Audit of Forest Soil Conservation
Mackenzie Forest District

Audit Report

FPB/ARC/66

November 2004

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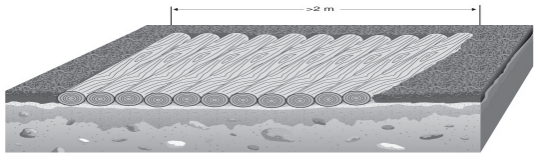
Key Concepts and Terms

Ballasting: the use of rock to construct the road subgrade where other available material is incapable of supporting the design traffic load during the period of use. Ballast is commonly used on locations with fine-textured or saturated soils.

Compaction: soil compaction occurs when soil particles are pressed together, reducing pore space.

Corduroyed Forwarding Trail: a trail built to move timber products from the stump to a landing for further transport. Corduroy means it is built of logs laid side by side transversely.



Criterion: a category of conditions or processes by which sound forest management may be assessed, underpinned by a set of indicators.

Excavated or Bladed Trails: constructed trails that have a mineral soil cutbank height greater than 30 centimetres and an excavated width greater than 1.5 metres.

Fine-textured Soil: soil consisting of or containing large quantities of the fine fractions, particularly of silt and clay. Includes all clay loams and clays; that is clay loam, sandy clay loam, silty clay loam, sandy clay, silty clay, and clay textured classes.

Forwarding: transporting the logs from stump to a landing without dragging them on the ground.

Gouges: excavations into the mineral soil.

Hydrologic Function: natural drainage patterns and flow of water.

Indicator: a measure of a criterion to assess the condition of a forest resource, which may be monitored periodically to assess change.

Landing: an area modified by equipment that is designed for accumulating logs before they are transported.

Roadside Processing: processing of timber products along the length of the road, rather than at a designated landing.

Scalps: removal of sections of the forest floor.

Skidding: the process of sliding and dragging logs from the stump to a landing.

Soil: is composed of solid particles (minerals and organic matter) and pore space (air and water).

Soil Disturbance: disturbance caused by a forest practice including areas occupied by excavated or bladed trails of a temporary nature, areas occupied by corduroyed trails, compacted areas, and areas of dispersed disturbance.

Soil Texture: refers to the size of mineral particles (sand, silt and clay), ranging in size from fine to coarse. The proportion of sand, silt and clay particles in the soil determines whether a soil is classified as sandy, silty or clayey.

Soil Productivity: the capacity of a soil, in its normal environment, to support plant growth.

Soil Rehabilitation: the remedial measures taken to restore soil productivity on a disturbed site. Rehabilitation activities are site specific and may include soil decompaction, re-contouring, spreading surface organic matter and re-vegetating the site. The objectives of soil rehabilitation are to restore a site to a stable condition to maintain and re-establish soil productivity to a level capable of sustaining the production of a crop of trees that is acceptable to site-specific standards.

Total Chance Planning: early planning over an entire development area for the best overall realization of all objectives identified by broader planning.

Wheel Tracks or Ruts: impressions in the soil caused by heavy equipment traffic.

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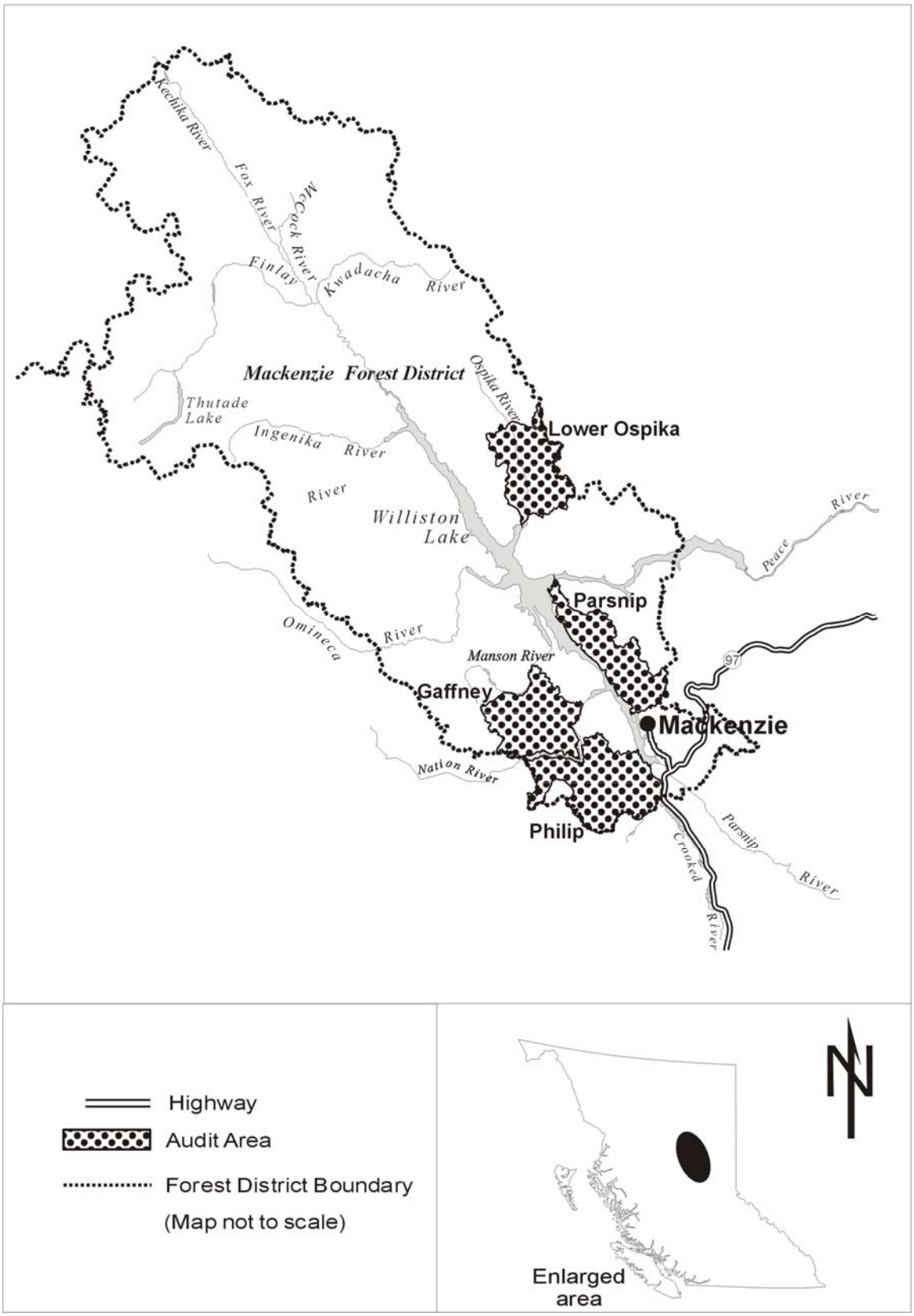

Introduction

The Forest Practices Board conducted a pilot audit of forest soil conservation in the Mackenzie forest district. The audit was one of two pilot audits[1] that were designed to explore the Board's approach to auditing the effectiveness of forest practices in anticipation of the *Forest and Range Practices Act* (FRPA). Recognizing that broader assessments of the results of forest practices in relation to government objectives would be required under FRPA, the Board is interested in the extent to which audits can facilitate such assessments and how to best report audit results.

In January 2004 the *Forest and Range Practices Act* (FRPA) replaced the Forest Practices Code as British Columbia's forest practices legislation. FRPA will be phased in over a two year period ending on December 31, 2005. FRPA will require the Forest Practices Board to take a new approach to forest practices audits.

The audit was conducted in the summer of 2003 and assessed forest practices for compliance with the *Forest Practices Code of BC Act* and regulations (the Code) and in relation to criteria and indicators of effective forest soil conservation.

The major requirements in the Code applicable to forest soil conservation include:

- identification of soil hazards prior to carrying out forest activities
- development of appropriate site prescriptions and establishing limits for the amount of permanent access structures and soil disturbance
- rehabilitating soils in situations where prescribed limits are exceeded
- rehabilitating temporary access trails
- maintaining natural drainage

Under FRPA, the objective set by government for soils is to, without unduly reducing the supply of timber from British Columbia's forests, conserve the productivity and the hydrologic function of soils.

The Board is working in co-operation with the FRPA Resource Evaluation Working Group (a joint project of the Ministry of Forests and the Ministry of Water, Land and Air Protection) to facilitate the development of effectiveness indicators for each of the forest values identified in FRPA. The indicators used in the audit were developed by a team of soils experts independent from the Board and adapted by the audit team. They are considered by the Board to reflect the most current information available about effective forest soil conservation. Appendix A to this report describes the process undertaken in developing the indicators to facilitate the audit.

Criteria and indicators provide an objective basis to assess and report on licensees' forest planning and practices in relation to the achievement of government objectives.

The audit assessed forest practices in relation to soil conservation by using the criteria and indicators in Table 1. The audit also reviewed the requirements of FRPA in consideration of the soil conservation effectiveness indicators and the findings of this audit.

Table 1: Criteria and indicators employed in the forest soil conservation audit.

Criteria	Indicators
Productivity and hydrologic function losses to forest soils from road, trail and landing construction activities are minimized.	• The area occupied by unproductive soil as a result of permanent access construction is minimized given the site conditions, harvest constraints and equipment utilized. • Temporary access is utilized where appropriate, and adequately rehabilitated and regenerated. • There is a minimal level of altered natural drainage and no significant erosion, or risk of significant erosion, caused by roads, trails and landings. • There is an absence of unproductive soil in the net area to be reforested as a result of landslides or gully erosion caused by road construction, maintenance or deactivation.
Productivity and hydrologic function losses to forest soils from harvesting activities are minimized.	• There is an absence of unproductive soil in the net area to be reforested as a result of landslides or gully erosion caused by harvesting. • There is minimal disruption of natural drainage patterns in the net area to be reforested. • The level of dispersed and concentrated soil disturbance in the net area to be reforested is minimized given the site conditions, harvest constraints and equipment utilized. • Areas of excessive soil disturbance have been appropriately rehabilitated and regenerated.

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

overall conclusions about forest practices in relation to the criteria and indicators applied. Appendix B to this report describes the Board's audit objectives and methodology.

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Forest Practices Board Commentary

The Role of Criteria and Indicators

FRPA is results-based legislation, so compliance with FRPA is expected to involve achievement of results that are consistent with government's forest management objectives. FRPA establishes objectives for various forest values and requires licensees to develop forest stewardship plans[2] that set out strategies and results consistent with these objectives. With the introduction of FRPA, new terminology and concepts are emerging that will in time become established in practice.

> The Board intends to conduct broader assessments of licensees' forest planning and practices in relation to the achievement of government objectives. Some of the key changes in the Board's audit approach will be the use of criteria and indicators, examination of systems and longer form reporting. The new approach embodying all these elements could be considered a form of effectiveness auditing.

Provincially, there is considerable work underway through various initiatives, such as the FRPA Resource Evaluation Working Group and forest certification programs, which share a similar need to interpret and explain FRPA's objectives in a way that can be understood and operationalized in practice. The development of criteria and indicator sets in relation to objectives appears to be distinguishing itself as the preferred approach.

The Board considers that the application of criteria and indicators is the appropriate means to interpret and explain FPRA's objectives. The Board is revising its audit approach to be consistent with the results-based approach of FRPA. The Board anticipates applying criteria and indicators to facilitate results-based assessments and to explain audit findings in a way that can be understood by the general public and by forestry professionals. This pilot audit is a part of the process.

Through this pilot audit of forest soil conservation, the Board has successfully completed an audit of the effectiveness of forest practices in British Columbia, using criteria and indicators adapted for the audit. The audit has confirmed the application of criteria and indicators as a practical approach to such broader audit assessments, as an effective basis for discussing audit

findings with the parties audited, for fostering improved practices and for reporting audit results. The experience gained from this pilot audit will be used in designing the Board's approach to audits under FRPA, so that future Board audits can provide assurance about the results of forest practices in relation to government's forest management objectives.

The Board is conducting three further pilot audits focusing on forestry practices in relation to FRPA's objectives for biodiversity, visual quality and stream riparian management. These audits will build on the experience gained from this audit, notably the application of criteria and indicators, and will also examine aspects of licensees' systems and controls important to ensuring that forest practices are achieving the results intended.

Audit Results

The results of the application of the criteria and indicators in this audit demonstrate that, for the most part, forest practices are effectively conserving forest soils. In all but one cutblock examined by the audit, detrimental soil disturbance was negligible due to sound planning and diligent execution of harvesting activities. The widespread use of roadside processing by two licensees has also eliminated permanent soil disturbance caused by landings, and the audit confirmed that the amount of road constructed was the minimum necessary to safely and efficiently access and extract timber.

The Code focuses on establishing limits for soil disturbance and requires rehabilitation only where these limits are exceeded. Current practices were mostly in compliance with this legislation. However, notwithstanding these positive results, there remains room for improvement.

In the four-year period of the audit, only three sections of road were rehabilitated to restore the productivity of the underlying soils. The licensees identified numerous disincentives, financial and operational, which are precluding rehabilitation. Most notably perceived were: high costs associated with rehabilitating fine-textured soils; increased liability associated with the cost and stand-tending activities required to successfully regenerate these areas; ensuring crew safety in remote areas; and the need to maintain access for potential future silviculture treatments.

The Board concurs with the licensee's assertion that there exist economic and operational disincentives associated with the rehabilitation of roads. Rehabilitation must be reasonably economical and licensees should not be penalized for attempting rehabilitation. The Board also notes that current research indicates most sites can be rehabilitated cost-effectively with proper planning and execution, and the audit identified a number of specific situations in which licensees could have rehabilitated more roads. The Board is recommending that government and industry work together to review applicable forestry legislation and policies to remove the disincentives for rehabilitating roads.

The audit also determined that the introduction of FRPA does not give rise to any significant gaps in legislation that could impact forest soil conservation. However, FRPA itself may

require improvement. FRPA establishes a seven percent maximum for permanent access structures. While the Board recognizes that in some situations seven percent may be the minimum level of access required, the results of this audit and other recent audits have shown that substantially less permanent access is often achievable, and desirable. The Board is recommending that government review the applicable requirements in FRPA in light of these results.

Lastly, the audit identified non-compliance on the part of BCTS related to its road construction practices exceeding prescribed limits. The Board is recommending that BCTS review its systems for ensuring compliance to determine why this non-compliance occurred, and effect improvements as necessary.

Recommendations

As provided by section 131 of FRPA, the Board makes the following recommendations:

1. The Ministry of Forests initiate and lead a joint review, with participation by the forest industry, to identify the economic, operational and other disincentives associated with forest road rehabilitation under current forestry legislation and policy.
2. The Ministry of Forests, with participation by the forest industry, propose changes to legislation and policy as required to create incentives for the rehabilitation and regeneration of areas used for access structures, where appropriate.
3. The Prince George BC Timber Sales Manager review the BCTS systems for ensuring compliance with legislated soil conservation requirements, and effect improvements as necessary.
4. The Ministry of Forests review the soil conservation requirements established by FRPA to determine whether legislative change is required to appropriately promote the minimization of permanent access structures.

In accordance with section 132 of FRPA, the Board requests that:

- The Ministry of Forests provide the Board by June 30, 2005, with a copy of the terms of reference and implementation plan in relation to recommendation 1.
- The Ministry of Forests provide the Board by December 31, 2005, with a copy of the proposed changes in relation to recommendation 2.
- The Prince George BC Timber Sales Manager provides the Board by March 31, 2005, with a summary of the review undertaken and results in relation to recommendation 3.
- The Ministry of Forests provide the Board by June 30, 2005, with a summary of the review undertaken and results in relation to recommendation 4.

Bruce Fraser, PhD
Chair, Forest Practices Board
November 16, 2004

Detailed Findings and Conclusions

Background

Four landscape units within the Mackenzie forest district with sufficient levels of harvest to facilitate the audit were selected. These landscape units, Lower-Ospika, Parsnip, Philip and Gaffney, comprise the audit area (see map on page 2).

Canadian Forest Products Ltd. (Forest Licence A15384[3]), Abitibi Consolidated Company of Canada (Forest Licence A15385), and the Prince George BC Timber Sales[4] (collectively 'the licensees') each operates in the area subject to audit. The scope of the audit included the licensees' operational planning, harvesting and road construction activities for the period September 1, 2001 to September 1, 2003. Soil rehabilitation activities for the period September 1, 1999 to September 1, 2003 were also included in the audit (a longer audit period was used for soil rehabilitation in order to facilitate examination of vegetation growth, including crop tree establishment, on the rehabilitated areas).

Approximately 700,000 cubic metres and 100 cutblocks were harvested in this area during the audit period, predominantly by conventional ground-based methods utilizing mechanized falling and rubber tired or tractor skidding, or forwarding. Due to the presence of soils sensitive to disturbance, harvesting is generally restricted to frozen or snow-covered ground conditions in winter and dry-ground conditions in summer.

The Mackenzie Land and Resource Management Plan (LRMP), although not a designated Higher Level Plan[5] under the Code, serves as guidance for forest development planning. The Mackenzie LRMP was approved by Cabinet on November 14, 2000. The LRMP provided resource management zones (RMZ) for the Mackenzie TSA. Government provided landscape unit zonation largely the same as the RMZ linework.

The Lower-Ospika and Parsnip RMZs are designated 'general' zones and the Philip and Gaffney 'enhanced' zones. Both general and enhanced classifications establish a management objective to minimize soil erosion and/or productivity losses by conserving soil through implementation of applicable legislation and regulation (i.e., the Code). The Lower-Ospika is the only RMZ with a further objective specific to soils—to manage resource development activities with consideration of the high proportion of unstable soils in the area.

Overall Conclusions

Overall, with one significant exception, the licensees' forest planning and practices are consistent with the criteria and indicators applied in this audit. Prior to carrying out forest activities, licensees identified critical site factors affecting the conservation of soils and developed appropriate site plans in relation to soil disturbance hazards. Harvesting activities were conducted with minimal levels of detrimental soil disturbance or alteration to natural

drainage patterns. Road construction was the minimum required to safely and efficiently extract timber. Where temporary access trails were utilized, the underlying soils were rehabilitated appropriately.

The one exception relates to the amount of roads considered permanent by the licensees. The licensees have not achieved the indicator of effective soil conservation: to minimize the area occupied by unproductive soil as a result of permanent access. On 20 of 36 cutblocks examined by the audit, one or more roads were considered and treated as permanent by the licensees, in circumstances where the audit determined that rehabilitation could have been attempted. In total, 29 kilometres of road treated as permanent had the potential to be rehabilitated. This comprises 27 percent of the roads constructed and approximately 27 hectares of land base for which soil productivity could potentially have been restored. Temporary roads been prescribed on only nine of the 136 road sections examined by the audit and rehabilitation been attempted on only three sections.

The audit concluded that these practices have not resulted in minimizing productivity losses to forest soils from road construction activities. The audit also concluded that the amount of road treated as permanent by licensees was not consistent with Mackenzie forest district policy, which established reasonable expectations for the treatment of forest roads consistent with effective forest soil conservation.

The audit found that licensees are managing road construction primarily at the site-level, based on efficient skidding or forwarding distances, but without the benefit of total chance plans or other longer-term plans. This reduces the licensees' ability to minimize the level of road construction.

The audit identified non-compliance on the part of BCTS. On 4 of 11 sites examined by the audit, the amount of permanent roads constructed by BCTS exceeded the maximum limits prescribed in approved silviculture prescriptions. On two of these sites, permanent access structures were constructed despite temporary roads having being prescribed. In each case, the excess permanent access had not been rehabilitated.

The primary area of the Code to which the non-compliance relates is section 46(1), which requires that licensees not exceed the amount specified under approved silviculture prescriptions for the maximum proportion of the area that may be occupied by permanent access structures.

Lastly, FRPA's seven percent limit on the area occupied by permanent access structures on each cutblock does not appear to address site-specific features, such as the topography, harvesting systems and equipment utilized, and therefore does not promote the minimization of permanent access construction.

Criterion: Productivity and hydrologic function losses to forest soils from road, trail and landing construction activities are minimized.

Indicators:

- **The area occupied by unproductive soil as a result of permanent access construction is minimized given the site conditions, harvest constraints and equipment utilized.**
- **Temporary access is utilized where appropriate, and adequately rehabilitated and regenerated.**

Permanent Roads

The most significant factors affecting forest soil conservation is the construction of permanent access structures (roads, landings, borrow pits). Where permanent roads are constructed, the productive capacity of the underlying soils is forgone for the foreseeable future. At the same time, it is important to recognize that the construction of permanent forest roads is an integral component of forestry operations in British Columbia. Access to Crown lands represents an important and substantial investment each year into developing BC's forest economy.

Minimizing the amount of road developed, through appropriately balancing the many factors that must be considered when developing the timber harvesting land base, is one of the most critical components of effective forest soil conservation. Licensees and government must work together to balance the need for, among other things:

- a steady supply of timber of the appropriate profile to ensure that mills remain viable
- available heavy equipment and road building capacity
- harvesting and access plans beyond current operations
- good stewardship of the land dictating that soils be conserved

The Code addresses the level of permanent access development by requiring site-level operational plans to establish a maximum area allowable on each site. This maximum area is expressed as a percentage in relation to the total area under each operational plan. Conventionally, seven percent has been used as a baseline to gauge the reasonableness of proposed access, with variations to address site-specific conditions and requirements (*2001 Forest Soil Conservation Guidebook*). The Code requires rehabilitation of any permanent access in excess of prescribed maximums.

In 1999 and in 2000, the Mackenzie Forest district manager issued guidelines for developing permanent access structures in the district. Slocan (now Canfor) and Abitibi participated in the development of the 2000 guidelines. The 1999 guidelines address the desire to minimize permanent road density through appropriate planning at the landscape level, and the 2000 guidelines set out criteria to guide licensees in determining whether roads should be

constructed to permanent or temporary standards. The underlying intent of the guideline was to:

- minimize the level of permanent access constructed based on a 200 metre maximum skidding distance;
- wherever practicable, utilize temporary rather than permanent roads.

The audit measured access on 36 cutblocks (2 of which did not require construction of road access) with 136 sections of road constructed in relation to the cutblocks (107 kilometres). In all cases, the amount of road constructed was determined to represent the minimum amount required to safely and efficiently extract the timber, generally by skidding or forwarding the timber approximately 200-250 metres to roadsides for either processing or loading. On average, for the cutblocks examined, the level of permanent access was 4.2 percent. This lower-than-baseline average (7 percent), reflects the predominant use of roadside operations not requiring landings and the generally favourable road building terrain in the audit area.

However, on 20 of these cutblocks, the audit identified one or more roads that were treated as permanent in circumstances where rehabilitation could have been attempted. On two of these cutblocks, permanent roads were constructed despite temporary roads having been prescribed. In total, 29 kilometres of road treated as permanent had the potential to be rehabilitated. This represents 27 percent of the roads examined during the audit, and translates into approximately 27 hectares of land-base for which soil productivity could potentially have been restored.

The main rationale provided by licensees for treating these roads as permanent was the presence of fine-textured soils. Licensees indicated that the presence of fine-textured soils generally requires that roads be ballasted and, therefore, precludes cost-effective rehabilitation of roads. However, the audit determined that the roads were either constructed in winter and not ballasted, or constructed on fine to moderate textured soils and rehabilitation may have been achievable. Licensees also indicated that very short windows where sites are suitable for accessing with the equipment necessary to conduct rehabilitation, safety and maintaining access for potential future silviculture treatments often precluded rehabilitation.

Current research[6] indicates that most sites with soil textures of sand, loamy sand, sandy loam, loam, silt loam, and silt can be cost-effectively rehabilitated with proper planning and execution. In soils with higher clay content, there is less information from research, but the available information suggests that successful rehabilitation will be more difficult and costly as the clay content increases above approximately 30 percent clay. On the 20 sites noted, soils were primarily silt loams or sandy loams. On four sites clay loams or silty clay loams were present. The area of possible road rehabilitation on these four sites comprised approximately seven hectares.

One licensee indicated that if its final harvest inspections indicated that road rehabilitation is viable, the approved operational plans would be amended and the roads rehabilitated. Of concern is that this approach reduces the likelihood of successful rehabilitation and increases

the cost of rehabilitation such that its viability becomes questionable. Effective rehabilitation of roads begins at the pre-construction planning stage and employs different construction techniques than used for permanent roads - for example, the stockpiling of topsoil during initial road construction to preserve it for use during subsequent rehabilitation.

The audit identified non-compliance on the part of BCTS. On 4 of 11 sites examined by the audit, the permanent roads constructed by BCTS exceeded the maximum limits prescribed for permanent access structures in the approved silviculture prescriptions. On two of these sites, permanent access structures were constructed despite temporary roads prescribed and in each case totalled 3.9 percent. On the other two sites, PAS totalled 7.7 percent and 8 percent. In each case, the excess permanent access had not been rehabilitated.

This non-compliance is considered significant because of the frequency of its occurrence and because of its adverse impact on the productivity of the sites affected. The primary area of the Code to which the non-compliance relates is section 46(1), which requires that licensees not exceed the amount specified under approved silviculture prescriptions for the maximum proportion of the area that may be occupied by permanent access structures. Section 46(4) requires that excess area occupied by permanent access structures be rehabilitated.

Temporary Roads

Forest roads that are not required for permanent access are, by definition, temporary roads. By their nature, temporary access structures are required only for a limited period, generally during the harvesting phase of a cutblock.

The Code addresses the level of temporary access by requiring site-level operational plans to establish a maximum level of soil disturbance for the net area to be reforested. This includes disturbance resulting from temporary roads. Temporary access structures that result in soil disturbance levels greater than the maximum prescribed are required to be rehabilitated (i.e., it is not a Code requirement to rehabilitate all temporary access structures, only those in excess of prescribed limits). The guidelines issued by the district manager in 2000 did not address the need to rehabilitate temporary roads.

On the 36 cutblocks examined by the audit, there were nine sections of road classified as temporary roads in the applicable silviculture prescriptions. Two of these sections of road, in the same cutblock, had been rehabilitated at the time of the audit. One road section that had been constructed prior to the audit period had also been rehabilitated during the audit period. The audit confirmed that the rehabilitation measures undertaken were generally suitable to restore long-term productivity of the soils in the areas.

Seedlings planted on this rehabilitated temporary road show good root initiation. This is likely due to favourable planting spots that have raised the microsite increasing growing season soil temperature and reducing incidence of frost, intermixing of favourable soil medium providing nutrients, and increasing porosity providing good drainage.

Other Temporary Access Structures

The Code requires rehabilitation of temporary landings and excavated or bladed trails. No temporary landings were constructed during the audit period. A small number of excavated or bladed trails were constructed during the audit period, primarily to access timber located on steeper areas within cutblocks. Substantially all excavated or bladed trails were rehabilitated in accordance with the requirements of the Code. The audit confirmed that the rehabilitation measures undertaken were generally suitable to restore long-term productivity in those areas.

This rehabbed bladed trail has incorporated many of the recommended methods for successful return of adjacent soil productivity. Regeneration on this trail will likely meet free growing at the same time as the surrounding undisturbed site. Seedling roots will eventually grow into the surrounding site as well.

Total Chance Planning

The guidelines issued by the district manager in 1999 recognized that road density and access issues need to be addressed on a broader level than the individual cutblock, and stated:

> Ideally there should be a clear planning connection from the strategic level, through landscape and forest development levels to the operational or individual cutblock level. In general, access issues should be addressed in forest development plans and these plans should demonstrate the application of 'total chance' concepts at the landscape or sub-unit level. This approach can result in significant cost savings through more efficient harvesting and use of road investment across a landscape…

At the strategic level, the Mackenzie LRMP establishes an objective to, "conserve soil through implementation of applicable legislation and regulation." It is a licensee's responsibility to ensure that forest planning and practices are consistent with that objective.

The audit examined each licensee's forest development plan and confirmed that each plan commits to employing basic concepts of total chance planning to minimize the level of permanent access structures required. For example, "Operational layout of cutblocks and roads will be completed to minimize isolation of the timber resource ensuring that future development opportunities are considered, and permanent access structures required to access the timber resource are minimized."

However, other than these commitments, the forest development plans did not demonstrate the application of total chance planning. Licensees indicated that in planning individual cutblocks, the timber characteristics in the surrounding areas are considered in determining whether roads may be required in future to access potential cutblocks. This does not constitute total chance planning and will not result in the area of permanent access being minimized.

Licensees indicated that it was important to maintain operational flexibility for woodflow considerations. They also indicated that total chance planning was not well-suited to volume-based forest licences, in which case a licensee's longer-term planning can be affected by other licensees' activities. Without the benefit of total chance planning, or other longer-term planning, and because the licensees' planning and field activities did not demonstrate total chance concepts, the audit could not determine whether the classification of permanent access structures, as affected by timing of construction, was appropriate.

Forest and Range Practices Act

FRPA establishes an objective for soils, "Without unduly reducing the supply of timber from British Columbia's forests, to conserve the productivity and the hydrologic function of soils." FRPA provides a default regime that licensees must adhere to, unless other regimes are approved in a forest stewardship plan. The default limit for the level of permanent access structures on a site is seven percent, unless there is no other practicable option. In which case, licensees must ensure that as little of the cutblock as practicable is occupied by additional permanent access structures. FRPA also requires that all temporary roads be rehabilitated and regenerated.

These requirements do not promote the minimization of the area of productive soils lost to permanent access structures.

Conclusions

The Mackenzie Forest District guidelines respecting density and classification of forest roads reflects sound principles important to effective soil conservation.

Licensees treated more roads as permanent than was necessary in the circumstances, the area occupied by unproductive soil as a result of permanent access construction was not minimized and temporary forest roads were not sufficiently utilized, where warranted. As a result, productivity losses to forest soils from road construction activities were not minimized.

In the three situations where temporary forest roads were rehabilitated, the rehabilitation will likely be effective in restoring the long-term productivity of the underlying soils.

Temporary trails were utilized where appropriate, and the trails were rehabilitated effectively, minimizing loss of soil productivity in these areas.

On four sites the BCTS did not comply with section 46(1) of the Code, which requires that licensees not exceed the amount specified under approved silviculture prescriptions for the maximum proportion of the area that may be occupied by permanent access structures.

There are a number of economic and operational disincentives for licensees to rehabilitate forest roads.

Appropriate application of total chance planning by licensees has not been undertaken.

The requirements under FRPA do not promote the minimization of the area of productive soils lost to permanent access structures.

Indicators:

- **There is a minimal level of altered natural drainage and no significant erosion, or risk of significant erosion, caused by roads, trails and landings.**
- **There is an absence of unproductive soil in the net area to be reforested as a result of landslides or gully erosion caused by harvesting or road construction, maintenance or deactivation.**

One of the most critical aspects of forest road and trail construction is maintaining natural drainage patterns. Where natural drainage patterns are altered, the consequences can be catastrophic, ranging from excessive levels of sediment introduced into waterways, to mass wasting events in the form of landslides.

The Code requires natural drainage patterns to be maintained through all phases of forest road-use, construction, maintenance and deactivation.

The audit examined 136 sections of road totalling 107 kilometres constructed during the audit period. The audit confirmed that on these sections of road, licensees had appropriately identified natural drainage patterns and prescribed appropriate measures to maintain natural drainage. There was minimal alteration of natural drainage and no significant erosion, or risk of significant erosion, caused by the road construction.

The audit confirmed the absence of landslides or gully erosion in the net area to be reforested on the 36 cutblocks examined.

These photos demonstrate the importance of maintaining natural drainage patterns. The main cause of this landslide was determined to be the result of altered natural drainage patterns above the slide area. A road intercepted water and re-directed it into the area above the headwall scarp, rather than maintaining natural drainage patterns below the road. The additional flow of water increased the natural overland and subsurface flow resulting in higher water levels and water pore pressures that initiated this slide. In this situation, the ineffective road construction was carried out prior to the period of the audit and was, therefore, not considered in the overall audit conclusions.

Conclusion

Licensees' road construction, trail construction and harvesting practices were effective in minimizing the alteration of natural drainage patterns.

Criterion: Productivity and hydrologic function losses to forest soils from harvesting activities are minimized.

Indicator: There is minimal disruption of natural drainage patterns in the net area to be reforested.

Similarly to road construction, preserving natural drainage patterns in the net area to be reforested is an important objective for effective soil conservation.

There was minimal disruption of natural drainage patterns in the net area to be reforested on the 36 cutblocks examined by the audit.

Conclusion

Licensees' harvesting practices are effective in minimizing the disruption of natural drainage patterns in the net area to be reforested.

Indicators:

- **The level of dispersed and concentrated soil disturbance in the net area to be reforested is minimized given the site conditions, harvest constraints and equipment utilized.**
- **Areas of excessive soil disturbance have been appropriately rehabilitated and regenerated.**

Harvesting activities invariably cause some level of soil disturbance on areas harvested. Soil disturbance can be beneficial or detrimental depending on the nature of the site and the severity and extent of the disturbance. Disturbance is considered detrimental, or excessive, when the disturbance reduces the long-term productivity of the areas disturbed.

The Code addresses the need to prevent soil degradation by requiring site-level operational plans to prescribe maximum levels of soil disturbance allowable for each site, depending primarily on soil characteristics. The primary types of disturbance considered include soil compaction, displacement and erosion. These types of disturbance can be in several forms, including gouges, scalps, ruts and compaction caused by machines falling and skidding trees.

Depending on the soil characteristics on a site, Code guidebooks recommend a maximum total disturbance in the net area to be reforested of either 5 percent or 10 percent. Lesser disturbance is required on sites with sensitive soils. Where timber is processed at roadside, disturbance in the roadside work areas is restricted to a maximum of 25 percent.

The audit examined harvesting practices on 36 cutblocks and mechanical site preparation activities on one cutblock. The majority of harvesting was processed within blocks (processed where felled) and at roadsides, with a lesser number of sites utilizing landings for processing. In each of the sites examined, soil disturbance levels were within prescribed maximums, in the net area to be reforested and, where applicable, roadside work areas.

By appropriately restricting operations to dry or sufficiently frozen or snow-covered ground conditions, planning skidding routes to avoid disturbance caused by repeated machine traffic and utilizing tree tops to create corduroyed forwarding trails, licensees effectively managed the risk of excessive soil disturbance caused by harvesting and processing activities.

However, on a number of sites examined, one or more situations of detrimental type soil disturbance were observed, which were considered avoidable. Examples include:

- Piling and burning debris, created in roadside work areas, outside of roadside work areas.
- Scalps resulting from operating machines on steep slopes within cutblocks. Licensees agreed that, in hindsight, there were better alternatives to operating machines on these areas.
- Rutting and puddling caused by machines operating on unfavourably moist soil conditions.

These observations of avoidable soil disturbance raise the question of whether the level of soil disturbance in these areas was, in fact, minimized—despite being within prescribed limits. The areas disturbed were quite minor when compared to the total area under each applicable plan and will not have an appreciable impact on the long-term productivity of each site. It may, therefore, be reasonable to consider that these small areas of disturbance are, in fact, the minimum level of disturbance achievable on these sites, considering the topography of the sites, the equipment utilized and the cost of transporting and utilizing different equipment on these localized areas.

However, it may also be reasonable to consider that a better alternative would have been to reserve these wet or steep areas from harvesting - an effective practice observed on a number of other sites.

On only one cutblock was the level of soil disturbance considered excessive, resulting from machinery operating despite unfavourable soil conditions. Two small areas (less than 0.2 hectares) and one larger area (0.9 hectares), located in wet depressed areas with fine-textured soils were observed with concentrated disturbance, including rutting and compaction. The level of disturbance within theses areas was estimated to be greater than 20 percent.

These photos illustrate machine disturbance (rutting) from operating machines on unfavourable soil conditions.

Skidding disturbance causing isolated scalping on a steep slope.

Conclusions

Licensees are appropriately identifying and managing the risk of excessive soil disturbance in the net area to be reforested.

On all but one cutblock, the level of soil disturbance was minimized considering the site conditions, harvesting constraints and equipment utilized.

On the one cutblock, machinery operating on unfavourable soil conditions resulted in excessive rutting and compaction over approximately 1.1 hectares.

Response from Auditees

Canadian Forest Products Ltd. (formerly Slocan Forest Products Ltd.)

Canfor stated in its response that its development plan is the end result of landscape and drainage scale planning completed at a level of investment and resolution consistent with the level of stability and ownership provided by government. Among many considerations, Canfor's plans strive to provide balanced and reasonable long-term access, minimize the isolation of timber, and address biodiversity issues.

Canfor expressed concern surrounding an expectation of significant investment in long-term/total chance planning and referenced the recent government "take-back" of timber areas as an example of the uncertainties and lack of security provided by a "Forest Licence" volume-based tenure.

Abitibi Consolidated Company of Canada

Abitibi stated in its response to the audit that the issue around soil conservation and rehabilitation must consider a wide range of values including economic, long term forest management and silviculture, soil productivity and wood supply, wildlife management, and social use of roads. There is strong public opinion (for and against) on the rehabilitation of roads that needs to be considered.

Abitibi stated that it, therefore, would be prudent that the Board's recommendations that government and industry identify and address disincentives to road rehabilitation include social and wildlife considerations.

British Columbia Timber Sales

With respect to the non-compliance identified by the audit, BC Timber Sales stated that it accepts the Board's findings, however, emphasized that, under the BCTS, compliance with statutory obligations is the responsibility of individual Timber Sale Licence holders. The Prince

George Business Area of the BC Timber Sales (PGBA) commits to undertake a site examination of the 4 non-compliant cutblocks. The site examination will lead to an action plan for treatment of the roads in question. Once completed, expected by November 30, 2004, the action plan will be forwarded to the Board.

With respect to the room for improvement regarding lack of rehabilitation undertaken on permanent access structures which could have been temporary, the PGBA commits to developing a standard operating procedure that will be focused on minimizing site disturbance, including developing revised guidelines for prescribing access structures, with the goal of better defining the conditions under what temporary and permanent access structures are prescribed. Once completed, expected by January 30, 2005, the standard operating procedure will be forwarded to the Board.

[1] The Board also conducted a pilot audit of stream riparian management in the Chilliwack Forest District.

[2]Under the *Forest and Range Practices Act* and its regulations, all major tenure holders – companies with logging rights on Crown land and the timber sales manager, BC Timber Sales – must prepare a forest stewardship plan. Government must approve this plan before forestry operations take place. The forest stewardship plan is a cornerstone of the results-based approach governing forest practices under the Act. In their plans, tenure holders must state explicitly how they will address government objectives for key forest values, such as soils and wildlife. The forest stewardship plan may be in place for up to five years and may be extended for a further 5 years while its counterpart under the Code, the forest development plan, could be in place for only up to two years. The new plans are intended to encourage longer-term planning, contribute to sound forest management, reduce paperwork and encourage innovation.

[3] Forest Licence A15384 was formerly held by Slocan Forest Products Ltd. On April 1, 2004 Canadian Forest Products Ltd. acquired Slocan Forest Products Ltd., including Forest Licence A15384.

[4] Under the BC Timber Sales, Timber Sale Licence (TSL) holders are responsible for their forest practices on the ground, including carrying out all operations in compliance with provincial legislation and regulations. The BCTS business area is responsible for planning and silviculture obligations and the Timber Sales Manager has overall responsibility for managing the program. The BCTS does not supervise the day-to-day field activities of TSL holders. The cutblocks examined during the audit were harvested either under the Small Business Forest Enterprise Program or during the transition to the BC Timber Sales.

[5] A higher level plan is a forest resource management objective that is established as legally binding by a written order. The objective applies to a resource management zone, landscape unit, sensitive area, recreation site, recreation trail, or interpretive forest site.

[6] C. Bulmer, Soil Restoration Ecologist, B.C. Ministry of Forests, June 2004.

Appendix A:
Development of the Soil Conservation Indicators

This appendix provides an overview of the process undertaken by the Board in designing an audit program for soil conservation, and highlights how the development of the audit program incorporated the draft indicators developed by the soils scientists.

Overview of the Indicator and Audit Program Development Process

- A team of soils scientists, independent of the Board, developed a total of 8 draft indicators under 5 categories (or groupings) and provided these to the Board.
- The Board auditors reviewed the draft indicators and provided feedback to the soils scientists.
- The auditors received final draft indicators.
- The auditors attended a two-day session in the field where the soil scientists reviewed and discussed the indicators with the auditors.
- The auditors developed the audit approach and methodology, including adapting the indicators as necessary to facilitate the audit (see below).
- The indicators and approach and methodology to the audit were reviewed and approved by the Board Chair.
- An audit program based on the approved approach and methodology was developed by the audit team (note: the audit team included one member from the soil scientists team).
- The Soils Conservation Audit Program was distributed to the other members of the soils scientists' team for review and comment.

Incorporating the Indicators into an Audit Program

In general, the changes described below stemmed from the need to ensure that the measurement and assessment processes employed would facilitate the Board's substantive-based audit approach (as opposed to the need to change the indicators themselves). Such an approach relies primarily on the examination of the results of forest practices in order to draw conclusions about the practices themselves. As such, the assessment procedures must, to the highest extent possible, include consideration of the underlying forest practices that led to the observed site conditions.

- All of the indicators, except 2, were incorporated into the audit program.
- The 2 indicators associated with soil biology were not utilized primarily because there is not a clear demonstrable link between the extent of mature forest ectomycorhiza fungi

retained on site and the productivity of site soils, and of the level of course woody debris on soil conservation.

- The grouping of the indicators was changed to 1) reduce the number of groupings and 2) more closely relate the groupings to the underlying forest practices. The groupings used for the audit program were Permanent Access Structures, Temporary Access Structures and Net Area to be Reforested.
- The assessment of 'minimization' of soil disturbance was incorporated into relevant indicators. This notion had been listed as an ancillary question to the draft indicators.
- The assessment of 'landscape-level' soil conservation was incorporated into the audit program.
- An element of 'setting expectations' was introduced into the overall assessment of effectiveness (through senior management interview audit procedures).
- The measurement process was adapted to increase reliance on professional judgment, with detailed quantification of soil disturbance in circumstances of non-compliant or ineffective practices only (rather than detailed measurement on all sites). This was necessary to accommodate audit resource and time constraints.

Appendix B: Forest Practices Board Audit Objectives and Methodology

The Forest Practices Board is an independent public watchdog that reports to the public about compliance with the *Forest Practices Code of British Columbia Act* and regulations (the Code). The board's mandate has been retained under the new FRPA, which will fully replace the Code effective December 31, 2005. The board's main roles are:

- Auditing forestry practices of government and licence holders on public lands.
- Auditing government enforcement of the Code and FRPA.
- Investigating public complaints.
- Undertaking special investigations of forestry issues.
- Participating in administrative appeals.
- Providing reports on board activities, findings and recommendations.

Auditing Forestry Practices

Background

The Forest Practices Board conducts audits of government and agreement-holders for compliance with applicable forestry and range legislation, including the achievement of its intent. The Board has the authority to conduct these periodic independent audits under FRPA and the Code.

Objective

The objective of Board audits of forestry practices has changed with the introduction of FRPA. FRPA is more results-based legislation than the Code. It focuses on setting forest management objectives and relying on licensees and their professionals to achieve those objectives. It does not direct specifically how forestry activities are to be performed. Instead it requires licensees to ensure that results consistent with objectives are achieved. Thus compliance with the legislation is expected to mean achievement of results. Board audits therefore examine and provide assurance whether forest practices are achieving government's objectives. These assessments could be considered a form of effectiveness auditing, but include compliance assessments also.

Criteria and Indicators

To facilitate the assessment of forest practices in relation to the achievement of government objectives Board audits use criteria and indicators. Criteria and indicators provide an objective

basis for evaluating the impact of forest practices on forest resources and assessing and reporting on the compliance of forest practices in relation to the achievement of objectives.

Indicators are measures or descriptions of the condition of a forest resource. For example, one indicator for soil conservation is the percentage of a logged area that is occupied by permanent access structures. This is an indicator of the extent to which the amount of growing sites has been reduced due to construction of roads and landings. This could be one of a number of indicators used to assess whether forest practices are consistent with criteria related to government's objective to conserve the productive capacity of forest soils.

The Board uses criteria and indicators as a basis for gathering audit evidence, assessing practices in relation to objectives and reporting findings.

The Board uses indicators developed by other credible sources, independent from the Board. The Board does, though, select the indicators it can use and in some cases may adapt indicators from other sources to facilitate audit.

For the purposes of audits, the Board uses indicators that enable it to assess the impact of forest practices and that are capable of being evaluated with the resources of an audit (e.g., the personnel and the time available).

Audit Standards

Audits by the Forest Practices Board are conducted in accordance with the auditing standards developed by the Board. These standards are consistent with generally accepted auditing standards.

The audits determine compliance with forestry legislation based on criteria derived from the legislation and its related regulations. Audit criteria are established for the evaluation or measurement of each practice regulated by legislation. The criteria reflect judgments about the level of performance that constitutes compliance with each requirement.

The standards and procedures for compliance audits under the Code are described in the Board's Compliance Audit Reference Manual. The standards and procedures for audits of forestry practices under FRPA are intended to include the use of criteria and indicators, and are currently under development.

Audit Selection

The Board determines how many audits it will conduct in a year, and what type of audits (limited or full scope), based on budget and other considerations. The Board audits agreement-holders who have forest licences or other tenures. The Board also audits government's BC Timber Sales program (BCTS), which is administered by Ministry of Forests' timber sales offices. Selection of audit units is done randomly, using a computer program, to ensure a fair, unbiased selection of auditees.

Conducting the Audit

Once the Board selects an audit and decides on its scope, the audit period and the resources required to conduct the audit are determined. Board audit standards require that the audit team be comprised of professionals who have the knowledge and competence necessary to carry out the particular audit.

Representatives of the audit team meet with the party(s) being audited to discuss the logistics of the audit before commencing the work.

All the activities carried out during the period subject to audit are identified; for example, harvesting or replanting sites and building or deactivating road sections. The 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'. The populations are then sub-divided based on factors such as characteristics of the sites, criteria applicable, and potential severity of the consequences of non-compliance on the sites.

For each population within each criteria applied by the audit, the auditors choose the most efficient means of obtaining information to conclude whether the forestry practices have achieved the criteria applied, including compliance with the legislation. Because of limited resources, auditors usually rely upon sampling to obtain audit evidence, rather than inspecting all activities.

Individual sites and forest practices within each population have different characteristics, such as the type of terrain or type of yarding. Each population is divided into distinct subpopulations on the basis of common characteristics (e.g., steep ground versus flat ground). A separate sample is 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 the sub-population where the risk of ineffective practices is greater.

Audit work in the field includes assessments from the air using helicopters and intensive ground procedures, such as measuring specific features like road or riparian reserve zone width. The audit teams generally spend one to two weeks in the field.

Evaluating the Results

The Board recognizes that assessing the effectiveness of forestry practices, including compliance with the many requirements of forestry legislation, is more a matter of degree than absolute achievement. Determining effectiveness and assessing compliance requires the exercise of professional judgment within the direction provided by the Board.

Auditors collect, analyze, interpret and document information to determine the audit results. The audit team, composed of professionals and technical experts, first determines whether forest practices are in compliance with the applicable legislation. For those practices considered

to not be in compliance, the audit team then evaluates the degree to which the practices are judged not in compliance. The significance of the non-compliance is determined based on a number of criteria, including the magnitude of the event, the frequency of its occurrence and the severity of the consequences.

As part of the assessment process, auditors categorize their findings into the following levels of compliance:

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

Not significant non-compliance–-where the auditor, upon reaching a non-compliance conclusion, determines that a non-compliance event, or the accumulation and consequences of a number of non compliance events, is not significant and is not considered worthy of reporting.

Significant non-compliance–-where the auditor determines that the event or condition, or the accumulation and consequences of a number of non-compliance events or conditions, 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 the non-compliance. A significant breach can also result from the cumulative effect of a number of non-compliance events or conditions. Identification of a possible significant breach requires the auditor to conduct tests to confirm whether or not there has been a breach. 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 Ministers of Forests, Energy and Mines, and Water, Land and Air Protection.

The audit team then determines whether forest practices have achieved the criteria applied. The data collected for each of the indicators is analyzed in relation to each criterion applied by the audit. Board audit standards require sufficient appropriate audit evidence be collected to support an overall conclusion about forest practices in relation to each criterion applied.

Where necessary, depending on the complexity and magnitude of findings of the audit, the audit team will facilitate a discussion of the audit results with the party audited. This discussion can take several forms and is intended to ensure that the party audited is fully aware of the results of audit findings, and provides an opportunity for the party audited to present further information about the audit findings and to ensure the audit team has complete and correct information.

Reporting

The first step in the audit reporting phase is facilitating a workshop attended by the parties audited, local resource agency managers, the auditors and the Board Chair. The workshop includes discussing the audit results and focuses on improving forest practices in relation to the

criteria and indicators applied. Also, feedback about the criteria and indicators and their application in audits is collected.

Based on the above evaluations, the audit team then prepares the draft audit report for review by the Board Chair. The party being audited is given a draft of the report to review and provide comments to the audit team. A final draft report is then prepared and given to the party audited. Based on the final draft report, the party audited may submit comments to the Board. The Board utilizes a one-report model comprising four main sections—Board commentary, recommendations, detailed findings and conclusions, and auditee response. This long-form reporting model is designed to provide comprehensive information about the results of forest practices.

In the Board commentary section, the Board's comments about the results of the audit are reported. For example, the Board may wish to comment on the results of an audit in relation to other audits conducted or developing trends.

In the recommendations section, the Board may make recommendations it considers appropriate. The Board may be asked to be notified of the steps that have been taken to implement a recommendation. If the Board believes that adequate or appropriate action has not been taken, the Chair can provide a further report to the ministers and make a report to the Lieutenant Governor in Council.

In the detailed findings and conclusions section, detailed findings and conclusions are reported about licensees' forest practices in relation to criteria applied, including overall assessments about the practices audited in relation to each of the criterion applied. Audit findings may include the impact of forest practices on forest resources, findings in relation to indicators, findings in relation to government's objectives and comments on licensee management systems. This section will also include a description of any non-compliance observations that are considered significant.

The Board 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 to the public and government. The representations allow parties that may potentially be adversely affected to present their views to the Board.

At the discretion of the Board, representations may be written or oral. The Board will generally decide on written representations, unless the circumstances strongly support the need for an oral hearing. The Board then reviews the report from the auditor and the representations from parties that may potentially be adversely affected before finalizing its report.

Before releasing its audit reports, the Board will provide auditees an opportunity to review and make comments about the results of the audit. A summary of these comments may be included in the Board's audit report. In conjunction with the opportunity to review the draft report, this will fulfill the Board's requirement to provide for auditees to make representations to the Board.

For third parties, the Board will provide for representations where they are determined to be potentially adversely affected by the content of a Board audit report.

Once the representations have been completed, the report is finalized and released: first to the auditee and then to the public and government.

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NEWS RELEASE

For Immediate Release
November 23, 2004

New results-based approach used for forestry audits

VICTORIA – The Forest Practices Board has released two pilot audits on forest soil conservation and streamside (riparian) management , the first board audits to reflect the results-based approach of the new Forest and Range Practices Act (FRPA).

“This is the board’s first step towards actually measuring whether forest practices are effectively preserving our forest and environmental values for future generations,“ said board chair Bruce Fraser. “While auditing compliance is still part of the board’s mandate, we are shifting our emphasis for future audits to evaluating achievement of results.”

The audits found that the forest practices examined were generally successful at protecting soils from the effects of harvesting activities and at preserving fish habitat in streams. With one exception, all licensees complied with the requirements of the Forest Practices Code, which was in effect during the period of the audit. FRPA is being phased in over a two-year period ending on Dec. 31, 2005.

“We found that forest companies and BC Timber Sales (BCTS) are doing a good job on the ground in protecting our soils and streams, but we also made recommendations to promote better performance on rehabilitating forest roads and reducing sediment deposits in streams,” said Fraser. “These pilot audits were a first opportunity to test science-based criteria and indicators to measure the effectiveness of forest practices in achieving objectives set by government.

“This is a work in progress and we will continue to improve our results-based auditing procedures through further pilot audits. We welcome feedback on our criteria and indicators, which are measuring tools to evaluate whether the desired results are being achieved. The board will be discussing the results of the pilot audits with forest professionals, industry, government and environmental organizations over the coming months.”

The pilot audit of forest soil conservation was conducted in the Mackenzie Forest District in the summer of 2003, while the stream riparian management pilot audit took place in the Chilliwack Forest District in the fall of 2003. The board is conducting further pilot results-based audits on biodiversity conservation, visual quality and stream riparian management.

The soil conservation audit found non-compliance with code requirements by BCTS, as its road construction practices exceeded prescribed limits and had a negative impact on the future productivity of the sites affected. The board requested that the Prince George BCTS manager review BCTS systems for ensuring compliance with legislated soil conservation requirements, and effect improvements as necessary.

The Forest Practices Board is an independent public watchdog that reports to the public about compliance with the Forest Practices Code and the achievement of its intent. The board’s mandate has been retained under FRPA. The board’s main roles under FRPA are:

- Auditing forest practices of government and licence holders on public lands.
- Auditing government enforcement of FRPA.
- Investigating public complaints.
- Undertaking special investigations of forestry issues.
- Participating in administrative appeals.
- Providing reports on board activities, findings and recommendations.

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Note: Backgrounder with report summaries and recommendations attached

Audit of Stream Riparian Management, Chilliwack Forest District

The Forest Practices Board conducted a pilot audit of stream riparian management practices in the Chilliwack Forest District in the fall of 2003, one of two pilot audits designed to explore the Board’s approach to auditing forest practices under FRPA.

Download Full Report Riparian

Audit of Forest Soil Conservation Mackenzie Forest District

The Forest Practices Board conducted a pilot audit of stream riparian management practices in the Mackenzie Forest District, one of two pilot audits designed to explore the Board’s approach to auditing forest practices under FRPA.

Download Full Report Soils

This news release and more information about the board are available on the Forest Practices Board Web site at www.fpb.gov.bc.ca or by contacting:

Backgrounder

Response from the Ministry of Forests and Range

Closing Letter from Chair

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