### *Discussion:*

A C&E advisory bulletin discusses the need for C&E and BCTS to cooperate and the need to mutually report suspected contraventions.<sup>9</sup> The bulletin was in draft form at the time of the Lamb Creek road work and has since been finalized. It states that if during an inspection BCTS staff observe a potential legislative non-compliance, it will be reported to C&E as soon as possible. The bulletin specifically references MOFR policy for reporting contraventions:

“All Ministry personnel who observe actual or suspected contraventions of any provincial or federal legislation during the course of their duties will immediately report the details of the incident in writing to those staff within their responsibility centre who have compliance and enforcement [C&E] responsibilities. At the time of discovery, all Ministry personnel will document the scene to the best of their ability”.<sup>10</sup>

BCTS discovered plugged ditchlines and sediment eroding into the fish-bearing Little Lamb Creek on May 31, 2005, but did not notify C&E until June 17<sup>11</sup>—17 days after BCTS discovered the potential contraventions, 12 days after it completed remediation work, and one day after Board auditors discovered the potential contraventions. By that time, C&E was unable to determine whether the TSL holder was solely responsible for the materials pushed into or placed near the creek, or if BCTS contributed through its remediation efforts.<sup>12</sup> While BCTS appropriately undertook the remediation work to protect the fish stream, it did so without notifying C&E, thus destroying evidence and hindering C&E’s investigation of the TSL holder’s

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<sup>9</sup> C&E and BCTS Roles and Responsibilities—Reporting Non-Compliance and Sharing Information, C&E Advisory Bulletin, March 2006.

<sup>10</sup> Ministry of Forests and Range Policy 16.6, Investigations, April 2005.

<sup>11</sup> Incident Description DRM-24229, p. 8.

<sup>12</sup> Notice of Determination for DRM-24229, August 15, 2006

potential contraventions. BCTS's failure to immediately inform C&E of potential contraventions was contrary to MOFR policy and the guidance of the draft bulletin to act cooperatively.

### *Conclusion:*

While BCTS took prompt action to protect the fish stream, its failure to immediately inform C&E of potential contraventions was contrary to MOFR policy and the guidance of the draft protocol agreement. Consequently, BCTS destroyed evidence and hindered C&E's investigation while trying to stop damage from occurring.

## **Board Commentary**

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Damaging fish streams through road building activities is a serious matter. In the Board's view, damage to the fish streams could have been prevented by:

- MOFR following requirements and established process for tracking road status and issuing permits;
- MOFR taking steps to ensure that its conditions for approval of the roadwork were implemented by the TSL holder;
- MOFR following established procedures to develop a plan to detect non-compliances associated with the road activities before they occurred; and
- BCTS implementing a program of monitoring.

BCTS's failure to immediately inform C&E of potential contraventions, contrary to explicit policy, is also of concern. Immediately notifying C&E would have allowed it to pursue its investigation without hindrance.

In the nearly three years since the incident occurred, BCTS and C&E processes have continued to evolve. In December 2005 the BCTS Kootenay Business Area, which includes the business unit in the BCTS Rocky Mountain Forest District, was certified under the ISO 14001 environmental management system (EMS). BCTS's EMS requires BCTS and its TSL holders to monitor and evaluate key forestry operations, and establishes monitoring frequency and self reporting requirements. In March 2006, BCTS and C&E signed off on the advisory bulletin formalizing their roles and responsibilities regarding reporting potential non-compliances and sharing information.

The Board is pleased that the BCTS Kootenay Business Area has implemented an EMS, as it will potentially reduce the risk of similar future outcomes. Furthermore, the advisory bulletin will promote an independent yet cooperative relationship between BCTS and the district's C&E program. The Board encourages MOFR to establish adequate procedures, protocols and training to ensure that new and previously established processes are implemented on the ground.



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## NEWS RELEASE

For Immediate Release  
June 15, 2007

### Inadequate monitoring and enforcement put fish stream at risk

VICTORIA – Gaps in monitoring by the Ministry of Forests and Range (MOFR) put an East Kootenay fish stream at risk, the Forest Practices Board reported today.

Since the incident occurred, MOFR and BC Timber Sales (BCTS) have taken measures to reduce the risk of future occurrences of this nature.

The board's special investigation focused on government management of roadwork by a timber sale licence holder (TSL) in the Lamb Creek area of the Rocky Mountain Forest District, southwest of Cranbrook. The TSL holder introduced substantial sediment into a fish-bearing stream while upgrading the Little Lamb Creek road and other roads near fish streams.

The MOFR district manager approved work on the Little Lamb Creek road in August 2004, subject to the TSL holder taking special measures to protect the creek. The board found MOFR compliance and enforcement staff did not do any monitoring to verify that those commitments were kept, despite the potential risk to fish habitat. Internal confusion about the legal status of Little Lamb Creek road led to a breakdown in MOFR's normal inspection planning procedures.

"High-risk road work near a fish stream would normally trigger recurring ministry inspections to check for non-compliance, but none of that work was done here," said board chair Bruce Fraser. "MOFR did investigate the TSL holder's roadwork after notification by the board, but by that time the stream sedimentation had already occurred."

The board first learned of this issue while auditing BCTS in the Rocky Mountain Forest District. BCTS issued the timber sale licence discussed in this report. BCTS discovered the potential damage while preparing for the board audit and attempted to mitigate the damage, without immediately notifying MOFR enforcement staff of the serious problem with the road.

"While BCTS was acting in good faith in trying to minimize impacts to the stream, it made two errors in judgment," said Fraser. "First, BCTS failed to notify MOFR compliance and enforcement staff immediately upon discovering the infraction. Secondly, by attempting to mitigate the damage without coordinating with the MOFR district office, BCTS compromised evidence and hindered the MOFR investigation of this non-compliance."

In the three years since the incident occurred, BCTS has formalized an internal protocol with MOFR compliance and enforcement staff to ensure information is shared promptly and promote clear understandings of the roles and responsibilities of the two branches. Also, BCTS has been approved for third-party certification, which should help improve future environmental management practices.

The Forest Practices Board is B.C.'s independent watchdog for sound forest and range practices, reporting its findings and recommendations directly to the public and government. The board:

- audits forest and range practices on public lands;
- audits appropriateness of government enforcement;
- investigates public complaints;
- undertakes special investigations of current forestry issues;
- participates in administrative appeals; and
- makes recommendations for improvement to practices and legislation.

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