



**Forest
Practices
Board**

Forestry Audit: BC Timber Sales and Timber Sale Licence Holders

*Stuart-Nechako Business Area
Fort St. James District*

FPB/ARC/153

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Board Commentary

This audit examined the activities of the BC Timber Sales (BCTS) program and timber sale licence (TSL) holders in the Fort St. James District.

The communities in this district depend heavily on the forest industry but also rely on resources such as water, fish, and wildlife to provide economic diversity and to meet cultural and tourism needs. At a time when mountain pine beetle infestations and subsequent timber salvage are high, BCTS and TSL holders face many challenges when balancing resource interests with salvage operations.

Overall, the audit found that BCTS and TSL holders met these challenges. However, auditors also found that one TSL holder, Larworth Logging Ltd. (Larworth), did not comply with the *Forest and Range Practices Act* when it installed a log culvert.

When constructing a road, culverts associated with the road are required to be structurally sound and safe for use by industrial users. While BCTS designed the log culvert to meet safety standards, Larworth did not follow the design, instead constructing a culvert that did not meet safety standards. As well, they did not inspect the culvert either during construction or after to ensure it met design requirements. Larworth has since implemented remedial measures by commissioning a professional assessment of the culvert and by restricting traffic on the road to a lower load rating.

The Board acknowledges Larworth's response to this concern and is satisfied that its remedial measures have mitigated the potential for harm caused by these construction practices. However, to avoid similar occurrences in the future, the Board would like to emphasize the importance of routine inspections by licensees, during and upon completion of road, bridge and culvert construction.

Audit Results

Background

As part of the Forest Practices Board's 2012 compliance audit program, the BC Timber Sales (BCTS) program and timber sale licence (TSL) holders in the Fort St. James District portion of the Stuart-Nechako Business Area were selected for audit.

The district falls within the Prince George Timber Supply Area (TSA) and includes the community of Fort St. James, located at the south end of Stuart Lake (see map on page 3). The southern portion of the district contains rolling landscapes while the northern part is extremely mountainous and largely unroaded. The district is known for its lakes and rivers, which are highly valued for tourism and recreation and produce provincially significant salmon runs.

In the Fort St. James District, BCTS has an annual allocated timber harvest volume of 1 050 563 cubic metres and it auctions standing Crown timber to registrants in the BCTS program. BCTS prepares operational plans and issues timber sale licences and road permits to successful bidders. Licensees must fulfill licence, permit and operational plan obligations, including timber harvesting and road work, within cutblocks.

During the one-year audit period, 522 854 cubic metres were harvested by TSL holders, primarily to address mountain pine beetle infestations.

The audit team consisted of a professional forester, a professional forester/agrologist, a professional engineer and a chartered accountant. The Board's audit fieldwork took place from October 1 to 5, 2012.

Additional information about the Board's compliance audit process is provided in Appendix 1.



A free growing plantation near Fort St. James.

Stubbing trees and marking a machine-free zone to protect a cultural site.

Bridge construction over a fish stream.

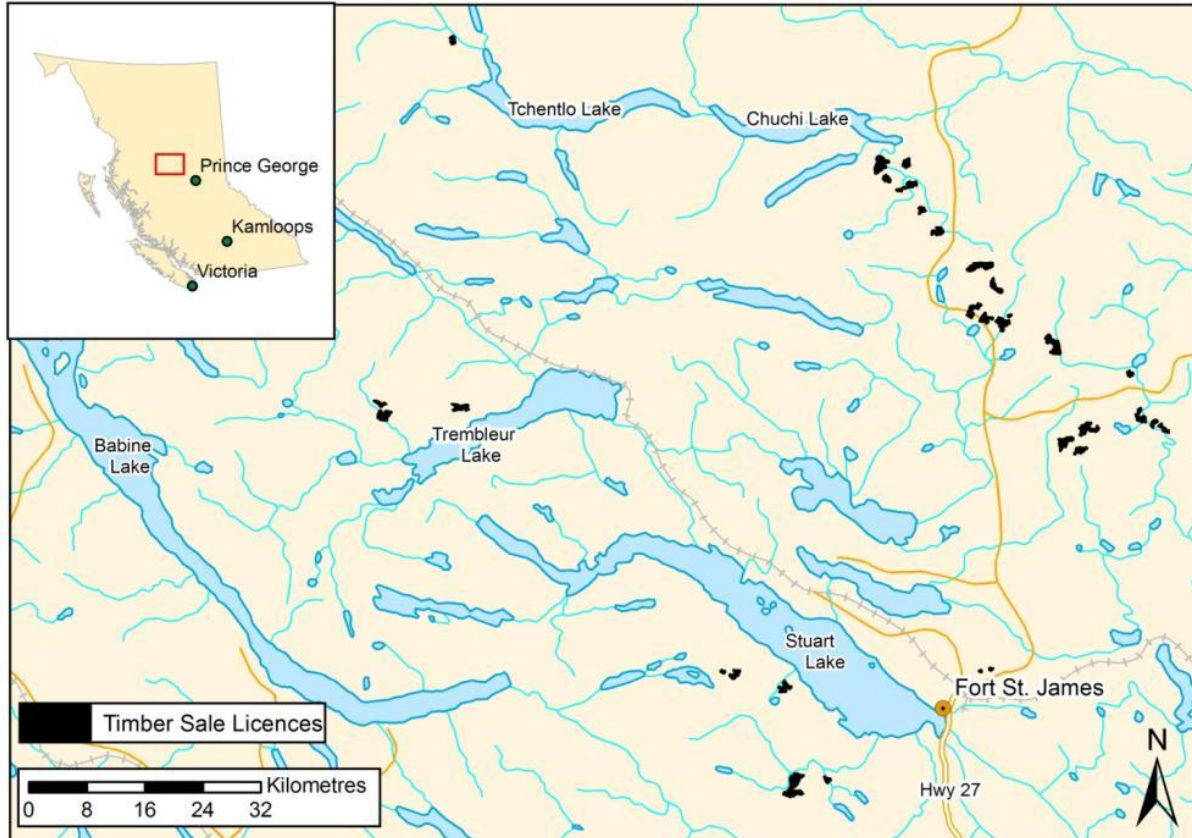
Objectives Set by Government

The *Fort St. James Land and Resource Management Plan (LRMP)* provides general management direction by identifying land use zones and the resource objectives within them designed to protect values such as water, fish, wildlife and biodiversity. While not legally binding, BCTS recognizes the merits of the LRMP and uses it to guide planning and forestry operations.

Government objectives, set out in the *Forest and Range Practices Act* (FRPA) and the *Forest Planning and Practices Regulation* (FPPR), provide strategic and operational guidance to BCTS operations. BCTS's activities must be consistent with FRPA and FPPR.

BCTS conducts its operational planning under the *BCTS SNBA Fort St. James District Forest Stewardship Plan*¹ (FSP) approved on December 31, 2006, and extended to December 31, 2016. The FSP provides the link between on-the-ground forestry operations and FRPA objectives by establishing measurable and verifiable results and strategies that are consistent with both.

Map of the Audit Area



Audit Approach and Scope

The audit examined both BCTS's and TSL holders' obligations and activities using a combination of detailed office, ground and aerial reviews.

BCTS is responsible for operational planning, including preparing FSPs and site plans, silviculture activities, bridge maintenance and most road and bridge construction, maintenance and deactivation outside of cutblocks.

¹ A forest stewardship plan (FSP) is a key planning element in the FRPA framework and the only plan subject to public review and comment and government approval. In FSPs, licensees are required to identify results and/or strategies consistent with government objectives for values such as water, wildlife and soils. These results and strategies must be measurable and once approved are subject to government enforcement. FSPs identify areas within which road construction and harvesting will occur but are not required to show the specific locations of future roads and cut blocks. FSPs can have a term of up to five years.

TSL holders are responsible for timber harvesting, fire protection, and most road construction, maintenance and deactivation within cutblocks.

These activities were assessed for compliance with FRPA, the *Wildfire Act* (WA) and related regulations. All activities, planning and obligations for the period September 1, 2011, to October 5, 2012, were included in the scope of the audit.

The Board's audit reference manual, *Compliance Audit Reference Manual, Version 6.0, May 2003*, and the addendum to the manual for the 2012 audit season, set out the standards and procedures that were used to carry out this audit.

Planning and Practices Examined

BCTS Responsibilities

Operational Planning

Both the FSP and stand level plans were examined to ensure they were consistent with legislative requirements. Landscape level legal requirements and objectives were assessed by reviewing analyses completed by BCTS during sustainable forest management planning.

Stand level plans were evaluated during harvesting, road and silviculture field sampling to ensure that they accurately identified site conditions.

Road Construction, Maintenance, Deactivation

During the audit period, BCTS constructed 5.4 kilometres of road, maintained 814 kilometres of road, constructed 2 bridges and maintained 49 bridges. BCTS did not deactivate any road.

Auditors examined all of the newly constructed roads and bridges, 215 kilometres of the maintained roads and 29 of the maintained bridges.

Silviculture Obligations and Activities

BCTS site prepared 20 cutblocks, planted 60 cutblocks and brushed 18 cutblocks. Regeneration obligations were due on 24 cutblocks and free-growing obligations were due on 90 cutblocks.

The audit examined 5 site prepared cutblocks, 14 planted cutblocks, and 4 brushed cutblocks. In addition, 8 cutblocks with regeneration obligations due and 29 cutblocks with free-growing obligations due were audited.

Timber Sale Licence Holders Responsibilities

Timber Harvesting

Nineteen TSL holders, holding 27 separate timber sale licences, fully or partially harvested 27 cutblocks during the audit period, using ground-based systems. All harvest activities were audited.

Road Construction, Maintenance and Deactivation

TSL holders constructed 7.4 kilometres of road under road permit and 15 kilometres under TSL, as well as 1 bridge, and permanently deactivated 15.5 kilometres of road during the audit

period. They also maintained the constructed roads and another 67 kilometres of in-block roads, held under TSL.

The Board audited all of the road and bridge construction, all of the road maintenance and 15 kilometres of the permanently deactivated road.

Fire Protection

Fire preparedness was audited for compliance with the *Wildfire Act* on two active operations.

Fire hazard assessments were audited on 5 TSLs. Abatement activities were examined on all 27 of the harvested cutblocks. Abatement obligations were further examined on the 5 site prepared cutblocks, 14 planted cutblocks and 8 cutblocks with regeneration obligations due.

Findings

The audit found that the planning and field activities undertaken by BCTS and by the TSL holders complied with legal requirements, with one exception involving construction of a log culvert, described below.

Log Culvert Construction

A TSL holder, Larworth Logging Ltd. (Larworth), built a 1.2 kilometre section of road under a road permit to access timber sale licence A86644. The road construction included installation of a log culvert to cross a fish-bearing stream. A professionally prepared road plan specified that the culvert installation was to meet the design criteria in Section 4 of the 2002 *Forest Road Engineering Guidebook*.² Auditors found that the culvert did not meet the design requirements.



Overview of the log culvert installation.

Section 72 of the *Forest Planning and Practices Regulation*ⁱ (FPPR) requires that a person who constructs a road must ensure that the culverts associated with the road are structurally sound and safe for use by industrial users. To meet the safe load rating of 64 tonnes (CL-625ⁱⁱ), for a structure with a span of 6 metres, the culvert design specified that the installed log stringers were to be a minimum of 675 millimetres in diameter; when installing the culvert, Larworth used 500 millimetre stringers spanning 6.5 metres. After the audit, Larworth commissioned a

² The 2002 Forest Road Engineering Guidebook can be found at:
<http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/road/fre.pdf>

post-construction inspection that, because of these deficiencies, recommended the culvert load rating be conservatively reduced to 27 tonnes, which does not meet the safe load rating required for hauling logs. Larworth did not meet the design requirements when installing the log culvert and, as a result, did not comply with section 72 of FPPR.

The *Revised Engineering Manual* (May 16, 2012)³ presents standards for planning and practices to ensure the safe use of forest roads. Because there may be a higher level of risk associated with a bridge, the manual distinguishes a culvert from a bridge by setting the maximum span for a log culvert at six metres, applying a more stringent set of standards to bridges. In this case, the culvert span exceeded six metres, so it met the definition of a bridge. As such, it was subject to the bridge construction standards in the manual and the requirements of sections 73ⁱⁱⁱ and 77^{iv} of the FPPR. These sections of the FPPR require that a person who builds a bridge for the purpose of constructing a road must ensure that the design and fabrication of the bridge meets or exceeds safety standards, and also must prepare as-built drawings of the bridge and retain them until they are no longer required to maintain the road. The manual also requires that a person constructing a bridge complete a professional design for structures with a span longer than six metres. Because Larworth thought they were installing a culvert, they did not attempt to comply with sections 73 and 77 of the FPPR, nor conform to the manual.

These practices are considered a significant non-compliance with sections 72, 73 and 77 of the FPPR because the TSL holder did not ensure the road was safe for industrial users.

Subsequent to the audit, Larworth commissioned a post-construction inspection and certification of the culvert to ensure the safety of lighter industrial and public use of this road.

Operational Planning

BCTS's planning activities were consistent with the forest stewardship plan and legislative requirements.

BCTS operates in 16 distinct operating areas, all within the Fort St. James defined forest area. BCTS, working with other licensees and public groups, has developed the *FSJ Defined Forest Area Sustainable Forest Management Plan* (SFMP), which sets performance targets and management strategies that are consistent with the Fort St. James LRMP and BCTS's forest stewardship plan. It is intended that the values, objectives, indicators, targets and guiding principles described in the SFMP will be adhered to by the licensees, supporting sustainable forest management within the defined forest area. The SFMP requires that BCTS effectively coordinates its activities, shares data with other licensees and collectively reports on the achievement of objectives on an annual basis. The 2012 report indicates that BCTS has met these requirements.

The forest stewardship plan was consistent with legislated requirements, and incorporated FRPA objectives. Planning at the landscape and stand levels was consistent with the forest stewardship plan.

³ The Revised Engineering Manual can be found at:

http://www.for.gov.bc.ca/hth/engineering/documents/publications_guidebooks/manuals_standards/Eng-Manual.pdf

BCTS addressed site specific resources in its plans by accurately identifying and prescribing practices for resource features, including soils, streams and wetlands, recreation trails, visually sensitive areas and cultural or heritage sites.

Harvesting

Harvesting was conducted in accordance with legislative requirements and site plan provisions.

The majority of logging targeted mountain pine beetle infected stands and employed ground-based harvest systems.

BCTS often included provisions in the site plan and TSL documents requiring TSL holders to:

- Minimize soil disturbance, grass seed and maintain natural drainage patterns to reduce the risk of landslides on potentially unstable terrain.
- Rehabilitate excavated trails, deactivate permanent access structures and restrict activities on sensitive soils to dry or frozen periods to conserve the productivity and hydrological function of the soils.
- Use wildlife tree patches, machine-free buffer zones, temporary stream crossings and vegetation retention to protect lakes, wetlands or streams.
- Retain standing timber and shape cutblocks to screen them from viewpoints.
- Retain vegetation, stub trees and use machine-free buffer zones to protect cultural and recreation sites.
- Retain wildlife trees in groups and as individual stems to provide wildlife habitat.



A typical cutblock in the Fort St. James District

In most instances the provisions were followed and completed by TSL holders.

There were a few instances where some individual retained wildlife stems had blown down, but it was not pervasive.

Soil disturbance and permanent access structures appeared to be below the limit set in the site plan, although there were small, localized instances of high disturbance within some cutblocks.

In some instances rehabilitation and deactivation practices had not yet occurred, even though the equipment had left the site. BCTS encourages the completion of these practices by including a mandatory performance clause in the TSL document. TSL deposits are not fully returned until obligatory activities have been confirmed.

Roads and Bridges

Other than the culvert issue described above, there were no concerns with road construction, maintenance and deactivation for either BCTS or TSL holders.

New road construction consisted of roads built within cutblocks (in-block roads) and main haul roads. Many of the in-block roads were seasonally deactivated following harvesting.

The audit found that roads and bridges were generally well constructed and maintained by:

- Maintaining natural drainage patterns.
- Grass-seeding exposed cutbanks, fill slopes and running surfaces, especially where there was a possibility of sediment entering streams.
- Signing, armouring and surfacing bridges.
- Preventing road surface and ditch line erosion.

Silviculture Activities and Obligations

Auditors noted that BCTS actively managed silviculture activities and obligations and considered their overall performance to be good. The silviculture activities audited included site preparation, brushing, planting, and regeneration delay and free-growing obligations.

BCTS demonstrated good silviculture practices by:

- Using a system for seedlot selection and monitoring compliance with the Chief Forester's Seed Transfer Guidelines.
- Planting trees at densities that have resulted in adequate stocking at regeneration delay and free growing milestones.
- Conducting brushing activities where required and, while doing so, avoiding damage to crop trees and not increasing the risk of fire.
- Meeting the prescription requirements for site prepared cutblocks while achieving soil disturbance and other forest resource objectives.

BCTS achieved and reported regeneration delay and free growing milestones within the allotted timeframes.

Fire Protection Activities

Two active TSL holder operations were reviewed and, at the time of the field inspection, both operations had sufficient fire tools and a functional water delivery system on site.

Operators used the appropriate fire weather station to determine the correct fire danger class and conducted operations accordingly.

BCTS developed an Emergency Response Plan (ERP) template for TSL holders to complete and forward to the Prince George Fire Centre. The ERP contains relevant information such as contact details and location of operations. The two active TSL holders who were audited had completed the ERP.

When requested, all four TSL holders audited were able to provide a copy of their fire hazard assessments. The assessments were completed within prescribed intervals and included an assessment of the fuel hazard and the risk of a fire starting or spreading, as required by the *Wildfire Regulation*.



Water delivery system on an active logging site.

Logging debris was piled in a manner that facilitated burning. Where burning had taken place it had been completed within the required time periods and reduced the risk of fire starting on the cutblock. There were no cutblocks audited where abatement activities had not been completed within the required time periods.

Audit Opinion

In my opinion, except for the bridge construction issue identified below, the operational planning; timber harvesting; road construction, maintenance and deactivation; silviculture; and fire protection activities carried out by BCTS and its TSL holders in the Fort St. James District portion of the Stuart-Nechako Business Area between September 1, 2010, and October 5, 2012, complied in all significant respects with the requirements of the *Forest and Range Practices Act*, the *Wildfire Act* and related regulations, as of October 2012.

In reference to compliance, the term “in all significant respects” recognizes that there may be minor instances of non-compliance that either may not be detected by the audit, or that are detected but not considered worthy of inclusion in the audit report.

As described in the *Log Culvert Construction* section of this report, the audit identified a situation of significant non-compliance.

The *Audit Approach and Scope* and the *Planning and Practices Examined* sections of this report describe the basis of the audit work performed in reaching the above conclusion. The audit was conducted in accordance with the auditing standards of the Forest Practices Board. Such an audit includes examining sufficient forest planning and practices to support an overall evaluation of compliance with FRPA, and WA.



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March 22, 2013

Appendix 1: Forest Practices Board Compliance Audit Process

Background

The Forest Practices Board conducts audits of government and agreement-holders under the *Forest and Range Practices Act* (FRPA), section 122, and the *Wildfire Act* (WA). Compliance audits examine forest or range planning and practices to determine whether or not they meet FRPA and / or WA requirements.

Selection of Auditees

The Board conducts about 8 or 9 compliance audits annually. Most of these are audits of agreement holders. The Board also audits the government's BC Timber Sales Program (BCTS). This section describes the process for selecting agreement holders to audit.

To begin with, auditors randomly select an area of the Province, such as a district. Then the auditors review the forest resources, geographic features, operating conditions and other factors in the area selected. These are considered in conjunction with Board strategic priorities (updated annually), and the type of audit is determined. At this stage, we choose the auditee(s) that best suits the selected risk and priorities. The audit selections are not based on past performance.

For example, in 2010, the Board randomly selected the Mackenzie district as a location for an audit. After assessing the activities within that area, we discovered that a large licensee had recently closed operations due to financial problems. As the Board has expressed concern in the past about financially strapped companies failing to meet outstanding obligations, such as reforestation and road maintenance, and we knew that some of the licence area is very remote, the new licence holder was selected for audit.

For BCTS audits, a district within one of the 12 business areas within the province is selected randomly for audit.

Audit Standards

Audits by the Board are conducted in accordance with the auditing standards developed by the Board. These standards are consistent with Canadian generally accepted auditing standards. The standards for compliance audits are described in the Board's *Compliance Audit Reference Manual*.

Audit Process

Conducting the Audit

Once the Board randomly selects an area or district and determines the scope of audit to be conducted and the licensee(s) to be audited, all activities carried out during the period subject to audit are identified (such as harvesting or replanting, and road construction or deactivation activities). Items that make up each forest activity are referred to as a population. For example, all sites harvested form the timber harvesting population and all road sections constructed form the road construction population.

A separate sample is then selected for each population (e.g., the cutblocks selected for auditing timber harvesting). Within each population, more audit effort (i.e., more audit sampling) is allocated to areas where the risk of non-compliance is greater.

Audit fieldwork includes assessments of features using helicopters and ground procedures, such as measuring specific features like riparian reserve zone width. The audit teams generally spend one week in the field.

Evaluating the Results

The Board recognizes that compliance with the many requirements of FRPA and WA, is more a matter of degree than absolute adherence. Determining compliance, and assessing the significance of non-compliance, requires the exercise of professional judgment within the direction provided by the Board.

The audit team, composed of professionals and technical experts, first determines whether forest practices comply with legislated requirements. For those practices considered to not be in compliance, the audit team then evaluates the significance of the non-compliance, based on a number of criteria, including the magnitude of the event, the frequency of its occurrence and the severity of the consequences.

Auditors categorize their findings into the following levels of compliance:

Compliance – where the auditor finds that practices meet FRPA and WA requirements.

Not significant non-compliance – where the auditor, upon reaching a non-compliance conclusion, determines that one or more non-compliance event(s) is not significant and not generally worthy of reporting. However, in certain circumstances, events that are considered not significant non-compliance may be reported as an area requiring improvement.

Significant non-compliance – where the auditor determines a non-compliance event(s) or condition(s) is or has the potential to be significant, and is considered worthy of reporting.

Significant breach – where the auditor finds that significant harm has occurred, or is beginning to occur, to persons or the environment as a result of one or many non-compliance events.

If it is determined that a significant breach has occurred, the auditor is required by the *Forest Practices Board Regulation* to immediately advise the Board, the party being audited, and the Minister of Forests, Lands and Natural Resource Operations.

Reporting

Based on the above evaluation, the auditor then prepares a draft audit report. The party being audited is given a draft of the report for review and comment before it is submitted to the Board.

Once the auditor submits the draft report, the Board reviews it and determines if the audit findings may adversely affect any party or person. If so, the party or person must be given an opportunity to make representations before the Board decides the matter and issues a final report. The representations allow parties that may potentially be adversely affected to present their views to the Board.

The Board then reviews the draft report from the auditor and the representations from parties that may potentially be adversely affected before preparing its final report. Once the representations have been completed, the report is finalized and released: first to the auditee and then to the public and government.

i Section 72 of the Forest Planning and Practices Regulation:

Roads and associated structures

72 A person who constructs or maintains a road must ensure that the road and the bridges, culverts, fords and other structures associated with the road are structurally sound and safe for use by industrial users.

ii CL 625 is a highway vehicle design configuration that is an exception to typical logging truck configuration. This configuration is drawn from the Canadian Highway Bridge Design Code (CSA S6) and BC Ministry of Transportation and Infrastructure and was adopted by the Ministry of Forests Lands and Natural Resource Operations in order to be consistent with MoT design configurations for highway loads. For CL 625 the CSA-S6 Canadian Highway Bridge Design Code requires drainage structures to be designed to support a gross vehicle weight of 64 tonnes.

iii Section 73 of the Forest Planning and Practices Regulation:

Design of bridges

73 A person who builds a bridge for the purpose of constructing or maintaining a road must ensure that the design and fabrication of the bridge

- (a) meets or exceeds standards applicable to roads at the time the design or fabrication is done, in respect of
 - (i) bridge design, as established by the Canadian Standards Association, Canadian Highway Bridge Design Code, CAN/CSA-S6, and
 - (ii) soil properties, as they apply to bridge piers and abutments, as established by the Canadian Foundation of Engineering Manual, and
- (b) takes into account the effect of logging trucks with unbalanced loads and off-centre driving.

iv Section 77 of the Forest Planning and Practices Regulation:

Retaining information

77 (1) A person who builds a bridge or major culvert for the purpose of constructing or maintaining a road must do all of the following:

- (a) prepare or obtain
 - (i) pile driving records,
 - (ii) for new materials used to build the bridge or major culvert, mill test certificates, in-plant steel fabrication drawings, and concrete test results,
 - (iii) soil compaction results, and
 - (iv) other relevant field and construction data;
- (b) prepare as-built drawings of the bridge or major culvert;
- (c) retain the information referred to in paragraphs (a) and (b) until the earlier of the date that
 - (i) the bridge or major culvert is removed, and
 - (ii) the person is no longer required to maintain the road.
- (2) Subject to subsection (3), a person responsible for maintaining a road must retain a copy of inspection records for a bridge or major culvert associated with the road for at least one year after the bridge or major culvert is removed from the site.
- (3) Unless the road has been deactivated, a person must submit to the district manager or the timber sales manager, as applicable, the documents, drawings and records described in subsections (1) and (2) in respect of a road if the person is no longer required to maintain the road because the district manager or timber sales manager
 - (a) cancelled the road permit, road use permit or special use permit for the road, and
 - (b) does not require the road to be deactivated.



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