Forest Practices Board

Logging on District Lot 33 within the Coastal Douglas-fir Ecosystem

Complaint Investigation 100950

FPB/IRC/173

January 2011

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Introduction

The Complaint

In May 2010, the Forest Practices Board received a complaint from a resident of Nanoose Bay about planned logging on District Lot (DL) 33. DL 33 is a 64-hectare parcel of Crown land near Nanoose Bay containing mature forest and some older veteran trees within the Coastal Douglas-fir ecosystem (CDF). The complainant is concerned about the integrity of the ecosystem and wants DL 33 to be protected from logging. Should logging proceed, the complainant wants to know how wetlands, rare species, plant communities, fish streams, and groundwater values on DL 33 will be protected.

Background

The 256,800 hectare CDF occurs only in southwestern British Columbia and part of Washington State. It has been highly modified by human development and use. Its primary plant association is classified as "globally imperiled" by BC's Conservation Data Centre.[1] About 160,000 hectares of the CDF remains as forest, but less than one percent of that area is old forest. The province controls about nine percent of all lands in the CDF (23,500 hectares). About 80 percent of the CDF is private land, with the remaining 11 percent held by federal and local governments.

In 2007, the Board recommended that government finalize and implement a stewardship strategy for the CDF. Government responded that it would:

1. Establish a land use objective (LUO) for Crown land parcels in the CDF.
2. Complete ecological mapping of the CDF.
3. Continue interim stewardship measures pending establishment of a LUO.
4. Initiate a public awareness program targeting non-provincial landowners and people working on Crown lands in the CDF.

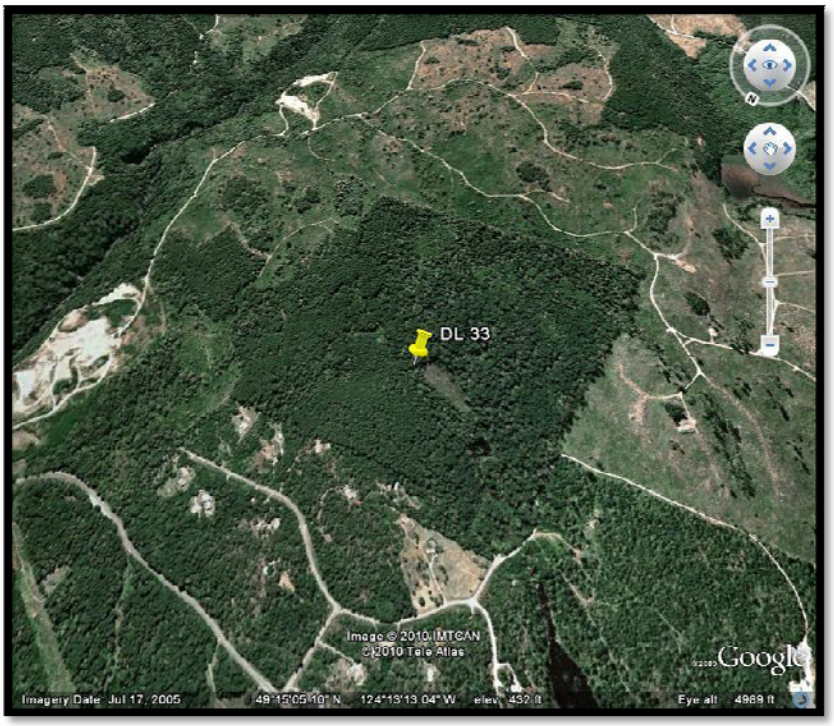
In November 2009, to fulfill a government commitment under an interim measures agreement with the Nanoose First Nation, the government issued a non-replaceable forest licence to Snaw-Naw-As Forest Services Ltd. (the licensee), a company operated by the Nanoose First Nation. The licence included DL 33.

[1] The BC Conservation Data Centre uses methodology and standards established by NatureServe. <http://www.natureserve.org/explorer/servlet/NatureServe?searchCommunityUid=ELEMENT_GLOBAL.2.787981> and <http://a100.gov.bc.ca/pub/eswp/search.do> G2 rank = globally imperiled.

Government and First Nations sometimes enter into interim measures agreements on forestry-related matters, to provide a greater degree of stability for investment and development while treaty negotiations continue. In this case, the forest licence was negotiated between the province and Nanoose First Nation as partial accommodation of undefined and ongoing treaty negotiations pertaining to aboriginal rights and title, the Douglas Treaties of the 1850s, and subsequent urbanization and development of Crown and private lands traditionally used by the Nanoose people.

Government allocated 15,000 cubic metres of timber to the licensee, which it intends to obtain from harvesting 15.2 hectares (24 percent of DL 33) of an 18.9 hectare cutblock[2] on DL 33. The licensee obtained a cutting permit in late December 2010, but no logging has yet occurred.

This is the Board's second complaint investigation dealing with DL 33. In a June 2010 report, *Conservation of Imperiled Coastal Douglas-fir Ecosystem*,[3] the Board found that harvesting mature and older forest in the CDF, such as that found in good condition on DL 33,[4] is not consistent with a vision of overall ecosystem integrity.



In July 2010, the provincial government increased the total amount of protected area in the CDF from five percent to just under six percent (14,300 hectares). In the Board's view, that amount of protection is inadequate to ensure viability of the ecosystem, which remains at high risk. Government's additional protected area did not include DL 33.

DL 33 near Nanoose Bay; surrounded by private lands.

[2] The total area under prescription of the licensee's cutblock, including retained trees and other reserved areas, is 18.9 hectares.

[3] <http://www.fpb.gov.bc.ca/publications.aspx?id=5199>

[4] The forest stand on DL 33 is largely mature Douglas-fir with scattered veteran (older) trees. The stand is gaining attributes typically found in old forest and provides habitat value for a diverse number of species. About half of the area to be harvested is mature timber about 100 years old; the remainder is younger, about 60 to 70 years old.

Discussion

The complainant considers that DL 33 should not be logged because doing so would put overall ecosystem integrity at higher risk. Since neither government nor the licensee has decided that DL 33 will be protected from logging, the Board considered how the licensee is dealing with the specific issues of concern to the complainant, namely the protection of:

1. wetlands;
2. rare species and plant communities;
3. fish streams; and
4. groundwater.

The Board considered how the licensee has dealt with these topics during its cutblock planning, under the *Forest and Range Practices Act* (FRPA). To conduct its planning, the licensee employed the services of professional foresters and biologists.

1. Wetlands

The complainant is concerned that a January 2010 map from the licensee did not identify all wetlands and vernal (temporary) pools on DL 33. In addition, the complainant is concerned that removal of tree cover from the wetland areas will negatively impact water quality, quantity, and fish and wildlife habitat.

FRPA's *Forest Planning and Practices Regulation* (FPPR) defines a wetland as a swamp, marsh, bog, or other similar area that supports natural vegetation that is distinct from adjacent upland areas. The FPPR requires a certain amount of protection based on five wetland classes (W1 through W5) established in that regulation. In the CDF, the FPPR requires an amount of protection for wetlands only if they are greater than 0.5 hectares in size. In January 2010, the licensee identified and classified nine wetlands on DL 33. Two of the nine wetlands are larger than 0.5 hectares in size.

There is no requirement under FRPA to identify or classify vernal pools unless they meet the definition of a wetland. For the two larger wetlands (classed W2 and W4), the FPPR stipulates a riparian management area (RMA) width of 30 metres each, measured outward from the wetland edge. For the W2 wetland (1.06 hectares), the FPPR describes the RMA as consisting of a 10-metre riparian reserve zone (RRZ) adjacent to the wetland and 20-metre riparian management zone (RMZ), located adjacent and outside the RRZ. For the W4 wetland (0.86 hectares), the FPPR requires just the 30-metre RMZ (no reserve zone). For those wetlands less than 0.5 hectares in size, sometimes called non-classified wetlands, FRPA does not require an RMA or any other specific riparian protection.

Except in certain circumstances, such as crossing a stream, a person must not construct a road in an RMA, or cut, modify or remove trees from an RRZ. Other than the restriction on roads, the licensee has no further requirements under FRPA concerning the RMZ of the wetlands. These areas may be harvested, but it is common practice that RMZs are managed to protect the inner reserve zone (i.e., from wind damage).

The Board reviewed a cutblock planning map prepared by the licensee in August 2010. The licensee's current plan shows the legally required RMAs adjacent to the W2 and W4 wetlands and, in addition, a further area voluntarily reserved for the protection of wildlife habitat. The effect is that no cutblock boundary or road will be closer than about 50 metres from either the W2 or W4 wetlands. In areas of higher risk of windthrow, the licensee intends to prune trees near the edge of the retained areas to protect those stands. The licensee's plan also shows a minimum 10 metres of tree retention around all but one non-classified wetland (retention there is somewhat narrower for about 40 metres on one side of that wetland). The plan also shows pruning to wind firm retained trees adjacent to several of the non-classified wetlands.

Finding

The licensee's cutblock plan exceeds FRPA requirements for wetland riparian protection.

2. Rare Species and Plant Communities

The complainant is concerned that logging DL 33 will cause the disruption, death or extinction of threatened CDF plant communities, red-legged frog, marbled murrelet, goshawk, purple martin and pacific sideband snail.

Under FRPA, it is assumed that most species and plant communities are adequately managed through general requirements for riparian areas and stand- and landscape-level biodiversity requirements, such as cutblock size and wildlife tree retention. Species and plant communities requiring additional management, such as those with critical habitat needs, can be designated by government under FRPA as *species at risk* or *regionally important wildlife* and are collectively known as *identified wildlife.* To provide necessary management, government can establish wildlife habitat areas (WHAs) and general wildlife measures under FRPA, or make Ministerial Orders under the *Land Act*.[5] A person carrying out primary forest activities under FRPA must comply with each order or general wildlife measure that applies to the area. In addition, the *Identified Wildlife Management Strategy* (IWMS)[6] provides forest and range managers with detailed guidance intended to minimize the effects of forest and range practices on designated species.

[5] Orders made under the *Land Act* can apply to more than *Identified Wildlife*.
[6] http://www.env.gov.bc.ca/wld/frpa/iwms

Government's objective for wildlife under FRPA is, without unduly reducing the supply of timber from British Columbia's forests, to conserve sufficient wildlife habitat in terms of amount of area, distribution of areas and attributes of those areas, for the survival of species at risk; the survival of regionally important wildlife; and the winter survival of specified ungulate species. Under FPPR section 7(3), a person required to prepare a forest stewardship plan (FSP) must specify a result or strategy in regard to a government objective for wildlife only if the government gives formal notice to the person about the species.

Red-Listed CDF Plant Communities

The primary plant association for the CDF (Douglas-fir/dull Oregon grape) is red-listed,[7] classified by the BC Conservation Data Centre as globally imperiled,[8] and designated a species at risk under FRPA. There are two additional plant associations present on DL 33 that are globally *critically* imperiled,[9] also classified as red-listed, but have no designation under FRPA. Most of the area to be harvested on DL 33 is comprised of these three plant communities.

The red-listed plant communities of DL 33 are not protected. There are no established WHAs for Douglas-fir/dull Oregon grape anywhere in the ecosystem (a recent application for one over DL 33 submitted by an adjacent resident is under review by government). Although there are occurrences of Douglas-fir/dull Oregon grape and almost certainly other red-listed plant communities in existing protected areas and parks in the CDF, contemporary ecosystem science suggests not enough of the ecosystem is protected to ensure they will persist in future.[10]

The large trees and maturity of the red-listed plant communities on DL 33 contribute to its good ecological condition and make it valuable to restoring the ecological integrity of the CDF, but also makes the area valuable for timber harvesting. In March 2010, a professional biologist hired by the licensee suggested that DL 33 should not be harvested based on its ecological condition and presence of red-listed plant communities. However, the biologist also said that, should the licensee wish to proceed, it should first do certain bird surveys and delay its harvesting until after the bird breeding season. The licensee considered the biologist's comments in the context of its agreement with government, FRPA, and MFR's 2007 guidance document, *Silviculture Practices for Enhancing Old Forest Stand Structure in Red- and Blue-listed Plant Communities in the CDFmm: Interim Document*.[11] The licensee decided to continue planning the cutblock.

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[7] BC's red list includes any ecological community, and indigenous species and subspecies that is extirpated, endangered or threatened in the province. <http://www.env.gov.bc.ca/atrisk/red-blue.htm>

[8] <http://a100.gov.bc.ca/pub/eswp/search.do> G2 rank = globally imperiled.

[9] Also as classified by the BC Conservation Data Centre. <http://a100.gov.bc.ca/pub/eswp/search.do> and <http://a100.gov.bc.ca/pub/eswp/search.do> G1 rank = globally critically imperiled.

[10] Holt, R.F., "*Conservation Planning and Targets for the Coastal Douglas Fir Ecosystem. A Science Review and Preliminary Approach,*" unpublished report prepared for Integrated Land Management Bureau, Nanaimo, 2007. Available at: <http://www.veridianecological.ca/publications/CDF_Targets_FINAL.pdf>

[11] Negrave, R. and D. Stewart, "*Silviculture Practices for Enhancing Old Forest Stand Structure in Red- and Blue-listed Plant Communities in the CDFmm: Interim Document,*" unpublished MFR Report (version 1.0), October 25, 2007. Version 2.0 of the interim report (May 2010) is available at: <http://www.for.gov.bc.ca/rco/research/SilvReports/CDFmm%20Practices%20May%2010%20V2.pdf>

MFR's 2007 guidance document was written to provide forest professionals with advice on retaining the ecological functions of older and mature forest conditions, and to suggest methods for increasing the representation of older and mature forest structures on provincial forest lands in the CDF. Overall, the document suggests that forest stands with great species diversity, tree size differentiation, coarse woody debris, canopy gaps, and understory abundance (all attributes found on DL 33) should be considered a priority for conservation. However, the draft guidance from MFR also suggests a variety of timber-harvesting strategies to maintain structural diversity in CDF forest stands with high conservation value. The strategies include:

a. Retain large, interconnected wildlife tree patches and other reserves.

Section 66 of the FPPR requires that wildlife tree retention total seven percent of the area of cutblocks harvested in any 12-month period. The licensee's cutblock plan identifies 10 percent of the total area of the cutblock in wildlife tree retention, with overall reserves totaling about 19 percent. Retained areas are largely interconnected. In addition, the licensee intends to retain about 10 percent of the harvested openings in dispersed trees of all diameter classes, and all old-growth trees (predominantly veteran fir) which will also have groups of younger trees retained around them.

b. Maintain permanent tree cover by using a single-tree or group selection, irregular shelterwood, or other low-volume silvicultural system.

The licensee classified its silvicultural system as primarily group retention, with 10 percent dispersed single stems and some clearcut. The licensee considers that its group and dispersed retention, combined with in-block reserves and retention of veteran fir, will largely maintain the structural and vertical diversity of the stand. In the Board's view, the licensee's proposed silviculture system is not low-volume removal; it will substantially modify current stand structure and will remove predominant tree cover from the harvested areas.

c. Enhance the structural attributes of retained and/or regenerating trees by such methods as thinning, juvenile spacing, pruning and/or fertilizing.

The licensee plans to top and/or prune those retained areas that are at high and moderate risk of windthrow.

d. Retain existing features, such as snags, coarse woody debris and vernal pools, including the trees that surround them.

The licensee plans to retain non-dangerous snags and wildlife trees in retained areas, to leave non-merchantable coarse woody debris dispersed throughout the harvested areas, and will leave additional buffers around wetlands and vernal pools. The licensee has not yet identified its group retention patches, but said it would focus those patches on mature forest and red-listed plant communities.

The draft guidance from MFR recognized that logging reduces the conservation value of high-value CDF forest stands and, by inference, the plant communities within them. The area to be harvested in DL 33 contains attributes of high conservation value, including three globally imperiled red-listed plant communities. The guidance was to consider such stands a priority for conservation. The licensee considers the guidance as aimed at mature and old forests and noted that its harvest area has equal amounts of immature and mature forest. The licensee believes its numerous reserves, retained areas and the unharvested remainder of DL 33 provides a significant area for preservation and recovery of the red-listed plant communities that may be affected by its harvesting.

Red-Legged Frog

The complainant is concerned about red-legged frogs that inhabit the wetlands and vernal pools on DL 33. The red-legged frog is blue-listed,[12] designated a species at risk under FRPA and considered 'identified wildlife.' Government has not provided a FPPR section 7 notice about red-legged frog to the licensee; therefore, the licensee was not obligated to specify a result or strategy in its FSP for red-legged frog.

In April 2010, as part of its ongoing inventory to support WHA establishment for red-legged frog, the former Ministry of Environment (MOE) surveyed the two main wetlands on DL 33 and confirmed them as productive red-legged frog breeding habitat. Based on its survey, MOE considered the two main wetlands a candidate for WHA designation and suggested to MFR (and consequently the licensee) that the typical WHA design for red-legged frog be applied—a 50-metre forested reserve around them.

In June 2010, the licensee confirmed that all water bodies on DL 33 are used by red-legged frog. The licensee had earlier identified FRPA-required riparian reserves and management zones for streams and wetlands; following its inspection in June it decided to reserve additional area. The licensee adopted and expanded upon MOE's suggestion, voluntarily mimicking establishment of a WHA for red-legged frog around the main wetlands. In addition, to help protect rearing habitat for red-legged frogs, the licensee added about 10 metres of tree retention around all but one non-classified wetland (tree retention there is somewhat narrower on one side of that wetland).

[12] The blue list includes any indigenous species or subspecies considered to be of special concern in BC because of sensitivity to human activities or natural events. <http://www.env.gov.bc.ca/atrisk/red-blue.htm>

Marbled Murrelet

The complainant is concerned that logging DL 33 will result in loss of marbled murrelet habitat. Marbled murrelet are blue-listed in BC, a species at risk under FRPA, and considered 'identified wildlife.' There are no documented records of marbled murrelet occupying DL 33. There is a 223-hectare WHA for marbled murrelet located about four kilometres east of DL 33. That WHA is mostly young forest and was established by MOE to recruit future marbled murrelet habitat. In 2004, government provided the licensee[13] with a FPPR notice detailing the amount, distribution and attributes required for the survival of marbled murrelet in the South Island Forest District. The notice specified that an amount of habitat must be retained equal to the amount of suitable nesting habitat in the non-contributing land base,[14] plus the amount of suitable habitat within old growth management areas. The licensee's FSP provides a strategy consistent with the notice for what it calls the Nanoose forest development unit (which is DL 33). In the circumstances, the amount of suitable marbled murrelet habitat required to be retained within DL 33 is the amount of forest within the non-contributing land base that is age class 8 or 9 and height class 4 or greater.

Only two hectares of DL 33 is within the non-contributing portion of the forest district's Arrowsmith timber supply area. Although many of the larger Douglas-fir and maple trees on DL 33 contain large, mossy branches that could have potential for marbled murrelet nesting, the licensee was required to assess and protect marbled murrelet habitat only within the two hectares of non-contributing land base. The licensee determined that the non-contributing area is too small and too open to be suitable marbled murrelet habitat. Therefore, there was no requirement for habitat protection.

Goshawk

The complainant is concerned that logging DL 33 will result in loss of goshawk habitat. Goshawk on Vancouver Island are red-listed, a species at risk under FRPA, and considered 'identified wildlife.' There are no confirmed records of goshawk occupying DL 33.

As with marbled murrelet, government provided a notice to the licensee in 2004 specifying requirements for goshawk habitat. The notice requires that there be 239 hectares of suitable goshawk habitat in the forest district (not including WHAs established prior to the notice). In 2005, government established a 239-hectare WHA for goshawk near Port Alberni. When it established that WHA, government also exempted persons that are required to prepare an FSP in the South Island Forest District from specifying a result or strategy for goshawk in their FSPs.

[13] At the time, this was BC Timber Sales. In 2009, Snaw-Naw-As Forest Services Ltd. became a holder of the part of BCTS' FSP pertaining to DL 33.

[14] "Non-contributing" typically means that part of the forest district's timber supply area landbase that does not contribute to timber supply.

Consequently, there was no requirement for the licensee to consider goshawk habitat during its cutblock planning. Nevertheless, to determine whether goshawk were present and nesting on DL 33, in May 2010, and again in July 2010, the licensee conducted goshawk surveys. No goshawks were detected and no evidence of goshawk presence was observed.

Purple Martin and Pacific Sideband

The complainant is concerned about the potential impact of logging on purple martin feeding habitat and recruitment of upland nesting cavities. Purple martin is known to nest at Nanoose Bay and to forage for insects over the forest canopy of DL 33. Purple martin is the largest swallow in North America and was almost extirpated from BC during the 1980s. A volunteer-based nest box program has since recovered the BC population to several hundred breeding pairs.

The complainant is also concerned about the potential impact of logging on the pacific sideband, a large snail known to occur on DL 33. Pacific sideband occupies a broad range of habitats within the Georgia Basin including deciduous, coniferous and mixed forests, open woods and grassy areas.

Purple martin and pacific sideband are both blue-listed and have no designation under FRPA. Both are examples of the many species whose habitat needs are expected to be met by protected areas and FRPA's general provisions for stand-level retention. The licensee was not required to, and did not, consider either species during cutblock planning. The potential impact of the cutblock, if any, on habitat for purple martin or pacific sideband is unknown.

Finding

The licensee has applied some guidance intended to mitigate the impact of its activities on red-listed plant communities, but the ecological condition of three globally imperiled red-listed plant communities on DL 33 remains likely to be degraded by logging. The licensee adopted and expanded upon MOE's suggestion for red-legged frogs, thus mimicking establishment of a WHA for that species. In the circumstances, there was no requirement to protect marbled murrelet or goshawk habitat. Habitat needs for those species, as well as purple martin and pacific sideband, are intended to be met by other protected areas and FRPA's general provisions for stand-level retention.

3. Fish Streams

The complainant is concerned that logging on DL 33 will damage fish streams and raise water temperatures, leading to fish mortality. Several streams on DL 33 contain trout, and there are valuable populations of salmon downstream. FRPA contains several requirements for the protection of fish and fish habitat. As an example, section 57 of the FPPR requires a person conducting a primary forest activity, such as road-building or timber harvesting, to do so at a time and in a manner that is unlikely to harm fish or damage fish habitat.

In January 2010, during high flows, the licensee identified watercourses on DL 33 and classified fish access and habitat use. In June 2010, the licensee again assessed the stream channels (and wetland areas) at lower flow. Section 47 of the FPPR specifies the RMAs required for streams based on width and whether the stream is a fish stream. Similar to wetlands, the FPPR requires some stream types to have an RMA containing both a RRZ and RMZ, and others to have a RMZ only. The Board reviewed the licensee's August 2010 cutblock planning map. That map shows the legally required RMAs adjacent to each stream.

Except in some specific circumstances, a person must not construct a road in an RMA or cut, modify or remove trees from an RRZ. Under FRPA, an RMZ may be harvested but, in some circumstances, the FPPR requires a licensee to retain enough trees to maintain stream bank or channel stability. Sometimes licensees manage an RMZ to protect the RRZ (i.e., from wind damage). The licensee's plan shows such treatments in areas it considers at risk of windthrow. Elsewhere, the licensee intends to clearcut RMZs within its harvest boundaries; however, it is still required to retain enough trees to maintain stream bank or channel stability. The licensee also intends to conduct other typical harvesting practices to prevent impact on streams, such as machine free zones, falling and yarding away (with one exception), and retention of non-merchantable trees where safe and practicable.

The FPPR also requires that stream crossings be located, built and used in a manner that protects the stream channel and stream bank immediately upstream and downstream of the crossing, and in a way that mitigates disturbance to the stream at the crossing. The licensee's biologist made several recommendations to help the licensee comply with this requirement. In addition, the FPPR also requires that primary forest activities not have a material adverse effect on fish passage in a fish stream. The licensee plans to use bottomless culverts for fish stream crossings. Using bottomless culverts is a good practice to protect stream channels and fish habitat.

Finding

The licensee's cutblock plan meets FRPA requirements for the protection of fish and fish habitat.

4. Groundwater

The complainant is concerned that logging on DL 33 will:

- compound existing problems with nearby residential wells going dry in summer;
- lead to contamination of groundwater supply; and
- increase spring runoff, causing additional local flooding of adjacent private lands.

The complainant believes that the area's groundwater is currently compromised by at least two free-flowing artesian wells and by the earlier extensive logging on private lands surrounding DL 33.

FRPA contains some specific provisions for protection of subsurface water flow, but nothing that applies to the licensee's forest activities at DL 33. However, the FPPR contains provisions that may contribute to groundwater protection, such as a maximum limit on soil disturbance (five percent of net area to be reforested), the amount of allowable permanent access structures (seven percent of the total area under prescription) and the maintenance of natural drainage patterns. The licensee must comply with those FPPR requirements.

Other provincial legislation (e.g., the *Water Act, Environmental Management Act* and *Drinking Water Protection Act)* has some provisions to protect groundwater, but these Acts do not specifically address potential impacts due to land uses such as logging. The province does not currently regulate groundwater extraction but does regulate the drilling and operation of water supply wells, under the *Ground Water Protection Regulation*. Section 10 of that regulation requires that the flow of water from a free-flowing artesian well be prevented or minimized.

Research indicates that, in the coastal lowlands of BC, a rise in water table and increase in groundwater recharge can be expected to follow forest harvesting.[15] A rise in water table might explain the complainant's observation of localized flooding following the earlier harvesting of private lands surrounding DL 33. The complainant's other observation of well-water levels trending toward depletion from year to year is not consistent with an increase in groundwater recharge. However, groundwater hydrology and the interactions between surface and subsurface flow, aquifer recharge and aquifer discharge or extraction can be complex and difficult to assess.

[15] Smerdon, B.D., T.E. Redding, and J. Beckers, "An overview of the effects of forest management on groundwater hydrology," *BC Journal of Ecosystems and Management*, 2009, 10(1):22–44. <http://www.forrex.org/jem/ISS50/vol10_no1_art4.pdf>

Overall, the licensee considers that groundwater at DL 33 will be adequately protected via buffers on the streams, the gentle terrain, implementation of its biologist's road-building and falling recommendations, and because harvesting will occur during dry weather using hoe-forwarding.[16]

The Board consulted an engineering firm to consider the potential effects of the licensee's logging plans on groundwater and surface water runoff. Overall, the potential risk to groundwater quality and quantity appears to be minimal. It is possible that localized infiltration of surface runoff into the fractured bedrock aquifer that supplies the downslope residential wells may temporarily affect local groundwater quality, but only if there are fractures beneath the soils of DL 33 that connect directly to fractures supplying the wells.[17] DL 33 is generally overlain with impermeable sediments, some of which may be disturbed by logging but are unlikely to be removed. Therefore, it is improbable that the planned cutblock will affect groundwater elevations or the overall availability of groundwater supply. Surface water runoff and peak stream flows may increase with severe rainfall events, which are infrequent, but the wetlands and retained timber in riparian areas are expected to largely buffer those effects. An un-harvested topographic rise between the cutblock and the private properties to the north deflects water from most of those private lands.

Some other factors that may affect current groundwater conditions near DL 33 are:

- Some property owners have installed ditches and drainage tiles to control surface runoff.
- Regenerating trees in the surrounding harvested areas may be returning previously raised water tables to lower, pre-harvest conditions (called hydrologic recovery).
- At least two nearby property owners have free-flowing artesian wells.[18] Flowing artesian wells can lead to decreased pressure and water level in area aquifers.

Finding

Logging as planned on DL 33 is unlikely to affect groundwater quality or quantity, or significantly change surface water runoff.

[16] Hoe-forwarding is where logs are lifted off the ground by a tracked machine and swung from one location to another, thus limiting soil disturbance in the harvested area.
[17] There is insufficient information available regarding the bedrock fracture network to evaluate the potential risk.
[18] One of those artesian wells is apparently capable of spilling more than a million litres of groundwater to the surface each month.

Conclusions

In its earlier report, *Conservation of Imperiled Coastal Douglas-fir Ecosystem*, which also dealt with DL 33, the Board found that harvesting mature and older forest in the CDF, such as that found in good condition on DL 33, is not consistent with a vision of overall ecosystem integrity. There is insufficient protected land and too little mature and older forest in the CDF to give confidence that ecosystem viability can be sustained.

Government has allowed the harvesting of timber on DL 33 to satisfy an agreement between the provincial government and the Nanoose First Nation. The agreement is related to treaty negotiations that pertain to aboriginal rights and title, the Douglas Treaties of the 1850s, and the subsequent urbanization and development of Crown and private lands traditionally used by the Nanoose people.

Thus, this investigation deals with cutblock planning for stand-level protection of biological resources and groundwater in a cutblock that, by modifying a forest stand that is currently in good ecological condition, will further compromise the already tenuous overall condition of the ecosystem. In the circumstances, the licensee's cutblock planning meets and, in some instances, exceeds FRPA requirements. The cutblock:

- Exceeds FRPA's requirements for wetland riparian protection.
- Meets FRPA requirements for protection of red-listed plant communities (however, the three globally imperiled red-listed plant communities that comprise much of the cutblock are not protected; available guidance suggests that the ecological condition of those communities is likely to be degraded).
- Voluntarily retains an area equivalent to establishment of a wildlife habitat area for red-legged frog.
- Meets FRPA requirements for protection of habitat for marbled murrelet, goshawk, purple martin, pacific sideband, fish and fish habitat.
- Is unlikely to affect groundwater quality or quantity, or significantly change surface water runoff.

In 2007, the Board recommended that government finalize and implement a conservation strategy for the CDF ecosystem. Government has undertaken some measures, including protection of some additional land; however, the result to date is that ecosystem viability remains at high risk. In the Board's view, it will remain so until the amount of older forest stands within the ecosystem is substantially increased.

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Forest Practices Board

NEWS RELEASE

For Immediate Release
January 10, 2011

Plans for harvest near Nanoose Bay meet requirements

VICTORIA – A Forest Practices Board complaint investigation report released today found that logging plans for a parcel of coastal Douglas-fir forest, known as District Lot 33, met, and in some cases exceeded, legislative requirements.

The complaint was filed by a resident of Nanoose Bay, who said that planned logging on the 64-hectare lot should not proceed, but if it did, wetlands, rare species, plant communities, fish streams and underground water resources on the site should be protected. The report considers how the licensee dealt with these resources in its cutblock planning under the Forest and Range Practices Act (FRPA).

The licensee obtained a cutting permit from government in late December 2010, but no logging has yet occurred. The harvest licence for DL 33 is part of an agreement related to treaty negotiations between the Province and the Nanoose First Nation.

This is the board's second investigation of public complaints about logging of District Lot 33.

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

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