

From: [Kempe, Norm L FLNR:EX](#)
To: [Casavant, Bryce FLNR:EX](#)
Cc: [Morris, Rhonda M FLNR:EX](#); [Cotton, Ron FLNR:EX](#); [Silver, Pam FLNR:EX](#); ["Pilling, Glen FPB:EX"](#)
Subject: File # DCR-37250 (BCTS response to Compliance Notice re: Nahmint SMZ 13)
Date: Monday, August 13, 2018 2:39:06 PM
Attachments: [Nahmint compliance notice response final Ltr signed.pdf](#)
[Nahmint OGMA TEM Variant map.pdf](#)
[Protected Forest by BGC Variant Site Series For the Nahmint SMZ13.xlsx](#)
Importance: High

Hello Bryce

Please see attached correspondence from BC Timber Sales regarding Compliance Notice DCR – 37250_SMZ 13.

Thank you for the extension to the response time.

Can you please confirm receipt of the email with a confirmation that all attachments are opening correctly. I can upload the attachments to a FTP site if necessary.

Regards

Norm Kempe
Acting Timber Sales Manager
BCTS Strait of Georgia Business Area
Office: 250 286 9359

Distribution List:

Rhonda Morris (District Manager – South Island Natural Resource District)
Ron Cotton (Land Resource Specialist – Coast Area)
Pam Silver (Resource Initiatives Section Head – West Coast Region)
Glenn Pilling (Forest Practices Board)



File: FOR 18046-01

August 9, 2018

Via email: Bryce.Casavant@gov.bc.ca

Bryce Casavant
Senior Compliance and Enforcement Specialist
Natural Resource Officer
West Coast Region
Compliance and Enforcement Branch/FLNRORD

Dear Bryce Casavant:

RE: Compliance Notice-Inspection Findings (SMZ 13)

Reference is made to your June 18, 2018, Compliance Notice concerning Inspection Findings related to BC Timber Sales, Strait of Georgia Business Area (BCTS) activities in the Nahmint Valley – Special Management Zone 13 (SMZ 13).

Please accept this letter as BCTS's response to Compliance and Enforcement, West Coast Region's finding that there is "*a high likelihood of government non-compliance*" with Objective B.4 of the Vancouver Island Land Use Plan, Higher Level Plan Order (HLP).

Vancouver Island Land Use Plan – Higher Level Plan Order – Objective B.4

- B. for Special Management Zones 8 and 13 and parts of Special Management Zones 1, 3 and 11, which are located within landscape units with higher biodiversity emphasis....
- 4. Maintain late-successional habitat elements and attributes of biodiversity⁸ in forested ecosystems with emphasis on regionally rare and underrepresented ecosystems, by retaining old seral forest at the site series/surrogate level of representation⁹.
 - 8. *This includes, but is not limited to: large diameter (> 60 cm) live, decaying and dead standing trees (providing nest and cavity sites); downed wood, including large diameter pieces (50 to 150 cm); deciduous broad-leaved trees, both in riparian and upland areas*
 - 9. *The level of representation of old seral forest will be applied through landscape unit planning.*

BCTS views Compliance and Enforcement's (C&E) evaluation on matters of non-compliance with resolute concern. Responsibly managing government objectives within the context of forest

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Ministry of Forests,
Lands, Natural
Resource Operations and
Rural Development

BC Timber Sales
Strait of Georgia Business Area

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Campbell River

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harvesting operations is a key objective for BCTS for the purposes of maintaining our social licence and achieving our SFI and EMS commitments.

The Compliance Notice requested the following:

1. *Further information pertaining to site series/surrogate levels of representation within Nahmint Landscape Planning, or in the alternative,*
2. *Identified corrective actions being taken to ensure compliance with government objectives.*

We believe our Landscape Planning Practices and Forest Stewardship Plan are consistent with the VILUP HLP Order Biodiversity Objective B.4. Our response will focus on addressing point (1) above in the following order:

- **BCTS Nahmint SMZ 13 Landscape Unit Planning Process**
- **Appendix 1 – Protected Forest Breakdown by Biogeoclimatic Variant and Site Series for the Nahmint SMZ #13.**
- **Appendix 2 - Supporting Information used by BCTS that provided direction to the Landscape Unit Planning Process.**
- **Appendix 3 – Summary of Steps for Land Use Planning for Nahmint**

BCTS Nahmint SMZ 13 Landscape Unit Planning Process

(Sustainable Resource Management plan for the Nahmint Landscape Unit)

Currently a suite of Draft Old Growth Management Areas (OGMA's) have been spatially established as described in the *Sustainable Resources Management Plan* (SRMP) for the Nahmint Landscape Unit (2012). These OGMA's meet targets set out in the ***Order Establishing Provincial Non Spatial Old Growth Objectives 2004 (Old Growth Order)***. The *Old Growth Order* provides *Objectives* for the amount and distribution of old seral forest retention required to meet the "High" *Biodiversity Emphasis* (BE) for SMZ 13.

Landscape Unit Planning in the Nahmint SMZ, including the selection of Draft OGMA's, has been ongoing for a decade – it is a work in progress that requires consideration of a range of values and working with First Nations and government. BCTS has worked with both the Tseshaht and Hupacasath First Nations on this planning. Both Nations recently received provincial *Strategic Forestry Initiative* funding to assist them in attaining the necessary capacity to participate in the Nahmint LU planning process. Their involvement arises from the province's commitment in a *Mediated Agreement* to emphasize western red cedar conservation, to the extent possible, with the OGMA selection process in order to provide access for cultural use. Further work is needed to complete Landscape Unit Planning in the Nahmint, much of which will be led by government through the modernized Land Use Planning approach (steps for completing Landscape Unit Planning in Nahmint outlined in Appendix 3).

Consistent with the *Landscape Unit Planning Guidebook* (1999), the 2012 Draft OGMA's were selected using the following preliminary base criteria: ***age class, forest type, and ecological classification*** which are considered as surrogates for site series as described below.

These base criteria are defined as:

- *Age Class 9* (which is 250 years or older) in Nahmint is old seral forest.
- *Forest Type* relates to tree and understory species composition and stand structure (horizontal and vertical) on a site (landform).
- *Ecological Classification* is based on the “*Biogeoclimatic Units of the Vancouver Forest Region*” as described in *Land Management Handbook Number 28*. The handbook describes Biogeoclimatic Ecological Classification (BEC) Units (Variants). Each BEC variant has similar recurring climatic, soil and physiographic properties and are classified based on their potential to produce similar Old Seral Forest plant communities. BEC variants are identified on available Biogeoclimatic spatial data sets.

Site Series within BEC variants refer to similar site conditions based on nutrient and moisture regimes present on a site. The approach to identifying site series requires determining the basic elements of site quality: Climate (inferred by BEC units), soil moisture regime (SMR) and soil nutrient regime (SNR). Determining site series requires a site assessment in the field that consists of gathering SMR, SNR and indicator plant species. This information is then synthesized using *Handbook Number 28* to identify the site series (ecosystem) according to the BEC system. Site series are a detailed classification level, normally only determined during operational field work.

Surrogate classification organizes ecosystems according to the principle of ecological equivalence. This principle implies that sites with the same or equivalent physical properties have the same vegetative potential, and underlies site classification according to BEC. They are intended to characterize the major forest types (ecosystems) within a biogeoclimatic unit. Surrogates are typically categorized using information from resource inventory maps and aerial photography – as opposed to site information collected in the field. Surrogates aid in predicting locations and occurrences of likely site series or groups of similar site associations in a landscape. They are useful in the Landscape Unit Planning process where detailed information is lacking across many thousands of hectares. Factors considered in surrogate classification rely on landform characteristics (depression, floodplain, bench (H, M, and L), middle slope, upper slope and ridge crest), Forest Type and riparian inventories. Surrogates are a generalized classification level.

Classification of forested ecosystems requires use of either site series or some form of surrogate to be used in order to analyze ecosystem representativeness across a landscape. To address variability within and across *Old Seral Forest* BEC variants, a **surrogate** ecosystem classification approach was used to attain forested ecosystem representativeness. This approach was used because accurate site series information was not available across the Nahmint SMZ. Although *Terrestrial Ecosystem Mapping* (TEM) inventories were available, field verification identified misclassifications, making the TEM inventory unsuitable for planning purposes.

The current suite of Draft OGMA's located in Nahmint SMZ 13 are situated across the non-contributing, constrained and timber harvesting landbase. The full *Old Seral Forest* representation targets were met for the Nahmint LU under the 2012 planning process. OGMA's were selected for structural old growth attributes inherent to varied old forested ecosystems across the range of surrogate ecosystems (landform characteristics, forest cover composition and existing riparian network) present in Nahmint SMZ 13. The current suite of Draft OGMA's in the 2012 *Sustainable Resource Management Plan for the Nahmint Landscape Unit* includes *Old Seral Forest* surrogate representativeness along an elevational gradient stretching from rich fluvial valley bottoms to higher

elevation, low “*site-index*” sites. The use of surrogates was a practical approach across a landscape 20,000 ha in size where acquiring accurate spatial ecosystem data sets is challenging and with limited detailed site series field information.

Government has not yet established targets for site series/surrogate distribution in *VILUP HLP Order, Objective B.4* or the *Old Growth Order* for Landscape Units. The absence of hard targets for site series or surrogate scale ecosystems is intended to provide planning flexibility to consider other old forested ecosystem attributes in the Landscape Unit planning process. This flexibility was exercised in the development of the Draft SMZ 13 Landscape Unit plan. Other values and forested ecosystem attributes considered in the 2012 Draft OGMA selection process include wildlife, cultural values, rare & underrepresented ecosystems, connectivity, protection of ‘interior forest’, distribution across the LU, and operational factors such as future harvest opportunity for surrounding areas.

At the operational planning (cut-block) level, BCTS is managing rare and underrepresented forested ecosystems by site series. BCTS’ protocols for managing sites at this level are consistent with the Provincial *Wildlife Tree Retention Area* (WTRA) guidance. This entails a fine-filtered approach whereby discovered occurrences of rare and Red Listed plant communities in old forest are protected to the extent practicable and set aside in WTRA’s. This is also the planning level where the biodiversity criteria in Objective B.4 (footnote 8) are specifically addressed. WTRA’s two hectares or larger can be considered as reserves for the purposes of Landscape Unit Planning.

In summary, due to the lack of detailed information on site series at the landscape level (site series can only be confirmed through field sampling), and the lack of clear targets at the site series level, a surrogate was used for draft OGMA planning. This approach at the Landscape Unit scale is bolstered by BCTS’s site-level approach for identifying and protecting rare sites series.

BCTS’s approach to biodiversity planning in Nahmint SMZ 13 is generally consistent with direction provided in both in the *Landscape Unit Planning Guidebook* (1999) and the *Old Growth Order* Objectives. The 2012 Draft *Sustainable Resource Management Plan* balances a variety of resource values while achieving legal biodiversity objectives across the range of BEC variants (including rare forested ecosystems) distributed throughout the SMZ.

BCTS reviewed Draft OGMA selections in the Nahmint SMZ as part of our response to the June 18th Compliance Notice. The review entailed GIS analysis of the extent the current Draft OGMA’s meet legal biodiversity variant retention targets and the distribution of finer scale TEM spatial data. For the purposes of this analysis, we applied the *Old Growth Order* variant targets to the cross section of site series represented in the LU for this assessment.

Our analysis (*Refer to Appendix 1 “Protected Forest Breakdown by Biogeoclimatic Variant and Site Series for the Nahmint SMZ #13”*) confirms that the ranges of TEM site series that appear across SMZ 13 are well represented in the Draft OGMA’s, confirming that the surrogate process used was effective.

The analysis also confirmed that rare forested ecosystems (site series or surrogates that make up less than 2% of an LU) are represented in the current Draft OGMA’s, within the Nahmint Special Management Zone (SMZ) #13. This analysis confirms that the coarse filter planning approach to OGMA planning in 2007, and later carried forward into the 2012 OGMA selection process, was successful at meeting VILUP Objective B.4.

Bryce Casavant
Senior Compliance and Enforcement Specialist

OGMA planning in the Nahmint LU is ongoing; BCTS is working with First Nations, District and Regional staff with a goal of having OGMA's legalized by spring 2019. BCTS will use best available information including TEM and new VRI data to evaluate site series representation to ensure the final legal OGMA's represent the correct balance of values and continue to achieve VILUP HLP Objective B.4.

To summarize, BCTS has provided information pertaining to point 1 in the Compliance Notice and is confident that our approach to biodiversity planning in the Nahmint SMZ is not in material conflict with the intent of VILUP HLP Order Objective B.4. Appendix 2 (*"Planning Framework for Landscape Unit Planning"*) provides additional context regarding direction to licensees concerning biodiversity objectives and the Landscape Unit planning process. We used a surrogate level of representation at the Landscape Unit planning scale, due to lack of site-level information accurately mapping site series, and bolstered this through a site-level strategy to capture rare site series when encountered. As demonstrated in the analysis in Appendix 1, this has resulted in a representative distribution of OGMA's across site series at the Landscape Unit level and within the SMZ. We continue to work with government and First Nations to complete the Land Use Planning process in the Nahmint and as part of this process may further refine our management at the site series level through the adoption of specific targets, such as using the BEC variant targets from the *Old Growth Order*.

BCTS manages its program in the context of continuous improvement. As new information or direction is provided by government, BCTS will adapt its program to meet higher level government objectives including training staff and multiphase contractors to ensure they are aware and address new information or direction.

If C&E has any questions regarding our response, please contact Norm Kempe, Operations Manager, Strait of Georgia Business Area.

Yours truly,



Norman Kempe
Acting Timber Sales Manager

cc: Rhonda.Morris@gov.bc.ca – District Manager, Regional Operations Division
Ron.Cotton@gov.bc.ca - Land and Resource Specialist, Regional Operations Division

Attachments: Nahmint SMZ13 TEM Variant and Site Series Map
Biogeoclimactic Variant and Site Series Spreadsheet Analysis

Appendix 1

Protected Forest Breakdown by Biogeoclimatic Variant and Site Series for the Nahmint SMZ #13 *(Spreadsheet and Map)*

Appendix 2

Planning Framework for Landscape Unit Planning

Forest development planning in Nahmint SMZ 13 is subject to three levels of plans:

1. Strategic Land Use Plans that set out broad objectives for land use - *Vancouver Island Land Use Plan, Higher Level Plan Order (December 1, 2000)*
2. Landscape Unit Plans that translate these broad objectives into clear and measurable targets and strategies to manage and conserve forest resources - *Order Establishing Provincial Non-Spatial Old Growth Objectives (June 30, 2004)*
3. Forest Stewardship Plans that set out specific timber harvesting results and strategies aimed at achieving government objectives.

Historical Context

On December 1, 2000, the VILUP HLP was put into effect. The VILUP HLP established Resource Management Zones and detailed a number of objectives that pertain to operational planning and landscape unit planning. It was noted at the time that some of the objectives were too broad in scope to give specific guidance to operational planning and that there was a need for Landscape-Level Plans (also referred to as “*Landscape Unit Plans*” or “*Sustainable Resource Management Plans*”) which provide more specific guidance for measuring consistency of an operational plan with the objectives of higher level plans such as the VILUP HLP.

Under the scheme of the *Forest Practices Code of British Columbia Act 1995* (the Code), Landscape Level Plans were intended to bridge HLP’s and Operational Plans. Landscape Level Plans manage biodiversity objectives such as VILUP HLP Objective B.4 through the implementation of the ***Order Establishing Provincial Non Spatial Old Growth Objectives (Old Growth Order)***.

Under the Code, the Chief Forester provided policy direction¹ regarding the relationship between approved HLP objectives and the development of Landscape Unit Plan objectives – such as the *Old Growth Order*. The direction required LU objectives to be consistent with existing Cabinet or Minister approved HLP such as the VILUP HLP. Accordingly, the 2004 *Old Growth Order* objectives are considered consistent with and complimentary to the 2000 VILUP HLP biodiversity objectives – specifically Objective B.4.

Recently Landscape Level plans, such as the Nahmint SMZ, have been broadened in scope to manage for a wider range of forest resources and values in order to provide meaningful guidance to operational plans and capture new societal values in forest management. In addition to forested ecosystem representation, habitat for species at risk and cultural values may be considered in the Landscape Level Planning process.

¹ Province of British Columbia: Higher Level Plans: Policy and Procedures – Chapter 5 Revisions (December 1996)

With respect to *VILUP HLP Objective B4*, both the HLP and the January 25, 2001 *South Island Forest District VILUP HLP Implementation Guidance Memo*² to Licensees stated that *Objective B4* is expected to be achieved through Landscape Unit Planning, referring to the Landscape Unit Planning Guide (1999).

The guidance in the January 25, 2001 Memo stated:

“Objectives 4 and 5: of the HLP require the retention of old seral forest at the site series level of representation and in patches of variable size in the Nahmint SMZ (SMZ 13). The SDM,s expect that these objectives will be achieved through landscape Unit Planning. Licensees and agencies should note that this objective is linked to the transitional provisions of the HLP (objectives 17 and 18)”

The transitional provisions were put in place because it was recognized that specific VILUP HLP objectives such as B4 were too broad in scope, lacking targets and vague in terms of providing guidance for their practical application. It was recognized in a Forest Practices Board (the board) special report (FPB/SR/34) that *“The clarity of objectives strongly influences how effectively they can be translated into practices on the ground”*³. The board concluded in their report that *“early SLUP’s (Strategic Land Use Plans) in particular were deliberately written to provide broad strategic direction, with the intent it would be refined or operationalized in lower level plans.”* This was the situation with VILUP HLP B4 and the reason this objective was subject to transitional provisions of the HLP.

HLP Objective 17 was a transitional objective that did not require several VILUP HLP objectives to be immediately implemented, including B.4, until landscape units and objectives had been established for applicable resource management zones...essentially this was a “phase-in” provision.

HLP Objective 18 provided a two year window for **Objective 17** to be in effect. On December 1st 2002, the transitional objectives that did not require forest development plan consistency with HLP Objectives were no longer optional but fully in effect.

It was not until June 30, 2004 with the establishment of the *Old Growth Order* that biodiversity emphasis and old growth retention targets for the Nahmint were made known to assist with the implementation of VILUP HLP Objective B4 though the Landscape Unit (LU) Planning process.

In addition to providing old forest retention targets for SMZ 13, the *Old Growth Order* also provided direction to Licensees in terms of its implementation. The direction in the Old Growth Order was, *“licensees must maintain old forest by **biogeoclimatic variant** within each landscape unit according to the age of old forest and the percentage of old forest retention that is specified in Tables 1 through 4...”* This direction was approved by the Regional director of MSRM in a companion Implementation Policy.

The Old Growth Order was implemented through the Landscape-Unit Planning Guidebook (1999). A stated directive by the Chief Forester with respect to implementation was that landscape unit biodiversity objectives would not impact timber supply by more than 4.3% (1999)⁴. This pre-mandated limit on timber supply would be achieved by way of adherence with earlier direction from the Chief

² Letter from Cindy Stern , District Manager South Island Forest District (January 25, 2001) (Re: VILUP HLP Implementation, South Island Forest District).

³ FPB Provincial Land Use Planning, Which way from here, (November 2008).

⁴ Memorandum from Larry Peterson, Chief Forester, Ministry of Forests (March 17, 1999) Re: Release and Implementation of the Landscape Unit Planning Guide.

Forester which specifically addressed representativeness when developing landscape unit objectives for old seral requirements (1998). The direction was not to consider representativeness at a scale finer than the Biogeoclimatic Ecosystem Classification (BEC) variant level when establishing Landscape unit objectives⁵.

The Chief Forester's 1998 memo expressed concern *"that applying representativeness requirements on a scale finer than the BEC variant represents a high risk that the Ministry of Forests will not be able to manage the Province's forest resources having regard to the immediate and long term economic benefits they may confer on British Columbia, as is required by section 4(b) of the Ministry of Forests Act R.S.B.C 1996, c.300"*⁶.

The release of the Old Growth Order in 2004 subsequently established Landscape Units and Old-Growth Landscape Unit Objectives consistent with the earlier Chief Forester policy directives. And, the Chief Forester direction to maintain old forest representativeness by BEC variant was affirmed again in the Old Growth Order itself.

Where a forest or planning practice is established as part of a higher level plan objective, they must be consistently followed in operational planning. Accordingly, VILUP HLP Objective B.4 must be addressed in SMZ 13 Land Use Planning. Objective B.4 is not prescriptive in nature (no targets) and therefore, is intended to provide flexibility in the OGMA selection process. Targets in higher level plans were typically only applied if it was generally accepted as necessary to attain a very specific outcome for an objective. Objective B.4 directs Landscape Unit Planning to consider the full spectrum of old seral forests (analysed at the site series or surrogate level) occurring within a variant, and attempt to balance their representation in OGMA's, with particular regard (or emphasis) to protecting rare and underrepresented ecosystems at an appropriate spatial scale.

It was this direction that guided BCTS's 2007 and 2012 Nahmint SMZ 13 Landscape Unit Planning process.

The *Old Growth Order* translates strategic level objectives and directions in the VILUP HLP such as Objective B4, into achievable and measurable legal requirements, through a Landscape Unit Planning Process, that provides a means of integrating and achieving the intent of the Objective B4 into a Forest Stewardship Plan.

The legal Realm – Forest Stewardship Plans

Under the Code, certain old growth objectives under VILUP were made legally binding as Higher-Level Plan Orders. When the Code was replaced with the *Forest and Range Practices Act 2004* (FRPA), existing Orders were continued under the *Land Act*. Legally, government objectives for old growth established under Code or FRPA orders become enforceable through a two-step process⁷.

1. *Forest tenure holders and timber sale managers are required to submit a forest stewardship plan (FSP). A FSP must specify results or strategies that are consistent with objectives set by*

⁵ Memorandum from Larry Peterson, Chief Forester, Ministry of Forests (May 25, 1998) Re: Chief Forester Direction Landscape Unit Objectives.

⁶ Memorandum from Larry Peterson, Chief Forester, Ministry of Forests (May 25, 1998) Re: Chief Forester Direction Landscape Unit Objectives.

⁷ Environmental Law Center and Clinic, An Old Growth Protection Act for British Columbia (Spring 2013)

government – (this includes objectives for old-growth retention contained in Code-era or Land Act orders). Approval of the FSP indicates that a Statutory Decision Maker is satisfied the Results and Strategies are compliant with legislation and higher level plans.

2. *Commitments (results and strategies) made in forest stewardship plans are legally binding on holders of such plans.*

This implies that Orders established under the Land Act or those established under the Code, and subsequently grandfathered, are enforceable only through a forest stewardship plan.

Accordingly, under the results-based framework of FRPA, a holder of a Forest Stewardship Plan (FSP) may be in non-compliance with an approved FSP result and strategy and reasonably subject to compliance and enforcement, but not with a government objective.

BCTS currently has an approved forest stewardship plan (#638 -approved on April 19, 2017) that addresses VILUP Objective B4 under section 7.2.5. of the FSP.

Appendix 3

Summary of steps for Land Use Planning in Nahmint

The Ministry of Forests, Lands, Natural Resource Operations and Rural Development is committed to establishing legal Old Growth Management Areas (OGMAs) in the Nahmint Landscape Unit. These will be established through a Land Use Order under Section 93.4 of the *Land Act*, as part of a modernized Land Use Planning process that considers a range of values and is completed in partnership with First Nations.

Overview of steps to achieve legal OGMAs	Target timeline
Work with Regional Planning staff to develop project team, define roles and responsibilities, and confirm scope of Land Use Planning for Nahmint Landscape Unit.	Currently underway – to be completed by Oct 2018
Engage early with First Nations and include stakeholders in Land Use Planning process. Currently working with BCTS and Hupacasath First Nation, will engage with Tseshaht First Nation and Interfor in near future.	Currently underway – to be completed by Oct 2018
Update and expand Nahmint draft Landscape Unit Plan to include all relevant values for Landscape Unit Planning. This includes OGMA planning considerations (aspatial targets by variant, targets by site series, configuration and size), in addition to a range of other Land Use Planning goals (e.g. overlap with cultural cedar, wildlife habitat areas and ungulate winter range). The province is currently reviewing options for site series targets, has confirmed cultural cedar overlap, and is considering overlap with species at risk (marbled murrelet, northern goshawk).	Currently underway – to be completed by Nov 2018
Draft a version of the Land Use Order to be established under Section 93.4 of the <i>Land Act</i>	To be completed by Nov 2018
Initiate formal First Nation consultation, continue engagement as needed.	Start by Dec 2018
Complete 60 day public review process and summarize responses.	January-March 2019
Bring final package to decision maker to establish Land Use Order.	April 2019
Post final order in BC Gazette and on Land Use Planning website in order to come into effect.	April 2019

Protected Forest Breakdown By Biogeoclimatic Variant And Site Series For The Nahmint SMZ13

BEC Variant	Site Series	Crown Forest Landbase (ha)	Target %	2018 Analysis (ha)	Total OGMA (ha) =I+L+P	Total Other Protected - WHA/JWR (ha) =I+M+Q	Old Growth - In Other Protected - WHA/JWR OGMA (ha)	Old Growth - In Class 9 Protected - WHA/JWR 9 in THLB (ha)	Remaining Old Growth - Age Class 9 in THLB (ha)	Remaining Old Growth - Age Class 9 in Non Contributing (ha)	Mature - Age Class 5 to 8 in Other Protected OGMA (ha)	Mature - Age Class 5 to 8 in Other Protected THLB (ha)	Remaining Mature - Age Class 5 to 8 in Non Contributing (ha)	Immature - Age Class 1 to 4 in Other Protected OGMA (ha)	Immature - Age Class 1 to 4 in Other Protected THLB (ha)	Remaining Immature - Age Class 1 to 4 in Non Contributing (ha)	Remaining Mature to Old in Non Contributing (ha) = K+O	
AT	00	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	No Site Series	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AT Total		7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
CWHvm1	00	142.5	19.0	27.1	18.9	3.3	14.6	3.1	4.4	23.7	2.2	0.0	5.7	25.4	0.3	17.9	43.1	49.1
	01	2246.7	19.0	426.9	234.8	23.6	160.8	16.2	301.8	87.5	69.3	2.6	339.3	178.2	4.7	4.8	1048.4	265.7
	02	24.6	19.0	4.7	2.3	0.0	1.5	0.0	0.2	0.0	0.8	0.0	2.4	11.5	0.0	8.3	0.0	11.5
	03	1064.6	19.0	202.3	183.9	16.7	79.1	9.2	161.4	48.6	103.5	6.3	168.1	151.8	1.2	1.3	299.4	329.5
	04	1309.9	19.0	248.9	156.8	4.3	64.6	0.1	315.2	47.8	90.1	0.3	166.9	134.5	2.2	3.8	463.3	200.5
	05	1637.0	19.0	311.0	368.3	45.3	282.1	32.5	286.4	222.0	56.8	4.4	109.0	67.7	29.4	8.4	529.0	182.3
	06	470.1	19.0	89.3	98.2	7.6	81.1	3.8	76.6	56.3	9.2	0.0	49.9	36.5	7.9	3.8	135.6	92.8
	07	424.9	19.0	80.7	118.2	4.1	84.7	3.0	45.2	56.4	15.3	0.2	22.3	36.1	18.3	0.9	78.4	92.5
	08	120.8	19.0	23.0	60.1	1.3	59.2	1.3	8.5	12.2	0.1	0.0	0.0	9.1	0.8	0.0	12.3	21.3
	09	115.5	19.0	21.9	50.0	41.9	40.8	3.6	1.8	0.0	0.4	0.3	0.0	0.0	8.8	38.0	21.8	0.0
	10	48.7	19.0	9.3	36.9	7.4	27.2	3.1	0.4	0.6	8.3	1.6	0.0	0.1	1.4	2.6	1.8	0.0
	11	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14	7.2	19.0	1.4	0.4	0.1	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	6.6	0.0	0.1
	CWHvm1 Total		7612.6		1446.4	1329.0	155.7	896.1	76.0	1201.9	555.0	355.8	15.8	863.7	650.9	77.1	64.0	2622.8
CWHvm2	00	164.5	19.0	31.3	3.5	0.0	2.2	0.0	7.6	28.8	0.8	0.0	9.1	40.1	0.5	0.0	24.8	68.9
	01	1517.2	19.0	288.3	239.2	3.2	67.8	1.2	106.2	129.4	167.1	1.1	367.6	204.9	4.3	0.8	429.3	334.3
	02	52.9	19.0	10.0	12.3	0.0	1.0	0.0	0.8	0.0	11.1	0.3	5.5	29.1	0.1	0.0	4.5	29.1
	03	1114.6	19.0	211.8	133.6	4.5	36.4	0.0	61.7	83.2	95.7	4.5	185.7	408.0	1.4	0.0	232.6	491.1
04	1016.7	19.0	193.2	126.3	0.0	34.4	0.0	129.7	137.0	91.0	0.0	216.2	250.4	0.9	0.0	152.3	387.4	

Protected Forest Breakdown By Biogeoclimatic Variant And Site Series For The Nahmint SMZ13

	05		939.2	19.0	178.4	246.9	5.4	95.4	1.6	140.0	107.6	148.7	2.1	102.9	216.0	2.9	1.7	98.0	22.4	242.9	323.6
	06		438.0	19.0	83.2	80.1	0.0	10.1	0.0	47.5	107.6	70.0	0.0	87.5	91.6	0.0	0.0	13.7	10.0	135.0	199.2
	07		351.0	19.0	66.7	74.7	2.9	35.7	0.7	12.3	47.8	36.4	2.2	12.9	105.2	2.6	0.1	64.9	30.3	25.2	152.9
	08		67.3	19.0	12.8	13.0	0.0	12.6	0.0	8.7	10.5	0.2	0.0	2.3	10.6	0.2	0.0	5.3	17.0	11.0	21.1
	09		52.0	19.0	9.9	10.4	0.0	0.0	0.0	0.9	10.6	10.4	0.0	1.3	7.9	0.0	0.0	0.9	19.9	2.2	18.6
CWHvm2 Total			5713.5		1085.6	939.8	16.3	295.5	3.4	515.4	662.4	631.3	10.3	990.9	1363.8	13.0	2.6	1026.2	198.5		
CWHxm2	00		1.8	13.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0
	01		13.9	13.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	9.8	0.0	1.8	0.0
	04		4.4	13.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.7	0.0	0.0	0.3	0.0	2.4	1.7
CWHxm2 Total			20.1		2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	1.7	0.0	0.0	11.9	0.0		
MHm1	00		226.9	28.0	63.5	3.4	0.0	0.0	0.0	1.3	25.6	3.4	0.0	3.3	96.1	0.0	0.0	17.8	79.5	4.6	121.7
	01		323.5	28.0	90.6	84.4	0.0	14.2	0.0	17.0	43.0	70.1	0.0	23.8	138.6	0.0	0.0	4.4	12.3	40.8	181.6
	02		529.8	28.0	148.3	57.0	1.2	18.7	0.0	27.3	72.3	38.2	1.2	19.5	287.1	0.1	0.0	3.9	61.7	46.8	359.3
	03		216.2	28.0	60.5	14.1	0.0	3.0	0.0	2.0	28.4	10.7	0.0	6.1	103.0	0.3	0.0	7.2	55.5	8.1	131.3
	04		75.4	28.0	21.1	35.9	0.0	1.2	0.0	7.9	7.4	34.6	0.0	3.3	12.3	0.0	0.0	8.7	0.0	11.2	19.7
	05		69.7	28.0	19.5	3.3	0.0	3.2	0.0	0.2	11.6	0.1	0.0	0.6	54.1	0.0	0.0	0.0	0.0	0.8	65.7
	06		68.4	28.0	19.1	5.9	0.0	1.1	0.0	0.0	12.5	4.8	0.0	0.0	38.4	0.0	0.0	2.6	9.0	0.0	51.0
	09		0.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MHm1 Total			1510.0		422.8	203.8	1.2	41.4	0.0	55.6	200.8	162.0	1.2	56.7	729.5	0.5	0.0	44.6	217.9		
No TEM Data No Site Series			189.7	0.0	0.0	11.4	0.0	5.2	0.0	23.3	61.8	6.1	0.0	33.1	47.2	0.1	0.0	10.4	2.5		
No TEM Data Total			189.7	0.0	0.0	11.4	0.0	5.2	0.0	23.3	61.8	6.1	0.0	33.1	47.2	0.1	0.0	10.4	2.5		
Grand Totals			15033.4		2954.7	2484.0	173.2	1238.1	79.4	1796.2	1480.0	1155.2	27.2	1944.4	2791.4	90.7	66.6	3704.0	652.4		

Site Series Representation < 2% of the Crown Productive Forest - Shown in Red

Data Used
BCGW Layers(June 28, 2018):
WHSE_TERRESTRIAL_ECOLOGY.STE_TEM_20K_POLYS.SVW
WHSE_FOREST_VEGETATION.VEG_COMP_LYR_R1.POLY
WHSE_WILDLIFE_MANAGEMENT.WCP_UNGULATE_WINTER_RANGE.SP
WHSE_WILDLIFE_MANAGEMENT.WCP_WILDLIFE_HABITAT_AREA.POLY
WHSE_LAND_USE_PLANNING.RMP_PLAN_LEGAL_POLY.SVW
BCTS Layers:
Draft OGMA's

Note: 4.8% of the Crown Forest Landbase has no TEM data (Where Site Series = 00 or where there is No TEM data)

From: [Casavant, Bryce FLNR:EX](#)
To: [Casavant, Bryce FLNR:EX](#)
Subject: FW: Report of Natural Resource Violation
Date: Tuesday, June 26, 2018 1:51:35 PM
Attachments: [attach2.pdf](#)
[attach3.jpg](#)
[attach4.jpg](#)
[attach5.jpg](#)
[attach6.jpg](#)
[attach7.jpg](#)

-----Original Message-----

From: mailer@a100.gov.bc.ca [<mailto:mailer@a100.gov.bc.ca>]
Sent: Tuesday, June 5, 2018 3:18 PM
To: FLNR Compliance and Enforcement Contact Centre FLNR:EX
Subject: Report of Natural Resource Violation

Below is the result of your feedback form. It was submitted on Tuesday, June 05, 2018 at 15:18:29.

referer: <https://www.for.gov.bc.ca/hen/nrv/report.htm>
remote address: 70.71.173.102

ReportDate: 05/31/2018

ReportTime: 15:38

LastName: Inness

FirstName: Andrea

EmailAddress: andrea@ancientforestalliance.org

DaytimePhone: 7789535983

MailingAddress: Ancient Forest Alliance Victoria Main PO, PO Box 8459 Victoria, BC, V8W 3S1

PropertyAddress: Unit 306, 620 View Street, Victoria, BC

Location: Nahmint Valley, west of Port Alberni on Vancouver Island. Special Management Zone 13.

attach1: Nahmint - 11x17.pdf

attach2: Nahmint Cutblocks - 11x17.pdf

attach3: Nahmint-Valley-9th-widest-Douglas-fir1.jpg

attach4: Nahmint-Valley-9th-widest-Douglas-fir2.jpg

attach5: Nahmint-Valley-9th-widest-Douglas-fir3.jpg

attach6: Nahmint-Valley-Clearcut-with-large-redcedar.jpg

attach7: Nahmint-Valley-Large-Redcedar.jpg

ViolatorAddress: BC Timber Sales

ViolationDate_Start: 05/06/2018

ViolationHour_Start: 00

ViolationMinute_Start: 00

ViolationHour_End: 00

ViolationMinute_End: 00

InProgress: yes

NatureOfViolation: This is a complaint from the Ancient Forest Alliance about a potential natural resource violation by the Ministry of FLNRO regarding forest practices and recent BC Timber Sales cutblocks in the Nahmint Valley - Special Management Zone 13 on Vancouver Island.

After walking through various recent cutblocks planned by BC Timber Sales in the Nahmint Valley, we believe BC Timber Sales' Forest Stewardship Plan (FSP #638) fails to meet the results and strategies set out in the Vancouver Island Land Use Plan Higher Level Plan Order that rare and underrepresented site series and surrogates be represented and protected (p. 2, objective B4).

After walking many of these cutblocks, typically found at lower- and mid-elevations, we believe several of the western redcedar, Douglas-fir, western hemlock, and amabilis fir-associated site series may be considered rare and underrepresented plant associations that should not be logged.

We also have noted that BCTS "Best Management Practices for Coastal Legacy Trees" policy states that the minimum size for retention of Douglas-fir is 2.1 meters. The largest Douglas-fir that we noted that was logged was 3.0 metres a clear violation of BCTS policy. See attached photos of the tree. We believe that other western redcedars and Douglas-firs in the BCTS-issued cutblocks also exceeded the minimum threshold size for retention.

Furthermore, we also note that, in the Vancouver Island Summary Land Use Plan, one of the primary land use objectives for the Nahmint Valley (Special Management Zone 13) includes the retention of a high proportion of old forest, including large, old seral Douglas-fir trees (p. 70). The Douglas-fir described above was clearly one of the largest and oldest Douglas-firs in the province (and was wider than the 9th-widest Douglas-fir tree listed in the BC Big Tree Registry).

We request that an investigation be commenced to look into this matter. If you need more information, please contact us at info@ancientforestalliance.org.

AffectFromViolation: We are deeply concerned about the violation, given the abundant ecological, tourism and recreational, and cultural values of the area in question and possible negative and long-term impacts on these values. We photo documented the areas and have alerted the public as to what is happening through news and social media channels.

AgenciesNotified: Minister of Forests, Lands, Natural Resource Operations and Rural Development

ReasonForUrgency: We consider this matter to be urgent, given the scale and fast pace of current logging operations in the Nahmint Valley, which are targeting the rarest, highest-productivity stands with the biggest trees.

Hazards: Fallen trees.



Nahmint Valley

Legend

- Active Forest Road Sections
- Active Licence To Cut - FTE
- Active Forest Cut Blocks - F Themed
- Active Forest Harvest Authorisation Themed
- Colour Themed

0 0.75 1.5 km

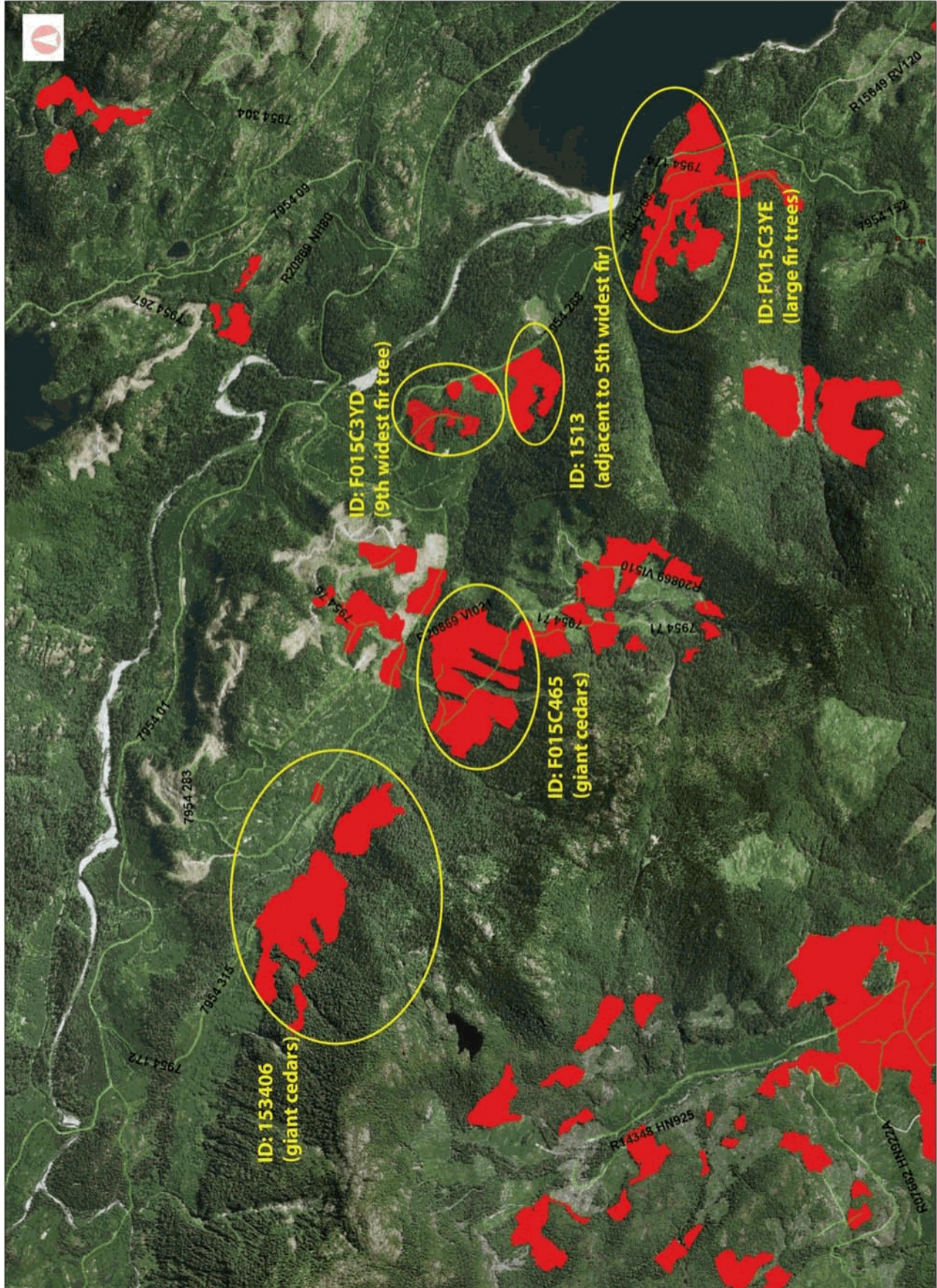
1:36,112

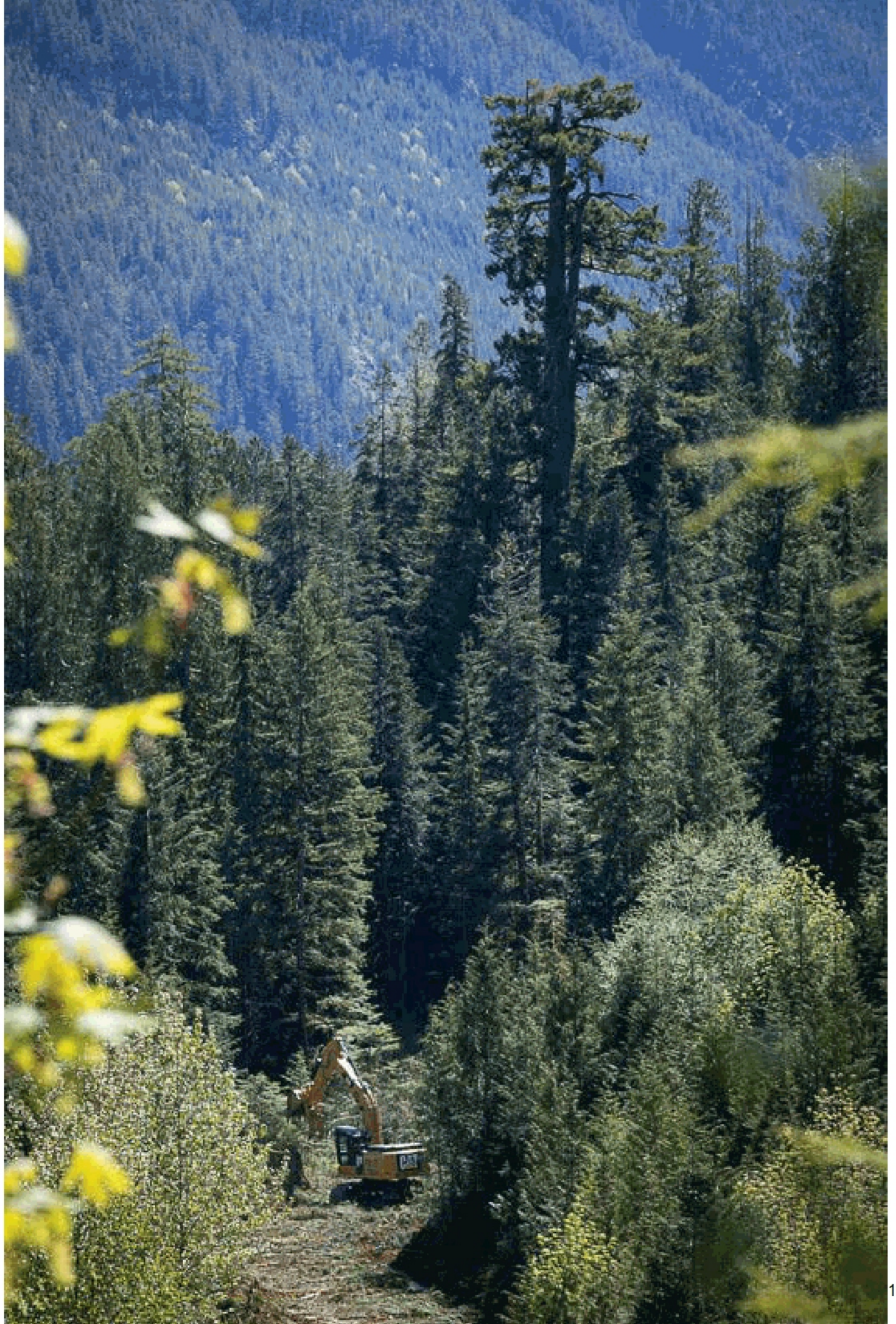
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Date: NAD83
Projection: WGS 1984 Web_Mercator_Auxiliary_2D
Name

Key Map of British Columbia







s.22





s.22



s.22

From: [Casavant, Bryce FLNR:EX](#)
To: [Hudson, Don A FLNR:EX](#)
Cc: [Bastarache, Paul FLNR:EX](#); [Morris, Rhonda M FLNR:EX](#); [Cotton, Ron FLNR:EX](#); [Norlock, Jim D FLNR:EX](#)
Subject: Nahmint Findings - SMZ 13 Compliance Notice
Date: Monday, June 18, 2018 2:56:39 PM
Attachments: [image001.jpg](#)
[Lt 2018 June 18 DCR 37250 Nahmint Findings BCTS.pdf](#)
Importance: High

Dear Mr. Hudson,

Please see attached correspondence of today's date.

I wish to take this time and thank your staff for their co-operation and transparency during this compliance inspection.

Sincerely,



NRO Bryce Casavant, DSocSci (ABD), MA, CMAS

Senior Compliance and Enforcement Specialist

Natural Resource Officer

West Coast Region

Compliance and Enforcement Branch | FLNRORD

Office: 250-230-1319 (cell)

To report a Natural Resource Violation:

Telephone: 1-877-952-7277 (RAPP) or #7277 on cellphones

Webpage: <https://www.for.gov.bc.ca/hen/nrv/report.htm>



File # DCR-37250

Don Hudson
B.C. Timber Sales Manager
Campbell River District Office
370 S Dogwood Street
Campbell River, B.C.
V9W-6Y7

VIA e-mail
don.hudson@gov.bc.ca

June 18th 2018

Re: Compliance Notice – Inspection Findings (SMZ 13)

Ref: Vancouver Island Land Use Order (Higher level Order); Vancouver Island Land Use Summary Plan; Nahmint Watershed Review (1991); Forest Stewardship Plan #638 (2018); West Coast Forest Stewardship Plan, BCTS – Major (2013).

Dear Mr. Hudson,

Please be advised that Natural Resource Officers conducted a records inspection pursuant to Section 61 (2) of the *Forest and Range Practices Act* in order to determine the level of compliance of timber harvesting operations in SMZ 13 (Nahmint). Please be advised that our inspection findings have resulted in reasonable grounds to believe that there is a high likelihood of a government non-compliance pertaining to your operations in this area. This letter will describe the issue, the overall findings, the details of the inspection conducted, and issues pertaining to interpretation of current ministerial orders. Finally, the actions taken by the inspecting officers will be outlined for you and an opportunity to respond within a specified timeline will be provided.

Issue: This Compliance Notice pertains to an Inspection conducted by Natural Resource Officers following public media attention regarding timber harvesting operations in the Nahmint Valley. A formal public complaint was also received by Natural Resource Officers.

Findings: The inspection found that there is a high likelihood of government non-compliance with the *Vancouver Island Land Use Plan – Higher Level Order* Objective B4.



Details of inspection: The Inspection found that the *Vancouver Island Land Use Plan* (“**VILUP**”) is a formal ministerial order that established portions of the Nahmint Valley as a Special Management Zone (identified as “**SMZ 13**”). This order is still in effect. The order contains a background document titled *The Vancouver Island Summary Land Use Plan*. On page 70, this plan establishes SMZ 13 and sets out specific government objectives and rationales pertaining to SMZ 13 (old growth protection objectives and intent is described in detail). While not a legal order itself, *The Vancouver Island Summary Land Use Plan*, coupled with the *Nahmint Watershed Review* (1991), assists in understanding the government’s intentions in producing the VILUP higher level order. The objectives of VILUP contain a requirement to manage SMZ 13 at a site series / surrogate level of representation (VILUP Objective B4) for the purpose of meeting ministerial intentions pertaining to SMZ 13. This ministerial order requirement for land use planning is identified in the current Forest Stewardship Plan (FSP) #638. Specifically, VILUP states:

- VILUP Objective # B4 – “Maintain ... elements of biodiversity in forested ecosystems ..., by retaining old seral forests at the site series / surrogate level of representation”. Special consideration is also to be given to rare and underrepresented ecosystems.
- VILUP Objective # B4 – Biodiversity retention, “This includes, but is not limited to: large diameter (>60cm) live, decaying and dead standing trees (providing nest and cavity sites); downed wood, including large diameter pieces (>50-150sm); deciduous broad-level trees, both in riparian and upland areas”.
- VILUP Objective # B4 – “The level of representation of old seral forest (at the site series / surrogate level) will be applied through landscape unit planning”.

In reviewing BCTS landscape planning documents from 2007 and 2012, the Inspection found that site series / surrogate level of representation in landscape planning was never implemented. Specifically, *The Nahmint Landscape Unit Plan* (2007, pg 13), states, “Although site series mapping was available it was not used to select OGMA delineation and final selection ...” Furthermore, the *Sustainable Resource Management Plan for the Nahmint Landscape Unit* (2012), appears to have adopted the 2007 methodologies and does not address site series / surrogate levels of representation in landscape planning. Therefore, it was found that:

1. Landscape unit planning, using site series / surrogate levels of representation, appears to have never been implemented.
2. As a result, there are reasonable grounds to believe historic and current harvesting in SMZ 13 is not in accordance with VILUP, BCTS FSP – Major (2013), and the current FSP #638.

VILUP Interpretation: The Inspection found that confusion appears to exist pertaining to VILUP Objective B4. It is noted that BCTS staff interpret this objective as only pertaining to identified “rare” or “underrepresented ecosystems” and that site series / surrogate levels of representation are not required in landscape planning due to data issues. However, in discussion with land use planning specialists and other staff, Natural Resource Officers interpret Objective B4 as applying to all of SMZ 13 at the landscape planning phase. This understanding of site series / surrogate levels of representation at the landscape level is consistent with the plain words of the order and the context of the background documents which formed the intent of the order.



Opportunity to respond: Please produce to the undersigned, within 30 days of the date of this Notice, the following:

1. Further information pertaining to site series / surrogate levels of representation within Nahmint Landscape Planning; or in the alternative,
2. Identified corrective actions being taken to ensure compliance with government objectives.

Actions taken:

- I conducted a file review and Compliance Inspection pertaining to SMZ 13.
- I reviewed all orders, FSP results and strategies, land use planning documents, and applicable legislation (300 + pgs).
- I spoke with land use specialists in Nanaimo and legislation and site series monitoring staff.
- I spoke with BCTS personnel on 3 occasions and reviewed cut block and site plans.
- I presented preliminary concerns to the FSP approving authority, district manager, and other staff on May 31st 2018.
- I presented preliminary findings during conference call proceedings on June 14th 2018.
- I determined there are reasonable grounds to believe that a high likelihood of historic and current government non-compliance in SMZ 13 exists, as a result of potential failures to implement site series / surrogate levels of representation in the landscape planning phases.

Submitted for your action,



NRO Bryce Casavant, DSocSci (ABD), MA, CMAS

Senior Compliance and Enforcement Specialist

Natural Resource Officer

West Coast Region

Compliance and Enforcement Branch | FLNRORD

Office: 250-230-1319 (cell)

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Webpage: <https://www.for.gov.bc.ca/hen/nrv/report.htm>

Distribution List:

Paul Bastarache (Regional Manager – C&E West Coast)

Jim Norlock (Field Unit Supervisor – C&E Port Alberni)

Rhonda Morris (District Manager – Alberni)

Ron Cotton (Land Resource Specialist – Coast Area)

From: [Chessor, Laura FLNR:EX](#)
To: [Casavant, Bryce FLNR:EX](#)
Subject: Nahmint OGMA ss tables
Date: Wednesday, June 13, 2018 4:05:31 PM
Attachments: [N OGMA's SSeries.xls](#)
[Nahmint SMZ Red Blue Lists.xlsx](#)

Hi Bryce,

Attached are the tables showing site series breakdowns for the draft OGMA's. The first one is from the 2007 analysis forwarded to me by Ron Cotton.

Thanks,

Laura

Laura Chessor, RPF
A/ Planning Officer
BCTS Strait of Georgia
(250) 286-9431

29 of 121

OBJECTID	SHAPE	OBJECTID	BCGSD	PERMETEID	EQD_ID	EQD_NB	POLY_NB	FOODE	PROJ_ID	SOURCE	SDEC_1	SITE_S1	SITEMC_S1	SITE_M1A	SITE_M1B	STRICT_S	SDEC_2	SITEMC_S	SITE_M2A	SITE_M2B	STISDEC_3	SITE_S3	SITEMC_3	SITE_M3	SITE_M3A	SITE_M3B	STISDEC_3	SITE_S3	SITEMC_3	SITE_M3	SHAPE_L	SHAPE_Area			
134	93210	0	1140.437	5063	23382	443505004	561	W5232001	44305	1	AB	C	1	AB	C	7	5	RO	C	7	0	0	0	0	0	0	0	0	0	0	1140.437	7178.15			
139	2441	0	4731.869	5020	23382	443505004	515	W5232001	44305	7	1	AB	C	7	1	AB	C	5	RO	C	7	0	0	0	0	0	0	0	0	0	0	1140.437	7178.15		
140	97302	0	1677.998	5017	23388	443505001	435	W5232001	44305	7	1	AB	C	7	1	AB	C	7	3	HD	C	7	0	0	0	0	0	0	0	0	0	1677.998	4092.954		
141	42664	0	3481.039	4998	23388	443505001	568	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	HD	C	7	0	0	0	0	0	0	0	0	0	3481.039	8138.97		
145	42664	0	3481.039	4998	23388	443505001	568	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	HD	C	7	0	0	0	0	0	0	0	0	0	0	3481.039	8138.97	
148	42664	0	3481.039	4998	23388	443505001	568	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	HD	C	7	0	0	0	0	0	0	0	0	0	0	3481.039	8138.97	
152	4874	0	1016.532	2951	2644	44101026	2644	W5232001	44101	10	1	AB	S	10	1	AB	S	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1016.532	800.093		
153	42664	0	3481.039	4998	23388	443505001	568	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	HD	C	7	0	0	0	0	0	0	0	0	0	0	0	3481.039	8138.97
158	42664	0	3481.039	4998	23388	443505001	568	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	HD	C	7	0	0	0	0	0	0	0	0	0	0	0	3481.039	8138.97
169	113670	0	1404.168	4908	234526	44401008	862	W5232001	44401	4	1	AB	C	4	1	AB	C	5	4	HD	C	5	2	3	HS	5	2	3	HS	5	2	3	HS	1404.168	9016.08
171	55348	0	2893.482	4878	23399	443505003	393	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	2893.482	3400.942	
177	70733	0	3270.447	4642	23171	443505003	388	W5232001	44305	5	1	AB	C	5	1	AB	C	7	5	HD	C	7	0	0	0	0	0	0	0	0	0	0	3270.447	8138.97	
180	33932	0	5061.165	4620	23108	443505003	388	W5232001	44305	5	1	AB	C	5	1	AB	C	7	3	RS	C	7	0	0	0	0	0	0	0	0	0	0	5061.165	1178.06	
187	55690	0	3298.411	4743	23287	443505003	374	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	RO	C	7	0	0	0	0	0	0	0	0	0	0	3298.411	7699.91	
188	52368	0	3171.241	4743	23287	443505003	374	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	RO	C	7	0	0	0	0	0	0	0	0	0	0	3171.241	7699.91	
192	62652	0	4485.182	4693	23281	443505003	365	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	4485.182	1401.75	
194	64736	0	4043.812	4658	23245	443505003	359	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	4043.812	70291.89	
195	16346	0	9173.123	4655	23236	443505003	347	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	9173.123	51488.57	
196	16346	0	9173.123	4655	23236	443505003	347	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	9173.123	51488.57	
203	120185	0	3245.152	4620	23108	443505003	388	W5232001	44305	5	1	AB	C	5	1	AB	C	7	3	RS	C	7	0	0	0	0	0	0	0	0	0	0	3245.152	19833.89	
204	86232	0	4454.166	4696	23236	443505003	345	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	4454.166	27432.69	
209	55347	0	2196.055	4547	23212	443505003	334	W5232001	44305	10	1	AB	C	10	1	AB	C	7	3	RS	C	7	0	0	0	0	0	0	0	0	0	0	2196.055	68073.13	
211	23346	0	931.6157	4538	232106	443505003	329	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	931.6157	44620.61	
212	99238	0	931.7768	4538	232106	443505003	329	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	931.7768	44620.61	
213	99238	0	931.7768	4538	232106	443505003	329	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	931.7768	44620.61	
214	91490	0	1267.365	4520	165412	44304007	778	W5232001	44304	5	1	AB	C	5	1	AB	C	7	5	YG	P	7	0	0	0	0	0	0	0	0	0	0	1267.365	269.2512	
216	21413	0	3312.238	4511	23287	443505003	327	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	3312.238	1617.07	
218	16005	0	1960.156	4357	16384	44304005	537	W5232001	44304	5	1	AB	C	5	1	AB	C	7	5	MS	K	7	0	0	0	0	0	0	0	0	0	0	1960.156	5247.39	
243	30657	0	784.7085	4350	16383	44304007	753	W5232001	44304	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	784.7085	449.4489	
247	58199	0	1383.794	4329	16377	44304005	534	W5232001	44304	5	1	AB	C	5	1	AB	C	7	5	AF	K	7	0	0	0	0	0	0	0	0	0	0	1383.794	6302.58	
252	47802	0	2365.823	4325	16377	44304005	534	W5232001	44304	5	1	AB	C	5	1	AB	C	7	5	AF	K	7	0	0	0	0	0	0	0	0	0	0	2365.823	6302.58	
255	124699	0	1869.787	4288	16367	44304007	747	W5232001	44304	6	1	AB	C	6	1	AB	C	7	5	AF	K	7	0	0	0	0	0	0	0	0	0	0	1869.787	1697.591	
258	76550	0	2229.005	4278	16364	44304007	745	W5232001	44304	6	1	AB	C	6	1	AB	C	7	5	AF	K	7	0	0	0	0	0	0	0	0	0	0	2229.005	745.7784	
264	3194	0	1314.252	4253	16355	44304007	738	W5232001	44304	4	1	AB	C	4	1	AB	C	7	3	MM	C	7	0	0	0	0	0	0	0	0	0	0	1314.252	584.2652	
265	15189	0	1233.623	4243	16355	44304007	738	W5232001	44304	4	1	AB	C	4	1	AB	C	7	3	MM	C	7	0	0	0	0	0	0	0	0	0	0	1233.623	584.2652	
267	76437	0	2060.889	4242	16351	44304007	734	W5232001	44304	6	1	AB	C	6	1	AB	C	7	5	AF	K	7	0	0	0	0	0	0	0	0	0	0	2060.889	1835.46	
269	113607	0	1816.118	4242	16351	44304007	734	W5232001	44304	6	1	AB	C	6	1	AB	C	7	5	AF	K	7	0	0	0	0	0	0	0	0	0	0	1816.118	1835.46	
269	65230	0	1092.137	4130	251186	44305002	293	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	1092.137	1782.03	
307	45513	0	1259	4081	251137	44305002	291	W5232001	44305	10	1	AB	C	10	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	1259	31207.49	
308	41026	0	862.074	1334	466	44101004	466	W5232001	44101	7	1	AB	C	7	1	AB	C	3	7	AS	G	7	0	0	0	0	0	0	0	0	0	0	862.074	18586.27	
310	41026	0	862.074	1334	466	44101004	466	W5232001	44101	7	1	AB	C	7	1	AB	C	3	7	AS	G	7	0	0	0	0	0	0	0	0	0	0	862.074	18586.27	
311	41026	0	862.074	1334	466	44101004	466	W5232001	44101	7	1	AB	C	7	1	AB	C	3	7	AS	G	7	0	0	0	0	0	0	0	0	0	0	862.074	18586.27	
314	84861	0	1142.182	1272	25083	443505002	283	W5232001	44305	6	1	AB	C	6	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	1142.182	53232.21	
315	84861	0	1142.182	1272	25083	443505002	283	W5232001	44305	6	1	AB	C	6	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	1142.182	53232.21	
326	336	0	2159.119	3972	25083	443505002	283	W5232001	44305	6	1	AB	C	6	1	AB	C	7	0	0	C	7	0	0	0	0	0	0	0	0	0	0	2159.119	1835.46	
334	40071	0	2971.714	3569	16325	44304006	682	W5232001	44304																										

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[illegible]

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OBJECTID	Shape	OBJECTIDBCGSD	PERMIT EOP	EOP_ID	EOP_NB	POLY_NB	FOODE	PROJ_ID	SOURCE	SDEC_1	SITE_S1	SYSTEMC_S1	SITE_M1A	SITE_M1B	STRICT_S	SDEC_2	SITESTRUC_SITE_M2A	SITE_M2B	STISDEC_3	SITE_S3	SITEMC_1SITE_M3SITE_M3ESTRICT_3	SHAPE_1	Shape_La	Shape_Area			
481	26768	0	1881351	3300	164862	44304001	138	W052001	44304	8	7 AS	7 AS	k	k	4	2	SA	n	3	0	0	0	1881365	204853	1560.03		
484	26768	0	3328428	3383	164857	44304001	138	W052001	44304	6	7 AS	7 AS	n	k	5	3	SA	n	3	1	7 AS	n	7	3328427	2176.104	70846.63	
536	27233	0	3054798	3271	164796	44304001	89	W052001	44304	6	7 AS	7 AS	k	k	7	4	SA	k	7	0	0	0	0	3054798	1440.118	67450.55	
538	27233	0	3054798	3271	164796	44304001	89	W052001	44304	6	7 AS	7 AS	k	k	7	4	SA	k	7	0	0	0	0	3054798	1440.118	67450.55	
529	17143	0	5421208	3301	164760	44304001	84	W052001	44304	5	7 AS	7 AS	k	k	4	5	AD	k	4	0	0	0	5421412	341.3183	1827.21		
538	19575	0	2947131	3248	164782	44304007	77	W052001	44304	5	7 AS	7 AS	k	k	4	5	AD	k	4	0	0	0	2947344	353.9951	1323.10		
542	102078	0	1289394	3233	164771	44304007	71	W052001	44304	5	7 AS	7 AS	k	k	4	5	AD	k	4	0	0	0	0	1289278	33.77096	12.80	
542	102078	0	1289394	3233	164771	44304007	71	W052001	44304	5	7 AS	7 AS	k	k	4	5	AD	k	4	0	0	0	0	1289278	33.77096	12.80	
573	94112	0	33061273	3128	164718	44304007	29	W052001	44304	6	7 AS	7 AS	k	k	4	5	AD	k	4	0	0	0	3306127	2409.720	89973.33		
275	27131	0	1567125	4229	165346	44304007	511	W052001	44304	5	7 AS	7 AS	k	k	7	5	AF	k	7	0	0	0	0	1567027	522.8389	14541.43	
285	107839	0	4764125	4178	165327	44304005	730	W052001	44304	5	7 AS	7 AS	k	k	7	5	AF	k	7	0	0	0	0	4764809	3692.782	183553.08	
520	21980	0	1342103	3308	164817	44304001	265	W052001	44304	8	7 Total	7 AS	k	k	7	4	AD	k	7	0	0	0	0	1342098	1359.868	38009.65	
28	33035	0	5979	256210	443050028	265	W052001	44305	8	7 Total	8 AD	7	c	k	7	2	1 AB	c	7	0	0	0	0	0	1267389	1075.566	20131.64
32	101364	0	2020008	5937	256123	443050028	281	W052001	44305	8	8 AD	8 AD	c	k	7	2	1 AB	c	7	0	0	0	0	0	2020602	2521.681	138029.48
355	26533	0	1639155	3887	165175	44304004	412	W052001	44304	5	8 AD	8 AD	c	k	7	5	SA	g	7	0	0	0	0	0	1639541	2195.274	68509.13
378	40962	0	1927528	3806	165124	44304003	365	W052001	44304	9	8 AD	8 AD	g	k	4	1	SA	g	3	0	0	0	0	0	1927526	810.3563	14509.47
378	16468	0	927105	3605	165123	44304003	364	W052001	44304	8	8 AD	8 AD	g	k	4	1	SA	g	3	0	0	0	0	0	927105	1435.008	37157.23
401	69873	0	1540793	3728	165074	44304003	318	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	1540778	828.7479	11267.10
401	69873	0	1540793	3728	165074	44304003	318	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	1540778	828.7479	11267.10
440	20173	0	13121837	3529	164691	44304002	215	W052001	44304	8	8 AD	8 AD	k	k	7	5	AF	k	7	0	0	0	0	0	1312184	1023.448	22751.32
460	9155	0	2977707	3497	164824	44304001	187	W052001	44304	8	8 AD	8 AD	j	k	7	2	1 AB	j	7	0	0	0	0	0	2977688	1282.615	24440.75
544	61435	0	5967459	3223	164769	44304008	69	W052001	44304	8	8 AD	8 AD	k	k	7	2	5 AF	k	7	0	0	0	0	0	5967478	487.0937	9753.86
544	61435	0	5967459	3223	164769	44304008	69	W052001	44304	8	8 AD	8 AD	k	k	7	2	5 AF	k	7	0	0	0	0	0	5967478	487.0937	9753.86
551	94379	0	1766398	3199	164759	44304008	69	W052001	44304	8	8 AD	8 AD	k	k	7	2	5 AF	k	7	0	0	0	0	0	1766388	901.1164	305.29
551	94379	0	1766398	3199	164759	44304008	69	W052001	44304	8	8 AD	8 AD	k	k	7	2	5 AF	k	7	0	0	0	0	0	1766388	901.1164	305.29
559	21110	0	2801924	3178	164745	44304001	50	W052001	44304	10	8 AD	8 AD	k	k	7	2	AF	k	7	0	0	0	0	0	2801988	219.3808	2384.83
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841.56
562	97888	0	4313415	3168	164739	44304006	44	W052001	44304	10	8 AD	8 AD	k	k	7	0	0	k	7	0	0	0	0	0	4313424	405.6152	8841

Biogeoclimatic Zone + Leading Site Series	Within OGMA	Outside of OGMA	Total Hectares	Percentage Within OGMA
AT		95.8	95.8	
00		71.8	71.8	0.0%
(blank)		24.0	24.0	0.0%
CWHvm1 Totals	1346.4	8546.5	9892.9	
00	7.9	182.7	190.6	4.3%
01	229.5	3147.7	3377.2	7.3%
02	2.3	31.1	33.4	7.5%
03	196.5	1155.1	1351.5	17.0%
04	156.9	1488.3	1645.2	10.5%
05	369.3	1327.2	1696.5	27.8%
06	99.7	535.6	635.3	18.6%
07	124.4	345.4	469.8	36.0%
08	60.1	101.5	161.6	59.2%
09	60.1	110.7	170.8	54.3%
10	39.3	88.8	128.1	44.2%
11	0.0	25.6	25.6	0.0%
14	0.4	6.8	7.2	6.0%
CWHvm2 Totals	948.0	4976.3	5924.4	
00	3.4	235.3	238.7	1.4%
01	240.9	1286.2	1527.1	18.7%
02	12.3	43.9	56.2	27.9%
03	136.6	1011.3	1147.9	13.5%
04	128.8	915.6	1044.4	14.1%
05	246.8	716.1	962.9	34.5%
06	80.4	362.9	443.3	22.2%
07	75.4	300.8	376.2	25.1%
08	13.0	60.3	73.2	21.5%
09	10.4	44.1	54.5	23.7%
CWHxm2 Totals		20.1	20.1	
00		1.8	1.8	0.0%
01		13.9	13.9	0.0%
04		4.4	4.4	0.0%
MHmm1 Totals	229.5	2406.7	2636.2	
00	7.2	900.7	907.9	0.8%
01	87.9	264.4	352.3	33.3%
02	74.2	793.4	867.6	9.4%
03	14.8	264.4	279.1	5.6%
04	35.9	42.6	78.5	84.1%
05	3.6	70.4	73.9	5.1%
06	5.9	70.7	76.6	8.3%
09		0.2	0.2	0.0%
MHmmp Totals		0.2	0.2	
00		0.2	0.2	0.0%
No Data	24.2	70.1	94.4	
(blank)	24.2	70.1	94.4	
Total Hectares	2548.2	16115.8	18663.9	

Biogeoclimatic Zone + Leading Site Series	Sum of Hectares	BC Focus List	Age Class
CWHxm2	20.1		
00	1.8	N/A	5
01	13.9	Red List	4
04	4.4	Blue Listed	5
Grand Total	20.1		

From: [Casavant, Bryce FLNR:EX](#)
To: [Hudson, Don A FLNR:EX](#)
Cc: [Kempe, Norm L FLNR:EX](#); [Morris, Rhonda M FLNR:EX](#); [Cotton, Ron FLNR:EX](#); [Smallacombe, Daniel K FLNR:EX](#); [Norlock, Jim D FLNR:EX](#); [Bastarache, Paul FLNR:EX](#)
Subject: Advisory Letter - Nahmint SMZ 13 - File CLOSED.
Date: Monday, October 22, 2018 9:11:00 AM
Attachments: [Lt 2018 Oct 22 DCR 37250 Nahmint SMZ 13 Advisory notice.pdf](#)
[Nahmint Review Oct 1 \(2\).pdf](#)
[Target assessment Nahmint SMZ13 RC calc.xlsx](#)
[image001.jpg](#)
Importance: High

To the Parties,

Please see attached correspondence of today's date with respect to an Advisory Notice regarding Nahmint SMZ 13.

The CEB inspection is now closed.

I remain available to answer any questions or address any concerns as they may arise.

I wish to thank everyone for their co-operation with this complex inspection and for their professionalism during the last few months.

Regards,



NRO Bryce Casavant, DSocSci (ABD), MA, CMAS

Senior Compliance and Enforcement Specialist
Special Provincial Constable | Natural Resource Officer
West Coast Region
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File # DCR-37250

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October 22nd 2018

Advisory Letter – Nahmint Special Management Zone (SMZ) 13

Encl: Consultant report titled *Nahmint SMZ 13: Consistency of Forest Stewardship with Management Intent and Legal Objectives* (attached as PDF); Secondary analysis of government data (attached excel spread sheet).

Good day,

Please be advised that the inspection results pertaining to timber harvesting within the Nahmint Valley (SMZ 13) are now concluded. It has been determined that Forest Stewardship Plan (the “FSP”) #638 is in non-compliance with S. 5 and S. 21 of the *Forest Range and Practices Act*. For this reason, it is recommended that BC Timber Sales (“BCTS”) submit an amendment to the current FSP, cease timber harvesting within SMZ 13 pending amendment approval, and place on hold current OGMA legalization and future timber harvesting tenures. Further details are provided within this Advisory Letter. This Advisory Letter will first provide an overview of the details leading to this referral decision followed by the independent review results, the results of the Compliance and Enforcement Branch (“CEB”) secondary analysis, an explanation of CEB’s position on legislative compliance, inspection determinations, historical context, outstanding concerns, CEB decision, and interim recommendations. Finally, closing remarks will be provided.

Overview: I am in receipt of the BCTS communication dated August 9th 2018 and titled *Re: Compliance Notice-Inspection Findings (SMZ 13)* (the “response letter”). The letter was in response to a CEB notice issued to BCTS on June 18th 2018 and titled *Compliance Notice – Inspection Findings (SMZ 13)* (the

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Ministry of Forests,
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“notice”). Briefly, the notice outlined a CEB records inspection which concluded that there was reasonable grounds to believe government non-compliance had occurred regarding timber harvesting operations within the Nahmint Valley (SMZ 13). Specifically, concerns were raised pertaining to the manner in which the current FSP was applying the Vancouver Island Land Use plan (“VILUP”) Objective B.4; namely, that the FSP only applied this government objective to rare and underrepresented ecosystems within the landscape when in actuality VILUP requires this objective to be applied to the entirety of the landscape. As a result, the overarching issue at play was the use of site series / surrogate levels of representative data at the landscape planning phase of timber harvesting operations. BCTS was provided an opportunity to respond to the CEB notice and did so respond on August 9th 2018.

In summary, the response letter received from BCTS maintained the following key points:

- Old Growth Management Areas (“OGMAs”) have been selected in consultation with First Nations.
- Established OGMAs have been delineated in accordance with applicable legislation (referenced in response) and best practices outlined within the land planning guidebook (referenced in response).
- Rare and underrepresented ecosystems within SMZ 13 are managed at the site series level.
- A surrogate (in place of site series data) was used for the remainder of landscape planning.
- Government has not set objectives for site series / surrogate distribution and this was to allow planning flexibility.
- There is an overall lack of site series data and lack of clear government targets for site series.
- The planning approach taken is “generally” consistent with best practices (referenced in response).
- GIS analysis using TEM site series data was used to verify current planning approaches and confirmed that BCTS landscape management is compliant.
- As the holder of an approved FSP BCTS could be found in non-compliance with results and strategies within the FSP but not in non-compliance with VILUP (i.e., objectives set by government) due to the legal application and workings of an FSP once approved.

Following the BCTS response letter, CEB engaged a private consultant to conduct a qualified professional third party blind review of the CEB notice and BCTS response letter. The parameters of the services were to, “verify the consistency of forest stewardship with management intent and legal objectives”. While this review was occurring, CEB conducted its own secondary data analysis of the BCTS site series data (which is provided as an enclosure to this letter) in conjunction with provincial government planning staff. This Advisory Letter is based on the results of these two reviews (described further below).

Blind review results: The independent review concluded the following in relation to BCTS timber harvesting operations within the Nahmint Valley (SMZ 13):

- Based on review of available documents and data, planning in the Nahmint seems inconsistent with the intent of the VILUP and with the legal objectives in the Higher Level Plan Order (“**HLPO**”).
- There is no evidence that planning in the Nahmint SMZ considered ecosystem representation by site series/surrogate as required by the HLPO.
- The BCTS response states that representation was assessed using a surrogate, but does not provide a systematic surrogate classification or provide evidence that analysis was completed as part of planning. Information exists to create surrogates from tree species and productivity as well as from landform and site series.
- Neither the draft Land Use Plan (“**LUP**”) nor draft Special Reserve Management Plan (“**SRMP**”) described surrogates nor mention assessment by site series or surrogate
- Our effectiveness assessment concludes that the current draft OGMA s do not represent site series or surrogates—based on three different surrogate measures—equally.
- Douglas-fir ecosystems (CWHvm1/04, CWHvm2/04, F and HF moderate and high productivity) seem poorly represented, counter to the specific notation for retention in the VILUP.
- OGMA s improved the representation of mesic, but not dry or wet MHmm1 ecosystems.
- The draft OGMA s do not include target amounts of old forest (age class 8 + 9) by variant.
- The 2017 FSP does not include a result for a target level of mature seral forest (exclusive of old forest) as per the HLPO.
- There is no demonstration of equivalency of younger forest included in draft OGMA s.
- The 2017 FSP only includes the HLPO old forest objective under rare ecosystems.
- Planning documents do not use best-available information.
- TEM site series data, representing best-available information, exist for 99% of the Nahmint, but were not assessed until the BCTS response. No valid rationale has been provided for why these data are worse than VRI.
- New estimates of disturbance return interval exist, but have not been incorporated.
- The legal objectives are unlikely to achieve the intent of the VILUP.
- Meeting representation objectives means that the minimum levels of retention need to be met or exceeded in all ecosystems.
- The natural disturbance return interval estimate is too low, so that the amount of old forest expected naturally—the basis for assessing risk to biodiversity and old forest values—is severely underestimated.
- Parks have been removed from the estimate of the amount of old forest needed, yet there are no parks in the Nahmint.
- Science is coming to consensus that maintaining low risk to biodiversity likely requires at least half of the total area retained.

- Natural disturbance will continue within OGMAs, so that the amount of old forest will be lower than the area retained (other constrained areas provide a little more).
- Landscape and stand-level retention is sometimes double-counted (e.g., riparian reserve zones).
- Planning for OGMAs seems to have been ad-hoc, based on existing constrained areas and aiming to achieve the bare minimum required legally rather than following good conservation design. Professional forester managers are responsible for filling the gap between legal objectives and intent. Our assessment suggests that the Nahmint demonstrates failure of professional reliance at maintaining publicly-agreed-upon values and priorities.

CEB internal secondary analysis: In conjunction with provincial land use planning staff, CEB conducted a secondary analysis of the BCTS provided data set and the BCTS response letter. This secondary analysis found the following:

1. There is a discrepancy between the plain and ordinary wording of VILUP regarding retention targets for mature seral forests and old forests, and the manner in which government has been interpreting VILUP retention targets in land use planning. Specifically, while the plain and ordinary wording of VILUP appears to direct a 25%-33% retention of mature seral forest across the landscape plus a minimum 19% old forest retention. In practice, however, this has been interpreted as 25%-33% overall retention of which 19% must be old and 6% may be old or mature seral forest. The retention difference between these two interpretations is significant.
2. Regardless of the above noted interpretation issues, if the BCTS data set is taken at face value as "true" the following additional concerns arise:
 - a. No mature seral forest retention target is identified.
 - b. No depletion targets are identified.
 - c. Multiple site series are not adequately represented within existing OGMA delineation and recruitment for many at risk site series needs to take place within the timber harvesting land base. Put another way, if only the OGMAs are used, there is a high probability of timber harvesting into deficit for both general retention targets and underrepresented ecosystems.
3. No site series data was used in initial landscape planning. Instead it is stated that a surrogate was used. However, the response letter lacks a clear definition of the surrogates, data, and retention target thresholds used in initial planning.
4. The FSP contains no clearly established retention values for mature seral forests or old forests, nor are depletion values over time explained for the FSP decision maker.
5. As noted in the previous CEB notice, the current FSP only references VILUP under the heading of rare and underrepresented ecosystems. This results in significant concerns regarding the application of VILUP and the adherence to government objectives across the land base.

CEB position on legislative compliance frameworks: BCTS has raised issue with the characterization of timber harvesting operations being in non-compliance with VILUP and objectives set by government. BCTS asserts this is not a possible enforcement conclusion as they are the holders of an approved FSP and therefore are held to results and strategies contained within the FSP and not the order more broadly speaking. **This BCTS position is not supported.**

Simply put, an FSP cannot be used as a shield to allow non-compliant activities to occur or purport to usurp or replace the legal orders and objectives set by government. Indeed, no such authority exists to contravene legislation, legal orders, or objectives set by government. While the legislative landscape may very well restrict the enforcement options available to CEB, nevertheless, the timber harvesting activities conducted must, by necessity, be in compliance with the overarching legislation, and both objectives set by government and the legal orders which establish said objectives. In situations where an FSP may be found to have inadvertently created circumstances by which timber harvesting has not met their legislated obligations, or failed to apply results and strategies that are measurable and verifiable, it is appropriate for CEB to note these concerns as non-compliances – regardless of the enforcement options available (if any). The legislative framework that applies to Nahmint SMZ 13 is as follows:

1. The *BC Land Act* S. 93.4 provides authority to establish the requisite ministerial orders under the *Forest and Range Practices Act* respecting Crown resources and confirms that such an order is an objective set by government.
2. The *BC Land Act* S. 93.8 provides confirmation that orders under S. 3 or 4 or the *BC Forest Practices Code* are continued as objectives set by government for the purposes of S. 93.4 of the *BC Land Act*.
3. The Vancouver Island Land Use Plan (High Level Order) was established pursuant to sections 3(1); 3(2); and 9.1 of the *BC Forest Practices Code* and is therefore continued as an objective set by government under the *BC Land Act* S.93.8; 93.4. VILUP therefore is legally in force.
4. Subject to the *Land Act*, the *BC Forest Act* S. 11 prohibits the government from harvesting Crown timber except in accordance with the *Forest Act*.
5. Subject to S. 12 of the *BC Forest Act*, the minister may grant rights to harvest timber through a timber sale licence.
6. Pursuant to S. 3 of the *Forest and Range Practices Act* an approved FSP is required for the holders of timber sale licences prior to timber harvesting.
7. Under S. 5 of the *Forest and Range Practices Act* an FSP must:
 - a. Specify intended results or strategies, each in relation to
 - (i) objectives set by government, and
 - (ii) other objectives that are established under this Act and that pertain to all or part of the area subject to the plan...
8. For greater certainty, and in accordance with the legal definitions provided within the *Forest and Range Practices Act*, “objectives set by government” are inclusive of objectives provided

under the *Land Act* and “other objectives set by government” are inclusive of regulations under the *Forest and Range Practices Act*.

9. Furthermore, subject to the definitions provided within the *Forest Planning and Practices Regulation*, a “result” means:
 - a. Measurable or verifiable outcomes in respect of a particular established objective, and
 - b. The situations or circumstances that determine where in a forest development unit those outcomes (above) will be applied.
10. In addition, “strategy” is defined as a description of:
 - a. Measurable or verifiable steps or practices that will be carried out in order to meet a particular established objective, and
 - b. The situations or circumstances that determine where in a forest development unit the steps or practices will be applied (emphasis added).
11. Subject to S. 21 of the *Forest and Range Practices Act*, holders of an FSP must ensure the intended results and strategies are carried out.
12. Pursuant to S. 12 of the *Forest Planning and Practices Regulation*, an exemption may be granted from showing a specified result and strategy under certain parameters but only if it is shown that there is a conflict with a land use objective. The regulation places a higher emphasis on compliance with land use objectives.

Inspection determinations: Based on a secondary analysis of the BCTS response letter and the data provided, coupled with a legislation review, CEB has determined the following:

1. For the reasons identified by the private consultant during their review, and based on the findings of CEB during an analysis of the BCTS response letter, the current FSP does not contain measurable or verifiable results and strategies pertaining to mature seral forests or old forests within SMZ 13, in contravention of S. 5 of the *Forest and Range Practices Act*. Other concerns pertaining to depletion values and overall landscape retention targets remain. Additional concerns pertaining to underrepresented and rare ecosystems as well as large tree retention still exist. As a result, the legal objectives established under VILUP have not been met.
Therefore, it is found that the current FSP is in non-compliance with S. 5 of the Forest and Range Practices Act.
2. Within the current FSP, and despite the above noted deficiency, it was found that certain site series for underrepresented ecosystems are not adequately represented across the landscape. Furthermore, current OGMA delineation does not retain the required targets. The overall results and strategies for underrepresented and rare ecosystems lack depletion values and clear targets / retention rationales. **Therefore, it is found that, even had the FSP been valid, the current timber harvesting within Nahmint SMZ 13 is in non-compliance with S. 21 of the Forest and Range Practices Act.**

Historical context: This inspection focused solely on the current FSP (#638) and current and planned timber harvesting operations within SMZ 13. However, this inspection did briefly review historical FSPs for general compliance over the last 18 years. Although out of scope for this inspection, at first glance, there appears to be legacy compliance issues with timber harvesting in the Nahmint Valley SMZ 13. There are therefore reasonable grounds to believe that serious cumulative impacts may occur on the land base over time should this matter remain unaddressed.

Outstanding matters: It is noted that there exists a discrepancy between the plain reading of VILUP, the retention values for mature seral forests, and the current government interpretation of VILUP retention thresholds for mature seral forests. This discrepancy is a serious concern. However, as mature targets and depletion values have simply not been identified, it is a non-determining factor in the above findings.

During the course of this inspection it was learned:

- That BCTS is moving to legalize the current established OGMA's. This is of great concern as the OGMA's do not adequately address the retention targets needed to maintain landscape biodiversity.
- That >400,000m³ is planned to go to public tender for harvesting. This is of significant concern to CEB as certain underrepresented site series are not adequately represented in the OGMA's and require recruitment from the timber harvesting land base. Without clearly identified recruitment planning for these site series overharvesting and irreparable harm is highly possible and would constitute further non-compliance with the FRPA and the FPPR.

CEB decision: CEB lacks the discretionary enforcement options that would otherwise be available if the holder of FSP #638 had been a company or non-government body. Therefore, CEB cannot adequately resolve the public complaint that has been made.

It has come to the attention of CEB that a public complaint has also been made to the Forest Practices Board. Please be advised that the Board has already been in contact with CEB regarding this matter and the status and outcome of the CEB inspection. CEB has been requested to notify the Board when the inspection has concluded.

Recommended interim measures: Based on the totality of circumstances identified, BCTS is hereby advised the following:

1. BCTS should voluntarily submit an amendment to FSP #638. This amendment should consider the points raised by the private consultant and address the additional concerns presented by CEB in this Advisory Letter; specifically, but not limited to, the interpretation of landscape retention targets for mature seral forests and old forests, the establishment of results and

strategies that are measurable and verifiable and that meet the objectives set by government. The amendment should also carefully consider the application of VILUP to the landscape within SMZ 13 (as legislatively required) versus the current restrictive application to only rare and underrepresented ecosystems.

2. Timber harvesting within Nahmint SMZ 13 should voluntarily cease pending amendments to the FSP regarding complete government objectives, the establishment of measurable and verifiable results and strategies, and any other matters that may be relevant.
3. The planned legalization of the current OGMAs should not be supported until the applicable FSP amendments adequately address and fully meet objectives set by government for SMZ 13, have included results and strategies that are measurable and verifiable, and are duly approved by the responsible District Manager.
4. Considering the above identified needs, future timber harvesting tenures should be placed on hold pending the above noted corrections and any matters determined relevant.

Concluding remarks: In making the above noted decisions I took the following actions:

- I conducted a review of all government files and records pertaining to SMZ 13.
- I reviewed all orders, legislation, FSPs, land use planning documents, and applicable legislation (400+ pgs).
- I engaged with government land use planning staff to review and verify data sets.
- I presented preliminary concerns to the FSP approving authority, district manager, and other personnel on May 31st 2018.
- I presented preliminary findings during conference call proceedings on June 14th 2018
- I issued a compliance notice on June 18th 2018 and provided an opportunity for the responsible individual to respond.
- On July 17th 2018 I issued a time extension to BCTS.
- I received a compliance notice response on August 9th 2018 which included a new data set containing site series information.
- I retained a private consultant to conduct a blind review of my compliance notice and the BCTS response letter.
- I conducted an internal CEB secondary analysis of the BCTS response information, legislation, and datasets.
- I again met with government land use planning staff to go over results and outstanding concerns.
- I received the independent review results on October 2nd 2018.
- I reviewed all results. I was then lead to believe that there were reasonable grounds to assert a government non-compliance had occurred and that the current FSP #638 was in non-compliance with legislation.

- I met with the FSP approving authority and district manager on October 5th 2018 and provided a preliminary assessment of the concerns regarding the FSP and current harvesting operations. A copy of the independent report was provided at this time.
- I conducted a final legislation review and noted that there were concerns regarding CEB's ability to take enforcement actions against a government body and properly address the inspection findings and public complaint that was made.
- I completed this Advisory Notice and associated documents.

In sum, it has been determined that FSP #638 is in non-compliance with S. 5 of the *Forest and Range and Practices Act*. It has also been determined that current harvesting operations are harvesting contrary to the plan and in contravention of S. 21 of the *Forest and Range and Practices Act*. As a result, it has been recommended that BCTS cease timber harvesting in SMZ 13, place a hold on current OGMA legalization, and hold future harvesting tenures.

Should you have any questions, comments, or concerns, please do not hesitate to contact me at: bryce.casavant@gov.bc.ca (1-250-230-1319).

Sincerely,



NRO Bryce Casavant, DSocSci (ABD), MA, CMAS

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Nahmint SMZ 13: Consistency of Forest Stewardship with Management Intent and Legal Objectives

Karen Price and Dave Daust

October 2, 2018

Report to Bryce Casavant, Senior Compliance and Enforcement Specialist, FLNRORD

Introduction

In response to a request from FLNRORD's Compliance and Enforcement Branch (CEB), this report assesses whether forest planning in the Nahmint Landscape Unit (SMZ #13) on Vancouver Island is consistent with legal objectives and with the intent of the Vancouver Island Land Use Plan (VILUP). Inconsistent management of publicly-agreed-upon values can result from excluded values, altered objectives or ineffective management strategies. We focus on the amount and representation of old forest in draft Old Growth Management Areas (OGMAs) to provide a second opinion on information provided to CEB by BC Timber Sales (BCTS). We assess both the process of determining OGMA amount and location (implementation of intent) as well as the likely effectiveness of the areas in achieving both legal objectives and policy intent as documented in the VILUP.

Caveats

- Data vary among sources. We have used existing public databases (except for OGMA location); they may not exactly match the databases used by BCTS.
- Time for review was limited. We have relied on easily-accessible documents.
- Literature cited is taken from our library rather than from a new literature review.

Methods

We assessed the implementation of direction by determining consistency of planned management with intent and legal objectives. We reviewed the following materials:

- Vancouver Island Summary Land Use Plan (2000); "VILUP"
- Vancouver Island Land Use Plan Higher Level Plan Order (2000); "HLPO"
- Nahmint Landscape Unit Plan (draft 2007); "draft LUP"
- Sustainable Resource Management Plan for the Nahmint Landscape Unit (draft 2012); "draft SRMP"
- *Forest Planning and Practice Regulation* (accessed September 17, 2018)
- Biodiversity Guidebook (1995)
- Landscape Unit Planning Guidebook (1999)
- *Order Establishing Provincial Non-Spatial Old Growth Objectives* (2004) and associated Implementation Policy; "Old Growth Order"
- CEB initial inspection findings (File # DCR-37250; June 18, 2018)
- BCTS response to compliance notice-inspection findings (File: FOR 18046-01; August 9, 2018)
- South Island Forest District TFL 44 Forest Stewardship Plan Background Information (BCTS; June 2008)
- 2017 West Coast Forest Stewardship Plan (BCTS, Strait of Georgia Business Area; SP #638; April 19, 2017); "2017 FSP"

We assessed the effectiveness of implementation by analysing ecosystem representation given planned management. We used the following data sources to analyse representation (Table 1).

Table 1. Spatial data sources used to assess representation.

Variable	GIS data file	Source
Landscape Unit	RMP_LU_SVW	Data_BC
Treaty Lands	FNT_TRT_LN_polygon	Data_BC
Ungulate Winter Range	WCP_UWR_SP_polygon	Data BC
Wildlife Habitat Area	WCP_WHAPLY_polygon	Data BC
OGMA	OGMA_Nahmint_Cous_May17_2010	FLNRO
Variant	Dist_Pkg_NonPEM_Coast.gdb	Province of BC *
Variant_v2	BEC_BIOGEOCLIMATIC_POLY (version 11, 2018)	Data BC
Site Series	Dist_Pkg_NonPEM_Coast.gdb	Province of BC *
Site Series Group	Dist_Pkg_NonPEM_Coast.gdb	Province of BC *
Cutblocks	CNS_CUT_BL_polygon	Data BC
Land Facets	facets_adjel10cl	AdaptWest**
Vegetation Resources Inventory	VEG_R1_PLY_polygon	Data BC
Site index class	Based in average SI for Ba, Cw, and Hw from sprod_38.gdb	Data BC
FMLB	Extracted from VRI	Data BC
Land1	Based on BC Land Classes 1 and 2 from VRI	Data BC
Land2	Based mainly on BC Land Class 4 from VRI	Data BC
Site Position	Extracted from VRI	Data BC
Logging Year	Extracted from VRI	Data BC
AgeClass	Extracted from VRI	Data BC
Tree species group	Based on species label, from VRI	Data BC

*<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/ecosystems/search-ecosystem-info>

**<https://adaptwest.databasin.org/pages/adaptwest-landfacets>

Further data analysis methods are included in the Effectiveness section below.

Broad Intent: VILUP Management Principles

Within the Vancouver Island Land Use Plan (VILUP), Special Management Zones are areas with regionally significant values that require management tailored to “*minimize development impacts*” (VILUP p. 35) to stated values. The intent is that management of forested SMZs should be based on the “*principles of sustainable forest ecosystem management*”, and should be monitored to ensure that strategies are effective at achieving stated objectives: “*Resource management within SMZ units will be accompanied by active monitoring and evaluation, consistent with the principles and concepts of adaptive management.*” (VILUP p. 35).

These principles—sustainability of stated values, and continual improvement—provide important context on broad intent and guidance for professionals planning management in the Nahmint.

Intent for Nahmint SMZ

Nahmint Special Management Zone (SMZ) #13 encompasses about 20,000 ha of the Nahmint River Watershed in southern Vancouver Island (reported area varies: 19,168 ha in the draft SRMP; 19,252 ha in the draft LUP; 20,438 ha in the DataBC landscape unit map; 24,900 ha in the VILUP). The SMZ and Nahmint Landscape Unit are congruent.

Values

The zone was created as part of the VILUP process to maintain significant primary values (VILUP p. 70) including

- Oldgrowth biodiversity and connectivity functions
- Fish and wildlife habitats and populations
- Visual quality for recreationists in the Nahmint Valley
- Linkage to possible high elevation Wilderness Area (Mt. Gibson, Klitsa Mountain)

Consistent with its listed oldgrowth biodiversity value, the Nahmint Landscape Unit was assigned a higher biodiversity emphasis option in the Old Growth Order as *“recommended for those areas where biodiversity conservation is a high management priority”* (Biodiversity Guidebook).

Objectives

Consistent with the Nahmint’s oldgrowth biodiversity value, overall management guidance is that *“emphasis should be on high biodiversity values, with high levels of old seral forest retention; ...”* (VILUP p. 70). Objectives incremental to forest management (referring to the Forest Practices Code at the time) include Special Biodiversity Conservation Management, Special Wildlife Management, Special Timber Management, Special Recreation Management and Special Visual Management. The VILUP also lists a specific strategy to *“maintain high proportion of old forest, including large Douglas fir in the Nahmint Old Growth Area”*.

Special Timber Resource Management objectives are intended to manage forests *“in keeping with the primary resource values identified”* (VILUP p. 38) with an objective to *“sustain forest ecosystem structure and function...”*; Special Biodiversity Conservation Management objectives are intended to maintain *“natural elements and attributes of biodiversity with emphasis on rare and underrepresented ecosystems”*; Special Wildlife Management objectives are intended to conserve habitat for identified wildlife species; Special Recreation Resource Management objectives are intended to maintain the integrity of identified recreation resources; and Special Visual Resource Management objectives are intended to maintain the integrity of visual resources.

The VILUP notes that SMZ plans will *“address the issues stakeholders and interests identified in the Planning Framework Statements identified in Appendix 3”* (6.5.2 VILUP). For the Nahmint (p. 53), planning issues raised by public interest groups include

- *“Concerns over the rate of forest harvest*
- *Concerns over lack of protection for fish, wildlife, old growth and biodiversity*
- *Propose creation of old growth reserves for Douglas fir in upper Nahmint”*

The special timber, biodiversity and visual management objectives included in the VILUP were subsequently legalized, with minor wording changes, within the HLPO. Wildlife and recreation objectives were excluded. The strategy to maintain a high proportion of old forest, including large Douglas-fir was dropped from the legal order.

The most relevant legal objectives, based on the Special Timber and Special Biodiversity Management regimes from the VILUP, include the following:

<p>A.1. Sustain forest ecosystem structure and function in SMZs, by:</p> <p>(a) creating or maintaining stand structures and forest attributes associated with mature¹ and old² forests, subject to the following:</p> <p>i. the target for mature seral forest should range between one quarter to one third of the forested area of each SMZ³; ...</p> <p>B.4. Maintain late-successional habitat elements and attributes of biodiversity⁸ in forested ecosystems with emphasis on regionally rare and underrepresented ecosystems, by retaining old seral forest at the site series/surrogate level of representation⁹.</p>
<p>¹ The mature seral forest is defined as generally 80 to 120 years old or older, depending on species and site conditions. The structure of mature seral forests generally includes canopies that vary vertically or horizontally, or both. The age and structure of the mature seral stage will vary significantly by forest type and from one biogeoclimatic zone to another.</p> <p>² The old seral forest is defined as generally greater than 250 years old, containing live and dead (downed and standing) trees of various sizes, including large diameter trees, and of various tree species, including broad-leaved trees. The structure of old seral forests varies significantly by forest type and from one biogeoclimatic zone to another.</p> <p>³ Mature seral targets will be established through landscape unit planning.</p> <p>⁸ This includes, but is not limited to: large diameter (> 60 cm) live, decaying and dead standing trees (providing nest and cavity sites); downed wood, including large diameter pieces (50 to 150 cm); deciduous broad-leaved trees, both in riparian and upland areas.</p> <p>⁹ The level of representation of old seral forest will be applied through landscape unit planning.</p>

The mature-forest objective A.1.(a)i. provides explicit targets for the amount of mature seral forest as 25 – 33% of forested area; the objective does not explicitly limit “mature” forest to younger than 250 years, but the definition of old as >250 years provides an implicit limit; in addition, the word “seral”, defines a bounded successional stage. The Biodiversity Guidebook is clear that the mature seral stage ends where the old seral stage begins. The similarity of the target to the recommended target for mature forest in the Biodiversity Guidebook further supports the definition of mature as 80 – 250 years or 120 – 250 years (Table 2). The mature-forest objective does not stipulate representation by site series—or even variant—for mature forest targets.

Table 2. Recommended % old and mature + old for major BEC variants in the Nahmint SMZ (high biodiversity emphasis option) from the Biodiversity Guidebook, with added columns showing calculated mature (difference between “mature + old” and “>250 years” and mature targets in HLPO.

BEC Variant	% >250 years recommended	% of mature + old recommended	% mature recommended*	% mature HLPO
CWHvm1	>19	>54	35	25 – 33
CWHvm2	>19	>54	35	25 – 33
MHmm1	>28	>54	26	25 – 33

* Calculated as {mature + old} minus old

The HLPO old-forest objective B.4. does not provide targets for the amount of old forest, but rather includes a footnote stating that “the level of representation of old seral forest will be applied through landscape unit planning” (HLPO p. 2). The objective and footnote are unclear in their usage of “level of

representation”: it refers to the unit of representation in the objective, but seems to refer to the target amount of representation in the footnote.

Consistency of Planned Management with Intent and Legal Objectives

Values

The draft Landscape Unit Plan (2007) and draft SRMP (2012) seem to move away from the values as described in the VILUP.

The draft LUP is consistent with the legal objectives (for Visual objectives described in the HLPO), but inconsistent with the intent of the VILUP. Although the draft LUP notes that VILUP assigns a Special Recreation Management regime, it ignores the objectives listed for that regime, instead relying entirely on managing visual quality.

The priority given to timber supply in the draft LUP is inconsistent with the intent of the VILUP. The draft LUP seems to manipulate the language around timber resources to misrepresent the intent of the VILUP. The VILUP assigns Special Timber Management regime to the Nahmint, with an overall goal to manage forests in keeping with primary values, and an objective *“to sustain forest ecosystem structure and function in SMZs by concentrating, within SMZs, the retention or recruitment of old growth forests required to meet landscape level biodiversity objectives”* (VILUP p. 38). The draft LUP, however, does not restate this objective; rather it states that the Nahmint was *“assigned a secondary level management regime for Timber under the VILUP SMZ13, which after considering the placement of OGMA’s to conserve primary management regime values, gave emphasis on minimizing timber supply impacts”*. Nowhere in the Nahmint SMZ13 description in the VILUP, or in the broad intent statements for SMZ, is there any mention of minimizing timber supply impacts.

The *Forest Planning and Practice Regulation* provides objectives for landscape-level biodiversity to harvest timber in a way that resembles patterns of natural disturbance in time and space, without *“unduly reducing the supply of timber”*.¹ The “unduly” clause, included in the *Government Action Regulation* that designates Wildlife Habitat Areas and Ungulate Winter Ranges constrains possibilities, but has no legal definition (although policy direction exists).² Old Growth Management Areas (OGMA’s), however, are established under the *Land Act* rather than the *Forest and Range Practices Act*, and are authorized by the *Land Use Objectives Regulation* where the test for designation, rather than not unduly reducing timber supply, is that benefits of OGMA’s must outweigh impacts to timber harvesting.³ No legal definition exists that allows comparison of costs and benefits amongst values, but the VILUP clearly intends that biodiversity is valued more highly than timber in the Nahmint SMZ by noting oldgrowth biodiversity as primary and timber as secondary.

The draft SRMP is inconsistent with the intent of the VILUP in excluding oldgrowth biodiversity and wildlife values. The draft SRMP ignores three of the four values listed in the VILUP (old growth biodiversity, wildlife, linkage to possible Wilderness Area), claiming that the *“primary objective is recreation”*. This is untrue and entirely inconsistent with both the VILUP and HLPO. Interestingly, the draft SRMP notes that HLPO objectives 1,2, 4, and 5 apply to SMZ 13 and ignores objective 6—visual quality—the one objective that the draft LUP notes as important to recreation. The 2017 FSP also seems to exclude HLPO objective 6.⁴

Mature targets

The mature target misrepresents the intent of the Biodiversity Guidebook and seems inconsistent with the legal objective mature seral forest target. HLPO Objective A.1.(a) refers to “*mature and old forests*”, while the sub-section A.1 (a)i. refers to “*mature seral forest*”. While the definition of “mature” in the footnote is unbounded at the upper end, the use of the term “seral”, and reference to the Biodiversity Guidebook, both clarify that the objective refers solely to mature forest, exclusive of old. The background information for the 2008 FSP for TFL 44, however, claims that “*mature*” is understood to mean “*mature plus old*” without providing any rationale, without noting that the HLPO amounts are similar to those for mature—without old—in the Biodiversity Guidebook (Table 2, above), and ignoring the accepted definition of “seral” as a bounded successional stage. The 2017 FSP continues with the misrepresentation, quoting the objective (7.2.1 Objective 1(a)i) as “*target for mature seral forest*”, but specifying under the result that “*no less than 25% of the forest area of SMZ 13 is retained as mature or old seral age classes*” (7.2.1.2.). This interpretation will likely considerably decrease the amount of mature and old forest over the landscape (e.g., from 54% recommended by the Biodiversity Guidebook to 25%).

Oldgrowth targets

The Biodiversity Guidebook (1995) provided the first estimates of the amount of mature and old forest to retain to improve the probability of maintaining biodiversity, with practices designed to “*reduce the impacts of forest management on biodiversity, within targeted social and economic constraints*” (p.1). Targets for the amount of mature and old forest vary by ecosystem according to the natural disturbance regime. The Biodiversity Guidebook states that targets represent “*the minimum requirements considered to have a good probability of maintain biodiversity within the landscape unit*” (p. 14).⁵ The approach was designed to be “*refined over time as new knowledge is obtained*” (p.2)—an intent that matches the broad intent of the VILUP.

Ecosystems within the Nahmint SMZ (except for very small areas of CWHxm2 and CWHmm1) fall within Natural Disturbance Type 1, with rare stand-initiating events and structure primarily driven by gap-phase dynamics. The biodiversity guidebook lists return interval for the CWHvm1 and vm2 as 250 years and the MHmm1 as 350 years (Table 3). It estimates the expected proportion of each age using a negative exponential method and calculates recommended proportions of the forested area to be mature + old (> 80 years for CWH; > 120 years for MH) and old (>250 years) based on the amount expected naturally. Hence, for CWHvm1, assuming a return interval of 250 years (and assuming disturbance independent of age), the Biodiversity Guidebook calculates that about 37% of the landscape would naturally be over 250 years old and nearly three-quarters (73%) would be mature or older. For the MHmm1, assuming a return interval of 350 years, nearly half (49%) would naturally be older than 250 years and 71% would be mature or older (Table 3).

Table 3. Estimates of stand-replacing disturbance, % expected old and recommended % old and mature + old for BEC variants in the Nahmint SMZ based on the high biodiversity emphasis option and Appendix 4 from the Biodiversity Guidebook (1995).

BEC Variant	Stand-replacing disturbance	% expected >250 years	% >250 years recommended	% of mature + old recommended
CWHvm1	250 year	37	>19*	>54
CWHvm2	250 year	37	>19	>54
CWHmm1	200 year	29	>13	>51
CWHxm2	200 year	29	>13	>51
MHmm1	350 year	49	>28	>54

* Calculation: (37% expected – 12% assumed to be in protected areas) x 0.75 = 19%

Target amounts of old forest are inconsistent with VILUP intent and with policy informing the Old Growth Order because they have not been updated to reflect best available knowledge. The Old Growth Order identifies how much old forest to retain based on landscape biodiversity emphasis. The targets for high biodiversity emphasis landscapes like the Nahmint match those provided in the Biodiversity Guidebook:⁶ 75% of the area that would be expected to be old naturally, with a 12% allowance for protected areas.ⁱ The Order stipulates review by 2007 to assess effectiveness at achieving sustainable management goals, and the Implementation Policy providing guidance for the Order notes that implementation “*should be informed by the best available technical and science-based information, with new information being utilized as soon as practicable*” (2.d).

Several lines of evidence demonstrate that mean disturbance intervals for CWHvm1 and 2 and MHmm1 variants were severely underestimated in the biodiversity guidebook.⁷ The lack of even-aged forests, soil charcoal and tree age all suggest that stand-replacing disturbance intervals in the CWHvm are 750 – 1,000 years or longer. Hence oldgrowth targets were calculated using outdated knowledge. Given the overarching principle for adaptive management in the VILUP, updated targets that reflect new information seem timely. Using best-available knowledge for stand-replacing disturbance interval and the calculations in the biodiversity guidebook raises the amount of old forest (>250 years) expected under historic condition to 72 – 78% or more.⁸ Using a similar calculation to that used in the Biodiversity Guidebook, the amount of old forest needed to have a reasonable probability of maintaining biodiversity increases from 19% in the CWHvm1 and 2 and from 28% in the MHmm1 to 45 – 50% (with 12% removed for protected areas).

The draft SRMP does not demonstrate equivalency when substituting younger stands for old forest and is thus inconsistent with the legal order. The draft SRMP notes that OGMA included younger stands “*where conservation value was assessed and determined to be equal or greater than that of the older stands*” (p. 8), but provides no description of the assessment; it is thus inconsistent with Old Growth Order Objective 6 stating that younger forests can be used “*where it can be demonstrated that equal or better conservation benefits would result*”.

ⁱ Appendix 4 of the Biodiversity Guidebook notes that the 12% adjustment could be replaced with actual percentage in the landscape. This stipulation is lost from the Landscape Unit Planning Guide and the Old Growth Order (indeed, the Landscape Unit Planning Guide states explicitly that protected areas should be removed from the OGMA target, thereby double-counting by subtracting area already removed in the targets). In the Nahmint, there are no protected areas; therefore, the target amounts of old forest are consistent with the legal order, but inconsistent with the intent of the Biodiversity Guidebook (which would return the 12% removed).

The objective and results for old seral representation included in the 2017 FSP are inconsistent with the legal objective of the HLPO and with the intent of the VILUP. The 2017 FSP includes the HLPO old growth objective under the heading “Rare ecosystems” (7.2.5 Objectives 4 and 5), whereas the HLPO targets are designed to apply to all ecosystems. Results applying to the strategy are limited to maintaining late successional habitat elements within stands (as wildlife tree patches or riparian management areas) rather than to retaining old forest; they do not mention rare ecosystems. While the FSP objective quotes the need for “*retaining old seral forest at the site series/surrogate level of representation*”, as per the HLPO objective, the results ignore both old forest retention and representation.

Old Forest Representation

Ecosystem representation is accepted as key to maintaining ecological integrity worldwide.⁹ Essentially, because we cannot understand ecosystems, the best practical approach retains enough of each natural ecosystem to allow ecological and evolutionary processes to continue.¹⁰ Effective representation must capture all different ecosystems. BC is fortunate to have an excellent ecosystem classification system: biogeoclimatic variants represent broad ecological variability due to climatic processes; within variants, a mosaic of distinct ecosystems—site series—vary with site conditions and soil processes.¹¹ Site series provide the best estimate of the potential of an area to support a particular ecosystem. Although ecosystems change with the climate, site series continue to integrate the environmental factors; for example, in a particular region, the wettest sites will continue to be the wettest sites even as aridity increases.

The Biodiversity Guidebook, representing the best available knowledge at the time, recommended representation of mature and old forest by site series: “*site series should generally be retained in proportion to their occurrence in the landscape unit*”; “*rare site series should be retained in greater proportion than they occur*”. The Biodiversity guidebook recommends that rare forest stand types covering <2% of area should be maintained over the rotation, and that the distribution of deciduous species and stands should be maintained within the natural range. Applying targets to finer-scaled units within BEC variants was intended to ensure that all ecosystems, including the productive ecosystems targeted by forestry, are sufficiently represented. Conservation scientists consider that one of the principle dangers of applying broad targets for old forest is that an uncritical focus on amount cannot account for non-random land-use processes, including biased modification of the most productive ecosystems.¹² This concern is particularly relevant in the highly incised watersheds of coastal BC, where it is possible to maintain more than 90% of a particular BEC variant while harvesting all of the productive valley-bottom ecosystems.¹³ The best available science agrees that consideration of ecosystem type, productivity and risk are crucial factors to include in representation planning.

Terrestrial Ecosystem Mapping (TEM), with aerial photo interpretation of site series verified with field assessment, provides the best-available information on ecosystem type. Where TEM exists, there is no need to use a surrogate for site series. Combining site series into groups of similar ecosystems can be beneficial to avoid slivers and decrease the number of units for planning purposes; however, grouping does not require a different classification system, but is based on existing TEM site series.

Recognising that coverage of TEM was incomplete, the Biodiversity Guidebook described an alternative methodology, using a surrogate based on leading species and productivity: “*where site series mapping is not available, a combination of forest cover and site productivity or site index information should be used*”

to determine representativeness” (Biodiversity Guidebook p. 18). This approach was used to design old forest representation in the Great Bear Rainforest.¹⁴ Using site series surrogates to design reserves intended to represent ecosystems brings challenges: there are concerns that using surrogates based on units defined for timber management (e.g., forest cover and productivity) may not match units based on ecology (i.e., site series) well; if surrogates do not correspond, non-random harvest can mean that productive ecosystems are harvested preferentially, leaving less productive ecosystems over-represented in reserves. An assessment in the Great Bear Rainforest determined that site series should be used preferentially when possible.¹⁵ Whenever site series are available, particularly based on field-checked TEM, they are the best units—potentially combined into site-series groups by edaphic grid or indicator species¹⁶—for planning and assessing representation.

The Biodiversity Guidebook suggestion for a surrogate that combines forest cover and site index is repeated in the VILUP (as a strategy under the Special Biodiversity Conservation Management Regime). The HLPO includes an objective for representation at the site series/surrogate level, but does not describe any particular surrogate.

Direction in the LUP Guidebook to plan representation by variant is irrelevant in the Nahmint. Diverging from the Biodiversity Guidebook, because of the potential impact to timber supply, the LUP Guidebook specifies that representation be calculated by variant (following the Chief Forester’s direction). Both LUP Guidebook and Chief Forester’s guidance note that finer detail can be used if an objective is established as a higher-level plan: *“Representation may be pursued at a finer level of detail provided that an RMZ objective is established as a higher level plan and directs representation at a finer level of detail”* (LUP Guidebook p. 28)—as it has clearly been in the HLPO. Indeed, the LUP Guidebook stipulates that HLPO direction *“supersedes the Chief Forester’s direction”* (p. 4).

The Chief Forester’s direction also calls for research into the impacts to biodiversity of representing ecosystems at the variant scale *“Research Branch...is committed to reviewing the risk to biodiversity values of establishing OGMAs at the variant level of representation”* (LUP Guidebook p. 34). We are unaware of any completed research projects into this issue that could provide an update on the best available science.

Potential Site series surrogates

- Forest cover plus productivity class or site index: suggested by the Biodiversity Guidebook and included as a VILUP strategy. The surrogate combines leading species with productivity (e.g., Hemlock-Cedar High) and was used for planning in the Great Bear Rainforest.¹⁷
- Site series groupings: similar site series combined based on vegetation community similarity or by position on the edaphic grid to facilitate planning.¹⁸
- Enduring features or landform: based on a topographic position index in combination with soil and climate variables. Landforms have been used widely in the US for conservation planning with climate change.¹⁹ Ongoing analyses suggest that site series include additional variability that is not well captured by topographic position.²⁰

Site series are available for the Nahmint, but were not used. The Planning Unit Statement for the Nahmint (VILUP, p. 53) notes the state of site series mapping under existing inventories: *“vegetation site series mapping (one-half of area complete)”*. Hence, in 2000, half of the area was complete. The draft LUP specifically notes that *“Although site series mapping was available, it was not used to select*

OGMAs...”. Based on the BCTS response appendix, TEM site series mapping, including field assessment, is available for almost all (98.8%, all but 190ha) of the Nahmint watershed.²¹ Further work may be needed to ensure consistency over the entire area because two separate projects defined site series in the Nahmint watershed, and site series do not match exactly in adjacent areas. On cursory examination, the discrepancy appears small, with mismatches only a single site series (by moisture or richness) apart. Grouping similar site series (an accepted practice) could easily account for the inconsistency, with field checks improving data as appropriate.

The draft LUP provides a rationale for ignoring site series based on other factors: *“site series mapping...was not used...because the many other factors involved...were significant influences and the distribution of OGMAs across the Landscape Unit and through the range of sites appeared to be exceptionally good”*. Factors considered, as described in the draft LUP include existing constrained areas with reduced or no harvest:

- Established WHAs (marbled murrelet and northern goshawk; on map 4)
- Established ungulate winter range (elk and deer; on map 4)
- Established Forest Ecosystem Networks (not on map²²)
- Hupacasath Cedar Strategy recommendations (on map 4)
- Nahmint Old Growth Reserve (not on map)
- Ecosystem complexes (e.g., slide track, riparian area, wetlands, rock outcrop, gullies—not on map).

Additional factors considered in the draft LUP are described to include

- Patch size: This is a reasonable consideration, but there is no evidence that it has been used. The large patches seem congruent with existing WHAs and UWRs; hence there was no additional consideration.
- Distribution throughout the landscape unit: This is a reasonable consideration to a point. Good conservation design will distribute retained areas by ecosystem with sufficient connectivity to allow movement across the landscape.
- Connectivity: There is a confusing statement in relation to connectivity that *“the inclusion of riparian reserve zones and other non-productive forest has increased the connectivity between lower and higher elevation OGMAs”* (p. 13). Ecologically, riparian zones are amongst the most productive forest. This definition of productivity seems to reflect a timber supply rather than biodiversity focus.
- Structural attributes: The draft LUP notes that *“structural attributes of the stand were used to determine its suitability as an OGMA rather than forest cover information”* (p. 13). Structural attributes can define oldgrowth, but do not address representation. The LUP does not describe how attributes are better than using site series/surrogate information.

The process of locating OGMAs as described in the draft LUP is unsupported by an analysis of representation at the site series/surrogate level and hence is inconsistent with the legal objective.

Most (90%) of WHAs and UWRs are included in the draft OGMAs as are some of the Hupacasath recommendations; nearly half of the OGMA area was already protected from harvest in WHAs and UWRs, with 77% of rich site series within the CWHvm1 already protected. This strategy is sensible as part of good conservation design; valuable ecosystems can form anchors for a complete OGMA network.

Fully constrained riparian reserve zones are also included, a reasonable strategy provided that the areas are sufficiently wide to maintain old growth attributes and not double-counted as in-stand retention. Further design is needed to ensure representation. The draft LUP does not provide an assessment of site series/surrogate representation in the draft OGMA's to support the statement that *"the range of sites appeared exceptionally good"*; nor does it state that such an assessment was completed. Neither does it mention any analysis of other factors (e.g., wildlife habitats represented). The existence of constrained areas for wildlife habitat conservation does not imply maintenance of oldgrowth biodiversity if they are not spread across the full diversity of ecosystems: assessment of representation by site series/surrogate is still required. Visual inspection of distribution (as implied by *"appeared to be..."*), while necessary, is not sufficient.

The process of locating OGMA's as described in the draft SRMP does not ensure representation by the site series/surrogate level and hence is inconsistent with the legal objective included in the HLPO. The draft SRMP quotes the HLPO objective to retain old seral forest at the site series/surrogate level, but then never even considers representation by site series/surrogates, simply stating that *"Old seral representation targets (which are the basis of OGMA's) are applied by BEC variant to ensure the OGMA's are distributed across each BEC variant thereby ensuring adequate protection of each variant."* (SRMP p. 4). The draft SRMP states that *"the full old growth representation targets were met for the Nahmint landscape unit"*, but does not provide any assessment of representation by site series/surrogate or mention that such an assessment was completed. Hence, there is no way of determining if legal targets were met. Inspection of each draft OGMA rationale (SRMP Appendix 1) shows that a single OGMA (out of nearly 80 listed) has a rationale that includes an ecosystem (OGMA #220: 8ha of *"old growth fir on ridge..."*); the remainder are either WHAs, marbled murrelet habitat, UWRs, gullies, riparian areas, or slide tracks. Of 16 OGMA's bigger than 50 ha, 14 are either UWRs, WHAs or both; of four OGMA's bigger than 100 ha, all are either UWRs, WHAs or both.

Addition of OGMA's to existing constrained areas was not in proportion to deficit. Good conservation design uses existing constrained areas to anchor an OGMA network, assesses how well these anchors represent ecosystems, and then adds area to under-represented ecosystems—adding the most area to the least-represented ecosystems to ensure that all ecosystems meet or exceed the target. This process does not appear to have been followed for the Nahmint (Figure 1). For example, wet, mesic and dry site series groups in the MHmm1 are very poorly represented in existing constrained areas (WHAs and UWRs), with 23 – 27% deficit (target is 28% retained for MHmm1). The draft OGMA's increased the representation of mesic MHmm1 ecosystems sufficiently to exceed the target, but added only 5 – 10% to dry and wet MHmm1 ecosystems that remain well below the target. Had a representation analysis been completed, the points on Figure 1 would show a one-to-one line, with added area matching deficit.

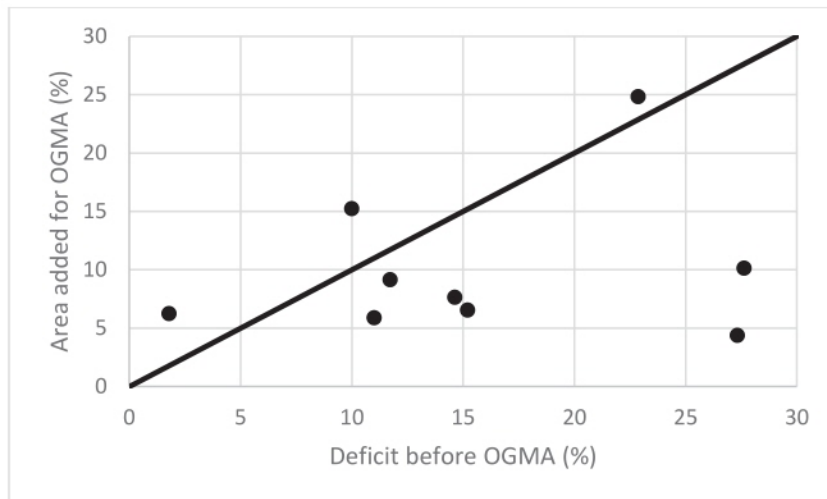


Figure 1. Relationship between the deficit faced by each ecosystem (here, site series groups within BEC Variant) and the amount added to existing constrained areas to create an OGMA network. All points above the solid line have met the targets; those below have not.

BCTS Response

This section offers comments ordered to match paragraphs of the BCTS response to CEB compliance notice.

The BCTS response “Re: Compliance Notice-Inspection Findings (SMZ13)” attempts to support the contention that the landscape planning practices and 2017 FSP are consistent with the HLPO. The response states “*Consistent with the Landscape Unit Planning Guidebook (1999), the 2012 Draft OGMAs were selected using...age class, forest type and ecological classification which are considered as surrogates for site series*” (p.2). The three factors listed are those included in the LUP Guidebook, but are not surrogates for site series. The following definitions (BCTS p. 3) confirm standard usage, including that “*ecological classification*” refers to BEC variant and not to site series.

BCTS (para 2, p. 3) defines site series, but states that site series are “*normally only determined during operational field work*”. This statement is untrue; many projects across the province have determined site series through TEM or PEM (predictive ecosystem mapping). Regardless, the statement is irrelevant to the Nahmint as TEM site series have been defined.

The BCTS description of surrogate classification (para 3, p. 3) includes both inaccuracies and unclear language. The statement that site series surrogates “*are intended to characterize major forest types (ecosystems) within a biogeoclimatic unit*” would be better stated as “are intended to characterize ecosystems within a biogeoclimatic variant”: biogeoclimatic “unit” can refer to different levels of classification; surrogates include ecosystems beyond forest types (e.g., wetlands); surrogates do not necessarily represent only “major” types, but also rare types. The success of surrogates in “*predicting locations and occurrences of likely site series or groups*” is questionable for those surrogates based on resource inventories.²³ The statement that surrogates are “*useful in the Landscape Unit Planning process where detailed information is lacking across many thousands of hectares*” is true, but irrelevant for planning in the Nahmint, where TEM is lacking for < 200ha. The next sentence is unclear: “*Factors*

considered in surrogate classification rely on landform characteristics..., Forest Type and riparian inventories.” Are these factors that BCTS considered, or a partial list of factors that some surrogates might consider? The Biodiversity Guidebook and the VILUP describe a site series surrogate for use when site series data are unavailable: *“a combination of forest cover and site productivity or site index information”*—was this considered? The list provided seems ad-hoc with no specifics or references to methodology provided, demonstrating lack of familiarity with surrogate types, their costs and benefits.

BCTS (para 4. P.3) states that *“a surrogate ecosystem classification approach was used to attain forested ecosystem representativeness”*. However, the response provides no evidence that BCTS assessed representation using a surrogate. An assessment of representation requires a description of the surrogate classes used and rationale. Neither are presented. The following statement notes that *“this approach was used because accurate site series information was not available across the Nahmint SMZ”*. This statement seems false. Site series based on TEM is the best possible current information (although of course, improvement may be possible). Such information was available for 99% of the SMZ. The emphasis seems to be on accuracy, with the following sentence confirming that TEM inventories *“were available”*, but noting that *“field verification identified misclassifications, making the TEM inventory unsuitable for planning purposes”*. TEM is based on field verification. Misclassifications are possible because surveyors may use slightly different cut-off points for site series; however, these misclassifications are often only a single site series (by moisture or richness) apart. cursory inspection of the TEM site series maps suggests that classification was completed by two different surveyors: meshing is imperfect at the border. Minor inconsistency is not an excuse to ignore the best available data. In our experience, Vegetation Resource Inventory databases includes considerable errors; but BCTS mentions no issue with using them. Another excellent option is to group similar site series until further field assessment can confirm or refine existing definitions. Using existing site series inventory to assess representation seems a minimum requirement. Such assessment is possible, as shown in Appendix 1 of the BCTS response.

The following paragraph 5 (BCTS para 5, p. 3) includes a very unclear sentence: *“OGMA’s were selected for structural old growth attributes inherent to varied old forested ecosystems across the range of surrogate ecosystems (landform characteristics, forest cover composition and existing riparian network) present in Nahmint SMZ 13.”* Nowhere are the selection criteria listed: how were structural attributes assessed? what does *“inherent to varied old forested ecosystems”* mean? why is riparian network included (it is a management unit, not an ecological unit)? how do *“forest cover composition”* and *“forest type”* differ? where is the assessment showing how OGMA’s were spread across landforms? The lack of evidence suggests that these criteria were used on an ad-hoc basis at best. The following sentence also claims *“surrogate representativeness along an elevational gradient”*, but where is the assessment by defined surrogate groups? Inspection of the rationale for each OGMA suggests that most were constrained to maintain wildlife and riparian values—no attempt to represent ecosystems is apparent anywhere. The final sentence (p. 4) restates that the *“use of surrogates was a practical approach across a landscape 20,000ha in size where acquiring accurate spatial ecosystem data sets is challenging and with limited detailed site series field information.”* Again, TEM site series exists and represents the best available data.

BCTS (para 2, p. 4) notes the lack of legal targets by site series/surrogates. This is incorrect: the Old Growth Order sets targets by variant; the HLPO requires representation by site series or surrogate; and the Biodiversity Guidebook clarifies representation. The Biodiversity Guidebook provides

adequate guidance that most site series should be retained in proportion to their occurrence, with rare site series retained more.

Addressing wildlife objectives does not cover biodiversity objectives. Representation targets are not an alternative to “other values and attributes”: they are additive. Good conservation design builds on mapped high-value and constrained ecosystems to include representation and connectivity. The VILUP clearly notes that biodiversity, old growth and wildlife values are primary in this watershed. Forest professionals have been provided with a clear statement of intent for old forest representation and a well-described methodology to design retention to meet this intent.

BCTS (para 3, p. 4) describes protocols for site-level management of attributes and rare ecosystems through wildlife tree retention areas (the LUP Guidebook notes that areas > 2ha can count towards landscape targets). In practice, in-stand retention is ineffective unless retention is much higher than the legal requirements and retained for longer than the required single rotation. Current scientific understanding, based on hundreds of studies, is that low levels of retention (up to 15 - 20%) are unlikely to maintain values for organisms that depend on old forest habitat.²⁴ Stand-level retention augments rather than replaces landscape-scale retention.

BCTS summarises their argument (para 4, p. 4) by claiming that a surrogate was used to address 1) lack of site series data and 2) lack of clear targets. However, site series data are not lacking, and clear targets are easily determined from VILUP intent and the Biodiversity Guidebook. No surrogate will perform as well as TEM site series data at identifying the full range of ecosystems to represent. In addition, there is no evidence that thoughtfully-designed surrogates were used.

BCTS notes (para 5, p. 4) that planning was consistent with the policy of LUP Guidebook and legal objectives of the Old Growth Order. However, the HLPO supersedes both.

Overall, the BCTS response suggests either ad-hoc methodology or post-hoc rationalization without any evidence to support the claims.

Effectiveness of OGMAs at Achieving Representation

The BCTS response includes the first analysis of site series representation presented in any Nahmint planning document, demonstrating that such an analysis is possible with the current data. The response claims that site series, including rare ecosystems, are well represented. We analysed representation by site series and by a variety of surrogates to assess this claim and present our findings in this section.

Methods

We summarised the amount of old forest (defined as age class 8 and 9; i.e., > 140 years) within OGMAs, stratified by BEC Variant, site series and site series surrogates for the Nahmint landscape unit, excluding Maa-Nulth Treaty lands. The forested area—which determines the target area for OGMAs given percent representation targets—was defined by the Forest Management Land Base (FMLB, from VRI), however where ecological units did not cover the extent of the FMLB, the subset of the FMLB with coverage was used for calculations. Representation was calculated for the following units:

- BEC Variant (TEM data)
- BEC Variant and Site Series (TEM data)
- BEC Variant and Site Series Group (TEM data)

- Landform (AdaptWest data): valley, steep-slope, headwaters, ridge/peak and hill
- Site Position (VRI data): flat, toe slope, lower-slope, mid-slope, upper-slope, crest
- Leading Species and Site Index Class (VRI data): Leading species groups were based on the first two species used to identify a forested polygon in VRI; sometimes just one species dominated (Table 4). Leading species can change after harvest (and records of pre-harvest species are not retained); hence leading species are not ideal surrogates. Site index classes discriminated poor and very poor (0 to 20) from moderate (20 to 26) and from high (26 to 30) productivity. Site index was calculated as the average of site indices for Amabilis fir, Western Redcedar and Western Hemlock, where site indices are based on BEC (i.e., SIBEC).

Table 4. Species groups based on the first two species described in the stand composition label in VRI. Groups comprising less than 50 ha were not included.

Species groups
Amabilis-Cedar, Amabilis-Hemlock
Cedar-Amabilis, Cedar-Douglas-fir, Cedar-Hemlock
Douglas-fir-Only
Hemlock-Amabilis, Hemlock-Cedar, Hemlock-Douglas-fir
Hemlock-Yellow-Cedar, Yellow-Cedar-Hemlock
Mountain-Hemlock-Amabilis, Mountain-Hemlock-Yellow-Cedar

Data came primarily from the Province of BC (Table 1, above). We compiled vector shapefiles and raster grids in QGIS and then converted all data to one-hectare (approx.) raster resolution for analysis in SELES. We extracted several variables from the Vegetation Resource Inventory.

We assess the area within OGMA as a proportion of the FMLB in the Nahmint Landscape Unit excluding Treaty Lands. Ideally, retention should be assessed over the entire watershed. Because the Treaty Lands have already been harvested, there is reduced opportunity for First Nations to maintain sufficient old forest within the area; maintaining biodiversity and old growth values across the landscape means retaining sufficient no matter what jurisdiction.

Definition of Old Growth

Lower productivity old growth is often misclassified as age class 8 (140 – 250 years) rather than 9 (>250 years). Examining the age-class distribution listed in the Vegetation Resources Inventory in the Nahmint suggests such misclassification has occurred because more of MHmm1 is classed as age class 8, followed by CWHvm2 and then CWHvm1 (i.e., the lower productivity variants, with longer disturbance return intervals, have more area likely misclassified (Figure 2).

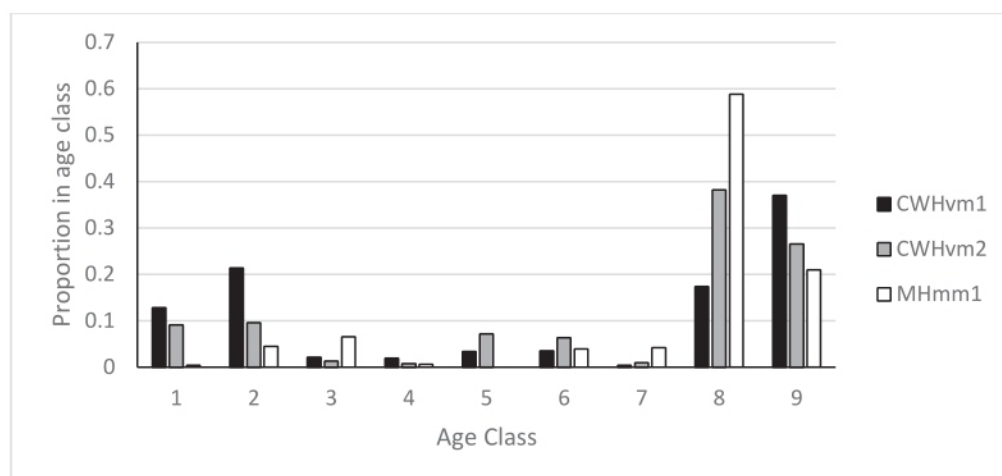


Figure 2. Age class distribution for the three main BEC variants in the Nahmint watershed.

Because of this likely misclassification, we combined age classes 8 and 9 in considering the amount of old forest included in OGMA. Implementation policy for the Old Growth Order stipulates that including forest younger than age class 9 requires demonstration of equivalent or better value for biodiversity. In the Nahmint, including age class 8 in OGMA seems eminently reasonable given the classification issues, but including younger age classes is not justifiable on similar grounds, hence requiring demonstration by other means.

When age class 8 and 9 are combined, the distribution demonstrates a disturbance return interval that is longer than that included in the Biodiversity Guidebook for all variants. There are uncertainties in this assessment—the Nahmint is a small unit to examine disturbance return; fire control may have contributed to the lack of disturbance—but particularly with “regrowing” the harvested area, the data are consistent with the more recent estimates for longer disturbance intervals in these variants.²⁵

Variant

The amount of old forest (age class 8 and 9) within OGMA is lower in each of the three main variants than the non-spatial target given in the Old Growth Order (Table 5). The amount of forest described as age class 9 in each variant is considerably lower (although much of the age class 8, particularly within the CWHvm2 and MHmm1 is likely misclassified).

Table 5. Representation within OGMA of all forest and of old forest (age class 8 + 9 and 9 only) by BEC variant. Cells are coloured to show deficit: green are at or above the target (19% for CWH, 28% for MH); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

BEC Variant	Crown Forest (Ha)	OGMA all age (%)	OGMA old forest (age 8 + 9; %)	OGMA old forest (age 9; %)
CWHvm1	7,645	19	17	13
CWHvm2	5,561	17	14	6
MHmm1	1,515	16	16	4

There is sufficient age class 9 within each variant, some in large patches, to boost the representation of known old forest (% classified as > 250 years: CWHvm1 = 37%; CWHvm2 = 27%; MHmm1 = 21%; Figure 3).

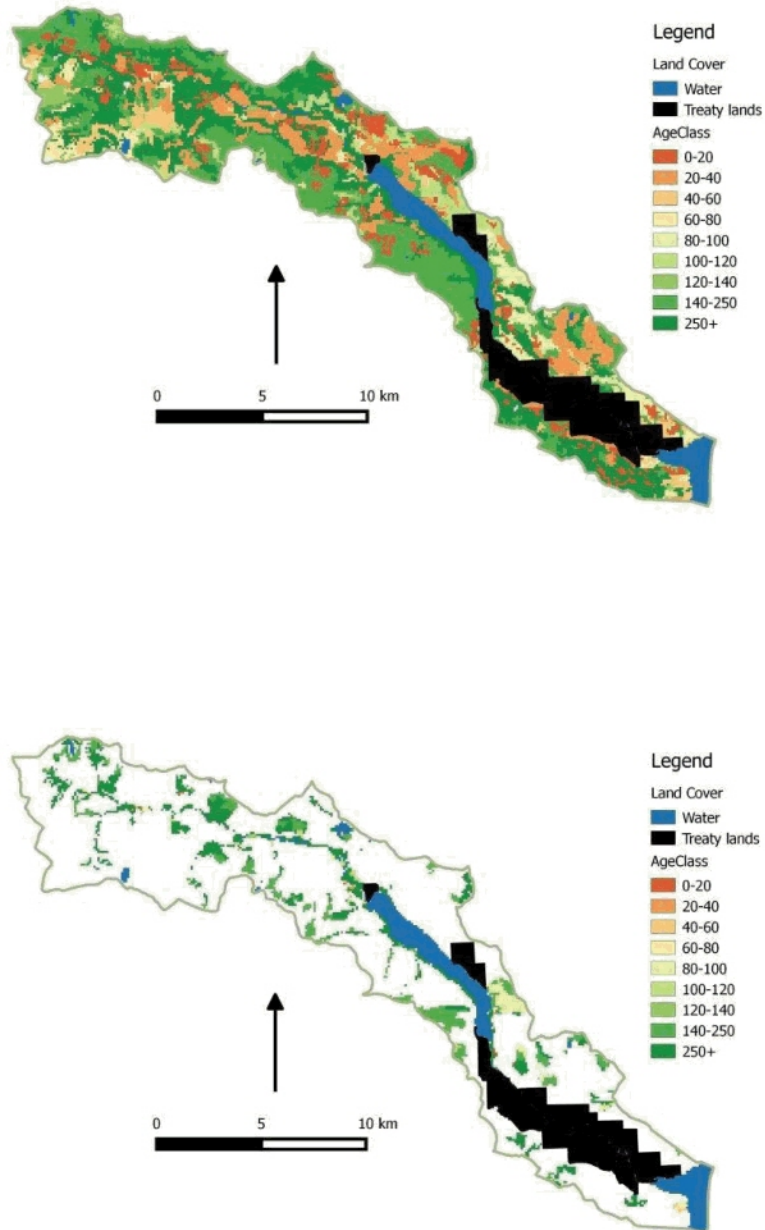


Figure 3. Age class over the Nahmint SMZ and within the draft OGMA.

Site Series

The amount of old forest (age class 8 and 9) within OGMA is lower than the non-spatial target in more than half of the site series, with eight less than half the target (Table 6). While some “rare” site series (covering < 2% of the area) are well represented, particularly the rich ecosystems of the CWHvm1 that

are captured by WHAs and UWRs, others are not, including dry ecosystems of the CWH and rich ecosystems within the MHmm1. The 04 site series within both the CWHvm1 and vm2 supports more Douglas-fir than other site series; it is poorly represented in both variants.

Table 6. Representation within OGMA of all forest and of old forest (age class 8 and 9) by site series within BEC variant. Cells are coloured to show deficit: green are at or above the target (19% for CWH, 28% for MH); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

BEC Variant	Site Series	Crown Forest (Ha)	OGMA all age classes (%)	OGMA old forest (age class 8 + 9; %)
CWHvm1	01	2,194*	0.13	0.12
CWHvm1	02	27	0.04	0.04
CWHvm1	03	1,062	0.21	0.16
CWHvm1	04	1,300	0.15	0.11
CWHvm1	05	1,687	0.23	0.20
CWHvm1	06	433	0.30	0.28
CWHvm1	07	456	0.22	0.18
CWHvm1	08	122	0.51	0.51
CWHvm1	09	119	0.37	0.32
CWHvm1	10	56	0.67	0.51
CWHvm1	14	7	-	-
CWHvm2	01	1,428	0.16	0.14
CWHvm2	02	51	0.22	0.02
CWHvm2	03	1,035	0.11	0.08
CWHvm2	04	999	0.13	0.07
CWHvm2	05	938	0.26	0.25
CWHvm2	06	419	0.20	0.18
CWHvm2	07	355	0.21	0.20
CWHvm2	08	69	0.22	0.22
CWHvm2	09	46	0.13	0.13
MHmm1	01	314	0.30	0.29
MHmm1	02	534	0.11	0.10
MHmm1	03	244	0.05	0.05
MHmm1	04	74	0.49	0.49
MHmm1	05	58	0.04	0.04
MHmm1	06	70	0.12	0.12

* Site series covering < 2% of the area in bold.

Site Series Surrogate: Site Series Group

Combining site series into groups based on soil moisture and nutrients (using the edaphic grid in Land Management Handbook 28; Table 7) highlights patterns in representation.

Table 7. Variants and site series used to define site series groups

Site Series Group	CWHvm1	CWHvm2	MHmm1
Dry (poor and rich)	02, 03, 04	02, 03, 04	02
Mesic (fresh to moist)	01, 06	01, 06, 09	01, 04, 06
Rich	05, 07, 08	05, 07, 08	03
Wet	09, 10, 11, 13, 14	10, 11	08, 09

The rich and floodplain site series in the CWHvm1 and vm2 are well represented (Table 8), likely because these mostly valley-bottom ecosystems are already included in WHAs and UWRs as well as riparian reserve zones. Dry ecosystems within all variants are poorly represented (the dry group in the CWHvm1 and vm2 includes site series 04, which is rich as well as dry and includes Douglas-fir). While mesic ecosystems in the MHmm1 are well represented, other ecosystems in the MHmm1 are not.

Table 7. Representation within OGMA of all forest and of old forest (age class 8 and 9) by site series groups within BEC variant. Cells are coloured to show deficit: green are at or above the target (19% for CWH, 28% for MH); yellow are above 75%; orange are 51 – 75%; red are 50% or less.

Variant	Site series group	Crown Forest (ha)	OGMA (all age; %)	OGMA (age class 8 + 9; %)
CWHvm1	Dry	2,388	0.17	0.13
CWHvm1	Mesic	2,627	0.16	0.15
CWHvm1	Rich	2,265	0.24	0.21
CWHvm1	Floodplain	182	0.45	0.37
CWHvm2	Dry	2,086	0.12	0.07
CWHvm2	Mesic	1,893	0.16	0.15
CWHvm2	Rich	1,361	0.24	0.24
MHmm1	Dry	534	0.11	0.10
MHmm1	Mesic	457	0.30	0.29
MHmm1	Rich	303	0.05	0.05

Site Series Surrogate: Forest Type and Site Index

The Biodiversity Guidebook and VILUP recommend a surrogate based on forest type and site index when site series are unavailable (Figure 4). A combination of forest type, based on leading tree species, and site index (data extracted from the Vegetation Resources Inventory) shows that representation varies across these surrogates (Table 9). Western redcedar stands are well represented in OGMA, but Douglas-fir-leading forests, and western and mountain hemlock-leading stands are not. There is no consistent pattern with productivity.

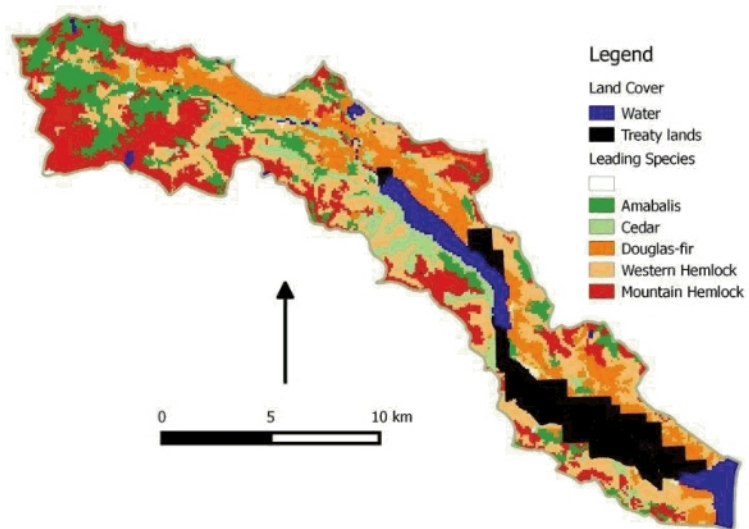
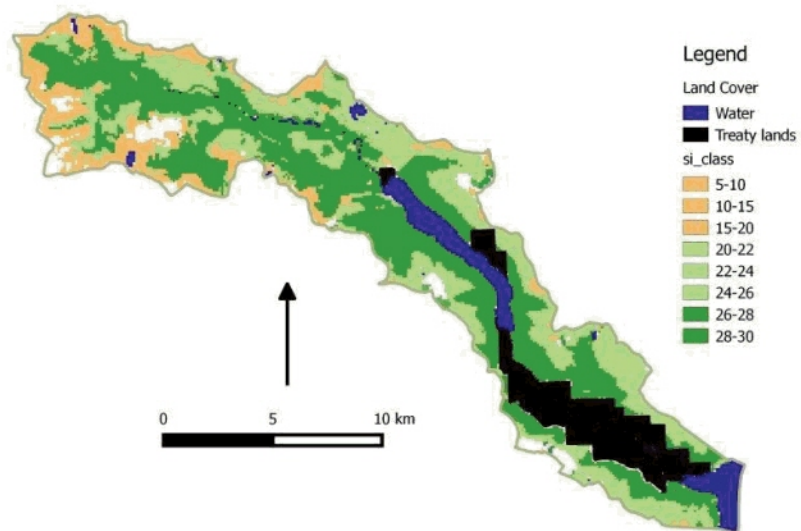


Figure 4. Site index groups and leading species over the Nahmint SMZ.

Table 8. Representation within OGMA of old forest (age class 8 and 9) by forest type (leading species) and site index. Cells are coloured to show deficit: green are at or above the target (19% for all as no division by zone in this analysis); yellow are above 75%; orange are 51 – 75%; red are 50% or less.

Species	0-20	20-26	26-30
BC*	-	-	0.17
BH	0.21	0.14	0.28
CB	-	-	0.25
CF	-	-	0.31
CH	-	-	0.25
F	-	0.11	0.17
HB	0.07	0.07	0.08
HC	-	0.25	0.10
HF	-	0.12	0.13
HMB	0.07	-	-
HMY	0.03	0.14	-
HY	0.07	0.14	0.26
YH	-	0.09	-

* B = amabilis fir, C = western redcedar, F = Douglas-fir, H = western hemlock, HM = mountain hemlock, Y = yellow cedar

Site Series Surrogate: Landforms

Enduring landform features within BEC variant also show varying representation of age class 8 and 9 forest, with good representation on flat areas (floodplains) and lower slopes, and poor representation of mid and upper slope CWHvm1 and upper slope CWHvm2 and MHmm1 (Table 10). Toe slopes cover a very small area (13 ha), none of which is in OGMA; crests also cover a very small area (9 ha), all of which is included in OGMA.

Table 9. Representation within OGMA of old forest (age class 8 and 9) by forest type (leading species) and site index. Cells are coloured to show deficit: green are at or above the target (19% for all as no division by zone in this analysis); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

BEC Variant	Landform	Crown Forest (Ha)	OGMA Old Forest (age class 8 + 9; %)
CWHvm1	Flat	159	0.42
CWHvm1	Lower slope	1,195	0.38
CWHvm1	Mid slope	5,644	0.13
CWHvm1	Upper slope	295	0.09
CWHvm2	Lower slope	272	0.23
CWHvm2	Mid slope	3,701	0.14
CWHvm2	Upper slope	1,401	0.12
MHmm1	Lower slope	36	0.20
MHmm1	Mid slope	714	0.17
MHmm1	Upper slope	760	0.10

Continual Improvement

The BCTS response ends with a commitment to using new information. Current science includes much relevant information to assist professionals managing to maintain biodiversity values:

- 1) Natural disturbance estimates for the CWHvm1 and vm2 have changed since the Biodiversity Guidebook meaning that the target amounts of old forest are severely underestimated.
- 2) Estimates for the amount of stand-level retention needed to maintain old forest values have increased.
- 3) Climate change research has highlighted the increased importance of connectivity to increase resilience.
- 4) Climate change research has demonstrated that old forests are more resilient and provide refugia when disturbance regimes shift.

Current State of Old Forest

There is currently sufficient forest classified as old (age class 9) on the landscape to add to the OGMA network and ensure representation of most site series (Table 11). Only the CWHvm1/02, CWHvm1/14, CWHvm2/02, CWHvm2/03, MHmm1/03, and MHmm1/05 have insufficient area of age class 9; for some of these at least, age class 8 is likely misclassified. Only the CWHvm2/02 has insufficient area in either age class 8 or 9 to meet representation.

Table 10. Representation within OGMA, and current amount of old forest (age class 8 and 9) by site series. Cells are coloured to show deficit: green are at or above the target (19% CWH, 28% for MH); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

Variant	Site Series	Crown Forest (Ha)	OGMA old forest (age class 8 + 9; %)	Existing old forest (age class 9; %)	Existing old forest (age class 8 + 9; %)
CWHvm1	01	2,194	0.12	0.26	0.47
CWHvm1	02	27	0.04	0.04	0.46
CWHvm1	03	1,062	0.16	0.29	0.53
CWHvm1	04	1,300	0.11	0.35	0.53
CWHvm1	05	1,687	0.20	0.49	0.60
CWHvm1	06	433	0.28	0.51	0.69
CWHvm1	07	456	0.18	0.46	0.60
CWHvm1	08	122	0.51	0.71	0.76
CWHvm1	09	119	0.32	0.42	0.42
CWHvm1	10	56	0.51	0.60	0.64
CWHvm1	14	7	-	-	-
CWHvm2	01	1,428	0.14	0.20	0.62
CWHvm2	02	51	0.02	-	0.06
CWHvm2	03	1,035	0.08	0.16	0.56
CWHvm2	04	999	0.07	0.30	0.55
CWHvm2	05	938	0.25	0.36	0.81
CWHvm2	06	419	0.18	0.39	0.90
CWHvm2	07	355	0.20	0.32	0.67

CWHvm2	08	69	0.22	0.54	0.66
CWHvm2	09	46	0.13	0.29	0.60
MHmm1	01	314	0.29	0.23	0.90
MHmm1	02	534	0.10	0.21	0.76
MHmm1	03	244	0.05	0.17	0.64
MHmm1	04	74	0.49	0.29	0.92
MHmm1	05	58	0.04	0.09	1.00
MHmm1	06	70	0.12	0.21	0.87

Summary

Based on review of available documents and data, planning in the Nahmint seems inconsistent with the intent of the VILUP and with the legal objectives in the HLPO.

- There is no evidence that planning in the Nahmint SMZ considered ecosystem representation by site series/surrogate as required by the HLPO.
 - Neither the draft LUP nor draft SRMP described surrogates nor mention assessment by site series or surrogate.
 - The BCTS response states that representation was assessed using a surrogate, but does not provide a systematic surrogate classification or provide evidence that analysis was completed as part of planning. Information exists to create surrogates from tree species and productivity as well as from landform and site series.
- Our effectiveness assessment concludes that the current draft OGMA's do not represent site series or surrogates—based on three different surrogate measures—equally.
 - Douglas-fir ecosystems (CWHvm1/04, CWHvm2/04, F and HF moderate and high productivity) seem poorly represented, counter to the specific notation for retention in the VILUP.
 - OGMA's improved the representation of mesic, but not dry or wet MHmm1 ecosystems.
- The draft OGMA's do not include target amounts of old forest (age class 8 + 9) by variant.
- The 2017 FSP does not include a result for a target level of mature seral forest (exclusive of old forest) as per the HLPO.
- There is no demonstration of equivalency of younger forest included in draft OGMA's.
- The 2017 FSP only includes the HLPO old forest objective under rare ecosystems.

Planning documents do not use best-available information.

- TEM site series data, representing best-available information, exist for 99% of the Nahmint, but were not assessed until the BCTS response. No valid rationale has been provided for why these data are worse than VRI.
- New estimates of disturbance return interval exist, but have not been incorporated.

The legal objectives are unlikely to achieve the intent of the VILUP.

- Meeting representation objectives means that the minimum levels of retention need to be met or exceeded in all ecosystems.

- The natural disturbance return interval estimate is too low, so that the amount of old forest expected naturally—the basis for assessing risk to biodiversity and old forest values—is severely underestimated.²⁶
- Parks have been removed from the estimate of the amount of old forest needed, yet there are no parks in the Nahmint.
- Science is coming to consensus that maintaining low risk to biodiversity likely requires at least half of the total area retained.²⁷
- Natural disturbance will continue within OGMAs, so that the amount of old forest will be lower than the area retained (other constrained areas provide a little more).
- Landscape and stand-level retention is sometimes double-counted (e.g., riparian reserve zones).

Planning for OGMAs seems to have been ad-hoc, based on existing constrained areas and aiming to achieve the bare minimum required legally rather than following good conservation design. Professional forester managers are responsible for filling the gap between legal objectives and intent. Our assessment suggests that the Nahmint demonstrates failure of professional reliance at maintaining publicly-agreed-upon values and priorities.

Literature Cited and Notes

- ¹ Forest Planning and Practices Regulation 9: “The objective set by government for wildlife and biodiversity at the landscape level is, without unduly reducing the supply of timber from British Columbia's forests and to the extent practicable, to design areas on which timber harvesting is to be carried out that resemble, both spatially and temporally, the patterns of natural disturbance that occur within the landscape.” [en. B.C. Reg. 580/2004, s. 8.] http://www.bclaws.ca/Recon/document/ID/freeside/14_2004#section9
- ² “Current government policy has set a limit of 1% to the allowable impact to short-term harvest levels that may be incurred as a result of implementing measures for Identified Wildlife” p.3 IWMS Procedures
- ³ Land Use Objectives Regulation 2(2)(b): “the importance of the land use objective or amendment outweighs any adverse impact on opportunities for timber harvesting or forage use”
http://www.bclaws.ca/civix/document/id/lc/statreg/357_2005
- ⁴ We didn’t focus on the visual objective, so may have missed it or missed a notice that it was rescinded.
- ⁵ The biodiversity guidebook as originally drafted by a team of BC’s senior ecologists did not include emphasis options; these were added later to reduce the impact on timber supply (at that point, several of the authors removed themselves from the process considering that the science had been muddled). Different options cannot all represent “the minimum requirements considered to have a good probability of maintain biodiversity within the landscape unit”. Authors of the original draft of the guidebook are unclear about whether they intended the high or intermediate options as the minimum requirements, although the wording in Appendix 4 (which seems unchanged by the politics) suggests the intermediate option was the original calculation (Jim Pojar leans towards the 50% option while Andy MacKinnon leans towards 75%; personal communication).
- ⁶ Targets for low biodiversity emphasis options reduce the targets by 2/3 from the Biodiversity Guidebook targets.
- ⁷ Daniels, L. D., and R. W. Gray. 2006. Disturbance regimes in coastal British Columbia. *Journal of Ecosystems and Management* 7.2 (2006).
- ⁸ Daniels and Gray 2006
- ⁹ E.g., Hctor, T.S., M.H. Carr, P.D. Zwick 2000. Identifying a linked reserve system using a regional landscape approach: the Florida Ecological Network. *Conservation Biology* 14:984-1000; Noss R.F., C. Carroll, K. Vance-Borland, G. Wuerthner. 2002. A multicriteria assessment of the irreplaceability and vulnerability of sites in the Greater Yellowstone Ecosystem. *Conservation Biology* 16:895-908. Noss R.F. 1992. The Wildlands Project: Landscape conservation strategy. *Wild Earth Special Issue* 10 – 25.
<http://www.environment.gov.au/biodiversity/publications/research-priorities/section-f.html>.
- ¹⁰ Noss, R. 1987. Protecting natural areas in fragmented landscapes. *Natural Areas Journal* 7:2-13.
- ¹¹ See the biogeoclimatic website at: <http://www.for.gov.bc.ca/hre/becweb/index.html>
- ¹² Lindenmayer, D.B. and Luck, G. 2005. Synthesis: threshold in conservation and management. *Biological Conservation* 124:351-354.
- ¹³ Based on analyses for the North Coast
- ¹⁴ Price K, A Roburn, and A MacKinnon. 2009. Ecosystem-based management in the Great Bear Rainforest. *Forest Ecology and Management* 258: 495-503.
- ¹⁵ Price K. 2008. Using site series surrogates to calculate ecosystem representation. Report to the Coast Information Team.
- ¹⁶ Huggard D. 2001. Grouping site series based on indicator species. Appendix 1 of Ecological representation in Weyerhaeuser’s non-timber landbase. Report to Weyerhaeuser Coastal BC Adaptive Management Working Group.
- ¹⁷ Price K. 2008. Using site series surrogates to calculate ecosystem representation. Report to the Coast Information Team.
- ¹⁸ Huggard D. 2001. Grouping site series based on indicator species. Appendix 1 of Ecological representation in Weyerhaeuser’s non-timber landbase. Report to Weyerhaeuser Coastal BC Adaptive Management Working Group.
- ¹⁹ AdaptWest: <https://adaptwest.databasin.org/pages/adaptwest-landfacets>
- ²⁰ Daust D. Evaluation of enduring features for use in Timber Supply Analysis. Ongoing work.
- ²¹ Based on analyses provided by BCTS in their response to CEB.

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- ²² The LUP and SRMP both state that they considered existing forest ecosystem networks. The SRMP notes that FENs were “*temporary measures to maintain connectivity*” prior to completion of landscape unit planning, implying that there was no need to consider FEN location as best available information. It was not possible to compare FENs to the OGMAAs, however, FENs in most regions have been defined to capture important connected ecosystems—increasingly important with climate change—and potentially representing best available information.
- ²³ Price K. 2008. Using site series surrogates to calculate ecosystem representation. Report to the Coast Information Team.
- ²⁴ Several meta-analyses have been completed: Rosenvald, R, and A Lohmus. 2008. For what, when, and where is green-tree retention better than clear-cutting? A review of the biodiversity aspects. *Forest Ecology and Management* 255: 1-15. Vanderwel, M C., J R. Malcolm, and S C. Mills. 2007. A meta-analysis of bird responses to uniform partial harvesting across North America. *Conservation Biology* 21.5: 1230-1240. Beese, W.J. 2013. Variable retention harvesting in North Pacific temperate rainforests. In *North Pacific temperate rainforests: ecology and conservation*. Edited by G.H. Orians and J.W. Schoen. University of Washington Press.
- ²⁵ Daniels, L. D., and R. W. Gray. 2006. Disturbance regimes in coastal British Columbia. *Journal of Ecosystems and Management* 7(2)
- ²⁶ Daniels, L. D., and R. W. Gray. 2006. Disturbance regimes in coastal British Columbia. *Journal of Ecosystems and Management* 7(2)
- ²⁷ Noss, R. F., Dobson, A. P., Baldwin, R., Beier, P., Davis, C. R., Dellasala, D. A., ... & Reining, C. 2012. Bolder thinking for conservation. *Conservation Biology*, 26(1), 1-4.

BEC Variant	Site Series	Crown Forest	Target %
CWHvm1	00	142.5	19.0
met in	01	2246.7	19.0
OGMA and P	02	24.6	19.0
OGMA,P,NC	03	1064.6	19.0
THLB req	04	1309.9	19.0
	05	1637.0	19.0
	06	470.1	19.0
	07	424.9	19.0
	08	120.8	19.0
	09	115.5	19.0
	10	48.7	19.0
	11	0.0	19.0
	14	7.2	19.0
CWHvm1 Total		7612.6	
CWHvm2	00	164.5	19.0
	01	1517.2	19.0
	02	52.9	19.0
	03	1114.6	19.0
	04	1016.7	19.0
	05	939.2	19.0
	06	438.0	19.0
	07	351.0	19.0
	08	67.3	19.0
	09	52.0	19.0
CWHvm2 Total		5713.5	

CWHxm2	00	1.8	13.0
	01	13.9	13.0
	04	4.4	13.0
CWHxm2 Total		20.1	
MHmm1	00	226.9	28.0
	01	323.5	28.0
	02	529.8	28.0
	03	216.2	28.0
	04	75.4	28.0
	05	69.7	28.0
	06	68.4	28.0
	09	0.0	28.0
MHmm1 Total		1510.0	
No TEM Data	No Site Series	189.7	0.0
No TEM Data Total		189.7	0.0
Grand Totals		15033.4	

Site Series Representation < 2% of the Crown Productive For

Data Used

BCGW Layers(June 28, 2018):

WHSE_TERRESTRIAL_ECOLOGY.STE_TEM_20K_POLYS_SVW

WHSE_FOREST_VEGETATION.VEG_COMP_LYR_R1_POLY

WHSE_WILDLIFE_MANAGEMENT.WCP_UNGULATE_WINTER_R

WHSE_WILDLIFE_MANAGEMENT.WCP_WILDLIFE_HABITAT_A

WHSE_LAND_USE_PLANNING.RMP_PLAN_LEGAL_POLY_SVW

BCTS Layers:

Draft OGMA`s

Note: 4.8% of the Crown Forest Landbase has no TEM data (V

Target (ha)	Total OGMA (ha) =H+L+P	target minus OGMA
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27.1	18.9	8.2
426.9	234.8	192.1
4.7	2.3	2.3
202.3	183.9	18.4
248.9	156.8	92.1
311.0	368.3	-57.3
89.3	98.2	-8.9
80.7	118.2	-37.5
23.0	60.1	-37.2
21.9	50.0	-28.1
9.3	36.9	-27.7
0.0	0.0	0.0
1.4	0.4	1.0
1446.4	1329.0	

31.3	3.5	27.8
288.3	239.2	49.1
10.0	12.3	-2.2
211.8	133.6	78.2
193.2	126.3	66.9
178.4	246.9	-68.5
83.2	80.1	3.1
66.7	74.7	-8.0
12.8	13.0	-0.2
9.9	10.4	-0.6
1085.6	939.8	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
2.6	0.0	

63.5	3.4	60.2
90.6	84.4	6.2
148.3	57.0	91.4
60.5	14.1	46.4
21.1	35.9	-14.8
19.5	3.3	16.3
19.1	5.9	13.3
0.0	0.0	0.0
422.8	203.8	

0.0	11.4	
0.0	11.4	

2954.7	2484.0	
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est - Shown in Red

ANGE_SP
REA_POLY

Where Site Series = 00 or where there is No TEM data)

Target remaining outside OGMAs	Total Other Protected - WHA,UWR (ha) = I+M+Q	Old Growth - Age Class 9 in OGMA (ha)
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8.2	3.3	14.6
192.1	23.6	160.8
2.3	0.0	1.5
18.4	16.7	79.1
92.1	4.3	64.6
0.0	45.3	282.1
0.0	7.6	81.1
0.0	4.1	84.7
0.0	1.3	59.2
0.0	41.9	40.8
0.0	7.4	27.2
0.0	0.0	0.0
1.0	0.1	0.4
	155.7	896.1

27.8	0.0	2.2
49.1	3.2	67.8
0.0	0.3	1.0
78.6	4.5	36.4
66.9	0.0	34.4
0.0	5.4	95.4
3.1	0.0	10.1
0.0	2.9	35.7
0.0	0.0	12.6
0.0	0.0	0.0
	16.3	295.5

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
	0.0	0.0

60.2	0.0	0.0
6.2	0.0	14.2
91.4	1.2	18.7
46.4	0.0	3.0
0.0	0.0	1.2
16.3	0.0	3.2
13.3	0.0	1.1
0.0	0.0	0.0
	1.2	41.4

	0.0	5.2
	0.0	5.2

	173.2	1238.1
--	-------	--------

Old Growth - Age Class 9 in Other Protected - WHA,UWR (ha)	Target Remaining minus old in OGMA and Other Protected
---	--

3.1	9.4
16.2	249.9
0.0	3.2
9.2	114.0
0.1	184.2
32.5	0.0
3.8	4.5
3.0	Target met
1.3	Target met
3.6	Target met
3.1	Target met
0.0	Target met
0.1	0.9
76.0	

0.0	29.1
1.2	219.4
0.0	9.0
0.0	175.4
0.0	158.8
1.6	81.5
0.0	73.1
0.7	30.3
0.0	0.2
0.0	9.9
3.4	

0.0	0.2
0.0	1.8
0.0	0.6
0.0	

0.0	63.5
0.0	76.4
0.0	129.7
0.0	57.5
0.0	19.9
0.0	16.4
0.0	18.0
0.0	0.0
0.0	

0.0	
0.0	

79.4	
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Protected Forest Breakdown By E

Remaining Old Growth - Age Class 9 in THLB (ha)	Remaining Old Growth - Age Class 9 in Non Contributing (ha)	Remaining Target minus NC old
--	--	----------------------------------

4.4	23.7	Target met
301.8	87.5	162.4
0.2	0.0	3.2
161.4	48.6	65.3
315.2	47.8	136.4
286.4	222.0	Target met
76.6	56.3	Target met
45.2	56.4	n/a
8.5	12.2	n/a
1.8	0.0	n/a
0.4	0.6	n/a
0.0	0.0	n/a
0.1	0.0	0.9
1201.9	555.0	

7.6	28.8	0.3
106.2	129.4	89.9
0.8	0.0	9.0
61.7	83.2	92.2
129.7	137.0	21.8
140.0	107.6	Target met
47.5	107.6	Target met
12.3	47.8	Target met
8.7	10.5	Target met
0.9	10.6	Target met
515.4	662.4	

0.0	0.0	0.2
0.0	0.0	1.8
0.0	0.0	0.6
0.0	0.0	

1.3	25.6	38.0
17.0	43.0	33.3
27.3	72.3	57.4
2.0	28.4	29.1
7.9	7.4	12.5
0.2	11.6	4.8
0.0	12.5	5.5
0.0	0.0	0.0
55.6	200.8	

23.3	61.8	
23.3	61.8	

1796.2	1480.0	
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Biogeoclimatic Variant And Site Series Fo

Target remaining minus old in THLB	OLD THLB used for Target	Mature - Age Class 5 to 8 in OGMA (ha)
---------------------------------------	-----------------------------	--

n/a	n/a	2.2
Target met	162.4	69.3
3.0	0.2	0.8
Target met	65.3	103.5
Target met	136.4	90.1
n/a	n/a	56.8
n/a	n/a	9.2
n/a	n/a	15.3
n/a	n/a	0.1
n/a	n/a	0.4
n/a	n/a	8.3
n/a	n/a	0.0
0.8	0.1	0.0
		355.8

Target met	0.3	0.8
Target met	89.9	167.1
8.2	0.8	11.1
30.5	61.7	95.7
Target met	21.8	91.0
n/a	n/a	148.7
n/a	n/a	70.0
n/a	n/a	36.4
n/a	n/a	0.2
n/a	n/a	10.4
		631.3

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
		0.0

36.7	1.3	3.4
16.3	17.0	70.1
30.2	27.3	38.2
27.1	2.0	10.7
4.6	7.9	34.6
4.6	16.4	0.1
5.5	18.0	4.8
0.0	0.0	0.0
		162.0

		6.1
		6.1

		1155.2
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r The Nahmint SMZ13

Target remaining minus mature in OGMA	Mature - Age Class 5 to 8 in Other Protected (ha)	Target Remaining minus Mature in other protected
--	--	--

n/a	0.0	n/a
n/a	2.6	n/a
2.2	0.0	2.2
n/a	6.3	n/a
n/a	0.3	n/a
n/a	4.4	n/a
n/a	0.0	n/a
n/a	0.2	n/a
n/a	0.0	n/a
n/a	0.3	n/a
n/a	1.6	n/a
n/a	0.0	n/a
0.8	0.0	0.8
	15.8	

n/a	0.0	n/a
n/a	1.1	n/a
Target Met	0.3	n/a
Target Met	4.5	n/a
n/a	0.0	n/a
n/a	2.1	n/a
n/a	0.0	n/a
n/a	2.2	n/a
n/a	0.0	n/a
n/a	0.0	n/a
	10.3	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
	0.0	

33.3	0.0	38.0
Target Met	0.0	33.3
Target Met	1.2	56.3
16.4	0.0	29.1
Target Met	0.0	12.5
4.5	0.0	4.8
0.7	0.0	5.5
	0.0	
	1.2	

	0.0	
	0.0	

	27.2	
--	------	--

Remaining Mature - Age Class 5 to 8 in THLB (ha)	Remaining Mature - Age Class 5 to 8 in Non Contributing (ha)	Target Remaining minus Mature in NC
--	--	-------------------------------------

5.7	25.4	n/a
339.3	178.2	n/a
2.4	11.5	Target Met
168.1	151.8	n/a
166.9	134.5	n/a
109.0	67.7	n/a
49.9	36.5	n/a
22.3	36.1	n/a
0.0	9.1	n/a
0.0	0.0	n/a
0.0	0.1	n/a
0.0	0.0	n/a
0.0	0.0	n/a
863.7	650.9	

9.1	40.1	n/a
367.6	204.9	n/a
5.5	29.1	n/a
185.7	408.0	n/a
216.2	250.4	n/a
102.9	216.0	n/a
87.5	91.6	n/a
12.9	105.2	n/a
2.3	10.6	n/a
1.3	7.9	n/a
990.9	1363.8	

0.0	0.0	0.2
1.8	0.0	1.8
2.4	1.7	Target Met
4.2	1.7	

3.3	96.1	Target met
23.8	138.6	Target Met
19.5	287.1	Target Met
6.1	103.0	Target Met
3.3	12.3	0.2
0.6	54.1	Target Met
0.0	38.4	Target Met
0.0	0.0	
56.7	729.5	

33.1	47.2	
33.1	47.2	

1944.4	2791.4	
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Target remaining minus mature in THLB	Mature THLB to meet Target	Immature - Age Class 1 to 4 in OGMA (ha)
---	-------------------------------	---

		2.2
		4.7
		0.0
		1.2
		2.2
		29.4
		7.9
		18.3
		0.8
		8.8
		1.4
		0.0
		0.0
		77.1

		0.5
		4.3
		0.1
		1.4
		0.9
		2.9
		0.0
		2.6
		0.2
		0.0
		13.0

	0.2	0.0	0.0
Target Met		1.8	0.0
Target Met		0.6	0.0
			0.0

		0.0
		0.0
		0.1
		0.3
Target met	0.2	0.0
		0.0
		0.0
		0.0
		0.5

		0.1
		0.1

		90.7
--	--	------

Immature - Age Class 1 to 4 in Other Protected (ha)	Remaining Immature - Age Class 1 to 4 in THLB (ha)
---	---

0.3	17.9
4.8	1048.4
0.0	8.3
1.3	299.4
3.8	463.3
8.4	529.0
3.8	135.6
0.9	78.4
0.0	12.3
38.0	21.8
2.6	1.8
0.0	0.0
0.0	6.6
64.0	2622.8

0.0	24.8
0.8	429.3
0.0	4.5
0.0	232.6
0.0	152.3
1.7	98.0
0.0	13.7
0.1	64.9
0.0	5.3
0.0	0.9
2.6	1026.2

0.0	1.8
0.0	9.8
0.0	0.3
0.0	11.9

0.0	17.8
0.0	4.4
0.0	3.9
0.0	7.2
0.0	8.7
0.0	0.0
0.0	2.6
0.0	0.0
0.0	44.6

0.0	10.4
0.0	10.4

66.6	3704.0
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THLB in Immature to meet target	Remaining Immature - Age Class 1 to 4 in Non Contributing (ha)
	43.1
	33.1
	0.0
	34.5
	21.1
	9.3
	9.4
	64.2
	17.2
	0.0
	1.5
	0.0
	0.0
	233.6
	50.7
	37.5
	0.4
	5.4
	4.8
	22.4
	10.0
	30.3
	17.0
	19.9
	198.5

142.5

Target Met 0.2	0.0
	0.0
	0.0
	0.0
	79.5
	12.3
	61.7
	55.5
	0.0
	0.0
	9.0
	0.0
	217.9
	2.5
	2.5
	652.4



File: 255-30/ #DCR-37250

Don Hudson
B.C Timber Sales Manager
Campbell River District Office
270 S Dogwood Street
Campbell River, BC, V9W 6Y7

VIA e-mail
don.hudson@gov.bc.ca

November 5, 2018

This letter is to follow-up on the Advisory Letter you received on Oct 22, 2018, regarding Nahmint SMZ 13.

The Advisory Letter has no legal status and only serves to convey the findings of the inspection and the subsequent data analysis that was undertaken by the officer. The Compliance and Enforcement Branch has subsequently also reviewed the information and has further considered the content of the Letter.

The provisions of land use plans and land use orders are not directly enforceable, but rather are implemented by results and strategies in plans such as forest stewardship plans having to be consistent with land use order objectives that have formally been made legally enforceable under legislation. Whether or not a forest stewardship plans meets required content requirements, and whether plans can and should be approved, are decisions that are within the purview of the district manager, and are not issues that are within the mandate of Compliance and Enforcement Branch. Statutory decisions such as plan approvals are not actions that are subject to compliance and enforcement action.

There may be a role for Compliance and Enforcement Branch should a plan holder fail to achieve results and strategies in their plan, or should the holder of a licence be in non-compliance with provisions of a forest stewardship plan.

As a result, we have determined that there is nothing substantive that falls under our purview or that concerns us at this time, but we will contact you further should there be any issues that arise that are within the mandate of the Compliance and Enforcement Branch. Please note that this file will remain open and active, if you have any questions or require clarification, please don't hesitate to contact me.

Thanks,



Paul Bastarache
Regional Manager – West Coast

Pc: Rhonda Morris – District Manager
Kevin Kriese – Forest Practices Board - Chair

From: [Cotton, Ron FLNR:EX](#)
To: [Casavant, Bryce FLNR:EX](#)
Subject: Table for Nahmint
Date: Thursday, October 4, 2018 11:03:50 AM
Attachments: [Target assessment Nahmint SMZ13 RC calc.xlsx](#)

Ron Cotton, Lands and Resource Specialist, West Coast Region, FLNRORD
Phone 250-751-7258

-----Original Message-----

From: Casavant, Bryce FLNR:EX
Sent: Thursday, October 4, 2018 9:06 AM
To: Cotton, Ron FLNR:EX
Subject: Re: Building.

I'm here now.

Sent from my iPhone

> On Oct 4, 2018, at 9:03 AM, Cotton, Ron FLNR:EX <Ron.Cotton@gov.bc.ca> wrote:

>

> Yes

>

>

> Ron Cotton, Lands and Resource Specialist, West Coast Region, FLNRORD

> Phone 250-751-7258

>

> -----Original Message-----

> From: Casavant, Bryce FLNR:EX

> Sent: Thursday, October 4, 2018 9:02 AM

> To: Cotton, Ron FLNR:EX

> Subject: Building.

>

> You in moe building?

>

> Sent from my iPhone

BEC Variant	Site Series	Crown Forest I	Target %
CWHvm1	00	142.5	19.0
met in	01	2246.7	19.0
OGMA and P	02	24.6	19.0
OGMA,P,NC	03	1064.6	19.0
THLB req	04	1309.9	19.0
	05	1637.0	19.0
	06	470.1	19.0
	07	424.9	19.0
	08	120.8	19.0
	09	115.5	19.0
	10	48.7	19.0
	11	0.0	19.0
	14	7.2	19.0
CWHvm1 Total		7612.6	
CWHvm2	00	164.5	19.0
	01	1517.2	19.0
	02	52.9	19.0
	03	1114.6	19.0
	04	1016.7	19.0
	05	939.2	19.0
	06	438.0	19.0
	07	351.0	19.0
	08	67.3	19.0
	09	52.0	19.0
CWHvm2 Total		5713.5	

CWHxm2	00	1.8	13.0
	01	13.9	13.0
	04	4.4	13.0
CWHxm2 Total		20.1	
MHmm1	00	226.9	28.0
	01	323.5	28.0
	02	529.8	28.0
	03	216.2	28.0
	04	75.4	28.0
	05	69.7	28.0
	06	68.4	28.0
	09	0.0	28.0
MHmm1 Total		1510.0	
No TEM Data	No Site Series	189.7	0.0
No TEM Data Total		189.7	0.0
Grand Totals		15033.4	

Site Series Representation < 2% of the Crown Productive For

Data Used

BCGW Layers(June 28, 2018):

WHSE_TERRESTRIAL_ECOLOGY.STE_TEM_20K_POLYS_SVW

WHSE_FOREST_VEGETATION.VEG_COMP_LYR_R1_POLY

WHSE_WILDLIFE_MANAGEMENT.WCP_UNGULATE_WINTER_R

WHSE_WILDLIFE_MANAGEMENT.WCP_WILDLIFE_HABITAT_A

WHSE_LAND_USE_PLANNING.RMP_PLAN_LEGAL_POLY_SVW

BCTS Layers:

Draft OGMA`s

Note: 4.8% of the Crown Forest Landbase has no TEM data (V

Target (ha)	Total OGMA (ha) =H+L+P	target minus OGMA
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27.1	18.9	8.2
426.9	234.8	192.1
4.7	2.3	2.3
202.3	183.9	18.4
248.9	156.8	92.1
311.0	368.3	-57.3
89.3	98.2	-8.9
80.7	118.2	-37.5
23.0	60.1	-37.2
21.9	50.0	-28.1
9.3	36.9	-27.7
0.0	0.0	0.0
1.4	0.4	1.0
1446.4	1329.0	

31.3	3.5	27.8
288.3	239.2	49.1
10.0	12.3	-2.2
211.8	133.6	78.2
193.2	126.3	66.9
178.4	246.9	-68.5
83.2	80.1	3.1
66.7	74.7	-8.0
12.8	13.0	-0.2
9.9	10.4	-0.6
1085.6	939.8	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
2.6	0.0	

63.5	3.4	60.2
90.6	84.4	6.2
148.3	57.0	91.4
60.5	14.1	46.4
21.1	35.9	-14.8
19.5	3.3	16.3
19.1	5.9	13.3
0.0	0.0	0.0
422.8	203.8	

0.0	11.4	
0.0	11.4	

2954.7	2484.0	
--------	--------	--

est - Shown in Red

ANGE_SP
REA_POLY

Where Site Series = 00 or where there is No TEM data)

Target remaining outside OGMAs	Total Other Protected - WHA,UWR (ha) = I+M+Q	Old Growth - Age Class 9 in OGMA (ha)
---	---	---

8.2	3.3	14.6
192.1	23.6	160.8
2.3	0.0	1.5
18.4	16.7	79.1
92.1	4.3	64.6
0.0	45.3	282.1
0.0	7.6	81.1
0.0	4.1	84.7
0.0	1.3	59.2
0.0	41.9	40.8
0.0	7.4	27.2
0.0	0.0	0.0
1.0	0.1	0.4
	155.7	896.1

27.8	0.0	2.2
49.1	3.2	67.8
0.0	0.3	1.0
78.6	4.5	36.4
66.9	0.0	34.4
0.0	5.4	95.4
3.1	0.0	10.1
0.0	2.9	35.7
0.0	0.0	12.6
0.0	0.0	0.0
	16.3	295.5

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
	0.0	0.0

60.2	0.0	0.0
6.2	0.0	14.2
91.4	1.2	18.7
46.4	0.0	3.0
0.0	0.0	1.2
16.3	0.0	3.2
13.3	0.0	1.1
0.0	0.0	0.0
	1.2	41.4

	0.0	5.2
	0.0	5.2

	173.2	1238.1
--	--------------	---------------

Old Growth - Age Class 9 in Other Protected - WHA,UWR (ha)	Target Remaining minus old in OGMA and Other Protected
--	--

3.1	9.4
16.2	249.9
0.0	3.2
9.2	114.0
0.1	184.2
32.5	0.0
3.8	4.5
3.0	Target met
1.3	Target met
3.6	Target met
3.1	Target met
0.0	Target met
0.1	0.9
76.0	

0.0	29.1
1.2	219.4
0.0	9.0
0.0	175.4
0.0	158.8
1.6	81.5
0.0	73.1
0.7	30.3
0.0	0.2
0.0	9.9
3.4	

0.0	0.2
0.0	1.8
0.0	0.6
0.0	

0.0	63.5
0.0	76.4
0.0	129.7
0.0	57.5
0.0	19.9
0.0	16.4
0.0	18.0
0.0	0.0
0.0	

0.0	
0.0	

79.4	
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Protected Forest Breakdown By E

Remaining Old Growth - Age Class 9 in THLB (ha)	Remaining Old Growth - Age Class 9 in Non Contributing (ha)	Remaining Target minus NC old
--	--	----------------------------------

4.4	23.7	Target met
301.8	87.5	162.4
0.2	0.0	3.2
161.4	48.6	65.3
315.2	47.8	136.4
286.4	222.0	Target met
76.6	56.3	Target met
45.2	56.4	n/a
8.5	12.2	n/a
1.8	0.0	n/a
0.4	0.6	n/a
0.0	0.0	n/a
0.1	0.0	0.9
1201.9	555.0	

7.6	28.8	0.3
106.2	129.4	89.9
0.8	0.0	9.0
61.7	83.2	92.2
129.7	137.0	21.8
140.0	107.6	Target met
47.5	107.6	Target met
12.3	47.8	Target met
8.7	10.5	Target met
0.9	10.6	Target met
515.4	662.4	

0.0	0.0	0.2
0.0	0.0	1.8
0.0	0.0	0.6
0.0	0.0	

1.3	25.6	38.0
17.0	43.0	33.3
27.3	72.3	57.4
2.0	28.4	29.1
7.9	7.4	12.5
0.2	11.6	4.8
0.0	12.5	5.5
0.0	0.0	0.0
55.6	200.8	

23.3	61.8	
23.3	61.8	

1796.2	1480.0	
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Biogeoclimatic Variant And Site Series Fo

Target remaining minus old in THLB	OLD THLB used for Target	Mature - Age Class 5 to 8 in OGMA (ha)
---------------------------------------	-----------------------------	--

n/a	n/a	2.2
Target met	162.4	69.3
3.0	0.2	0.8
Target met	65.3	103.5
Target met	136.4	90.1
n/a	n/a	56.8
n/a	n/a	9.2
n/a	n/a	15.3
n/a	n/a	0.1
n/a	n/a	0.4
n/a	n/a	8.3
n/a	n/a	0.0
0.8	0.1	0.0
		355.8

Target met	0.3	0.8
Target met	89.9	167.1
8.2	0.8	11.1
30.5	61.7	95.7
Target met	21.8	91.0
n/a	n/a	148.7
n/a	n/a	70.0
n/a	n/a	36.4
n/a	n/a	0.2
n/a	n/a	10.4
		631.3

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
		0.0
36.7	1.3	3.4
16.3	17.0	70.1
30.2	27.3	38.2
27.1	2.0	10.7
4.6	7.9	34.6
4.6	16.4	0.1
5.5	18.0	4.8
0.0	0.0	0.0
		162.0
		6.1
		6.1
		1155.2

r The Nahmint SMZ13

Target remaining minus mature in OGMA	Mature - Age Class 5 to 8 in Other Protected (ha)	Target Remaining minus Mature in other protected
--	--	--

n/a	0.0	n/a
n/a	2.6	n/a
2.2	0.0	2.2
n/a	6.3	n/a
n/a	0.3	n/a
n/a	4.4	n/a
n/a	0.0	n/a
n/a	0.2	n/a
n/a	0.0	n/a
n/a	0.3	n/a
n/a	1.6	n/a
n/a	0.0	n/a
0.8	0.0	0.8
	15.8	

n/a	0.0	n/a
n/a	1.1	n/a
Target Met	0.3	n/a
Target Met	4.5	n/a
n/a	0.0	n/a
n/a	2.1	n/a
n/a	0.0	n/a
n/a	2.2	n/a
n/a	0.0	n/a
n/a	0.0	n/a
	10.3	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
	0.0	

33.3	0.0	38.0
Target Met	0.0	33.3
Target Met	1.2	56.3
16.4	0.0	29.1
Target Met	0.0	12.5
4.5	0.0	4.8
0.7	0.0	5.5
	0.0	
	1.2	

	0.0	
	0.0	

	27.2	
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Remaining Mature - Age Class 5 to 8 in THLB (ha)	Remaining Mature - Age Class 5 to 8 in Non Contributing (ha)	Target Remaining minus Mature in NC
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5.7	25.4	n/a
339.3	178.2	n/a
2.4	11.5	Target Met
168.1	151.8	n/a
166.9	134.5	n/a
109.0	67.7	n/a
49.9	36.5	n/a
22.3	36.1	n/a
0.0	9.1	n/a
0.0	0.0	n/a
0.0	0.1	n/a
0.0	0.0	n/a
0.0	0.0	n/a
863.7	650.9	

9.1	40.1	n/a
367.6	204.9	n/a
5.5	29.1	n/a
185.7	408.0	n/a
216.2	250.4	n/a
102.9	216.0	n/a
87.5	91.6	n/a
12.9	105.2	n/a
2.3	10.6	n/a
1.3	7.9	n/a
990.9	1363.8	

0.0	0.0	0.2
1.8	0.0	1.8
2.4	1.7	Target Met
4.2	1.7	

3.3	96.1	Target met
23.8	138.6	Target Met
19.5	287.1	Target Met
6.1	103.0	Target Met
3.3	12.3	0.2
0.6	54.1	Target Met
0.0	38.4	Target Met
0.0	0.0	
56.7	729.5	

33.1	47.2	
33.1	47.2	

1944.4	2791.4	
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Target remaining minus mature in THLB	Mature THLB to meet Target	Immature - Age Class 1 to 4 in OGMA (ha)
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		2.2
		4.7
		0.0
		1.2
		2.2
		29.4
		7.9
		18.3
		0.8
		8.8
		1.4
		0.0
		0.0
		77.1

		0.5
		4.3
		0.1
		1.4
		0.9
		2.9
		0.0
		2.6
		0.2
		0.0
		13.0

	0.2	0.0
Target Met	1.8	0.0
Target Met	0.6	0.0
		0.0
		0.0
		0.0
		0.1
		0.3
Target met	0.2	0.0
		0.0
		0.0
		0.0
		0.5
		0.1
		0.1
		90.7

Immature - Age Class 1 to 4 in Other Protected (ha)	Remaining Immature - Age Class 1 to 4 in THLB (ha)
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0.3	17.9
4.8	1048.4
0.0	8.3
1.3	299.4
3.8	463.3
8.4	529.0
3.8	135.6
0.9	78.4
0.0	12.3
38.0	21.8
2.6	1.8
0.0	0.0
0.0	6.6
64.0	2622.8

0.0	24.8
0.8	429.3
0.0	4.5
0.0	232.6
0.0	152.3
1.7	98.0
0.0	13.7
0.1	64.9
0.0	5.3
0.0	0.9
2.6	1026.2

0.0	1.8
0.0	9.8
0.0	0.3
0.0	11.9

0.0	17.8
0.0	4.4
0.0	3.9
0.0	7.2
0.0	8.7
0.0	0.0
0.0	2.6
0.0	0.0
0.0	44.6

0.0	10.4
0.0	10.4

66.6	3704.0
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THLB in Immature to meet target	Remaining Immature - Age Class 1 to 4 in Non Contributing (ha)
	43.1
	33.1
	0.0
	34.5
	21.1
	9.3
	9.4
	64.2
	17.2
	0.0
	1.5
	0.0
	0.0
	233.6
	50.7
	37.5
	0.4
	5.4
	4.8
	22.4
	10.0
	30.3
	17.0
	19.9
	198.5

142.5

Target Met 0.2	0.0
	0.0
	0.0
	0.0
	79.5
	12.3
	61.7
	55.5
	0.0
	0.0
	9.0
	0.0
	217.9
	2.5
	2.5
	652.4