2018 Annual Report
# Sustainable Forest Management Plan
Canfor Kootenay Operations

Canadian Forest Products Ltd.
Kootenay Operations

August 8th, 2019

Executive Summary

Canfor's Kootenay Operations are certified with three Sustainable Forest Management Certification schemes. The Radium Forest License (FL A18979) is currently certified under the CSA Standard (Z8098-08). The Wynndel Forest License (FL A20214) in Creston is certified under the Sustainable Forestry Initiative (SFI) and is not included in this report. The rest of Canfor's Kootenay Operating Area is certified under the Forest Stewardship Council (FSC) BC 2005 Standard.

This is the fourth Annual Report of Canfor East Kootenay Region Sustainable Forest Management Plan (SFMP, Version 5.0), and summarizes the progress and performance made by Canfor to achieve the results within the SFMP.

Each of the four main value areas – ecological, economic, social, and Indigenous People – has a suite of associated measures and targets. This report provides information that demonstrates Canfor's performance relative to the indicators. The following table summarizes Canfor's overall achievements of meeting the assigned targets.

Table 1: Indicator Summary

Classification	Ecological	Economic Social	First Nations
Number of Targets Achieved	*29*	*15*	*4*
Number of Targets Pending	*2*	*0*	*0*
No Change from Current Condition in SFMP	*3*	*0*	*0*
Number of Targets Not Met	*3*	*0*	*1*
Total	*37*	*15*	*5*

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1.0 Introduction

Canfor's Sustainable Forest Management is based upon a set of local criteria, indicators, measures and targets; initially developed in 2003 from a review of national and internationally recognized frameworks of sustainable forest management and updated periodically. A corresponding set of strategies in the company's Sustainable Forest Management Plan (SFMP) specify how Canfor will achieve those goals throughout their Kootenay Defined Forest Area (DFA, please refer to Section 3.0 of the SFMP for a detailed description). The Criteria[1], Indicators[2] and strategies described in the SFMP are consistent with the company's environmental program and are intended to satisfy many aspects of the Canfor's Forest Stewardship Council (FSC) forest management certification to the BC Regional Standard and Canadian Standards Association (CSA) Sustainable Forest Management Requirements and Guidance. The Wyndell license (FL A20214) is not included in these results.

Canfor's Annual Report (AR) is a companion document to the current SFMP and is an important aspect of the long-term evaluation, assessment and monitoring of the SFMP's effectiveness. As part of the continuous improvement and Adaptive Management principle, it is a critical part of the feedback loop in the Sustainable Forest Management Framework and process. The Annual Report presents information about Canfor's Woodlands operations in the Kootenay Region in four broad categories – First Nations, environmental, economic and social. The statistical information and commentary are intended to report on the status of the goals in the SFMP.

Many of the larger wood products customers require that a forest company have Sustainable Forestry Initiative (SFI), Canadian Standards Association (CSA) or Forest Stewardship Council (FSC) third party certification for their woodlands operations. Canfor in the East Kootenay maintains CSA, SFI and FSC.

SFM Framework

Canfor's Sustainable Forest Management Framework uses a *Criteria and Indicator* approach to achieve its forest management objectives. Initially Criteria are established for *Ecological, Social, and Economic* values, and several key Indicators identified for each criterion. For each indictor a measurable target is also established. Assuming suitable indicators have been chosen for each criterion, and an appropriate cost-effective means to measure the value has been established - planned measurements can be made and compiled for analysis. The *Sustainable Forest Management Plan: Canfor Kootenay Operations* (December 2017) contains the full set of local Criteria, Indicators, Measures and Targets. The current SFMP outlines the strategies that will be implemented, and an approach for monitoring each target. Minor modifications have been made to the Local Criteria and Indicators over the years and the current version is available upon request.

Often in forestry the measurements and frequency of information collected will vary depending upon what is being collected, and why. As Canfor implements, and reports on the targets set out it will be possible to evaluate the suitability of each measure toward meeting the desired outcome. From this information, Canfor will be able to determine appropriate and necessary changes to the SFMP, and applicable operational practices. In a practicable sense, it is Canfor's intention to establish longer-term (five year) trends/data and information with regard to the established indicators and strategies. This will provide useful guidance for periodic plan revisions and, where necessary, changes to the criteria, indicators and measures of sustainability.

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[1] Criteria – are broad management statements that can be demonstrated through the repeated, long-term measurement of associated indicators.

[2] Indicators – are used to help assess the success of meeting the sustainable forest management criteria and are periodically monitored to assess their suitability to represent the intent of the criteria.

Focused and Public Review

An important goal of the Annual Report is to document and inform our managers and resource staff on our progress toward meeting the sustainable forest management goals. On-going improvements to Canfor's forest management practices also rely upon informed advice and participation from a wide range of interests, as well as directly affected parties with regard to our forest activities. As such our Woodlands staff seeks input on an on-going basis, both formally and informally through numerous processes. Each year this report is made available for comments and stakeholder input, through our various advisory and consultation process including being posted to the Canfor corporate website.

Kootenay Forest Management Units

In March 2012, Canfor acquired Tembec's major forest licenses in the Kootenay Region. More recently, in April 2016, Canfor completed the acquisition of Wyndell Box and Lumber. Canfor's primary forest tenures in the East Kootenay were FSC certified beginning in the fall of 2004. Canfor's Radium license, FL A18979, is transitioning to SFI certification, while Wyndell holds SFI certification. In addition, over the past several years, an assortment of additional non-renewable, renewable and minor licences have been issued to Canfor by the province. In some cases, Canfor manages these tenures on behalf of their owner, such as a First Nation business or organization. Often these minor tenures are not included in the SFMP nor are they within the scope of Canfor's Forest Management certifications. The 'management unit' (MU[3]) descriptions in this report are based on the provincial government licenses and tenures. Using this approach allows for Annual reporting of the results for all Canfor's forest management units/tenures, regardless of being 'certified' or not.

Table 1: Woodlands Administrative Organization (since 2018)

Timber Supply Area (TSA)	Major Tenures Licences	Certified
Tree Farm Licence 14	TFL 14	FSC
Invermere TSA	FL A18978	FSC
Invermere TSA	FL A18979	CSA (transitioning to SFI)
Kootenay Lake TSA	FL A20212	FSC
Cranbrook TSA	FL A19040	FSC
Kootenay Lake TSA	FL A20214	SFI

Table 2: Forest Management Units (Tenures /Licences) for Kootenay Woodlands (2018)

Minor Tenures		Timber Supply Area (TSA)	Certified
NRFL A86246	Lower Kootenay Band	Kootenay Lake TSA	FSC
NRFL A86450	Skookumchuk Pasture	Invermere TSA	No
NRFL A84741	Rouse Pasture	Cranbrook TSA	No
NRFL A81369	Nupqu Inv	Invermere TSA	FSC
NRFL A81368	Kinbasket Dev Corp	Cranbrook TSA	FSC
NRFL A82929	NUPQU	Cranbrook TSA	FSC
NRFL A88226	Tobacco Plains	Cranbrook TSA	FSC
NRFL A82928	Tobacco Plains	Cranbrook TSA	FSC
RFL A91306	?Aq'am	Cranbrook TSA	FSC
RFL A91307	Tobacco Plains	Cranbrook TSA	FSC
RFL A91309	Lower Kootenay Band	Kootenay Lake TSA	FSC
RFL A90310	Shuswap Indian Band	Invermere TSA	CSA
K1W	Ktunaxa Nation Council	Federal Dominion Coal – Block	No

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[3] Management Unit is the term used by FSC to describe the area of the forest that is certified.

Minor Tenures		Timber Supply Area (TSA)	Certified
		Lands	

2.0 Strategic Level

The strategic level for SFM establishes broad management objectives or sustainability criteria over as large an area as possible over a long-time frame (from 100 to 300 years). At this level, the overall strategy for the DFA is defined.

The Canadian Council of Forest Ministers (CCFM) Criteria and Indicators (C&I) and the Forest Stewardship Council FSC-BC Standards guided the development of the SFM Criteria and Indicators that were used as a starting point for the original SFM Plan (2004). The current SFMP aligns with CSA Z809-08 standard, Canfor core indicators and FSC-BC Standard, October 2005. Even though the C&I numbering structure follows the CSA Standard, many of the locally developed Indicators address the specific requirements of the FSC Standard.

The establishment of Criteria, Elements, Indicators and Targets is undertaken at the strategic level. They can be used both to gauge the sustainability of strategic alternatives and assess broad trade-offs. Elicitation and consideration of stakeholder and public views on the indicators and targets, and the priorities amongst them, are an important component of this level. The information and strategies developed at the strategic level are used to guide the tactical and operational level activities.

A summary listing of locally important Criteria, Elements, and Indicators for the Ecological (Table 3), Economic and Social (Table 4) Values are provided below.

Table 3: Kootenay DFA Criteria, Element & Indicators – Ecological Values

C1. Biological Diversity
1.1 Ecosystem Diversity
1 – Ecosystem Representation
2 – Protected Reserves
3 – Patch Size Distribution by Natural Disturbance Type
4 – Distribution of Forest Type
5 – Old and Mature Forest Retention
6 – Seral and Structural Stages Relative to RNV
7 – Interior Forest Habitat
8 – Green Tree and Snag Retention
9 – Landscape Unit Wildlife Tree Patch Retention
10 – High Value Snags
11 – Riparian Management
1.2 & 1.3 Species & Genetic Diversity
12 – Species of Management Concern – Habitat Protection
13 – Species of Management Concern – Habitat Suitability
14 – Tree Seed
15 – Natural Regeneration
16 – Mix of Species Planted
17 – Managing for Species Diversity during Tree Thinning
1.4 Protected Areas & Sites
2 – Protected Reserves
18 – Sites of Biological Significance
19 – High Conservation Value Forests
47 – Level of Management &/or Protection – Indigenous Peoples Culturally Important Sites, Practices & Activities
C2. Ecosystem Condition & Productivity
2.1 Forest Ecosystem Condition and Productivity
20 – Reforestation Success

16 – Mix of Species Planted	
21 – Invasive Plant Species	
22 – Permanent Access Structures	
23 – Landslides	
24 – Land Conversion	
25 – Volume Harvested Vs. Allocated	

C3.Soil & Water

3.1 Soil Quality & Quantity

3.1 Soil Quality & Quantity

26 – Detrimental Soil Disturbance

27 – Coarse Woody Debris

3.2 Water Quality & Quantity

28 – Sensitive Watersheds

29 – Stream Crossing Sedimentation Control

C4. Role of Global Ecological Cycles

4.1 Carbon Uptake and Storage

5 – Retention of Existing Old Forest

20 – Reforestation Success

14 – Tree Seed

30 – Climate Change Adaptation

4.2 Forest Land Conversion

22 – Permanent Access Structures

24 – Land Conversion

Table 4: Kootenay DFA Criteria, Element & Indicators – Economic & Social Values

C5. Economic & Social Benefits
5.1 Timber & Non-Timber Benefits
25 – Volume Harvested Vs. Allocated
31 – Primary And By-Products
32 – Non-Timber Benefits
33 – Overlapping Tenures
5.2 Communities & Sustainability
34 – Investment In Local Communities – Local Procurement
35 – Investment In Local Communities – Sponsorships, Donations and Scholarships
36 – Environmental & Safety Training
37 – Direct & Indirect Employment
C6. Society's Responsibility
6.1 Fair & Effective Decision-Making
38 – PAG Satisfaction
39 – Educational Opportunities – Information/Training
40 – SFM Monitoring Report Public
41 – Third Party Verification
6.2 Safety
42 – Certified Safety Program
C7. Indigenous Relations
7.1 Indigenous Peoples & Treaty Rights
43 – Indigenous Peoples Awareness Training
44 – Indigenous Peoples Understanding of the Plans
7.2 Indigenous Peoples Forest Values, Knowledge & Uses
45 – Level of Indigenous Peoples Participation in the Forest Economy
46 – Evidence of Understanding and Use of Indigenous Peoples Knowledge
47 – Level of Management &/or Protection – Indigenous Peoples Culturally Important Sites, Practices & Activities

Criterion 1 – Biological Diversity

Element 1.1 – Ecosystem Diversity

Indicator 1 – Ecosystem Representation

Indicator Statement	Target (Variance)	Results
Representation of ecosystem groups across the DFA	● Rare Ecosystems – Reserve (0 ha with harvest or roads)	Achieved
	● Uncommon Ecosystems – Reserve and/or retain high levels of structural retention for those ecosystems below target levels	Achieved
	● Common Ecosystems – Maintain at least 25% of each ecosystem in the NHLB (Non-Harvestable Land base) or under an ecosystem restoration or High Conservation	Achieved – Five of eight ecosystems have >25% in NHLB; the two of the three below 25% have HCVFs designated within them up to target levels. Group 4 will be re-assessed against targets after representation

	Value Forest management regime.	analysis re-done.

The results for this indicator for Rare and Uncommon Ecosystems are based on data from cutblocks harvested (Harvest Complete) between 1 January 2018 and 31 December 2019. GIS overlay analysis indicated that no blocks contained Rare Ecosystems within their net area (the area of the block that is harvested, not including reserves), thus achieving the target for Rare Ecosystems. A list of Rare Ecosystems can be found in Table 32 in the SFMP, under the Ecosystem Representation Indicator (1.1.1a).

One block had net area overlap with a PEM polygon indicating the possible occurrence of an uncommon ecosystem type (1.8 ha total overlap, A19040 CP 833 LIN0031). This block was harvested for fire salvage, and effort was made to retain the majority of the predicted uncommon within a WTP. The small amount of overlap with the NAR represented an area that was required in the NAR for operational reasons. Where they occurred, ground-truthed uncommon ecosystem types were protected in WTPs for the remaining blocks harvested in 2018 (n = 2). Thus, the target for uncommon ecosystems has been achieved.

Two of the three common ecosystems that are below the NHLB target of 25% include the BEC variants which have been identified as those being the furthest from historic conditions, and which require ecosystem restoration to restore their conservation value and habitat for threatened and endangered species. Simply identifying areas to protect from logging as part of a protected reserves network will not achieve the ecological goals for these ecosystems, because, on most sites, trees have encroached and ingrown onto the grasslands and Open Forest within them and must be removed to restore the ecological function of the site. There are several HCVFs that overlap with these common ecosystems and have ecosystem restoration as their management strategy. The amount of overlap between these common ecosystem types and HCVFs has been calculated and compared against the amounts to be added to NHLB, harvested under Ecosystem Management, or HCVF Management to meet targets as listed in Table 37 of the SFMP. The area of HCVFs in common ecosystem types was much greater than the target amount; details of this analysis are found in Appendix I.

In addition, one common ecosystem group (Group 4, Circum-mesic ICHdw/dm) requires an additional 730 ha to be added to NHLB, harvested under Ecosystem Restoration, or HCVF Management to meet targets as listed in Table 37 of the SFMP. Estimates for actual vs. target areas for this group will be calculated after the new BECs are finalized and the representation analysis has been redone.

Indicator 2 – Protected Reserves

Indicator Statement	**Target (Variance)**	**Results**
Percent of area in protected reserves, by BGC variant and management unit, within the DFA	12 – 24%	Achieved, with consideration of HCVFs in the IDFdm2 and PPdh Analysis to be re-run in 2020.

The specific targets for each BEC/ecological unit within each Licence unit are shown in Tables 39-42 of the SFMP, together with the surpluses and deficits relative to the targets. Table 5 and Table 6 below provide a summary of the results and the actions taken to address any deficits that exist. This indicator is only specific to the FSC Standard.

Deficits relative to targets were primarily found within the lowest elevation BGC variants; the PPdh2 and IDFdm2. In these ecosystems, restoration, rather than protection, is often required in order to maintain native species and ecological processes. This is because of the change in fire regimes since European settlement, and the resultant increase in tree ingrowth and encroachment onto grasslands and open forests

(See SFMP Section 4.3 The Range of Natural Variability for more detail). Thus, a key strategy for meeting protected area targets in these variants is the application of ecosystem restoration logging (following the Best Management Practices for Ecosystem Restoration), followed by prescribed burning, rather than setting areas aside as protected reserves. Since there are many HCVFs in these BEC variants that have ecosystem restoration as their management strategy, in 2016 the deficits were examined relative to HCVF amounts. The area of HCVFs in these BEC variants was much greater than the deficit area; details are found in Appendix II.

Table 5: Summary of results of Protected Areas Analysis and Actions

Management Unit (MU)	Total BEC Variants/ Ecological units in MU	No. BEC variants where target not achieved by reserves alone	BEC variants below target	Actions taken to address deficits
TFL 14	9	2	ICHwm1, ICHmk1	Additional reserves established to meet target levels
A18978	8	2	IDFdm2, PPdh2	HCVFs designated in these BECs to meet target levels
A18979	22	2	IDFdm2, MSdk2	IDFdm2 – HCVFs designated to target level, MSdk – additional reserves established to meet target
A19040/ A20212	18	2	IDFdm2, PPdh2	HCVFs designated to meet target levels

Changes in this indicator occur gradually in most BEC variants, due to the large area of the unit relative to the small amount harvested each year in that unit. Thus, this analysis is re-done every 10 years, or within 2 years of a new TSR being completed. Until the new analysis is completed, the amount of harvesting in the inoperable area is being tracked. Since the inoperable is treated as a reserve in the analysis, harvesting within it depletes the area of reserves and could cause some BEC units to fall below target. For further explanation, see Indicator 1.1.1b in the SFMP.

In 2018, GIS overlay analysis indicated 36 blocks had some amount of harvesting above the operability line, ranging from 0.01 ha to 84.3 ha. All variants in which harvesting occurred above the operability line had large surpluses of protected reserves (Table 6), meaning that the small amount of activity that occurred did not create any deficits with respect to targets. In addition, no harvesting or road building above the operability line occurred on any unique or ecologically sensitive sites, including rare and uncommon ecosystem groups, caribou habitat, and whitebark pine leading stands (Impact on special values, Table 6).

The protected reserves analysis will be run within two years of the legal adoption of new mapping of BEC variants.

Table 6: Harvesting Above Operability Line or on Unique/Ecologically Sensitive Sites

License Management Unit	BEC variant[1]	Surplus Reserves[2] (ha)	Area (ha) impacted by harvesting		Current Reserves (Surplus minus harvest-to-date)	Impact 2007-2017 on special values?
			2018	2007-2017		
TFL 14	ESSFdk	1,822	0	16	1,805	No
	ESSFwm	5,033	0	2	5,031	No
A18978	ESSFdk	49,080	21	232	48,842	No

(includes MF72, A81369)	MSdk	8,984	3	61	8,920	No
	ICHmk	289	0	10	279	No
	IDFdm2	1,401*	0	3	1,399	No
	ESSFdku	23,531	1	5	23,525	No
A18979** *(includes A90310)*	ESSFdk	55,455	138	589	54,766	No
	ICHmk	8,282	1	67	8,218	No
	IDFdm2	861	0	0	861	No
	MSdk	9329	9	88	9,233	No
A19040 and A20212 *(includes A80321, A91308)*	ESSFdk	66,321	57	1102	65,248	No
	ESSFdm	22,968	0	141	22,828	No
	ESSFwm	20,717	6	24	20,687	No
	MSdk1/2	8,965	57	478	8,439	No
	ICHdm	9,772	57	173	9,542	No
	ICHdw1	1,491	0	20	1,471	No
	ICHmk1	3,392	0	114	3,278	No
	IDFdm2	11,684	0	17	11,674	No

[1] BEC variants not included in this table that are known to occur within the areas have not been impacted by harvesting.

[2] Surplus reserves come from 2006 data for TFL 14 and A18978, and from 2012 data for A19040 and A20212

*Considering HCVF as reserves, as per the Protected Areas report.

**Area impacted by harvesting for 2014-2017 only

Indicator 3 – Patch Size Distribution

Indicator Statement	Target (Variance)	Results
Patch size distribution by Natural Disturbance Type (NDT), within Ecosections	Trend towards patch size distribution targets as defined in the Biodiversity Guidebook (Table 21), by Natural Disturbance Type (NDT) within Ecosections, over the mid-term (20-50 yrs)	N/A – Trend and Strategy to be evaluated in 2020

Patch size distributions have been re-run for the entire East Kootenay Operating area as a result of the 2017 and 2018 wildfires, and are up to date as of December 2018. The 2017 and 2018 wildfires shifted patch size distributions in several Ecosections (Ecosections 1, 4, 5, 7, 9, 14, 15, 16). The updated information has been communicated and made available to Planning and Permitting staff, and will be used to influence planning decisions going forward. Further detail has also been added to the Planning and Permitting SFMP checklist requiring additional investigation into patch size targets on a block by block basis.

This information will also be used to inform revisions to the SFMP Patch Size Strategy, anticipated in 2019.

Table 7: Target Patch Size Distributions for the NDTs in Canfor's DFA

NDT2		NDT3		NDT4	
Patch size (ha)	Target Percentage Range	Patch size (ha)	Target Percentage Range	Patch size (ha)	Target Percentage Range
<40	30-40	<40	15-25	<40	30-40
40-80	30-40	40-250	20-40	40-80	30-40
80-250	20-40	250-1000	30-50	80-250	20-30
250+	0-5	1000+	10-20	250+	5-15

Indicator 4 – Distribution of Forest Type

Indicator Statement	Target (Variance)	Results
Percent distribution of forest type across the DFA	No significant decline (> 10% of the total amount) in broadleaf or mixedwood types by BEC zone, over a 10-year period	N/A – Trend to be evaluated in 2020

The area under analysis included the entire landbase in the DFA, excluding private land, provincial parks, and woodlots. The broad forest types are defined in Table 8, further information for which is found in the current SFMP. Estimates for percent composition are derived from a combination of the BC Land Cover Classification Scheme (subset of the VRI data), BEC, and harvest data.

This indicator will be reported out on a 5-year basis, based on calculations done by the Woodlands Information Management (WIM) team using VRI data updated with the Reporting Silviculture Updates and Land Status Tracking System (RESULTS). WIM has a standardized code for this calculation that they follow (available from the WIM team or GIS Analyst). Reporting on a more frequent basis is not necessary because the indicator will change very slowly due to the large scale of the analysis (licence-wide) and the relatively small changes that occur each year in each category. The current (as of September 2016) percent distribution of forest type across the DFA by major licence is shown in Table 9.

Table 8: Definitions of broad forest types

Forest Type	Description
0 – 10 Years	Recently disturbed areas, either from harvesting or natural disturbance (i.e. fires more
11 – 30 Years	than 3 years old). Too early in succession to classify confidently as mixedwood, deciduous or conifer leading.
Conifer*	Percent composition conifer is at least 75%
Mixed*	Neither deciduous nor conifer has percent composition greater than 75%
Deciduous*	Percent composition deciduous is at least 75%
Non-Forest	Vegetated areas with than 10% tree cover, predominantly grassland areas
Non-Productive (Natural)	Areas that do not fall into the other broad categories; also includes alpine BECs, avalanche paths, naturally non-vegetated areas
Roads and Landing	Temp constructed roads, spur roads, FSRs, gravel mainlines, paved roads, and landings
Water	Areas classified by the VRI as water

All five licences are dominated by conifer stands, and there are small percentages of broadleaf and mixedwood stands. Over the next five years, no significant declines in the total amount of broadleaf or mixedwood types are expected to occur as Canfor does not target hardwoods for harvest.

Table 9: Percent distribution of broad type by BEC by Forest License as of September 2016

Forest License	Forest Type and Age Class	BEC zone						
		ESSF	ICH	IDF	IMA*	MS	PP	Grand Total
A18978	0 - 10 Years	3%	17%	9%	0%	8%	13%	16477
	11 - 30 Years	11%	14%	19%	0%	22%	11%	43329
	Conifer 31 - 90 Years	9%	28%	19%	0%	23%	23%	44064
	Conifer >90 Years	33%	29%	27%	0%	36%	24%	98569
	Mixed 31 - 90 Years	0%	2%	2%	0%	1%	1%	1484
	Mixed > 90 Years	0%	1%	0%	0%	0%	0%	541
	Deciduous 31 - 90 Years	0%	0%	1%	0%	1%	0%	876
	Deciduous > 90 Years	0%	0%	0%	0%	0%	0%	116
	Non-Forest	1%	0%	1%	0%	0%	1%	3061
	Non-Productive (Natural)	42%	6%	11%	100%	6%	21%	95341
	Roads	1%	3%	2%	0%	2%	2%	3712
	Landings	0%	1%	0%	0%	0%	0%	523
	Water	0%	0%	9%	0%	1%	4%	4796
A18979	0 - 10 Years	1%	6%	4%	0%	10%	0%	12505
	11 - 30 Years	5%	15%	15%	0%	19%	0%	30998
	Conifer 31 - 90 Years	7%	18%	17%	0%	19%	0%	37051
	Conifer >90 Years	37%	49%	29%	0%	42%	0%	119054
	Mixed 31 - 90 Years	0%	1%	1%	0%	0%	0%	1009
	Mixed > 90 Years	0%	0%	1%	0%	1%	0%	910
	Deciduous 31 - 90 Years	0%	1%	1%	0%	0%	0%	661
	Deciduous > 90 Years	0%	0%	1%	0%	0%	0%	413
	Non-Forest	0%	0%	2%	0%	0%	0%	1408
	Non-Productive (Natural)	49%	6%	21%	100%	6%	0%	162544
	Roads	0%	2%	2%	0%	2%	0%	3304
	Landings	0%	0%	0%	0%	0%	0%	20
	Water	0%	2%	7%	0%	1%	0%	4588
A19040	0 - 10 Years	2%	7%	8%	0%	8%	23%	33921
	11 - 30 Years	5%	11%	16%	0%	13%	14%	57634
	Conifer 31 - 90 Years	21%	39%	22%	0%	41%	10%	194600
	Conifer >90 Years	24%	27%	38%	0%	25%	27%	189221

Forest License	Forest Type and Age Class	BEC zone						
		ESSF	ICH	IDF	IMA*	MS	PP	Grand Total
	Mixed 31 - 90 Years	0%	3%	1%	0%	1%	0%	5058
	Mixed > 90 Years	0%	1%	1%	0%	1%	1%	2065
	Deciduous 31 - 90 Years	0%	1%	0%	0%	0%	0%	1475
	Deciduous > 90 Years	0%	1%	0%	0%	0%	0%	859
	Non-Forest	0%	0%	2%	0%	0%	6%	3762
	Non-Productive (Natural)	48%	6%	10%	100%	7%	14%	259711
	Roads	0%	2%	2%	0%	2%	2%	6860
	Landings	0%	0%	0%	0%	0%	0%	1149
	Water	0%	2%	1%	0%	1%	3%	4739
A20212	0 - 10 Years	2%	8%	0%	0%	0%	0%	6112
	11 - 30 Years	9%	10%	0%	0%	0%	0%	10542
	Conifer 31 - 90 Years	41%	49%	0%	0%	0%	0%	49917
	Conifer >90 Years	39%	27%	0%	0%	0%	0%	34775
	Mixed 31 - 90 Years	0%	1%	0%	0%	0%	0%	769
	Mixed > 90 Years	0%	0%	0%	0%	0%	0%	295
	Deciduous 31 - 90 Years	0%	0%	0%	0%	0%	0%	192
	Deciduous > 90 Years	0%	0%	0%	0%	0%	0%	229
	Non-Forest	1%	1%	0%	0%	0%	0%	1077
	Non-Productive (Natural)	7%	1%	0%	0%	0%	0%	3489
	Roads	1%	2%	0%	0%	0%	0%	1286
	Landings	0%	0%	0%	0%	0%	0%	186
	Water	0%	0%	0%	0%	0%	0%	151
TFL14	0 - 10 Years	6%	13%	21%	0%	29%	0%	15451
	11 - 30 Years	3%	24%	10%	0%	14%	0%	8455
	Conifer 31 - 90 Years	3%	11%	34%	0%	16%	0%	11338
	Conifer >90 Years	20%	44%	14%	0%	27%	0%	32426
	Mixed 31 - 90 Years	0%	1%	9%	0%	1%	0%	1398
	Mixed > 90 Years	0%	1%	3%	0%	1%	0%	551
	Deciduous 31 - 90 Years	0%	0%	0%	0%	0%	0%	7
	Deciduous > 90 Years	0%	0%	0%	0%	0%	0%	46
	Non-Forest	0%	0%	0%	0%	0%	0%	45
	Non-Productive (Natural)	67%	0%	6%	100%	9%	0%	78463
	Roads	1%	4%	3%	0%	3%	0%	1930
	Landings	0%	1%	0%	0%	1%	0%	307
	Water	0%	0%	1%	0%	0%	0%	180

IMA stands for "Interior Mountain-heather Alpine"

Indicator 5 – Old and Mature Forest Retention

Indicator Statement	Target (Variance)	Results
Amounts of old and mature stands by landscape unit and BEC variant	a) Full compliance with the mature and old targets as defined in the Kootenay Boundary Higher Level Plan Order (KBHLPO)	Achieved
	b) Spatial identification of stands to meet KBHLPO targets (no more than -0.3% variance)	Achieved

The area of forest currently present in identified Old Growth Management Areas (OGMAs) and Mature Management Areas (MMAs) relative to targets specified in the Kootenay Boundary Higher Level Plan Order (2002) has been assessed for the Invermere, Cranbrook, and Kootenay Lake TSAs; as well as TFL14. For all areas sufficient spatial OGMAs and MMAs have been deployed for each Landscape Unit

BEC Variant combination to meet KBHLPO targets, thus targets a) and b) of this indicator have been achieved.

Indicator 6 – Seral and Structural Stages Relative to the Range of Natural Variability

Indicator Statement	Target (Variance)	Results
Area of old, mature and early seral stands, by ecosystem (BEC subzone) grouping, for current and future time periods relative to the Range of Natural Variability	To be compatible with (either within or moving towards) the Range of Natural Variability	Achieved

This indicator is assessed through a model which compares the area of each seral stage to that expected under historic disturbance regimes, and which is expected over the next 250 years under current harvest practices (TSR III). A detailed description of the model and its assumptions is provided in the SFMP under this indicator.

Results of the model showed that:

- For most ecosystem types (BEC groupings), the amount of early seral stands and mature stands are currently below historic amounts, and,
- The amounts of mid- and old seral stands are currently above or similar to historic amounts.
- Under current management, trends in seral stage are toward historic conditions for most ecosystem types and seral stages, except that there is a trend towards more old forests than existed historically.

It is important to note that the model did not incorporate any effects of climate change. Future climate trends are expected to differ from historic and current ones in that fires and insect pest outbreaks are projected to increase in frequency and severity as the climate warms and summers become hotter and drier (see Indicator 4.1.4 – Climate Change Adaptation in the SFMP for a discussion). Although the model projects a trend toward more old forests than existed historically, it is expected that effects of climate change will lead to an increase in disturbed areas and consequently higher amounts of early seral stands on the landscape. Thus, at this point in time, no changes to current management in order to try and increase the amount of early seral stages are being contemplated.

Figures and tables illustrating these conclusions are provided in the SFMP and in the report on the model (Appendix to SFMP). The model will be re-run in the years following the release of TSR IV, and trends will be re-evaluated. Further discussion for this indicator is available in the SFMP.

Indicator 7 – Interior Forest Habitat

Indicator Statement	Target (Variance)	Results
Median patch size of Old Growth and Mature Management Areas, by NDT and ecosection	Median patch size is maintained or increases through time	N/A – fourth year for this indicator. To be reported in 2020.

Current condition for the median patch size of Old Growth Management Areas (OGMAs) and Mature Management Areas (MMAs) is shown in Table 10. Of note is that the medians in most ecosections, with the exception of the Southern Purcell Kootenay Lake, are relatively small. This indicator is slow to change over time because relatively few OGMAs and MMAs are changed each year; consequently, median patch size will be re-calculated in 2020.

Recently, spatial changes to OGMAs and MMAs were primarily for re-allocation of OGMAs from proposed harvest areas to other areas and ensuring targets were maintained throughout this process. In all

cases, the "Old and Mature Forest Replacement SWP" was followed, which indicates that replacement stands must be "of similar or greater area, and at least 2 ha in size alone or when combing with an adjacent OGMA if one exists", and that when choosing a replacement OGMA, to "…try to add on to existing OGMAs or riparian reserves to make them larger, rather than making small isolated patches.".

Through continued implementation of the Interior Forest Habitat Strategy, we expect the median patch size of old and mature management areas to remain stable or increase over this time period. Further discussion on this indicator and size class distributions of the OGMA and MMAs in each ecosection is presented in the SFMP.

Table 10: Median OGMA/MMA polygon size by ecosection in the DFA

Ecosection	NDT3		NDT4	
Forest License	**Median size**	**n polygons**	**Median size**	**n polygons**
TFL14				
Upper Columbia Valley – TFL14	5.80	193	5.47	118
Eastern Purcell Mountains – TFL14	6.43	289	-	0
A18979				
Southern Park Ranges – North	5.07	973	5.47	19
Upper Columbia Valley – Radium	4.34	365	3.56	264
A18978				
East Kootenay Trench – North	4.83	417	4.35	188
Shared A18978/A18979				
Southern Park Ranges – Central	4.74	929	9.95	11
Eastern Purcell Mountains – Central	5.81	745	6.37	42
A19040				
Southern Purcell Mountains – Cranbrook	7.66	296	6.06	6
Southern Park Ranges – South	8.34	448	5.91	23
McGillivary Range	7.77	1000	5.97	73
East Kootenay Trench – South	8.76	137	8.63	233
Mid Elk Valley	8.97	257	6.95	9
Upper Elk Valley	6.69	682	3.42	1
Flathead Valley/ Crown of the Continent	6.94	918	2.95	3
Eastern Purcell Mountains – North	5.27	574	5.53	19
Eastern Purcell Mountains – South	8.16	162	6.20	18
A20212				
Southern Purcell Mountains – Kootenay Lake	64.02	59	-	0
Total	**6.15**	**8444**	**5.30**	**1027**

Indicator 8 – Green Tree and Snag Retention

Indicator Statement	Target (Variance)	Results
Density (stems/ha) of dominant and co-dominant green trees and snags (standing dead trees) on each cutblock or cutblock area (gross block area)	All blocks or block areas to exceed the densities specified in FSC-BC Indicator 6.3.9 for each Natural Disturbance Type (NDT) and Biogeoclimatic zone combination (Table 12)	Achieved

Table 11: FSC-BC Indicator 6.3.9 minimum retention levels of dominant and co-dominant trees within each cutblock area (>200 m wide or 100 ha in aggregate)

NDT	NDT 1		NDT 2		NDT 3		NDT 4	
BEC	ESSF	Other	ESSF	other	ESSF	other	PP	other
Green Tree and Snag target (sph)	12	8	15	10	12	8	4	8
Snag target (sph)	3	2	3.75	2.5	3	2	1	2

This indicator only pertains to FSC Certified licenses (Table 1). Over the past nine years, including 2018, all blocks in Canfor's FSC certified areas have met the green tree retention targets (Table12). However, not all blocks met the snag retention targets over this time period unless stubs (man-made snags, demonstrated to have wildlife value) were counted. Due to the large no-harvest buffers required around most snags by WorkSafe BC (minimum 1.5 tree lengths in diameter), not all snags can be retained within cutblocks and have the block still make an economic harvest unit. Thus, stubs help fill this gap. At the layout stage the focus is still on retaining the highest value wildlife trees (snags) in safe reserve patches. A High Value Snag SWP and target have been developed to assist with this goal.

Table 12: Percentage of blocks meeting green tree and snag retention targets in FSC certified areas between 2009 and 2018

Year	Percent of Blocks meeting Green Tree Retention Targets	Percent of Blocks meeting Snag Retention Targets when Stubs are not included	Percent of Blocks meeting Snag Retention Targets when Stubs are included[1]	Total number of blocks on FSC certified areas
2018[2]	**100%**	**86%**	**100%**	**79**
2017[2]	100%	90%	100%	82
2016[2]	100%	75%	100%	72
2015[2]	100%	76%	100%	85
2014[2]	100%	80%	100%	109
2013	100%	75%	100%	132
2012	100%	70%	100%	103/67[3]
2011	100%	75%	n/a	164/129[3]
2010	100%	n/a[4]	n/a	137
2009	100%	n/a[4]	n/a	65

[1] *Stubs were not consistently prescribed in all Site Plans in years prior to 2012*
[2] *Analysis done using the total number of harvested blocks in that calendar year, rather than CP approved blocks.*
[3] *The total number of approved blocks in FSC certified areas/ the number of approved blocks in FSC certified areas with the target densities of snags present in the pre-harvest stands (used in snag retention calculation).*
[4] *Snag retention not measured separately from green tree retention in this year*

Indicator 9 – Landscape Unit Wildlife Tree Patch Retention

Indicator Statement	Target (Variance)	Results
Percent of Wildlife Tree Patches retained across the DFA, by Landscape Unit and BEC variant	Varies by BEC/Landscape Unit combination, as specified in the Forest Stewardship Plan	Achieved

Targets for Wildlife tree patch retention have been determined through analyses conducted by Forsite as part of Forest Stewardship Plan submissions over the past decade. The analysis is a two-step process that first uses current BEC linework and the methodology outlined in the Landscape Unit Planning Guide to determine the % Wildlife Tree Retention (WTR) required for each BEC/LU combination. The second step involves determining the amount of forest in the Non-Timber Harvest Landbase (THLB) that is contributing to WTR and comparing these amounts to WTR targets, and results on three possible scenarios for a given LU-BEC variant (Table 13).

Table 13: Possible Scenarios from LU-BEC Variant WTR analysis

Scenario	Required Retention in the THLB
1. Retention level in Non-THLB is above target and spacing was adequate to ensure no THLB was outside the buffered area.	This unit does not need any WTR implemented during cutblock development.
2. Retention level in Non-THLB is above target but there is THLB area that does not meet the spacing requirement (outside the buffered area).	This unit needs WTR implemented in the identified areas so that appropriate spacing is achieved. There is no specific percent requirement for the THLB but patches implemented for spacing should be at least 0.25 ha in size.
3. Retention level in Non-THLB is below target and there is THLB area that does not meet the spacing requirement (outside the buffered area).	This unit needs WTR implemented in the identified areas to both achieve spacing and target levels. A percent retention in the THLB is specified and spacing is to be considered during implementation.

Within Canfor's East Kootenay DFA, nearly all LU/BEC combinations fall under Scenario 1 or 2, meaning they have enough area within the Crown Forested Landbase (CFLB) that is not expected to be harvested (e.g. Riparian areas, unstable terrain, Parks and Ecological Reserves), and is therefore contributing to WTR targets. Only a handful of LU-BEC variant combinations fall under Scenario 3, and consequently have percent targets for Wildlife Tree Patch Retention. In the 2017-2018 reporting year, no blocks were harvested within BEC/LU combinations where WTR retention within the THLB was required, thus, the target has been achieved for this indicator.

Indicator 10 – High Value Snags

Indicator Statement	Target (Variance)	Results
a) The density (stems/ha) of all identified High Value snags within gross block areas, all BEC subzones combined;	a) 5% improvement annually in the average	a) Achieved
b) The average percentage of protected High Value snags	b) Minimum 65%	b) Not Met

Analysis for this indicator differs slightly from the way that it was calculated for Current Condition in the SMFP (Table 14). These changes were made to simplify analysis and to provide a more accurate picture of High Value Snag identification and retention in a given calendar year.

Table 14: Changes to current condition calculations for High Value Snags

Indicator	SFMP Current Condition	2018 Reporting Year onwards	Rationale
Density	Included Partial Harvest blocks in analysis	Only blocks with Harvest complete status included in analysis	Partial harvest blocks can show up in multiple years.
% Protected	Protected HV Snags are snags that are: Within the Gross Block Area of *any* unharvested block (i.e. Proposed, Available,	Protected HV Snags are snags that are: Wildlife tree class 2 HVS within the Net Area of the block, or any wildlife tree class HVS within	Blocks that are not yet harvested may have changes to the linework, possibly leading to fewer or greater HVS protected. Including HVS

	Stagnant, WIP, Permitted, Partial Harvest, Harvested blocks) OR are outside the Gross Block area of any block	WTPs of a block *harvested* in a specific calendar year (e.g. 2018)	outside the gross area inflates the amount protected when only looking at a specific year for harvest (e.g. 2018 harvest year).

Current condition for the two indicator statements for High Value Snags (HVS) is presented in Table 15 and Table 16. The density of identified snags within the gross block area of a harvested block (Indicator Statement a) increased from 0.964 HVS/ 100 ha (2013 – 2014) to 2.81 HVS/ 100 ha (2018, Table 15), representing a 193% increase.

The average percent of identified, protected HVS is 51% (Table 16), which is below target. Consequently, an in depth review of the HVS program was conducted, yielding the following information:

- Not all snags that are protected are identified pre-harvest: HCVF Effectiveness monitoring over the last three years has indicated that more HVS than those identified pre-harvest are retained by loggers within the Net Area. CCVF Effectiveness Monitoring in 2018 found that four out of five cutblocks had HVS retained within the Net Area, even though no HVS were identified pre-harvest. Effectiveness Monitoring in 2016 over 31 cutblocks identified 29 HVS snags that were retained but not identified pre-harvest (Table 17).
- Within the Net Area, it's likely that more snags other than Class 2 HVS are protected: Results for 2016 HCVF Effectiveness Monitoring found that 70% of all snags identified (n = 57) within the Net Area were not felled; and of the 105 HVS that were identified post-harvest, 80% were retained.
- Inaccurate estimates of HVS pre-harvest: It's not possible for layout crews to survey entire blocks for HVS due to time constraints. In addition, there is no baseline data for what is a reasonable number of HVS to be expected within a given area; it depends on previous disturbances (e.g. high intensity fires, old logging, insect outbreaks). Thus, while there has been a measurable increase in the number of HVS identified pre-harvest, this number is likely well below the density of HVS on the landbase.

As a result of this analysis, the following are follow up actions for this indicator:

- Revisit indicator and associated targets for HVS. This will be completed as part of the SFMP revision process as the Kootenay Division transitions from CSA to SFI and from the FSC-BC Forest Management Standard to the Canada wide FSC Forest Management Standard.

Table 15: Density (stems/100 ha) of all identified High Value snags within gross block areas (harvested), by BEC zone grouping

	Year harvested	BEC					Total
		ESSF	ICH dry	ICH moist	IDF/PP	MSdk	
Area harvested (ha)	2013-2014	3968.2	874.3	1125.9	4130.3	6850.4	17010.5
	2015	1803.2	1298.1	789.2	933.4	2081.6	6905.5
	2016	2426.2	1323.9	684.3	606.9	807.7	5849
	2017	1558.5	498.1	309.5	1801.3	1553.2	5720.5
	2018	2609.3	794.9	424.9	912.3	3098.5	7840.0
n HVS	2013-2014	3	7	31	84	39	164
	2015	3	7	31	84	39	164
	2016	5	11	20	23	7	66

	2017	2	11	4	47	39	103
	2018	31	19	9	79	87	225
Average density (HVS/100 ha)	2013-2014	0.08	0.80	2.75	2.03	0.57	0.96
	2015	0.02	0.54	3.93	9.00	1.87	2.37
	2016	0.21	0.83	3.65	1.81	0.87	1.12
	2017	0.13	2.21	1.29	2.61	2.51	1.80
	2018	1.03	2.39	2.11	8.65	2.80	2.81

Table 16: Average percentage of High Value snags protected, by BEC grouping

	n HVS*	n HVS protected**	% Protected
ESSF‡	31	20	65%
ICH dry†	19	18	95%
ICH moist	9	7	78%
IDF/PP†	79	30	38%
MSdk†	87	40	46%
Total	**221**	**115**	**51%**

* Within the Gross Area of harvested blocks in 2018 harvested blocks
** HVS within a WTP of a harvested block, or a Class 2 wildlife tree anywhere within the Gross area of a harvested block
‡ ESSF dry and ESSF moist are grouped together due to small sample size for ESSF moist (n=1).
†Includes blocks that were fire salvage.

Table 17. Summary of HVS observations as part of 2016 HCVF Effectiveness Monitoring Program

# Snags checked	Within Reserve		Within Net Area of block			Could Not locate	Not a previously recorded HVS
	Intact	On ground	Intact	Felled	Stubbed		
76	11	4	40	14	3	4	29

Indicator 11 – Riparian Management

Indicator Statement	Target (Variance)	Results
a) Riparian Reserves and Management Zones planned in accordance with Canfor's Integrated Riparian Assessment.	0 non-conformances	Achieved
b) Within each Riparian Management Unit, the combined Riparian Reserve and Management Zone widths meet the FSC budgets in Table 52 (SFMP), including both *FRPA* legal minimums on each stream, lake and wetland	0 non-conformances	Achieved

Canfor did not have any incidents in 2018 reported on riparian reserves not being planned to meet the Integrated Riparian Assessment process (no ITS incidents).

The current condition of Canfor's riparian reserves with respect to the FSC budget is available in the Integrated Riparian Assessments, Volumes 2-9. For each of the 46 Riparian Management Units within the DFA, the required retention amounts for each lake, wetland, and stream class are calculated, together with the amount of retention currently calculated to be present. Surplus and Deficits are presented by feature class, and for the overall unit.

All of the 46 RMUs have a budget surplus when lakes, wetlands, and streams across the unit were considered as a whole. However, in some units' particular feature classes are at or near deficit. This is particularly so for lakes and wetlands which are relatively rare on the landscape and thus have small budgets and small surpluses. In addition, these features tend to be located on valley bottoms where historic logging has taken place, much of it without riparian reserves.

Element 1.2 – Species Diversity & Element 1.3 – Genetic Diversity

Indicator 12 – Species of Management Concern – Habitat Protection

Indicator Statement	Target (Variance)	Results
Forest management activities conform to operational plans that include the appropriate management strategies from the SWP for blocks containing habitat for species of management concern	100% (5)	Achieved

Evaluation of this indicator relies on confirming operational plans contain information for habitat management. Evaluation of this indicator also relies on Canfor's Incident Tracking System (ITS), which is Canfor's system for tracking incidents related to forest management (such as operational plans not being followed). In 2018, no incidents were reported into ITS where operational plans were not followed. Table 18 shows that there were 195 instances where mapped habitat for a SoMC overlapped with a block harvested in the 2018 calendar year (some blocks harvested with more than one type of mapped habitat). Of those 195 blocks, 186 had operational plans that adequately prescribed management strategies for species of management concern. Information regarding situations where management strategies were not adequate are detailed below:

FL A19040 CP 592 Block EFH0040: A short section of road was constructed within a Gillette's Checkerspot WHA, in contravention to the legal Order. Consequently, this incident was entered into ITS and reported to the Ministry of Environment, and a root cause analysis was undertaken to determine follow up actions to avoid a reoccurrence. Follow up actions included updating Canfor's SFMP Planning and Permitting Checklist, updating Canfor's harvest scheduling program (Forest Ops) to include timing restrictions for Gillette's Checkerspot, emphasizing SoMC at Annual Preworks, and reviewing all unharvested cutblocks to ensure that any cutblocks that overlap with WHAs with a timing restriction have the timing restriction identified in the Site plan and that the timing restriction is scheduled in Forest Ops.

Migratory Bird Habitat Overlap: A small portion of blocks that overlapped with Migratory Bird habitat prescribed measures that were not consistent with the BMPs in Canfor's SWP for Migratory Birds (n=7). One block that overlapped with Rank 4 habitat did not prescribe enough retention to qualify as a moderate BMP (but were still harvested within the Restricted Period), while five other cutblocks that overlapped somewhat with Rank 5 MB habitat did not prescribe two Moderate BMPs as required. Finally, one block had winter harvest prescribed, but was harvested in the summer. Consequently, the Permitting Foresters responsible for the blocks have been notified, and future training will emphasize correct application of Migratory Bird BMPs.

Table 18: Number of blocks harvested in 2018 following SWPs for SoMC when block overlaps with habitat for SoMC

License	Habitat Type	n blocks with overlap with habitat for SoMC	n blocks with management strategies prescribed
A18978	Rank 4/5 MB Habitat*	37	37
A18979	Rank 4/5 MB Habitat*	41	41
A19040	Rank 4/5 MB Habitat*	40	39
	Wildlife Habitat Areas	7	6
	Critical Habitat	1	1
A20212	Rank 4/5 MB Habitat*	13	12
	Wildlife Habitat Area	5	5
A90310	Rank 4/5 MB Habitat*	12	12
A91306	Rank 4/5 MB Habitat*	2	2
	Critical Habitat	2	2
	Wildlife Habitat Area	1	1

A91307	Rank 4/5 MB Habitat*	3	3
A91308	Rank 4/5 MB Habitat*	3	3
A91309	Rank 4/5 MB Habitat*	1	1
A91310	Wildlife Habitat Area	1	1
TFL14	Rank 4/5 Migratory Bird Habitat*	26	21
Total		**195**	**187**
Total Percent			**96%**

Only includes Site Plans signed from January 2017 onwards. The Migratory bird SWP was adopted in mid-2016, thus Site Plans signed prior to this date do not contain explicit measures to manage for migratory birds, and the remainder of 2016 was considered a transition period to the new SWP.

Indicator 13 – Species of Management Concern – Habitat Suitability

Indicator Statement	Target (Variance)	Results
Suitable habitat is provided for key Species of Management Concern	Within one quartile (+ 25%) of the Mean in the Range of Natural Variation	Pending –TSR IV models under review

Since this is a new indicator, current condition has not yet been established. Current condition will be the currently available amount of suitable habitat for the key species of management concern that were modelled in TSR IV. Government finalized these reports in late 2017. The available models require further refinement to be applicable at the watershed and stand level. Canfor is currently exploring the best way to proceed with modelling these species, in collaboration with FLNRORD staff. Results of the investigation will be reported in the 2019 Annual Report.

Indicator 14 – Tree Seed

Indicator Statement	Target (Variance)	Results
Percentage of tree seed used in yearly tree planting program that is consistent with the *Chief Foresters' Standards for Seed Use*	100% (-5%)	Achieved

For 2018 planting, Canfor is within the 5% variance with the percent of trees planted outside of the *Chief Forester's Standards for Seed Use*: 3.5% Cranbrook TSA, 2.47% Invermere TSA and 4.34% for Kootenay Lake TSA as demonstrated in the Infoview Seed Transfer Compliance reports. Not using select seed where it is available is included in the percent above.

Indicator 15 – Natural Regeneration

Indicator Statement	Target (Variance)	Results
Percentage of stands at free growing that have a component of natural regeneration	100% (-10%)	Achieved
60% of stands have 60% of their total inventory coming from natural regeneration at free growing	60% (-10%)	Achieved

Current condition for the percentage of stands with a portion of their inventory coming from natural regeneration is slightly higher than the target (

Table *19*); however, targets were chosen to reflect a balance between site productivity objectives and maintaining genetic and species diversity.

Table 19: Natural Regeneration within 2018 Free-Growing cutblocks

Strata	n	Area (ha)	Percent of Total	
			Strata	Area
Surveyed for Free-Growing in 2017	612	8054	100%	100%
With some natural regeneration	586	7860	**96%**	**98%**
With >60% natural regeneration	407	6189	**67%**	**77%**

Indicator 16 – Mix of Species Planted

Indicator Statement	Target (Variance)	Results
Percentage of hectares planted with more than one species (by year)	100% (-30%)	Achieved

In 2018, a total of 5764ha were planted and 89% were planted with more than one species.
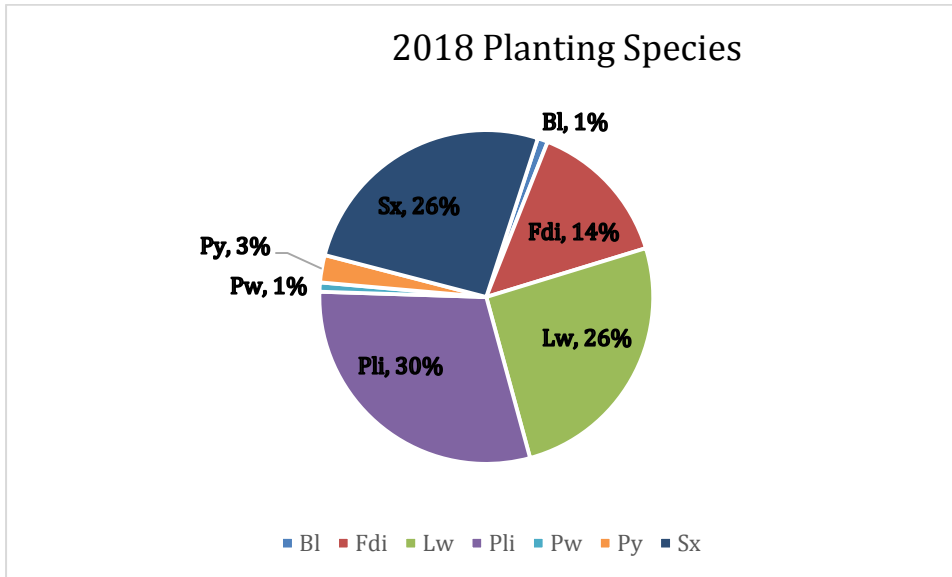
Figure 1 Breakdown of species planted in 2018.

Indicator 17 – Managing for Species Diversity during Tree Thinning

Indicator Statement	Target (Variance)	Results
Percentage of maximum density spaced hectares with species diversity maintained or enhanced	100% (-10%)	Not applicable – no spacing activities conducted

In 2018, Canfor did not complete juvenile spacing activities, thus, this indicator is not applicable.

Element 1.4 – Protected Areas and Sites of Special Biological and Cultural Significance

Indicator 2 – Protected Reserves

Indicator Statement	Target (Variance)	Results
Percent of area in protected reserves, by BEC variant and management unit, within the DFA	12 – 24%	Target achieved, with consideration of HCVFs in the IDFdm2 and PPdh

See Page 11 for information on this indicator.

Indicator 18 – Sites of Biological Significance

Indicator Statement	Target (Variance)	Results
Forest management activities conform to operational plans that include the appropriate management strategies from the SWP for blocks containing sites of biological significance	100% (0)	Not Met (97%)

Thirty blocks were harvested in 2018 that overlapped with Sites of Biological Significance (referred to as "SBS", Table 20), one of which did not follow the appropriate management strategies as per the SBS SWP. Information regarding the block that failed to include correct management strategies is detailed below:

FL A91307 CP 834 Block LIN0028: LIN0028 has a large WTP around a goshawk nest (200 m radius at its narrowest point), management recommendations for an active goshawk nest are to buffer nests with a minimum 200 m forested buffer and to avoid High and Moderate disturbance activities within 500 m of the nest between February 15th and August 15th (or, when not practicable, between the most sensitive period: March 15th and July 1st) The Permitting Forester incorrectly stated in the Site Plan that a timing restriction was not required for activities within the block, due to the large buffer around the nest. The block was subsequently harvested during the recommended avoidance period (May 24th, 2018 to July 10th, 2018). The Permitting Forester for the block is no longer employed by Canfor, however, the importance of correctly prescribing timing restrictions has been re-emphasized to current Canfor staff and contractors responsible for Site Plans.

In order to improve tracking of wildlife features a field card was developed in early 2018 that allows field staff to better capture information about features when they are encountered, and also lists what resources are available to manage for features when they are encountered. The field card was released at Spring training in 2018 and is available both as a fillable iPad form, and as a paper form.

Table 20: Number and percentage of blocks following SWPs for Sites of Biological Significance (SBS) for blocks harvested in 2018 that overlap with a SBS

License	Site of Biological Significance	n blocks with overlap[†]	n blocks with adequate management strategies prescribed
A18978*	Stick Nest	2	2
	Avalanche Path (Moderate or High Value)	3	3
A18979*	Stick Nest	1	1
	Avalanche Path (Moderate or High Value)	3	3
A19040*	Redd	1	1
	Stick Nest	3	2
	Avalanche Path (Moderate or High Value)	12	12
	Carnivore Den	2	2
TFL14	Stick Nest	2	2
	Avalanche Path (Moderate or High Value)	1	1
	Carnivore Den	1	1
Total		**31**	**30**

[†]*One block had more than one SBS noted on site (A91307 CP834 Block LIN0026 had two dens and one stick nest identified).*
*Includes fire and beetle salvage blocks.

Indicator 19 – High Conservation Value Forests

Indicator Statement	Target (Variance)	Results

Forest management activities conform to operational plans that include the appropriate HCVF management strategies	100% (5%)	Achieved

Analysis for this indicator focused on an in-depth review of Site Plans for blocks harvested in 2018 that overlap with HCVFs (Table 21Table 21). All blocks harvested in 2018 that overlapped with HCVFs 1> ha had applicable management strategies prescribed.

Table 21: Summary of HCVF management strategy review for cutblocks harvested in 2018 Calendar Year

HCVF Type	License	n HCVFs	HCVF Management strategies prescribed
1 or 2	A18978	10	10
	A19040*	27	27
	A20212	13	13
3	A18979	4	4
	A19040	2	2
	A20212	5	5
	TFL14	3	3
4	A18978	1	1
	A18979[†]	1	1
Total		66	66

Includes FLA91308 Akisqnuk RFL

[†]*Includes FLA91310 Kinbasket Development Corporation RFL*

Canfor is currently partnering with the Ktunaxa Nation (KNC) to conduct post-harvest assessments of HCVFs (CCVFs in particular). In 2018, four days of field monitoring were conducted (a total of 5 blocks evaluated). Results indicate that CCVF management strategies are, in general, consistently applied. One block (FL A91309 CP 101 Block KID0032) overlapped slightly (14.9 ha) with Lower Kootenay CCVF 4308, but did not include management strategies for retention of cedar and hemlock veteran trees. Field review of this block indicated that some of these veteran trees (defined as stems >45 cm dbh) were harvested. Follow up with the permitting forester for this block determined that this was an oversight. Consequently, a review of all Permitted unharvested, permitted cutblocks that overlap with HCVFs (including HCV3 and CCVFs) was undertaken to ensure that all contained applicable management strategies, and results of monitoring were communicated to permitting and planning staff.

The joint KNC-Canfor CCVF Effectiveness monitoring program is scheduled to continue in 2019, in conjunction with formal revisions to the Canfor's CCVF Management Strategies. A summary report of the 2018 CCVF Effectiveness monitoring program is available by request from the Canfor Biologist.

Criterion 2 – Ecosystem Condition and Productivity

Element 2.1 – Forest Ecosystem Condition and Productivity

Indicator 20 – Reforestation Success

Indicator Statement	Target (Variance)	Results
Percentage of blocks that achieve regeneration delay (RG) within the regen delay period	100%	Achieved
Percentage of blocks that achieve free growing within the free growing	100%	Achieved

(FG) period		

Within the DFA, 100% of cutblocks have met Regeneration Delay (RG) and Free-Growing (FG) obligations within the period. As of 2018, RG is achieved within 1.7 years and FG within 15, on average.

Indicator 16 – Mix of Species Planted

Indicator Statement	Target (Variance)	Results
Percentage of hectares planted with more than one species (by year)	100% (-30%)	Achieved

See Page 27 for information on this indicator.

Indicator 21 – Invasive Plants

Indicator Statement	Target (Variance)	Results
A: Percentage of treatments with no follow-up	0% (10%)	Not met (19%)
B: Percentage of infestations that go untreated	0% (10%)	Achieved (0%)

Canfor's process for addressing invasive plants is evolving. Increased focus has been placed on identification of invasive plants during early block development (layout, SFMP Permitting and Planning Checklist). Annual training in 2018 for Kootenay Woodland Field Staff and all contractors included a 1 hour course on Invasive Plants with the East Kootenay Invasive Species Council. A Standard Work Procedure for Invasive Plants was developed in early 2017, and was updated February 2019 to reflect the changes in the November 2018 FSP. It includes procedures for recording priority invasive plants when they are discovered and lists activities that can be prescribed for management of existing invasive plant sites in cutblocks and roads during harvest activities. These management activities include not disturbing sites where possible, re-vegetating disturbed ground promptly either through grass seeding (where there is no obligation to grow trees, like on roads and landings), or tree-planting (most invasive species are shade-intolerant). The herbicide ClearView™ is used in locations where grass seeding and/or tree-planting is not likely to be effective. Hand pulling of existing infestations during monitoring visits is also done where it's appropriate.

Currently, areas with invasive plants are generally restricted to roads and along old oil and gas exploration, rights- of-way and near communities. Information about the presence of invasive plants is recorded in Land Resource Manager (LRM); Canfor's data management system. Spatial locations of infests are recorded using the Invasive Alien Plant Program Application (IAPP), a provincial resource managed by the provincial government; this information is downloaded annually to LRM to ensure spatial locations are up to date (the government updates their database in the spring and our update needs to make sure it's done after the new data is loaded).

To update our processes to reflect the new 2018 FSP, Canfor is scheduling an 'Invasive Plant Monitoring' activity in LRM if a block meets one of the following criteria: if the block had a Soil Disturbance Survey, where the survey determines that excessive soil disturbance was found; or if invasive plants ranked 1 or 2 priority are found along roads and landings during pre-harvest assessments or from the IAPP layer in LRM. Additionally, if invasive plants are identified pre-harvest, then a 'Grass Seeding' activity must be scheduled. CP's approved prior to November 2018 have 2 years to grass seed all roads and landings regardless if weeds are present. CP's approved after November 2018 will have seeding completed within

one year of harvest competition to minimize seedbed available to invasive plant colonization, only on blocks where invasive plants have been identified.

In 2018, 34 blocks were monitored for invasive plants (39 total, 5 of which are outside the DFA). Ten blocks were treated for invasive plants (16 total, 6 of which are outside the DFA); 5 of these blocks were treated using herbicide and 5 blocks were hand-pulled (See Table below for details). Grass seeding roads and landings was completed on 64 blocks, regardless if there were weeds reported. One block, A19040 561 JAF0006, was heli-grass seeded due to excessive soil disturbance in an open forest block. Another block, A19040 561 JAF0007, was declared Free Growing and is no longer Canfor's responsibility; however due high numbers of priority invasive weeds in this block, Canfor plans to continue monitoring and treatment of this block. 13 blocks that required monitoring were moved to 2019 due to wildfire season limiting access and/or due to a lack of resources. These 13 blocks have been scheduled in LRM as priority blocks to be monitored in 2019.

In order to reduce the number of blocks that are missed due to a lack of resources, we have consulted out the monitoring & treatment of invasive plants for 2019. Ideally, this will allow infestations to be treated during the invasive plant monitoring site visit. Additionally, we have updated how we schedule invasive monitoring and treatment in LRM to be able to report more accurately. If invasive plants are hand pulled in the field, we are now entering this as an 'Invasive Plant Treatment' in LRM. When scheduling 'Grass Seeding' in LRM, we are we are adding a comment saying grass seeding must be completed by *'this date'* in order to meet targets set out in the FSP (i.e. seed by 2019 to meet targets).

Indicator statement 'A: percentage of treatments with no follow-up': In 2017, 12 blocks were treated (6 by hand pulling, 4 with herbicide, 1 by grass seeding) that required follow up monitoring. In 2018, follow up monitoring was done on 9 of the 11 blocks. One block, A19040 cp576-004, did not have follow up monitoring due to a data entry error in LRM, therefore has been scheduled to be monitored in 2019 for weeds and grass seeding; and A18979 312-GRA0037 was rescheduled to 2019 due to a lack of resources; WFH0011 and LIN0014 harvest is ongoing and further herbicide and grass seeding will be scheduled promptly upon harvest completion. This determines 19% of blocks that were treated for invasive plants in 2017 were not followed up in 2018.

Indicator statement 'B: percentage of infestations that go untreated':

From monitoring activities in 2017, 9 blocks were identified as having invasive plant infestations that required treatment by hand pulling, herbicide, or grass seeding (See Table 22). In 2018, all 9 of these blocks were treated (5 by hand pulling, and 4 by herbicide). JAF0006 was one of the blocks that received herbicide treatment, and it was also heli grass seeded due to the exceeding the soil disturbance survey. In 2018, A19040 835-LIN0035 was identified as a serious infestation of low priority weeds, therefore East Kootenay Invasive Species Council carried out treatment before harvesting activities began. All of these treatments took place in October 2018, before the snow fell. This determines 0% of blocks that have known invasive plant infestations went without treatment in 2018.

Table 22: Summary of invasive plant treatments by block in 2018

License	CP	Block	Treatment
A19040	556	JAF0002	Hand-pulled
A19040	558	POL0007	Herbicide
A19040	561	JAF0006	Herbicide + heli-grass seeded
A19040	561	JAF0007	Herbicide + declared FG
A19040	724	WCR0008	Hand-pulled
A19040	725	WCR0011	Hand-pulled
A19040	739	WCR0010	Hand-pulled
A19040	809	809-007	Herbicide
A19040	831	CAV0018	Hand-pulled
A19040	835	LIN0035	Herbicide

Indicator 22 – Permanent Access Structures

Indicator Statement	Target (Variance)	Results
Percent of operable landbase converted to permanent access structures through forest management activities	5% or less per LU (+2%)	Achieved

Table 23: Percent Permanent Access Structures for Landscape Units in the DFA

2017 % PAS for Landscape Units				
> 5	4.01 - 5	3.01- 4	2.01- 3	<2
I25	C08, C20,C21, C30, C36, I16, I18, I23, I25, I26, I29, I30, I33	C01, C04, C06, C11, C15, C23,C24, C25, C27, C29, C32, C33, C34, C38, I07, I09, I15, I20, I21, I22, I24, I27, I28, I32, I36,	C02, C05, C07, C09, C10, C16, C17, C18, C19, C22, C31, C37, I02, I03, I04,I05, I06, I08, I10, I11, I12, I13, I14, I17, I19, I34, I35, I37, I38, K02, K03, K05,	C13, C14, I01, K06

In 2018, there has been some movement of LU's in the lower columns. As with previous years, only one LU currently exceeds the 5% target, although it is currently within the acceptable variance. No road building has taken place in the I25 LU. Thirteen LUs are approaching the 5% target (Within the 4 to 5% range). Future planning will follow the PAS strategy as it pertains to LUs over and approaching the indicator target.

Indicator 22 – Permanent Access Structures

Indicator Statement *slides*
Target (Variance)

Indicator Statement	Target (Variance)	Results
Number of recordable landslides resulting from Canfor's forestry operations on permitted roads or cutblocks	0 (4)	Achieved
Percent of operable landbase converted to permanent access structures through forest managem...		
activities		

5% or less per LU (+2%)
Achieved

Table 24: Percent Permanent Access Structures for Landscape Units in the DFA

> 5

In 2018 there have been four (4) landslides recorded; which puts this indicator just within the acceptable variance. All were initiated along existing roads. The first was along Teepee Creek where a plugged culvert saturated the road and eventually caused a road failure. The second occurred in Linklater and was a similar incident. In both cases a rehabilitation plan was completed and implemented by contractors. The third was along the Goat River FSR. It was a smaller incident and the Union crew was able to action it right away. The fourth was along Windfall Creek during road building of fire salvage. Road building was halted and qualified professionals were consulted to develop a rehabilitation program. This action is still open in ITS and is targeted to be completed in summer 2019.

Indicator 24 – Land Conversion

Indicator Statement	Target (Variance)	Results
Percent of DFA converted to non-forest land use through forest management activities not including roads, landings and other infrastructure directly related to forest management	Less than 5% reduction of DFA annually	Achieved

In 2018, no land was converted to non-forest land use through forest management activities, not including roads, landings and other infrastructure directly related to forest management (and).

Table 25: Current FSC Certified DFA – by TSA

Area	Cranbrook	Invermere	Kootenay Lake	TFL 14	Total
Total Certified Area (ha)*	729,758	198,390	109,854	TSA	1,188,335

Table 26: Pro-rated FSC AAC resulting from Excision

Year	ha's	AAC (m3/yr)	m3/ha/yr
2013	1,194,301	1,013,214	0.85
2014	1,188,335	1,008,153	0.00
2015	1,188,335	1,008,153	0.00
2016	1,188,335	1,008,153	0.00
2017	1,188,335	1,008,153	0.00
2018	1,188,335	1,008,153	0.00

Indicator 25 – Volume Harvested Vs. Allocated

Indicator Statement	Target (Variance)	Results
Percent of volume harvested compared to allocated harvest level	100% over the legislated cut control period for Canfor's major replaceable forest licenses in the Kootenay region (+/-10%)	Achieved

See page 40 for information on this indicator.

Criterion 3 – Soil and Water

Element 3.1 – Soil Quality and Quantity

Indicator 26 – Detrimental Soil Disturbance

Indicator Statement	Target (Variance)	Results
Number of blocks where the % detrimental soil disturbance exceeds acceptable limits	0 (4)	Achieved

In 2018 Canfor had three incidents related to excessive soil disturbance. Two were in Thunder Creek and were at least partially due to skid trails that had not been reclaimed. A plan for rehabilitation during 2019 summer is in place although not yet completed. The third was in the Island Pond fire where 1 SU had excessive soil disturbance. A plan to hand seed exposed soil was seen as the most productive way to rehabilitate soil disturbance. This action is also is targeted for completion in summer 2019.

Indicator 27 – Coarse Woody Debris

Indicator Statement	Target (Variance)	Results
Number of large pieces of CWD per ha in harvested cutblocks each year, by BEC zone in each major Forest Licence	The annual median and mean by BEC and License to be at or above the following: ● PP – 1 piece/ha ● IDF – 2 pieces/ha ● MS and ICH, Pl leading stands – 2 pieces/ha ● MS and ICH, non-Pl leading stands – 4 pieces/ha ● ESSF, Pl leading stands – 8 pieces/ha ● ESSF, non-Pl leading stands – 10 pieces/ha NOTE: Targets do not apply to blocks within community-forest interface areas being managed to reduce fire risk.	Pending – Expanded field sampling planned for summer 2019

Sampling in the 2018 field season was inconclusive in determining whether or not blocks have met CWD piece density targets; only a subset of all harvested blocks were sampled as a result of changes to the provincial waste and residue surveys. The provincial methodology has changed again, and all blocks harvested in 2018 (rather than a subset) will be assessed in 2019 for waste and residue. All blocks will have ocular assessments for large CWD (>10 m and >20 cm diameter), as well as a smaller size category with equal volume. This information will be used to determine whether or not current targets for piece density have been met, and if a modified target of density of pieces of a given volume is more suitable (from an operational an ecological perspective). Results from this indicator will be presented in the final draft of this report.

Element 3.2 – Water Quality and Quantity

Indicator 28 – Sensitive Watersheds

Indicator Statement	Target (Variance)	Results
Percent of Sensitive Watersheds, where forest development is planned, above ECA thresholds that have had further assessment by a qualified	100% (-10%)	Achieved

professional		

In 2018 Canfor completed an Update to the RAU assessment to account for the 2017 fires. The same update will need to be run for the 2018 fires and is scheduled for summer 2019 work.

Table 27: Hydrological Assessments

Watershed type	Above ECA Threshold	Hydrological Assessment Complete	Assessment Scheduled	No Planned Activity	Assessments Required – Not Yet Scheduled
HCV3	15	12	2*	3	-
CWS	2	2	2*		-
DWS	17	10	7**	3	-
RAU	11	9	2	-	-
Total	**45**	**33**	**13**	**6**	

* Both HCV3 Assessments scheduled are updates to watersheds that have been previously assessed

** One of the two CWS Assessments is on an area currently below ECA thresholds. Both are updates to previous assessments.

*** One of the seven DWS assessments is an update to a previous assessment. Two of the other scheduled assessments are on watersheds currently below ECA thresholds.

Indicator 29 – Stream Crossing Sedimentation Control

Indicator Statement	Target (Variance)	Results
Number of drainage structures on Canfor's permitted roads identified as having a high risk of significant sedimentation that are not remediated within 1 year of identification	0 (3)	Achieved

In 2018 there was Zero (0) ITS incidents regarding significant sedimentation from High risk crossings.
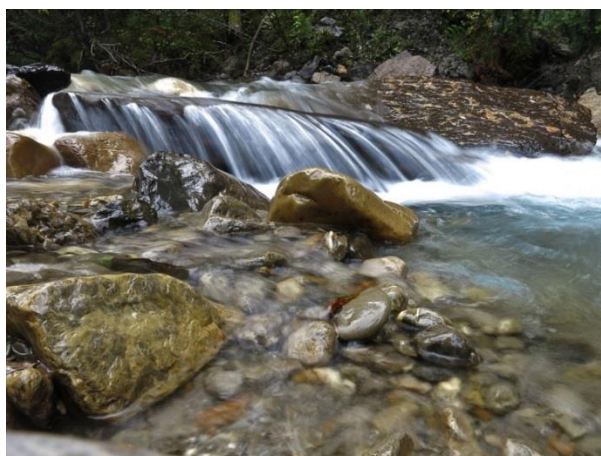
Criterion 4 – Role in Global Ecological Cycles

Element 4.1 – Carbon Uptake and Storage

Indicator 20 – Reforestation Success

Indicator Statement	Target (Variance)	Results
Percentage of blocks that achieve regeneration delay (RG) within the regen delay period	100%	Achieved
Percentage of blocks that achieve free growing within the free growing (FG) period	100%	Achieved

See page 29 for information on this indicator.

Indicator 14 – Tree Seed

Indicator Statement	Target (Variance)	Results
Percentage of tree seed used in yearly tree planting program that is consistent with the *Chief Foresters' Standards for Seed Use*	100% (-5%)	Achieved

See page 24 for information on this indicator.

Indicator 30 – Climate Change Adaptation

Indicator Statement	Target (Variance)	Results
a) Annual meeting to review: possible effects of climate change, new information available, results of monitoring other indicators/strategies (from the perspective of climate change) and determine if changes are needed for the SFMP.	Annual Meeting	Achieved
b) Implement climate change stocking standards into regeneration plans	Within 1 year of approval of FSP climate change stocking standards	Achieved
c) Percent of cutblocks (by area) reforested with mixed species at free growing	100% (-30%)	Achieved

a) The annual climate change meeting was held in Cranbrook on March 1st 2019. Topics included wildfire resilience, fuel break mapping, changes to the FSC Standard, FSP, cumulative effects, hydrological mapping, road and bridge monitoring. No immediate changes to the SFMP were proposed, however, a formal review and revision of the SFMP is scheduled to occur in late 2019, at which point climate change indicators will likely be developed.

b) New stocking standards have recently been developed by MFLNRORD for both the Rocky Mountain and Kootenay Lake Forest Districts. These stocking standards take into account the best available information on ecosystems (updated Biogeoclimatic mapping), climate change science (climate envelopes) as well as comments from licensees (including Canfor). Canfor continues to use these default stocking standards. Additionally, within the default stocking standards there is latitude to plant species that are more adapted to drier climates (e.g. plant more ponderosa pine and Douglas-fir, and less spruce); which is done by Canfor on a regular basis.

The Kootenay division is in the process of transitioning to implementing the Climate Based Seed Transfer program (CBST website), which is a program that matches seed sources (seedlots) to climatically suitable planting sites, and is one of the ministry's climate change adaptation policies. The CBST program will be a legal requirement in the future, until such a date, the Kootenay division will continue to apply it on a trial basis.

c) Refer to Indicator 16 for information on this indicator.

Element 4.2 – Forest Land Conversion

Indicator 22 – Permanent Access Structures

Indicator Statement	Target (Variance)	Results
Percent of operable landbase converted to permanent access structures through forest management activities	5% or less per LU (+2%)	Achieved

See page 32 for information on this indicator.

Indicator 24 – Land Conversion

Indicator Statement	Target (Variance)	Results
Percent of DFA converted to non-forest land use through forest management activities not including roads, landings and other infrastructure directly related to forest management	Less than 5% reduction of DFA annually	Achieved

See page 33 for information on this indicator.

Criterion 5 – Economic and Social Benefits

Element 5.1 – Timber and Non-timber Benefits

Indicator 25 – Volume Harvested Vs. Allocated

Indicator Statement	Target (Variance)	Results
Percent of volume harvested compared to allocated harvest level	100% over the legislated cut control period for Canfor's major replaceable forest licenses in the Kootenay region (+/-10%)	Achieved

In 2018, the overall harvest for the entire region was 98.06% which meets the target (Table 28). The percent of volume harvested compared to allocated harvest level for the year were; FL A18978 (75.4%), A19040 (89.3%), A18979 (113.0%), A20212 (172.3%) and TFL 14 (85.6%). The Invermere and Cranbrook TSR's were completed and announced in the summer of 2017 and each TSA saw a reduction in AAC's. The reduction in the Invermere TSA is approximately 17% for the first 5 years, then it will step down again. The Cranbrook TSA also saw a reduction but not to the same magnitude as Invermere. The AAC's used in this calculation represent the projected reduction for each TSA although the Minister has not, as of the time of this writing, apportioned the volumes to license holders. This is the best estimate of proportional reduction while taking a precautionary approach to the reduced harvest levels.

Canfor relies on its purchase wood program to supply additional fibre to its manufacturing facilities. Although harvesting below its quota levels, the company can ensure its Kootenay facilities can operate using purchased wood and fibre agreements with some First Nations communities who hold forest tenures.

Table 28: Harvest Results – 2018

License	AAC by license (m3)	2017 (m3)	% of AAC
FLA 19040 (Cranbrook)	427,020	381,276	89.29%
FLA 18978 (Canal Flats)	184,161	138,912	75.43%
FLA 20212 (Creston)	99,081	170,665	172.25%
TFL 14 (Parson)	180,000	154,599	85.89%

FLA 18979	184,443	208,411	112.99%
Total	**1,074,705**	**1,053,863**	98.06%

Indicator 31 – Primary and By-Products

Indicator Statement	Target (Variance)	Results
Primary and by-products that are bought, sold, or traded with other forest dependent businesses in the local area	Report annually on the total number of vendors (n/a)	Achieved

Primary and by-products were sold or traded with 40 +/- forest dependent businesses in the local area in 2018. This figure is up from 33 in 2017. Sales included pulp chips, hog fuel, cedar poles, peeler logs, posts, beams, firewood, and spruce for musical instruments.

Indicator 32 – Identified Non-Timber Forest Benefits

Indicator Statement	Target (Variance)	Results
Number of incidences of documented concerns about non-timber forest benefits (NTFB) brought forward, where the NTFB strategy was not followed	0 incidents (0)	Achieved

In 2018 there were zero incidences of concerns brought forward where Canfor's strategy to deal with public concerns was not followed.

Indicator 33 – Overlapping Tenures

Indicator Statement	Target (Variance)	Results
Number of incidences of documented concerns related to overlapping tenures brought forward, where the Overlapping Tenures Strategy was not followed	0 incidences (0)	Achieved

In 2018 there were zero incidences of concerns brought forward by overlapping tenure holders where Canfor's strategy to deal with their concerns was not followed.

Element 5.2 – Communities and Sustainability

Indicator 34 – Local Procurement of Goods & Services

Indicator Statement	Target (Variance)	Results
Maintain a high percentage of procured goods and services that are from local sources	>= 70% of Woodlands dollars spent in local communities; 5-year rolling average (-10%)	Achieved

Based on the 5-year average information available for Radium (Figure 2), the 5-year average percent spend for local goods and services is 90% and the target has been met. Canfor continues to purchase fibre from Alberta which is also showing an increase in spend for fibre acquisition outside the Kootenay

Region and reducing the total local spend. Regardless, Canfor continues to spend an extremely high percent of its woodlands budget in the local Kootenay economy which was over $135 million dollars into the local economy from woodland operations in 2018.
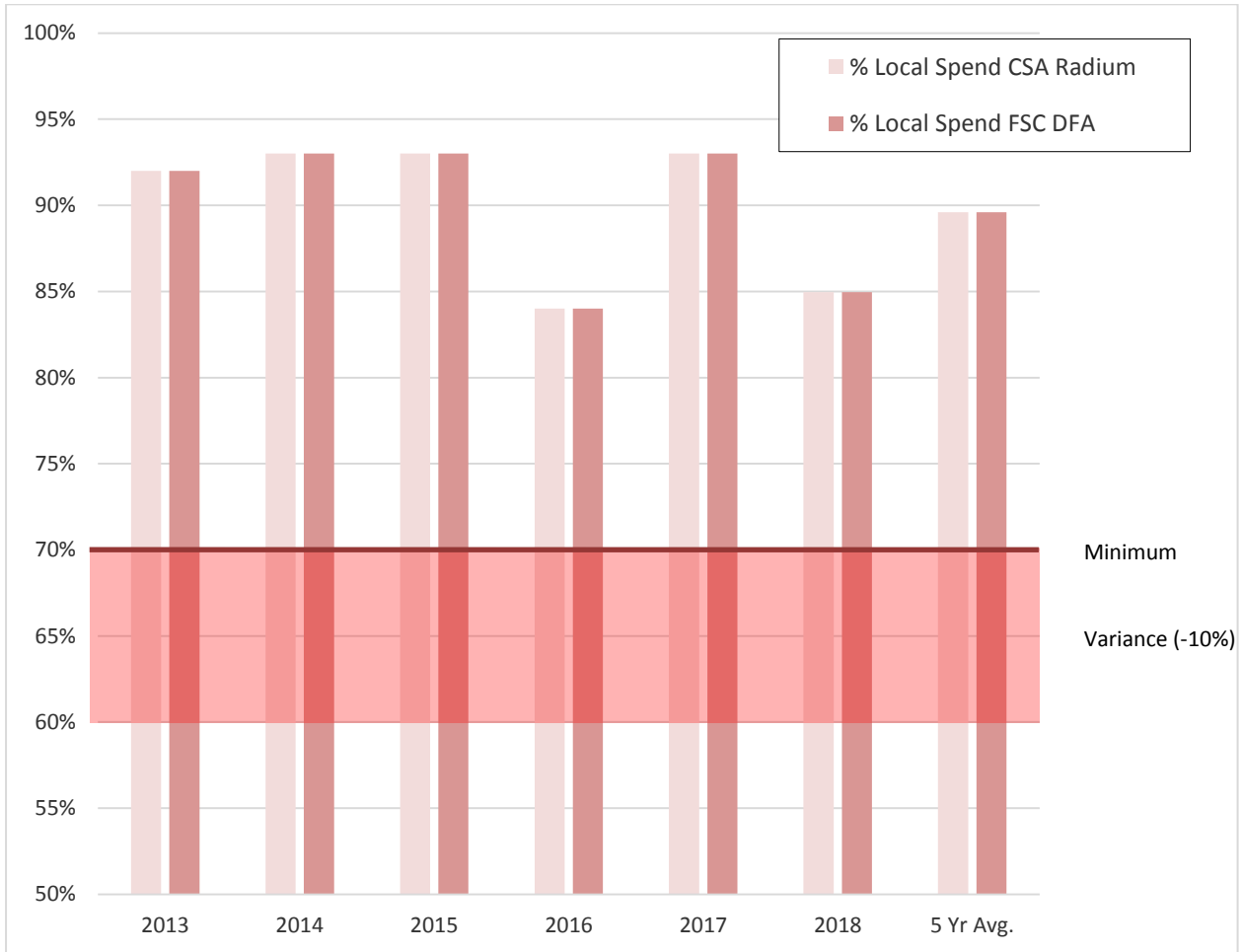
Figure 2. Percentage of CAD Spent Locally in FSC and CSA DFA's 2013-2018

Indicator 35 – Corporate Sponsorships, Donations and Scholarships

Indicator Statement	Target (Variance)	Results
Number of Corporate donations, scholarships or other sponsorships to local community groups, individuals or events	>= 5 donations and/or sponsorships to regional communities, events or individuals per year (- 1)	Achieved

Based on the 2018 reporting year, a total of 34 donations or sponsorships were given within Kootenay communities of over a value of $108,000, which exceeds the 2017 amount. This target was achieved in 2017.

Within the Radium DFA, seven donations were made to local First Nations, the Akisqnuk recreation Center, local volunteer fire departments, Wild Voices speaker series and the Hospice Society. Canfor staff also supported the local United Way.

Within the remaining region, donations were made to various First Nations communities and their events. Donations include 15 loads of firewood to local First Nations communities, donation of lumber, cash

donations to other First Nations communities for National Aboriginal Day celebrations, Annual Elders Gathering, outdoor education programs and PowWows.

Indicator 36 – Environmental & Safety Training

Indicator Statement	Target (Variance)	Results
Training in environmental and safety procedures in compliance with company training plans	100% of Canfor Kootenay WOODLANDS employees will have required environmental and safety training (-5%)	Achieved

In 2018, there were 36 woodlands employees. Training records indicate that by May 31st 2019, 96% of staff had completed their training.

Indicator 37 – Direct & Indirect Employment

Indicator Statement	Target (Variance)	Results
Level of direct and indirect employment	AAC * employment multiplier – 5-year average (+/-10%)	Achieved in Both DFAs

Based on the last 5 years harvest levels within the Radium license, the calculated 5-year average employment Person Years (PYs) is 220 persons which is + 160.0% of the target (Table 29: Radium Employment 2014-20188). The target is exceeded and trending to lower levels as the annual cut is projected to decline in the Invermere Timber Supply Area following the Chief Forester's 2017 AAC Determination.

Table 29: Radium Employment 2014-2018

FL A18979 Volume harvested						
Year		2014	2015	2016	2017	2018
AAC m^3	221,005	221,005	221,005	221,005	221,005	184,443
Cumulative AAC m^3	221,005	221005	442,010	663,015	884,020	1,105,025
Annual harvest m^3	221,005	473,677	352,205	257,573	259,219	208,411
% of AAC	100.00%	214.33%	159.37%	116.55%	117.29%	112.99%
Cumulative	221,005	221,005	573,210	830,783	1,090,002	1,298,413
% of cumulative AAC	100.00%	100.00%	129.68%	125.30%	123.30%	117.50%
Average per year over five years						295,348
Direct + indirect employment per 1000 m^3						0.745
Person Year Target						137
Person Year Calculated						220

Based on the last 5 years harvest levels within the remaining Kootenay DFA, the calculated 5-year average employment PY's is 803 which is 97.3 % of the target slightly up from last year's figures (Table 30: Kootenay FSC DFA Employment 2014-20188). The person year target slightly decreased following the reduction of AAC in the Invermere TSA following the TSR determination in 2017.

Table 30: Kootenay FSC DFA Employment 2014-2018

All remaining licenses administered by Canfor FSC DFA - Volume harvested						
Year		2014	2015	2016	2017	2018
AAC m^3	1,021,686	1,025,925	1,025,925	1,020,051	1,020,051	932,939
Cumulative AAC m^3	1,021,686	1,021,686	2,047,611	3,073,536	4,093,587	5,113,638
Annual harvest m^3	1,171,524	921,122	958,257	886,813	854,725	1,042,577
% of AAC	114.67%	89.78%	93.40%	86.94%	83.79%	111.75%
Cumulative	1,171,524	921,122	1,879,379	2,766,192	3,620,917	4,663,494
% of cumulative AAC	114.67%	90.16%	91.78%	90.00%	88.45%	91.20%
Average per year over five years						972,503
Cranbrook TSA and Kootenay Lake TSA Direct + indirect employment per 1000 m^3						0.95
Invermere TSA and TFL 14 Direct + indirect employment per 1000 m^3						0.745
TFL and A18978 total 5 year harvest						1889952
Cranbrook and KL TSA total 5 year licenses harvest						2744073
Person Year Target						825
Person Year Calculated Invermere TSA and TFL						282
Person Year Calculated Cranbrook and KL TSA						521
Total Person Years Calculated						803

Criterion 6 – Society's Responsibility

Element 6.1 – Fair and Effective Decision-making

Indicator 38 – PAG Satisfaction

Indicator Statement	Target (Variance)	Results
PAG established and maintained according to Terms of Reference (satisfaction survey implemented)	80% satisfaction from surveys (-10%)	Achieved

During 2018, there was one meeting held for the Radium PAG (Public Advisory Group) in October. There had been a meeting held in December of 2017 just before the end of the year.

Overall the Satisfaction Survey (15 questions) resulted in a score of 4.3 (86%), above the target of 4.0. With the move from CSA to SFI certification, Canfor intends to keep the Radium PAG functioning if the participants are willing, however, there will be a need to re-define the PAG and its role. Those discussions have begun at the first PAG meeting in 2019. Canfor continues to recruit new PAG members from organizations that are not currently on the PAG.

Indicator 39 – Educational Opportunities – Information/Training

Indicator Statement	Target (Variance)	Achieved
Number of educational opportunities for information/training that are delivered to the PAG	≥ 1/meeting (0)	Achieved

In 2018, there was one PAG meeting. The one PAG meeting was a field trip to learn about steep slope logging and riparian management in a community watershed. Canfor staff also explained Whitebark pine (Pa) retention as it is an ecologically significant species. Although the PAG is specific to CSA Certification (FLA18979) Canfor provides information/training topics covering the entire DFA.

Indicator 39 – Educational Opportunity

Indicator Statement	Target (Variance)	Results
Number of people who took part in an educational opportunity	25 (-10) annually	Achieved. There were over 70 people in attendance at various presentations, field tours and workshops.

In 2018, Canfor staff led numerous educational opportunities including presentations, workshops, field tours, and one-on-one meetings. Examples include: a presentation on forestry hydrology to the Elk River Flood Committee, a presentation to the Windermere Rod and Gun Club on wildfire salvage operations, two staff presented at the Wings over the Rockies tour on forest practices, a presentation on Canfor operations during the Ktunaxa Business Match-Up event, Presentation on FREP results to stewardship foresters from around the Province, an open house presentation on wildfire salvage operations to residents in Invermere at the Lions Hall and a tour of the Wynndel mill for members of the JMAC.

Indicator 40 – SFM Monitoring Report

Indicator Statement	Target (Variance)	Results
SFM monitoring report made available	One SFM Annual Report available to public	Achieved

to the public	annually via web (N/A)	

The 2018 SFMP Annual Report (current) for the entire DFA, addressing both CSA and FSC indicators is provided to the PAG and made publicly available. All current and historic SFMP Annual Reports are located on Canfor's Website – Canfor Plans - select Kootenay Operations.

Indicator 41 – Third Party Verification

Indicator Statement	Target (Variance)	Results
Independent, third party review of the degree of Canfor achievement of meaningful participation	Compliance with external audit	Achieved

This indicator is currently being met, as verified by the valid FSC, SFI and CSA certificates for the applicable DFAs during 2018. It should be noted that PAG members are often involved in audits through being interviewed by FSC and/or CSA Auditors. In addition, interim and final audit results are presented at subsequent PAG meetings.

Indicator 44 – Indigenous Peoples Understanding of Plans

Indicator Statement	Target (Variance)	Results
Evidence of best efforts to obtain acceptance of applicable management plans based on Indigenous Peoples communities having a clear understanding of the plans	≥ 3 forms of communication for all applicable management plans (0)	Achieved

See page 50 for information on this indicator.

Element 6.2 – Safety

Indicator 42 – Certified Safety Program

Indicator Statement	Target (Variance)	Results
Implementation and maintenance of a certified safety program	100% (0)	Achieved

Canfor maintains a certified safety Program – Occupational Health & Safety Program. The program covers topics ranging from relevant legislation to hazard identification, risk assessment and control measures.

Canfor's staff and contractor safety record is above the industry average and the total numbers of hazard and near miss reports are up compared to previous years ("YTD" and "Previous YTD",) however the ratio is lower than 2017. The Hazard to Near Miss ratio in 2018 was 42.2 compared to 2017's ratio of 56.3.

Figure 3: Kootenay Safety Numbers – 2018
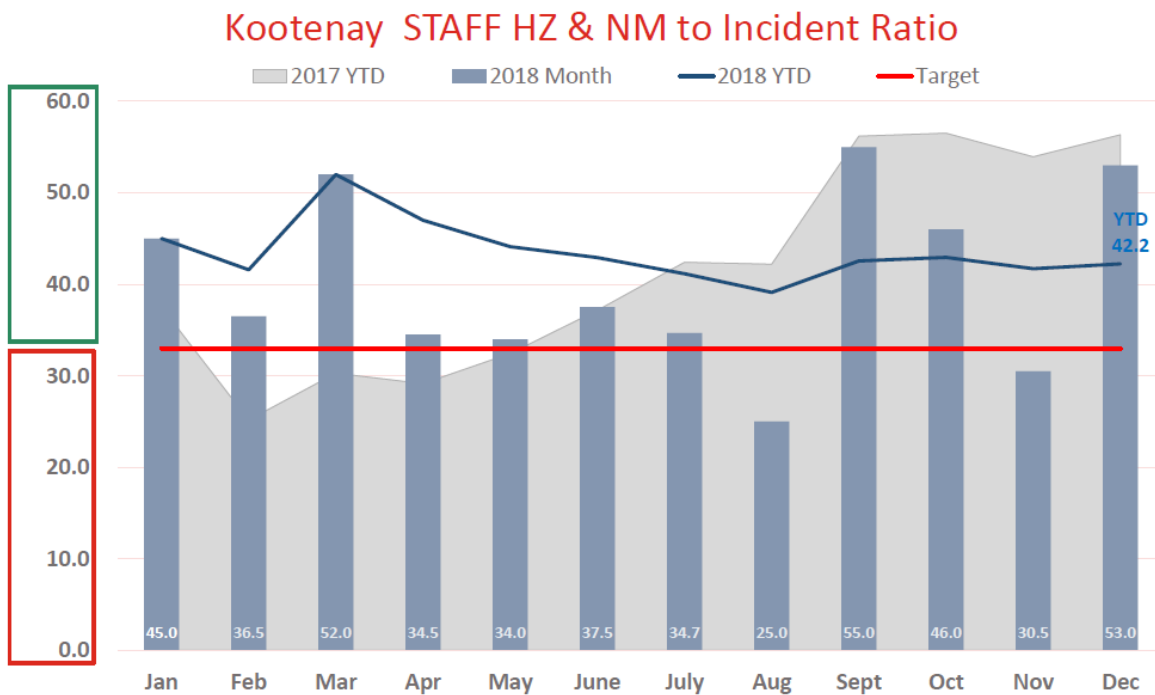
Kootenay	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	YTD	Pr YTD
Hazard	88	47	41	49	46	51	69	28	33	63	41	36	592	517
Near Miss	47	26	11	20	22	24	35	22	22	29	20	17	295	26
INCIDENTS														
Prp Damage	3	2	0	1	1	2	2	1	0	1	1	1	15	4
First Aid	0	0	0	1	0	0	0	1	0	1	0	0	3	1
Medical Aid	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Medical Treatment	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Lost Time	0	0	0	0	1	0	0	0	0	0	0	0	1	0

1/8/2019

Criterion 7 – Indigenous Relations

Element 7.1 – Indigenous Peoples and Treaty Rights

Indicator 43 – Indigenous Peoples Awareness Training

Indicator Statement	Target (Variance)	Results
Employees receive Indigenous Peoples awareness training	100% of staff who are required to have Indigenous Peoples awareness training as per the staff training matrix. (-10%)	Achieved

In 2018, 100% of required staff completed Indigenous Peoples Awareness Training. The only change was one new staff in the planning group.

Indicator 44 – Indigenous Peoples Understanding of Plans

Indicator Statement	Target (Variance)	Results
Evidence of best efforts to obtain acceptance of applicable management plans based on Indigenous Peoples communities having a clear understanding of the plans	≥ 3 forms of communication for all applicable management plans (0)	Achieved

Table 6 provides a summary of communications and information shared with Indigenous Peoples communities in 2018.

Table 6: Information sharing and communication types for Indigenous Peoples Communities in 2018

Nation or Band	# Plans Shared Annually with Indigenous Peoples	Forms of Communication	Qualitative Information provided in 2018
Ktunaxa Nation (and Bands)	11	Face-to-face meetings, phone calls, field trips, letters and information sharing digital submissions.	Canfor met with the Ktunaxa to review proposed developments, fire salvage and monitoring on the CCVF project continued with field work in 2018. Field trips and heli-flight overview were also completed on the fire salvage areas in Meechen Cr., the Cross River fire and Akenside wildfire. Additionally, a field tour was conducted to an area which fell partially within a CCVF. The field trip identified that the CCVF values were not present in the harvest area. A field trip was completed with the Chief of the Akisqnuk First Nation to review historical trails. Canfor conducted 7 information sharing submissions to the Kootenay Lands and Resource Agency (KLRA) on proposed developments. The consultation sub-committee continued to meet to discuss the information sharing submissions, plans, emerging issues and begin a review/update of the consultation

Nation or Band	# Plans Shared Annually with Indigenous Peoples	Forms of Communication	Qualitative Information provided in 2018
			matrix.
Shuswap Indian Band	10	Face-to-face meetings, phone calls, letters and information sharing hard copy submissions.	Several meetings and field trips were held with the Shuswap Band's Territorial Lands staff. Canfor met their referrals staff to discuss the 7 information sharing submissions and conduct an overview flight of proposed fire salvage areas. A field trip also took place to review a proposed gravel pit Special Use Permit which was in proximity to a potential Arch site. No values were found. Shuswap and Canfor staff met to review previously information shared proposed areas in an in-depth fashion. Communication and reviews continued with Territorial Lands staff throughout the year however recent staffing changes in the Shuswap office has been challenging for both parties.
Adams Lake Indian Band	6	Phone calls, emails, letters and information sharing digital submissions.	Canfor sent 6 information sharing submissions to the Adams Lake Indian Band (ALIB). Historically there has been not much communication from the ALIB as they tend to rely on Kootenay region First Nations to provide comments. During one submission, the ALIB noted the potential of a historical trail within TFL14. There were no responses from ALIB after follow up phone calls and communications. Canfor continues to reach out to the ALIB on proposed developments.
Neskonlith Indian Band	6	Phone calls, emails, letters and information sharing digital submissions.	Canfor sent 6 information sharing submissions to the Band. No responses were received from the Neskonlith. Canfor continues to reach out to the Neskonlith on proposed developments.

Element 7.2 – Respect for Indigenous Peoples Forest Values, Knowledge and Uses

Indicator 45 – Level of Indigenous Peoples Participation in the Forest Economy

Indicator Statement	Target (Variance)	Results
Evidence of Indigenous Peoples participation in the forest economy and efforts to increase the level of participation	Maintain 2013 levels of Indigenous Peoples participation in the forest economy at a minimum and continual improvement towards strategies to increase those levels of participation based on a 3-year average (-10%)	Achieved

The total amount of business between Canfor and Indigenous Peoples vendors and contractors in 2018 exceeded 2013 levels by $3,251,654 (Figure 4). The trend towards greater aboriginal participation in the forest economy increased relative to 2017, in part due to the addition of one vendor (Neil Throndson) not previously recognized as an Indigenous peoples business. A total of 19 Indigenous Peoples contractors and vendors provided goods and services to Canfor in 2018 versus 12 in 2013. Several initiatives have been undertaken by the Joint Management and Advisory Committee to increase Aboriginal participation.
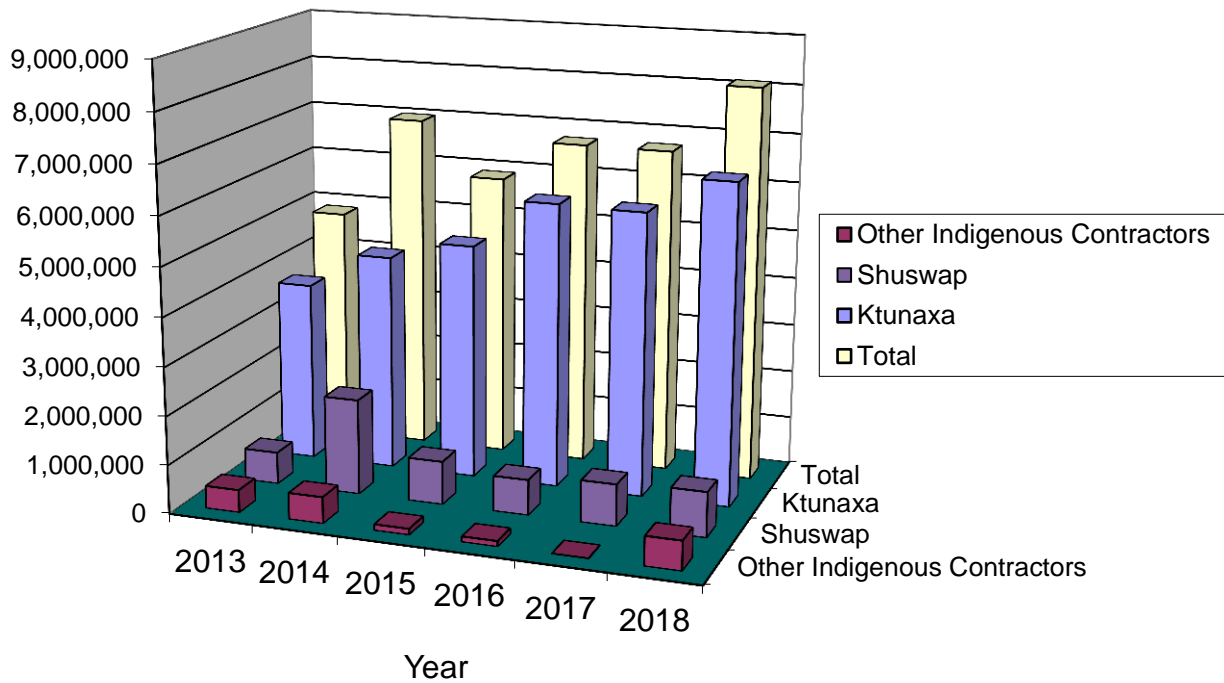
Figure 4. Summary of Indigenous Peoples Woodlands contracts in CAD, 2013-2018

Indicator 46 – Evidence of Understanding and Use of Indigenous Peoples Knowledge

Indicator Statement	Target (Variance)	Results
Management strategies, developed through a collaborative process, including traditional knowledge and use, to protect identified Indigenous Peoples and other cultural forest values or sites of spiritual importance	Minimum of 1 process in place with willing Indigenous Peoples communities to identify and manage culturally important resources and values.	Achieved

Canfor and the Ktunaxa Nation Lands and Resources Agency (KLRA) staff continue to follow their agreed upon referral process although this process has started to be reviewed for updating. Several field trips were held with Ktunaxa lands staff in 2018 to develop management strategies for fire salvage operations in the White and Meachen wildfire areas. During a field trip in the Meachen fire, members of the Ktunaxa Nation identified fisheries values that were previously unknown.

A joint monitoring project to review Cultural Conservation Value Forests (CCVFs) between Canfor and Ktunaxa KLRA staff continued with field visits of harvested areas which had overlapping CCVFs. The monitoring project is intended to determine if management strategies are being implemented and if they are achieving the desired outcomes. The project started with CCVFs identified in the Creston area of the Yakan Nuqiy's traditional territory. The next phase of the project involves review of CCVFs in other parts of Canfor operating area and review of the management strategies.

Canfor staff additionally met with Shuswap Territorial Lands Office staff to review blocks that had been previously information shared more than 3 years previously. The review included a spatial review of all the identified potential harvest blocks.

Indicator 47 – Level of Management and/or Protection for Indigenous Peoples Culturally Important Sites, Practices and Activities

Indicator Statement	Target (Variance)	Results
Forest management activities conform with operational plans which include management strategies to manage and protect Indigenous Peoples culturally important sites, practices and activities	100% compliance with operational plans (0)	Not Met

No instances of non-conformance with operational plans that include management strategies to manage and protect Indigenous Peoples important sites were reported in the Incident Tracking system (ITS). In 2017, 61 archaeological assessments were completed on proposed harvesting blocks within Kootenay Region. Following the wildfires of 2018, extensive referrals work was completed with local First Nations groups. These efforts included face-to-face meetings on cultural, archaeological and environmental values. Additionally field trips were held with Ktunaxa Nation staff.

In 2018, a joint monitoring program of Cultural Conservation Value Forests (CCVF's) was undertaken with the Ktunaxa Nation. The study looked at cutblocks harvested between 2014-2017 which overlapped with CCVFs. One block, KID0032, was identified where CCVF management strategies pertaining to veteran trees were not applied. Results from the monitoring project have been communicated to applicable staff and Canfor is actively working with KNC to improve CCVF management.

Appendices

Appendix I. Common Ecosystem Type Representation within HCVFs

Table A-I 1. Common Ecosystem type overlap with Ecosystem Restoration HCVFs

HCVF Number	HCVF Name	Group	Area in HCVF (ha)
2114	Skookumchuk Priarie	1	703.1
2115	Reed Lakes	1	500.7
2125a	Lower Findlay A	1	22.6
2125b	Lower Findlay B	1	134.2
2126	E. Columbia Lake	1	420.3
2128	Findley Mouth	1	0.0
3127	Fussee Lake	1	679.6
3128	Englishman Creek	1	1711.4
3152	Saugum Lake	1	2272.9
		Total Group 1	**6444.9**
	Area required to be harvested under Ecosystem Restoration (ha)		**4098.0**
		Total Surplus (ha)	**2349.9**
2115	Reed Lakes	3	1699.4
2125a	Lower Findlay A	3	1673.2
2125b	Lower Findlay B	3	676.0
2125c	Lower Findlay C	3	331.5
2126	E. Columbia Lake	3	908.5
2128	Findley Mouth	3	45.2
3127	Fussee Lake	3	350.9
3128	Englishman Creek	3	6826.1
3139	Kiakho Lake	3	211.5
3152	Saugum Lake	3	2744.7
		Total Group 3	**15466.8**
	Area required to be harvested under Ecosystem Restoration (ha)		**3021.0**
		Total Surplus (ha)	**12445.8**

Appendix II. IDFdm2 and PPdh BEC Variant Representation within HCVFs

Table A-II 1. IDFdm2 and PPdh BEC Variant Representation within HCVFs

License	BEC	HCVF#	HCVF	Area (ha)
A18978	IDFdm2	Lower Findlay a,b,c	2125a,b,c	5746.2
A18978	IDFdm2	Findlay Mouth	2128	106.5
A18978	IDFdm2	East Columbia Lake	2126	1075.5
A18978	IDFdm2	Dutch Creek	2124	25
A18978	IDFdm2	Lower Lussier a	2113a	696.5
A18978	IDFdm2	Lower Lussier	2112	200
A18978	IDFdm2	Mud Creek a	2127a	57
A18978	IDFdm2	Mud Creek b	2127b	26.5
A18978	IDFdm2	Reed Lakes	2115	2124
			Total Area IDFdm2	**10057.2**
		Area required to be harvested under Ecosystem Restoration (ha)		**2242.3**
			Total Surplus (ha)	**7814.9**
A18978	PPdh	Lower Lussier b	2113b	128.4
A18978	PPdh	Reed Lakes	2115	770.9
A18978	PPdh	Skook Prairie	2114	1370.7
			Total Area PPdh2	**2270.0**
		Area required to be harvested under Ecosystem Restoration (ha)		**835.4**
			Total Surplus (ha)	**1434.6**
A18979	IDFdm2	Aberdeen	2545	1500
			Total Area IDFdm2/PPdh	**1500**
		Area required to be harvested under Ecosystem Restoration (ha)		**46**
			Total Surplus (ha)	**1454**
A19040	IDFdm2	Saugum Lake	3152	3698
A19040	IDFdm2	Lower St. Mary's b	3150b	475.6
A19040	IDFdm2	Kimberley Nature Park	3151	1190
A19040	IDFdm2	Lower St. Mary's c	3150c	69.7
A19040	IDFdm2	Lower St. Mary's d	3150d	182.7
A19040	IDFdm2	Kiakho Lake	3139	173.4
A19040	IDFdm2	Englishman Creek	3128	7778.3
A19040	IDFdm2	Fussee Lake	3127	657.2
A19040	IDFdm2	Lower Elk Fish a	3125	1084.7
A19040	IDFdm2	Mt. Broadwood	3126	2706.5
A19040	IDFdm2	Morissey GB Linkage	3113	104.3
			Total Area IDFdm2	**18120.4**
		Area required to be harvested under Ecosystem Restoration (ha)		**4293.0**
			Total Surplus (ha)	**13827.4**

License	BEC	HCVF#	HCVF	Area (ha)
A19040	PPdh	Saugum Lake	3152	2520
A19040	PPdh	Lower St. Mary's c	3150c	19
A19040	PPdh	Englishman Creek	3128	2949.3
A19040	PPdh	Fussee Lake	3127	1031
A19040	PPdh	Lower Elk Fish a	3125	6.6
			Total Area PPdh	**6525.9**
		Area required to be harvested under Ecosystem Restoration (ha)		**1667.0**
			Total Surplus (ha)	**4858.9**