

**REPORT ON AUDIT OF PRIVATE
MANAGED FOREST PROPERTIES
ON VANCOUVER ISLAND**

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Prepared For

Land Reserve Commission

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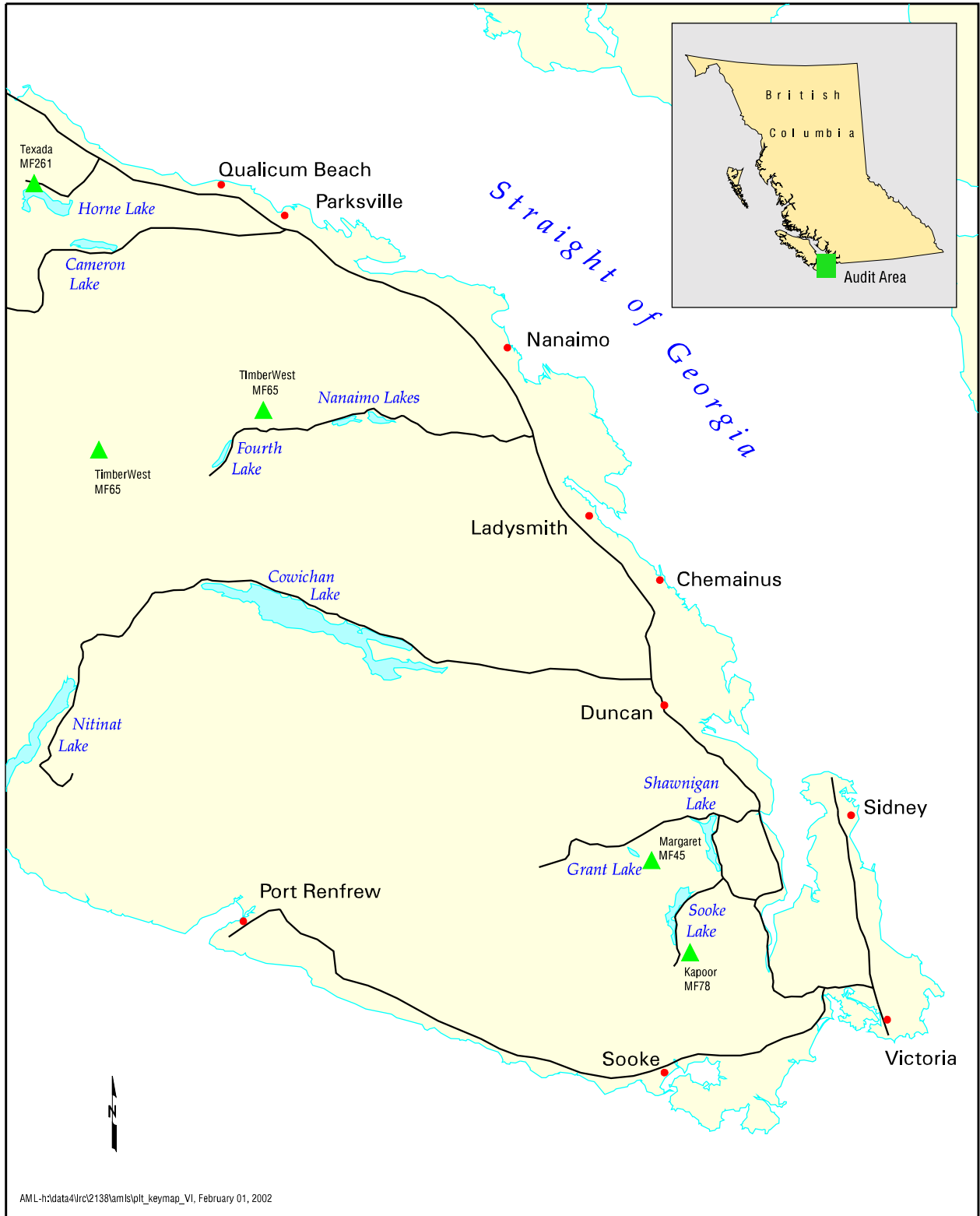
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Vancouver Island Audit Locations



1.0 INTRODUCTION

1.1 MANDATE AND LEGISLATION

The Land Reserve Commission (Commission) administers the Forest Land Reserve (FLR) and the Agricultural Land Reserve (ALR). The FLR was established in 1994 by the provincial government to retain forest lands for timber production and harvesting and to minimize the impact of urban development and rural settlement. The FLR includes both private and public lands. There are approximately 16 million hectares in the FLR of which about 920,000 hectares are private. Of this 920,000 ha about 720,000 ha meets the definition of identified land in the legislation and is subject to the Private Land Forest Practices Regulation. Approximately one half of the private forest land in British Columbia is in the managed forest property assessment class. Managed forest is a property assessment classification, designated by the BC Assessment Authority, available to owners of forest land who commit their properties to the growing and harvesting of trees. Approximately 30,000 ha of managed forest in the ALR meets the definition of identified land. The majority of the private forest lands are located on Vancouver Island (75%) and in the Kootenays (25%).

The Commission is responsible for ensuring that forest management practices on identified land complies with the Private Land Forest Practices Regulation, BC Reg. 318/99 (the regulation) which came into effect on April 1, 2000. This responsibility includes carrying out audits of forest practices on identified lands. The objective of the legislation is to protect key public environmental values. The regulation establishes forest management objectives and minimum standards of practice for the protection of water quality, fish habitat, soils, critical wildlife habitat and reforestation.

In August 2001 the Commission engaged Sterling Wood Group Inc. (Sterling Wood), forestry consultants, to undertake an audit of certain identified lands. The intent was to assess compliance with the regulation and the effectiveness of these standards in achieving the Schedule A Forest Management Objectives in the regulation. It is recognised that private managed forest lands are subject to additional federal and provincial environmental legislation (including the federal *Fisheries Act*, the provincial *Water Act*, *Soil Conservation Act* and *Wildlife Act*.)

A forest practices audit of four private forest land properties on Vancouver Island was undertaken during October 29 through November 7, 2001 by a three-person audit team composed of independent third party auditors from Sterling Wood and a representative from the Ministry of Water, Land and Air Protection (MWLAP). This report from the audit team presents the findings of the audit and a description of the objectives, scope and methodology used.

1.2 AUDIT TEAM

Stuart Macpherson Lead Auditor Sterling Wood Group

Mr. Macpherson is a registered professional forester and a certified environmental auditor with 30 years experience in forest management planning and operations. Since 1994 he has led the forest practices auditing services for Sterling Wood Group. Stuart has participated in over 60 forestry and environmental audits of forest companies’ operations throughout British Columbia. In his role as either team leader or auditor he has performed audits for the Forest Practices Board, the Ministry of Forests Small Business Program and numerous forest companies. His expertise covers design and development of environmental management systems, audit design and planning, risk assessment, audit training, forest practices auditing and reporting.

Dave Barker Auditor Sterling Wood Group

Mr. Barker is a registered professional forester and a certified environmental auditor with 33 years experience in forest management planning and operations. He has been undertaking audits since 1988 and has assisted in the development of forest practices auditing services for Sterling Wood Group. Dave has participated in over 70 forestry and environmental audits of forest companies’ operations throughout British Columbia and in Ontario. In his role as either team leader or as an auditor, he has performed audits for the Forest Practices Board, the BC Ministry of Forests Small Business Program, Ontario Ministry of Natural Resources and numerous companies. His expertise covers design and development of environmental management systems, audit design and planning, risk assessment, audit training, forest practices auditing and reporting.

Kevin Telfer Auditor Ministry of Water, Land and Air Protection

Mr. Telfer is a biologist and registered professional forester with over ten years experience in the forest sector. He has worked in interior and coastal British Columbia with the Ministry of Forests in the silviculture, timber protection and Small Business Forest Enterprise programs. Since 1995 he has been with the Ministry of Environment Lands and Parks (now the Ministry of Water Land and Air Protection) reviewing forestry and resource development proposals and monitoring environmental impacts on public and private land.

1.3 OBSERVERS

Observers of the audit who accompanied the audit team during the field assessment included a field officer from the Commission whose role was to provide technical expertise on the interpretation of the regulation, representatives of the owners who provided information on request and staff from the Private Forest Land Owners Association (PFLA) who witnessed the audit process.

2.0 OBJECTIVES

The purpose of the audit was to assess both compliance of forest practices with the private land forest practices legislation and the effectiveness of the regulation.

The objectives were to:

- determine the degree to which forest practices on audited lands comply with the Forest Land Reserve Act and the regulation,
- determine the degree to which the Forest Management Objectives in Schedule A of the regulation have been achieved,
- estimate variation in the effectiveness of the regulation for identified lands,
- compare the effectiveness of the *Forest Land Reserve Act* to the *Forest Practices Code of BC Act* with respect to the same/similar public values on Crown land.

3.0 SCOPE

The scope included the management requirements on identified land that relate to soil conservation, fish habitat, water supply areas, critical wildlife habitat and reforestation as a result of harvesting, road construction, maintenance and reforestation activities.

The audit reviewed activities that occurred from April 1, 2000 to December 31, 2000. The audit also assessed the regeneration status of areas harvested prior to April 2000. As the audit period only covered activities completed in the first nine months since the regulation took affect, the scope was extended during the audit to assess harvesting, road maintenance and reforestation activities in 2001 to gain an understanding of how an owner's forest practices may have evolved over time.

3.1 DESCRIPTION OF PROPERTIES AUDITED

All four properties audited have managed forest property assessment status. They are all located on southeastern Vancouver Island. The properties were:

Owner	MF #	Location	Gross Area (ha)
Kapoor Lumber Ltd.	77	Sooke Lake	2,447
Margaret Forestry Ltd.	45	Grant Lake	817
Texada Land Corp.	261	Horne Lake	2,927
TimberWest Forest Co.	65	Nanaimo Lakes	34,454*

Three of the properties subject to this audit (Sooke Lake, Grant Lake, and Nanaimo Lakes) have been managed by their respective owners as tree farms for over 30 years and have a history of continuous forest management. The fourth property, (Horne Lake), had one owner from the mid-1960s until late 1999, when it was sold to Texada Land Corporation.

Although there are differences in physiographic characteristics within and between each property, generally the types of forest and environmental conditions found on each are similar:

Water Quality Condition

None of the properties audited are within or part of community water supply areas.

Soil Condition

The sites reviewed ranged from valley bottom, midslope, to upper slopes. The topography varied from moderately flat to steep. There is no history of chronic terrain instability. Slopes are considered stable, with minimal natural or man-made slide history observed on the sites visited during the field review. Soils within harvest units are relatively well drained with little evidence of standing water or deep organic soils.

*Excludes Oyster River Operation

Due to high seasonal precipitation levels, these conditions are considered to present a moderate risk regarding the potential for erosion of soils into streams.

Potential point sediment is at stream crossings and associated with road surface water maintenance. Failure to ensure appropriate management of harvesting activities could dramatically increase the risk of erosion of soil into streams, and damage forest productivity.

The well-drained soils found on some of the sites audited feature a thin organic mantle that may be adversely affected if broadcast burning is selected as a site preparation method.

Fish Habitat Condition

There are fish bearing streams within the properties. Landowners use available sources of fish inventories, however, fish stream inventory data is not available for all of the properties to assist owners in determining the presence of fish. One landowner, TimberWest was found to maintain an inventory of fish bearing streams on its property. For the other three properties, fish bearing streams have not been fully documented. Stream gradients are the primary determinant for owners in planning harvesting and road development activities adjacent to streams. The lower reaches of streams entering Grant Lake (Margaret) and the lower reaches on streams entering Horne Lake (Texada) are thought to have fish present. The few streams on the Kapoor property are not known to be fish bearing. Under the regulation the onus is on the owner to assess the presence or absence of fish in streams prior to timber harvesting activity.

Critical Wildlife Habitat

No areas within the properties audited had been identified by the MWLAP as critical wildlife habitat during 2000 or 2001.

Reforestation Condition

The forests are of mixed age classes and rotational stages. The stands consist predominantly of mixed conifer species composed principally of Douglas-fir, western hemlock, western red cedar, amabilis fir, red alder and yellow cedar.

Reforestation of harvested areas is well established and includes a range of natural and artificial restocking methods.

3.2 AUDIT PROCESS

The Commission notified each landowner of the audit. Following this notification the lead auditor contacted them to assemble information for preparing an audit plan and provided an Owner Information Request form. The completed form along with the owners' annual declarations for calendar year 2000 provided the basis for preparing the audit plan. All information provided by the owners to the auditors in addition to that required by statute was handled in confidence and was returned to them on completion of the audit.

A joint opening meeting involving the auditors, auditees, and observers was held in Duncan on October 29, 2001. Because as this was the first audit on the Coast by the Commission a portion of the meeting was used to discuss and address issues. Informal exit meetings were held on site with each auditee on completion of the field assessment phase. At this meeting, the auditors provided an overview of their findings and a preliminary opinion on performance relative to the audit objectives. During the audit, owner representatives were interviewed on issues related to managing identified lands, some of which were outside the audit scope but have been brought forward in this report in order to provide owners and regulators with opportunities for improvement.

Audit summary forms and checklists for documenting evidence were prepared by the audit team. Observations and collection of facts were made through a combination of interviews with owner representatives, review of property documentation, field measurements and assessment of activities. Working papers were completed for each audit sample. These consisted of observation, interview notes, completed checklists, photographs and summary notes. The owner representatives accompanied the audit team during the field assessment of each property.

As there was only limited harvesting on the properties audited adjacent to large or small streams during the audit period, the audit sample did not enable a rigorous evaluation of harvesting practices and tree retention near streams and in riparian zones. However, in the process of assessing past harvesting, road construction and planning practices, it was possible to get a general sense of how riparian management was being addressed before April 2000. During this time, before the enactment of the regulation, owners who are members of the PFLA were following a Best Management Practices program and voluntarily protecting key public environmental values on private land.

3.3 AUDIT SAMPLE

The audit examined harvesting, road building, deactivation, maintenance and reforestation activities declared for the last nine months of calendar year 2000. In addition, a selection of areas logged prior to April 2000 was assessed for regeneration status. Current road maintenance was evaluated. The field assessments were made on the ground by road and helicopter on the TimberWest and Texada properties.

The number of samples by activity was:

- 29 harvest blocks (being clear-cut, clear-cut with reserves, and selective cutting)
- 20.5 km of new road construction (primarily branch and on-block roads)
- 1.6 km of semi-permanent and permanent road deactivation
- 42 km of road maintenance (both pre-existing and new roads and four bridges)
- 18 blocks restocked after harvesting in 2000
- 9 blocks regenerated after harvesting during the previous 10 years (pre-2000)
- 2 areas (500ha) of broadcast fertilisation

As the sample of areas harvested adjacent to both large and small fish streams¹ during the audit period was limited, this audit did not constitute a rigorous valuation of management practices near fish streams and in riparian zones. During the audit of the TimberWest property the sample was expanded to include three cutblocks to assess tree retention practices beside small non-fish bearing streams that drained into fish streams.

¹ Large Stream = >3.0m wide Small Stream = 1.5 to 3.0 m wide

4.0 FINDINGS

The audit findings were developed from an evaluation of evidence collected through interviews, field observations and measurements, document reviews and inspection of field activities and then assessed against the compliance and effectiveness criteria in the checklists.

The reader is reminded that the findings were derived from a sample of the activities on the four properties audited. Accordingly, they reflect the auditors' assessment of those properties and, therefore are not necessarily representative of practices on other private managed forest lands in the FLR on Vancouver Island. The findings presented are for all four properties, apart from the exceptions discussed.

4.1 SOIL CONSERVATION

Compliance

The audit found that forest management activities with respect to soil conservation are being conducted in compliance with the regulation. The percentage of productive forest land converted to roads and landings was consistently less than 7%.

Effectiveness

Schedule A Forest Management Objective

1. The forest management objectives with respect to conservation of soil, for areas where harvesting has been carried out, are:

- (a) to retain the organic floor to the fullest extent possible if disturbance to the organic forest floor is likely to result in erosion of mineral soil from the area, if that erosion presents a significant risk of damage to human drinking water supplies or to aquatic habitats;*
- (b) to restrict the amount of productive forest land that is converted to permanent roads, landings and excavated or bladed trails to the minimum necessary to safely and efficiently conduct forest practices; and*
- (c) to protect soil productivity on areas other than those referred to in paragraph (b).*

No environmental concerns were detected with respect to soil conservation.

Harvesting operations are undertaken using ground-based hoe forwarding, cable and helicopter yarding systems or a combination of all three. Site disturbance to, or scarification of the forest floor is minimal. Where skid trails were used for extracting logs, they were not unduly compacted. In many cases skid trails had been planted alongside or had conifer germinants beginning to grow on them.

Logs are decked either at the roadside or on small landings (<0.15 ha). Logging sites are left in stable condition with no signs of erosion of soil into streams.

Access to harvest sites is primarily by extending or branching off established road systems. Both new roads and existing roads are well built, with narrow cleared right-of-ways and road surfaces generally from 5 to 6m wide. Use is made of rolling grades, ditching, out-sloping of road surfaces and installing cross-drain culverts to minimize surface erosion, stabilize the road prism and provide adequate drainage of roads.

Generally road systems are being adequately maintained. Culvert inlets and outflows are armoured and ditches are being cleaned where required. Exposed cutbanks and fillslopes are often grass seeded when additional stability is needed. These are usually seeded within a year of construction. When roads are not in active use, ditchblocks and water bars are installed as a water control measure.

The application of these practices has resulted in stable, well-maintained road systems designed, constructed and maintained in a manner that minimizes the risk of erosion of soil into streams and minimizes the amount of forest land converted to non-productive area.

4.2 WATER QUALITY AND FISH HABITAT

Compliance

The audit found that forest management activities with respect to water quality and fish habitat are being conducted in compliance with the regulation on the Kapoor, Margaret and TimberWest properties. On the Texada property at Horne Lake, forest management activities substantially comply with the regulation except for two situations concerning tree retention beside streams in two harvest blocks, SA-10 and SA-16.

For both of these harvest blocks Texada had deemed the streams to be fish bearing, although this had not been verified by a fish inventory. Both streams had slope gradients of less than 20% and appeared to have the characteristics of fish streams. This means that the regulatory requirements for fish streams, sections 11 – 16, must be applied during harvesting unless it has been proven that fish are not present before harvesting activity commenced. More specifically, the retention of trees adjacent to large and small streams as defined in section 11 and 12 of the regulation must be followed.

Block SA-10: a large stream along the southeastern boundary had been ribboned before harvest assuming it was fish bearing. The audit team assessed a section of this stream and found that the proportion and size of the Douglas-fir and alder trees retained along the section of riparian zone was not in the same proportion as the pre-harvest stand. The balance and majority of riparian zone beside the stream was observed to have adequate tree retention. The owner's representative suspected that there was a barrier to fish downstream and that the stream may not be fish bearing. The understory vegetation had not been cut and the streambanks had not been disturbed.

The auditor considered this finding to be a potential non-compliance with section 11(1)(2) of the regulation.

Block SA-16: a small stream adjacent to the boundary had been ribboned before harvest assuming it was fish bearing. The audit team assessed a section of this stream and found that the proportion and size of the alder and red cedar trees retained along the riparian zone was not in the same proportion as the pre-harvest stand, which was red cedar/fir/alder. The understory vegetation had not been cut and the streambanks had not been disturbed.

The auditor considered this finding to be a potential non-compliance with section 12(1)(5) of the regulation.

These two potential non-compliances were recorded as Non-Compliance Advisory Notes and forwarded to the Commission. At the closing meeting the owner's representative advised the auditors that a fish biologist would be retained to investigate fish presence or absence in both of these streams.²

Despite these two exceptions the integrity of fish habitat on the properties' audited is being protected by a combination of various practices. These include retaining trees adjacent to streams, establishing riparian zones along both fish and non-fish streams and minimizing the number of crossings needed. During the period of activity covered by this audit, the auditees advised that there had been no water quality problems reported to them by downstream water users.

Effectiveness

Schedule A Forest Management Objective:

2. The forest management objective with respect to protecting human drinking water quality and fish habitat, both during and after harvesting, is to retain sufficient streamside mature trees and understory vegetation to sustain all of the following:

- (a) a natural variation in water temperatures;*
- (b) cover for fish;*
- (c) a continual source of large woody debris for stream channel stability purposes;*
- (d) a vigorous mass of roots capable of controlling stream bank erosion;*
- (e) a filter to prevent the transport of sediment into stream channels;*
- (f) woody debris sufficient for in-stream habitat;*
- (g) a source of nutrients to the stream through litter fall.*

No environmental concerns were detected with respect to general requirements around streams and fish habitat, or specific requirements for fish streams and water supply areas. There were no operations in licensed water supply areas

² Subsequently the professional biologist's field study reported that the large stream on SA-10 was non-fish bearing due to a barrier, and that fish absence could not be established for the stream on SA-16. Also that there are no barriers to fish passage and, noting that this stream joined onto a known fish bearing stream.

There was no harvesting adjacent to fish streams on the Kapoor and Margaret Forestry properties. Harvesting adjacent to large and small fish streams was sampled on the TimberWest and Texada properties. TimberWest classifies (and field verifies) most streams prior to harvesting and prepares detailed logging plans with site specific requirements designed to protect stream habitat within or adjacent to the harvest block. On the TimberWest property streamside trees and vegetation were retained and clearly meet the Schedule A Forest Management Objectives.

Although non-fish streams outside water supply areas are not covered by a forest management objective we find it notable that logging around /adjacent to small non-fish streams was restricted. In general an approach is used that includes reserving areas from cutting, retaining vegetation and non-merchantable trees and establishing and respecting appropriate riparian zones wide enough so that the stream banks are not disturbed.

Road maintenance practices are minimizing the risk of sediment transfer into streams. Water control measures include armouring of culvert inlets and outflows, keeping ditches cleaned, grass seeding exposed cutbanks and fill slopes when additional stability is needed and installing ditch blocks and water bars. Road maintenance and deactivation work was generally well done and is providing a stable road network such that there is low risk of erosion of soils into streams.

In situations where stream bank tree retention was required in the main there was no harvesting within or disturbance to the riparian zone. With the exception of the potential regulatory non-compliance on Texada's Horne Lake property, the auditor found that appropriate riparian zones had been established in all harvested areas located adjacent to streams and the areas had been harvested in a manner that protects fish habitat and water quality.

4.3 CRITICAL WILDLIFE HABITAT

Compliance

This regulation provides for the protection of critical wildlife habitat on identified lands. These provisions have not been implemented at present on private land or on Crown land because MWLAP has not listed identified wildlife pursuant to the *Forest Practices Code* and demonstrated that there is insufficient habitat on Crown forest land within an ecoregion for the identified species' habitat needs. This must be done before the provisions of the regulation can be implemented.

Effectiveness

Schedule A Forest Management Objective

3. *The forest management objective with respect to critical wildlife habitat is to facilitate the long-term protection of that habitat by:*
 - (a) *providing an opportunity for the Ministry of Environment, Lands and Parks to reasonably assess whether critical wildlife habitat is present on identified land, and*
 - (b) *enabling agreements to be entered into to protect the habitat.*

The auditors determined that landowners are aware of this regulatory requirement and the process to protect critical wildlife habitat and have open lines of communication with MWLAP. It is the auditors' opinion that any progress in the application of this standard will be effectively communicated and administered.

4.4 REFORESTATION

Compliance

Because the regulation has only been in place for less than two years, and it requires harvested areas to be restocked within five years, the auditors are not able to report on reforestation compliance at this time. However, the assessment of past and current restocking practices indicate that reforestation occurs in a timely manner. Based on these observations and is likely that these owners will be able to comply with the restocking and regeneration standards of the regulation.

Effectiveness

Schedule A Forest Management Objective

- 4. The forest management objective with respect to reforestation of areas where timber has been harvested or destroyed is to promptly regenerate the areas with a healthy, commercially valuable stand of trees that is unimpeded by competition from plants and shrubs.*

No environmental concerns were detected with respect to reforestation. It is evident from the audit that all four owners have been practicing prompt reforestation.

Harvested areas are being planted within two years of harvesting being completed. Seedlings planted are higher value commercial species e.g., Douglas-fir, western red cedar, western hemlock and yellow cedar. Stocking levels are approximately 600-1,000 stems per hectare (sph) well in excess of the minimum 400 sph crop trees required by the regulation. Areas logged before the regulation took effect (April 2000) have been regenerated with conifer species, primarily by planting. Restocking has been kept in step with the area harvested. This prompt reforestation is maintaining the productivity of the forest land with commercial conifer species. Based on these findings the risk that these owners will be unable to meet the regulatory successful reforestation requirement within the maximum 15-year period is low.

4.5 GENERAL COMPLIANCE

The audit has found that forest practices management activities on the Kapoor, Margaret and TimberWest properties are being conducted in compliance with the regulation. On the Texada property forest practices comply with the regulation except for the two instances concerning tree retention along streams where it has not been possible for the owner to prove fish absence. This issue concerns the question of whether the owner has retained an adequate number and size of coniferous and deciduous trees along the reach of default fish streams as required by the regulation.

4.6 GENERAL EFFECTIVENESS

The results-based focus of the regulation allows flexibility in forest management practices. There are several factors that may contribute to an owner's performance apart from the regulation. These include the purpose for owning the property, relationship with neighbors and other downstream users, technical knowledge in forest practices, awareness and training in the regulatory requirements and forest stewardship ethic.

The auditors assessed to what degree the regulation is being effective in protecting key public environmental values. It is not possible to give a categorical opinion on this question as a relatively short time has elapsed (nine months) since the regulation was introduced and not all sections of the regulation have been implemented. As the regulation had just taken effect during this period, landowners would have only begun to implement the requirements of the new regulation and make changes where necessary to ensure that their operations would comply. This particular audit sample included a limited sampling of fish streams, broadcast fertilization and did not sample harvesting in water supply areas. There was also the absence of opportunities for the auditors to have a larger sample of activities in areas of high environmental risk. The auditors have provided a qualitative opinion on the outcome of the regulation to date based on the interviews with owners' representatives and their field assessment (as opposed to an objective assessment using indicators of effectiveness).

The auditors' perception is that the transition to the new regulation is more challenging for smaller property owners because of the need to convey the new expected standards of forestry practices to their harvesting/road contractors and because of the need to create a more structured management system for monitoring and documenting their activities. More documentation by owners is needed in part because of their reporting obligations to the Commission. Other new requirements include classifying streams, and implementing riparian management practices that provide for retention of streamside trees and vegetation.

Interpreting loss of productive area and streamside management requirements has been one of more difficult aspects of the regulation for owners. The regulation has also required that more attention be paid to road construction and maintenance practices and that more emphasis be placed on water management practices to minimize the risk of sediment or silt being transferred into streams.

It is worth noting that the PFLA and government agencies have been providing support and guidance to owners on the implementation of the regulation. During the past eighteen months, this has included facilitating training workshops on implementing the regulation and promoting best management practices to their membership.

There are individual differences between the owners in managing their properties. This is reflected in differing forest management strategies and needs in adapting their operations to the regulation. For the Kapoor, Margaret and TimberWest properties that have a history of continuous management by the same owner, the transition has not been onerous and the pre-existing management programs have continued without major changes in practices. In the case of Texada's Horne Lake property, the new owner increased the harvest level and had to acquire forest management expertise.

These different approaches have not translated to a wide variation in forestry practices on the ground, but there is a difference in harvest levels chosen.

Operational activities on the four properties are uniformly consistent with the intent of the regulation and the Forest Management Objectives. This means that operations are being conducted with a relatively low impact on the forest growing capacity of the land, there is minimal impact on water quality and fish habitat, and reforestation is being completed. Apart from the outstanding issue regarding the two streams on the Texada property, no environmental concerns were detected with respect to soil conservation, general requirements around streams and fish habitat, specific requirements for fish streams and water supply areas, critical wildlife habitat or reforestation.

4.7 EFFECTIVENESS COMPARED TO THE FOREST PRACTICES CODE

The auditors were asked to compare the effectiveness of the *Forest Land Reserve Act* to the *Forest Practices Code of BC Act* with respect to the same/similar public values on Crown forest land. In other words, how does the owners' performance with respect to soil conservation, protection of fish habitat, licensed domestic water supply quality, critical wildlife habitat and reforestation compare with the Forest Practices Code regulations for Crown forest land? In addition to making a comparison regarding protection of the key public environmental values that comprise the Schedule A Forest Management Objectives of the regulation, the auditor offers an opinion regarding the general administration of the landbase.

Given the relatively short time that the regulation has been in effect and this small audit sample, it is not realistic or feasible to make an empirical comparison. The auditors can offer some comments based on the results of the audit and their experience with forest practices on Crown forest land.

It is evident that these particular owners are interested in managing their properties for growing commercial timber, maintaining the property value as productive forest land, and at the same time protecting public environmental values.

Soil Conservation

In the auditors' opinion, the standards of forest practices with respect to soil conservation are equivalent to the standard expected on Crown forest land. Both terrain and soils on harvested areas and along road right-of-ways were observed to be stable.

Road rights-of-ways are kept narrow, and cut only to the width required to construct a safe road. Roads are not over-designed or over-built based on a predetermined road class, but are built according to the terrain and requirements for efficient and safe access.

Water Quality and Fish Habitat

In the auditors' opinion, the standards of forest practices with respect to fish habitat and licensed domestic water supply quality are equivalent to the standard expected on Crown forest land. Timber harvesting in water supply areas has not affected drinking water quality and water management practices related to timber harvesting activities are minimizing the potential for erosion of sediment into streams.

Regarding the objective of protecting water quality and fish habitat, the primary protective functions of the regulatory riparian zone are to provide a filter to trap sediment, maintain a live root mass to stabilise stream banks, and where appropriate, ensure long term provision of large woody debris for in-stream fish habitat and stream channel stability.

The *Forest Practices Code* prescribes fixed reserve and variable management zones beside streams. It is intended to preserve resource values (including bio-diversity, aesthetics, wildlife and recreation) beyond those key public values, which are prescribed on private land in the regulation. The results-oriented approach of the regulation is intended to encourage owners of identified land to assess each stream reach and prescribe the specific measures required to achieve appropriate tree retention and stream protection objectives for that specific stream section.

It is not possible to provide an absolute opinion comparing the effectiveness of fish habitat protection under the different regulatory regimes due to the lack of harvesting activities near fish streams on the properties audited. However, as indicated in previous sections of this report, in the process of reviewing past management and planning processes, it was possible to get a general sense of how riparian management was being addressed by the owners.

Reforestation

In the auditors' opinion, the standards of forest practices with respect to reforestation are equivalent to the standards expected on Crown forest land. Reforestation is completed with delays of less than two years after completion of harvesting and results in successfully regenerated forests.

Critical Wildlife Habitat

None of the properties audited have been identified as containing any critical wildlife habitat. The regulation requires that where critical wildlife habitat is essential to the continued existence of a species which cannot be supplied on Crown lands alone, an owner of identified land and government may enter into an agreement to restrict activities for the protection of such habitat where it occurs on private land. Requirements on Crown lands are managed under the *Identified Wildlife Management Strategy* including measures and procedures released in February 1999.

Additional Key Aspects of Forest Management

It is the auditors' opinion that in addition to regulatory requirement for key public environmental values, the general process and approach enables auditees to provide certain additional protection and benefits:

Fire Prevention and Suppression

It is evident that landowners are protecting private and neighboring public forest values through compliance with fire prevention and suppression regulation. Many landowners exceed this requirement by implementing supplementary processes; TimberWest maintains an aerial water bombing capability, which is also available to fight fire on Crown and other private land, with the famous 'Mars' water bombers.

General Wildlife

It was evident during the field assessment that the properties audited had general wildlife habitat values. Auditees indicated awareness of general wildlife and relevant additional legislation such as the Wildlife Act, and some landowners had voluntary protection of general wildlife habitat within their management objectives. The voluntary measures to protect or enhance wildlife habitat values included retention of deer winter range and support for efforts to protect the Vancouver Island marmot. It was also evident during the audit that landowners cannot completely control security of, and restrict access to their lands by third parties. Resulting trespass, and the consequent risk of fire, vandalism and poaching could compromise efforts made to enhance wildlife values on the properties.

Administration

Owners are able to protect the same public values on Crown forest land without the burden of the administrative planning and approval processes required by the *Forest Practices Code*. They have considerably more flexibility and freedom to manage their properties based on their individual forest management options. This has numerous desirable economic and environmental benefits for owners with a long-term commitment to forest management. The flexibility and freedom can result in harvesting and road construction with a soft footprint since the private owner is “closer to the forest”, and is therefore able to employ “hands on” management of his/her property.

4.8 OPPORTUNITIES FOR IMPROVEMENT

The auditor considers that there are potential opportunities to improve certain aspects related to the administration-identified land and some management practices observed during the field review.

Critical Wildlife Habitat

As mentioned above in this report *Division 5 Critical Wildlife Habitat* of the regulation cannot be applied to identified land (or implemented) until MWLAP has first determined identified wildlife habitat requirements on Crown land. It is not known when they will be able to do so. In the meantime, there is no way of knowing whether potential critical wildlife habitat on private land within the forest land reserve is being adequately protected, or whether the opportunity to designate critical wildlife habitat is being missed.

Pesticide Control Act

Private forest landowners are required to submit a pest management plan and are required to have their permits subjected to the same public appeal and aboriginal consultation process as required on public Crown forest land. Permitting is much less onerous for farmers in the Agriculture Land Reserve. This requirement is not consistent with the intent of the results-based regulation.

Practices

On the TimberWest property, instances were noted where heli-drop sites were located near to or on top of a cross-drain culvert, and logging debris was piled on the downhill side of the road. Although these sites are generally low risk, it is not good practice. It induces some risk, particularly in the event of major rainfall.

On the Texada property, three heli-logged blocks have accumulations of logging slash. That is a potential fire hazard that poses a risk to adjoining forest lands on other properties as well as to the blocks if they are restocked without a reduction in fire hazard.

On the Texada property, road maintenance requires attention. Water is running down the road surface in three locations. Muddy surfaces on two other road sections have the potential to deliver sediment into streams although the risk and potential impact on the streams is low. If appropriate Best Management Practices are not applied the audit team considers there is also some potential for erosion of soil into an unnamed small stream on the Horne Lake property during periods of heavy rain or snowmelt. The audit team considers there is no risk of affecting water supply quality, however, there is potential for erosion and degradation of the road surface

4.9 INTERPRETATION AND CLARIFICATION ISSUES

The audit team recommends that certain sections of the regulation or administration policy should be reviewed to reflect the intent of the requirement and improve clarity. Alternatively, clarity could be improved and awareness raised through education and training. The sections of the regulation requiring interpretation or clarification that arose in discussions during the audit are:

Section 5 (1-4) Non-productive area

This section limits the area that may be converted to non-productive area by roads and landings to net more than 7% of the total area harvested on a property within cutblocks during that calendar year.

Although the audit found no instances of non-compliance with this requirement, and it was evident that landowners are clearly meeting the objective of the regulation, it is considered by the auditor that there is a risk of uncertainty regarding the administrative reporting requirements related to this section. The appropriate implementation of section 5 requires some clarification to ensure that environmental protection; safety and operational effectiveness are fully considered in the design, construction and maintenance of roads and landings.

The auditors recommend that the administrative requirements are clearly communicated through education and training.

Section 9(1)(d) Tree Retention

This section requires understorey vegetation and non-commercial trees within 5m of the edge of a stream channel to be retained “to the fullest extent possible”. Although the audit found no instances of non-compliance with this requirement, and it was evident that landowners are meeting the objective of the regulation, there was clearly some variation in the interpretation and approaches being taken.

The auditors recommend that the Commission develop interpretative guidance concerning the objectives and intent of this section and ensure that they are clearly communicated in education and training initiatives.

Section 25 (1,2) Reforestation

Some owners are concerned about the administrative requirement of having to declare restocking and successful regeneration of areas harvested prior to April 2001, notwithstanding the requirement under section 25 (2) that they have met this requirement and have no backlog of areas to reforest. A sensible approach for administering section 25 (2) is needed. Although the audit found no instances of non-compliance with this requirement, and it was evident that landowners are clearly meeting the objective of the regulation, it is considered by the auditor that there is a risk of uncertainty regarding the administrative requirements regarding this section.

The auditor recommends that the Commission develop policy concerning the administrative requirements of this section.

Section 31 (2) (b) (ii) Annual Declaration

This section requires reporting of “any road constructed”. Some owners are not sure where modification or upgrading should be reported as construction despite there being a definition of “road construction” in the regulation.

The Commission should provide guidance to owners by clarifying the definition of road construction in its annual declaration form.

Section 57 Audits

This section enables the Commission to establish standards for conducting audits. To be able to successfully conduct audits, auditors need access to auditees’ documents, records and other information pertinent to the audit scope to enable an audit plan to be prepared. It was intended that the Forest Land Reserve Act’s forest practices administrative provisions, more specifically the annual declaration requirement, would serve these information needs. However, it was found through this audit process that this was not the case. This section lacks a requirement for auditees to provide relevant information when requested by the auditors. The audit manual presently being prepared for the Commission will outline audit standards and information for completing an audit plan.

The auditors recommend that the Commission develop policy concerning the provision of information by auditees on a confidential basis.

5.0 CONCLUSIONS

In the time since the regulation has been in effect, the owners have demonstrated a commitment to adapt their operations to the new requirements and to implement them.

The audit did not fully assess the effectiveness of the regulation concerning streamside management practices as little harvesting had occurred adjacent to any streams on areas selected for audit.

The audit has found that forest practices on the Kapoor, Margaret and TimberWest properties are being conducted in compliance with the regulation with respect to soil conservation, general requirements around streams and fish habitat, specific requirements for fish streams, and reforestation. On the Texada property, forest practices comply with the regulation except for two instances of potential non-compliance concerning tree retention along two deemed fish streams.

There is not a significant degree of variation in forest practices among the four properties audited. However Kapoor, Margaret, and TimberWest, with a long-term perspective to their ownership, have systems, procedures and practices that exceed expectations of the regulation. Texada has a short-term perspective to its ownership and their practices meet minimum expectations.

The regulation enables owners to continue to manage their lands as commercial forest estates without major changes in their forest practices, while serving public environmental values.

Harvested areas are left in a stable condition with no signs of erosion or the potential for siltation into streams.

Road systems are designed, constructed and maintained in a manner that minimizes the risk of erosion sediment being transferred into streams and the amount of forestland converted to non-productive area is less than the 7% allowance.

Reforestation practices before and after implementation of the regulation are similar and effective. A strategy of prompt reforestation with commercial conifer species is maintaining the forest land productivity of the properties.

The forest practices with respect to soil conservation and reforestation on the properties are similar to those on Crown lands administered under the Forest Practices Code. Generally, the standards of harvesting and road construction practices being achieved are similar to Forest Practices Code expectations.

Notwithstanding that some wording of the regulation requires interpretation, and subsequent communication to landowners through the education and training programs, the result-oriented approach is providing appropriate environmental protection.

These conclusions are based on a small sample of operations on managed forest land on Vancouver Island. More time needs to elapse since the implementation of the regulation before the effectiveness of the regulation can be fully tested.

A handwritten signature in blue ink, appearing to read "S Macpherson".

Stuart Macpherson, RPF, CEA (SFM)
Lead Auditor

February 13, 2002

APPENDIX I

Summary of Auditee Comments

Written comments on the first draft audit report were received from one auditee:

- TimberWest Forest Company

Texada Land Corporation and Margaret Forestry provided verbal comments.

The comments concerned correction to certain statements of facts and edit comments. The comments were considered by the auditors, and the changes made as a result, contributed to the structure and flow of the report.

APPENDIX II

Definitions

Definition from Forest Land Reserve Act:

- Identified Land:** private land that is:
- a. forest reserve land, other than land included in any of the following
 - i. A tree farm licence area;
 - ii. A woodlot licence area;
 - iii. A community forest agreement area; or
 - b. agricultural reserve land that is managed forest land;

Definition from Private Land Forest Practices Regulation

Critical Wildlife Habitat: is defined in section 20 (1)a as portions of "identified land" set aside for the protection of "identified wildlife", which is in turn defined in the "Definitions" section of the regulation as wildlife (including plants and fish) in the "Operational Planning Regulation BC Reg 107/98", exclusive of "regionally significant species", as described in the definition of "species at risk" contained in section 1 of that regulation."

"Identified Wildlife" means a species classified as identified wildlife under section 70 of the Operational Planning Regulation, BC Reg 107/98, but does not include a species that is classified as identified wildlife because it is a regionally important species as described in the definition of "species at risk" contained in section 1 of that regulation;

Fish Stream means a stream that

- a. is frequented by one or more of the following species of fish:
 - i. anadromous salmonids;
 - ii. rainbow trout, cutthroat trout, brown trout, bull trout, Dolly Varden char, lake trout, brook trout, kokanee, largemouth bass, smallmouth bass, mountain whitefish, arctic grayling, burbot, white sturgeon, black crappie, yellow perch, walleye or northern pike;
 - iii. identified threatened or endangered fish as classified under section 63; or
- b. has an average slope gradient of less than 20% for each 100 m, unless a fish inventory, carried out in accordance with the methods acceptable to a designated environment official, shows that it is not frequented by any species of fish referred to in paragraph (a);

but does not include any portion of the stream that is located upstream of a proven barrier to fish, if there is no fish habitat beyond the barrier.