Fort St John Pilot Project - SFMP# 3 Amendment #1

Scope of Amendment:

This amendment to SFMP# 3 adds new non-legal Indicator #70 – Residual Fibre Utilization, new legal indicators #52A – AAC Partition – Conifer Harvest Performance, #51A – AAC Partition – Deciduous Harvest Performance and revises existing legal indicators #52 – Timber Profile Conifer, #51 – Timber Profile Deciduous, #2 –Seral Stages, #49 – Forest Health FOS Planning, #42 – Damage to Range Improvements, #10 – Noxious Weed and Invasive Plant Content, and non legal indicators #48 - Summer and Fall Volume Deliveries, # 41 - Range Action Plans and # 56 – Maintenance of Wildlife and Fisheries Habitat Values.

This revision to SFMP# 3 is made to effect continuous improvement and conformance with the conditions stated in the SFMP# 3 approval dated May 4, 2018.

As per sections 35(4), 38 & 39 of the *Fort St. John Pilot Project Regulation (FSJPPR)*, the requirement for public review and government approval of SFMP regulatory performance indicators applies only to those indicators identified for the evaluation of the Participants' performance in implementing the landscape level strategies specified within the plan. Legal indicators requiring government approval are denoted by red font. The non – legal indicators are identified by black font.

Although the non-legal indicators do not require government approval or formally advertised public review, they have been included in this amendment package for transparency and were thoroughly reviewed with the Fort St. John Pilot Project public advisory group (PAG).

Monitoring of management performance under the revised indicators will begin after April 1, 2020.

This amendment is made on behalf of the Fort St. John Pilot Project Participants: Canadian Forest Products Ltd., Louisiana-Pacific Canada Ltd., Mackenzie Pulpmill Corp., Cameron River Logistics Ltd., Dunne-za LP, Peace Valley OSB and BC Timber Sales, by:

_____ Date:____April 15, 2020_____

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Revised Indicator #2 – Seral Stages

Details of Amendment:

The target statement for existing indicator #2 – Seral Stages, is revised. The revision **addresses SFMP#3 approval condition 3b.** Revisions to Indicator #2 will become effective April 1, 2020 for the purposes of monitoring management performance to the indicator target. Revised indicator #2 will continue as a legal indicator for evaluating performance to the SFMP Patch/Seral/Adjacency strategy and therefore requires approval from MFLNRORD. This will be considered an interim indicator, which will be replaced in the future, pending the eventual replacement of the Old Forest Management Areas (OFMAs) identified in the Forest Operations Schedule (FOS) with legally established Old Growth Management Areas (OGMAs).Green highlight denotes the proposed revision.

#2 SERAL STAGES

Indicator Statement	Target Statement
The minimum proportion (%) of late seral stage forest retention by NDU.	A) All Periods: The minimum proportion (%) of late seral stage forest retention by NDU as identified in Table 11[1] will be met. B) By the close of Period 1 (April 1, 2019 – March 31, 2020): a minimum of 30% of the ~~old~~ *late seral stage* forest retention target will be achieved by contribution from spatially identified OFMAs, in all NDUs. By the close of Period 2 (April 1, 2020 – March 31, 2021): a minimum of 60% of the ~~old~~ *late seral stage* forest retention target will be achieved by contribution from spatially identified OFMAs, in all NDUs. By the close of Period 3 (April 1, 2021 – March 31, 2022): A minimum of 100% of the ~~old~~ *late seral stage* forest retention target will be achieved by contribution from spatially identified OFMAs, in all NDUs.
SFM Objective: Maintain the diversity and pattern of communities and ecosystems within a natural range Ecosystem functions capable of supporting naturally occurring species that exist within the range of natural variability Maintain a natural range of variability in ecosystem function, composition and structure which allows ecosystems to recover from disturbance and stress	
Linkage to *FSJPPR*: For the purposes of Section 42 of the *FSJPPR* this indicator statement, target and acceptable variance will be one of the indicators used to determine if forest practices are consistent with the Patch Size, Seral Stage and Adjacency and Forest Health Management Landscape Level Strategies.	

Acceptable Variance:

[1] Refers to Table 11 in the *Fort St. John Pilot Project Sustainable Forest Management Plan #2*

A 1% variance below the target is permissible provided projections indicate the target can be met within 20 years. (e.g. Boreal Foothills minimum allowable would be 22%)

What is this indicator and why is it important:

In the 1990's retention of old forests within all forested landscapes was recognized as important for maintaining biodiversity. The basic principle being that all landscapes (ecosystems) have some level of old forests and the more a managed forest resembles the forests that were established as a result of natural processes the more likely that all native species and ecological processes will be maintained.

The Craig DeLong paper entitled *"Land Units and Benchmarks for Developing Natural-disturbance Based Forest Management Guidance for Northeastern British Columbia, Technical Report 059; 2011"* is a synthesis of the most current scientific information and regional professional judgement available. The Natural Disturbance Unit (NDU) guidance uses the updated local research and separates areas based on differences in disturbance processes, stand development, and temporal and spatial landscape patterns. Unlike the Biodiversity Guidebook, this document presents goals based on the "natural range of variability" and does not present any numbers that represent a compromise between biodiversity and timber management. The guidance in this document would result in the least possible differences between harvesting and natural disturbance.

There are four NDUs within the Fort St. John TSA; Boreal Plains Uplands in the east, Northern Boreal Mountains in the northwest, the Omineca in the central and eastern mountains and the Boreal Foothills south of the Halfway River.

In the Boreal Plains Uplands NDU, upland climax forests are dominated by hybrid white spruce and/or black spruce depending on topographic position and the time since the last stand replacement event. Trembling aspen and to a lesser extent lodgepole pine and paper birch dominate younger stands. Wetlands are very common; there are 7 forested and 9 non-forested wetland types recognized in this NDU. (Delong 2002)

In the Northern Boreal Mountains NDU, upland climax forests have sparse crown closure and are dominated by hybrid white spruce and/or subalpine fir. Subalpine fir dominance increases with elevation. Lodgepole pine and to a lesser extent trembling aspen dominate younger stands. Black spruce occurs along with white spruce or lodgepole pine on upland sites especially on north aspects. Wetlands are common along the broader valleys and in flatter terrain in the mountains. (Delong 2002).

Forests occurring in different seral and structural stages over space and time are recognized as an important part of the landscape, providing distinct habitat elements for a variety of species. The publication *Land Units and Benchmarks for Developing Natural-disturbance Based Forest Management Guidance for Northeastern British Columbia, Technical Report 059; 2011,* has estimated the natural range of variation for different Natural Disturbance Units within the DFA.

Late seral "old" forest is defined as stands greater than 140 years old for coniferous leading stands and as greater than 100 years old for deciduous leading stands. Late seral "near old" forest is defined as stands between 120 to 140 years old for coniferous and between 80-100 years old for deciduous leading stands. Deciduous stands are typically made up of short lived early seral species, and if left undisturbed for long periods of time (>150 years) will eventually convert to coniferous stands, or die and cycle back to a similar species composition. Therefore it would be inappropriate to manage for the same distribution of ages for deciduous as for conifer species. Late seral deciduous stands are structurally distinct from young and mature stands. These stands provide lower tree

densities and hence produce larger diameter trees and higher level of coarse woody debris and, it is therefore important to maintain some occurrence of these stands on the landscape over time.

As deciduous stands make up approximately 28% of the Boreal Plains land base, targets are applied to both deciduous and coniferous in the Boreal Plains NDU. In the Boreal Foothills, Omineca and Northern Boreal Mountains NDU's however, deciduous stands comprise an insignificant amount of the remainder of the TSA (approximately 3%, 1.5% of which is THLB) and therefore only conifer late seral stage targets are applied to the forested land base in these NDU's.

There have been no separate targets set for mixedwood stands in the DFA. Approximately one third (33%) of the productive forested land base of mixedwood stands is within the non-harvesting land base (NHLB) which is not actively managed by the Participants. This provides some assurance that there will be a significant amount of unmanaged mixedwood stands to meet seral stage targets. The remainder of the mixedwood stands will be managed to the targets for the deciduous and conifer leading stands, based on leading species, for the appropriate NDU.

The late seral stage forest retention targets identified in Table 11 are planned to be achieved through an evolving combination of spatially identified Old Forest Management Areas (OFMAs), land designations in the Crown Forest Landbase (CFLB) that prohibit timber harvesting such as Wildlife Habitat Areas (WHAs), Ungulate Winter Ranges (UWRs) and Parks and protected areas, and non-spatially identified old forest. Over time, the contribution from non-spatially identified old forest will be reduced as the target for spatially identified OFMAs is achieved. The target for spatially identified OFMAs will be derived by subtracting the late seral stage contribution made by the land designations in the CFLB that prohibit timber harvesting and which are not legally designated as OGMAs, from the late seral stage forest retention targets specified by NDU in Table 11 of the SFMP.

Table 11: Natural Disturbance Unit Late Seral Stage Targets

Natural Disturbance Unit	Minimum Age of Late Seral (yrs)	Targets for Late Seral Forest Retention (%)
Boreal Plains Uplands (BPU)	Conifer- 140 Decid.- 100	16 16
Boreal Foothills Valley (BV)	All- 140	23
Boreal Foothills Mountain (BM)	All- 140	33

Northern Boreal Mountains (NBM)	**All- 140**	**37**
Omineca Mountains (OM)	**All- 140**	**41**
Omineca Valley (OV)	**All- 140**	**16**

Current Status

The following Tables 12, 13 and 14 show the 2017 status of seral stage distribution for the NDU's in the DFA, and a projection to 2025 of seral stage distribution that accounts for stand maturation, and any known planned harvesting remaining from FOS# 3. Since 2010, the majority of timber harvesting conducted in the DFA has been concentrated in the Boreal Plains NDU.

The current existing late seral stage areas exceed the targets in each NDU.

Table 12: Boreal Plains Conifer Current and 2025 Seral Stage and Target

LU_NAME	< 40 years				41 - 100 years				101 - 140 years				> 140 years						Total LU Area
	2017		2025		2017		2025		2017		2025		2017			2025			
	area (ha)	%	area (ha)	%	area (ha)	%	area (ha)	%	area (ha)	%	area (ha)	%	area (ha)	%	Surplus (ha)	area (ha)	%	Surplus (ha)	
Blueberry	59410	17%	61911	18%	148573	43%	141809	41%	92814	27%	84738	24%	45741	13%		58080	17%		346538
Crying Girl	0	0%	0	0%	0	0%	0	0%	3	32%	0	0%	7	68%		10	100%		10
Halfway	11944	8%	16182	11%	29040	20%	23512	16%	49798	34%	41485	28%	55489	38%		65093	45%		146271
Kahntah	6831	1%	6767	1%	395913	67%	337770	58%	144102	25%	182690	31%	40406	7%		60026	10%		587252
Kobes	14037	17%	15077	18%	10722	13%	10762	13%	37992	46%	31967	39%	19035	23%		23982	29%		81787
Lower Beatton	19202	42%	19398	42%	16023	35%	13656	30%	9049	20%	10621	23%	1953	4%		2554	6%		46227
Milligan	29617	8%	28901	8%	244595	65%	241125	64%	45332	12%	37986	10%	59481	16%		71012	19%		379025
Tommy Lakes	22563	4%	37445	7%	215421	39%	183368	33%	217759	39%	218253	39%	103357	18%		120034	21%		559100
Trutch	2258	1%	6018	2%	126169	36%	107972	31%	131570	38%	131558	38%	87138	25%		101586	29%		347134
Grand Total	165862	7%	191698	8%	1186456	48%	1059972	43%	728419	29%	739297	30%	412607	17%	25187	502376	20%	100747	2493343
											Oil and gas area included:			16%			20%		2518676
														Target = 16%					

2017 - uses FOS blocks with harvest start date <Mar 31, 2017

2025 - uses FOS blocks with harvest start date >Mar 31, 2017

Table 2 identifies the current and expected 2025 conifer seral condition upon the completion of all harvest activities proposed by FOS #3 for the Boreal Plains Natural Disturbance Unit (NDU). Upon completion of all conifer harvest activities proposed in FOS #3 the conifer seral targets are achieved for the Boreal Plains NDU and the analysis indicates a surplus of 100,747 ha of old forest (amount of old forest above the target).

The old seral analysis also considered the cumulative effect of timber harvesting and oil and gas disturbance on the landbase. The existing calculated area occupied by wellsites and pipelines is 25,333ha, by adding this area (25,333ha) to the CFLB and harvested area, the Boreal Plains Conifer late seral current condition is 16% and future is 20%.

Table 12: Boreal Plains Deciduous Current and 2025 Seral Stage and Target

	< 40 years				41 - 100 years				> 100 years						Total LU area
	2017		2025		2017		2025		2017			2025			
LU_NAME	area (ha)	%	area (ha)	%	area (ha)	%	area (ha)	%	area (ha)	%	surplus (ha)	area (ha)	%	surplus (ha)	
Blueberry	17320	9%	26845	14%	101907	55%	93261	50%	67578	36%		66699	36%		186805
Crying Girl	0	0%	0	0%	5	100%	3	62%	0	0%		2	38%		5
Halfway	1599	6%	3692	14%	10475	41%	8415	33%	13531	53%		13497	53%		25604
Kahntah	2737	2%	3084	2%	98870	79%	86639	69%	24111	19%		35996	29%		125718
Kobes	3013	8%	7700	19%	10911	27%	7696	19%	26222	65%		24750	62%		40146
Lower Beatton	10618	13%	9990	12%	59051	70%	54504	64%	15189	18%		20364	24%		84858
Milligan	6059	12%	5534	11%	42256	81%	42553	81%	4130	8%		4358	8%		52445
Tommy Lakes	4859	4%	17272	14%	58998	49%	49532	41%	56354	47%		53407	44%		120211
Trutch	612	1%	2186	3%	39857	53%	34940	47%	34045	46%		37388	50%		74514
Grand Total	46817	7%	76303	11%	422329	59%	377543	53%	241160	34%	129287	256460	36%	143652	710306
							Oil and gas area included			34%			36%		718260
										Target = 16%					

2017 - uses FOS blocks with harvest start date <Mar 31, 2017

2025 - uses FOS blocks with harvest start date >Mar 31, 2017

Table 3 identifies the current and expected 2025 deciduous seral condition upon the completion of all harvest activities proposed by FOS #3 for the Boreal Plains NDU. Upon completion of all deciduous harvest activities proposed in FOS #3 the deciduous seral targets are achieved for the Boreal Plains NDU and the analysis indicates a surplus of 143,652 ha of old forest (amount of old forest above the target).

The old seral analysis also considered the cumulative effect of timber harvesting and oil & gas disturbance on the landbase. By including existing oil and gas area in the calculation (7,954ha) the Boreal Plains Deciduous late seral current condition is 34% and future is 36%.

Table 13: Boreal Foothills Valley and Mtn, Northern Boreal Mountains, Omineca Mtns and Valley: Current and 2025 Seral Stage and Targets

NDU Sub-Unit	Landscape Unit	< 40 years				40 - 100 years				101 - 140 years				> 140 years					Target
		2017		2025															
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Grand Total	
Boreal Foothills - Mountain	Crying Girl	931	2%	792	2%	4020	10%	3087	7%	19132	46%	16118	38%	17845	43%	21930	52%	41927	
	Graham	1870	2%	1817	2%	10561	13%	6597	8%	41091	49%	35436	42%	30960	37%	40632	48%	84482	
	Halfway	15	0%	15	0%	2069	16%	1764	13%	4471	34%	3335	25%	6636	50%	8077	61%	13192	
	Kobes									8	54%	8	54%	7	46%	7	46%	15	
	NDU Total	2815	2%	2624	2%	16650	12%	11448	8%	64702	46%	54897	39%	55448	40%	70646	51%	139616	33

NDU Sub-Unit	Landscape Unit	< 40 years				40 - 100 years				101 - 140 years				> 140 years					
		2017		2025															
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Grand Total	
Boreal Foothills - Valley	Crying Girl	1386	7%	977	5%	2747	13%	2561	12%	9308	45%	8560	41%	7347	35%	8689	42%	20787	
	Graham	218	0%	47	0%	6741	13%	4502	8%	22847	43%	19927	38%	23298	44%	28628	54%	53104	
	Halfway	7	0%	7	0%	211	13%	138	9%	435	28%	349	22%	916	58%	1076	69%	1570	
	Kobes									86	49%	82	47%	89	51%	93	53%	175	
	Grand Total	1611	2%	1032	1%	9699	13%	7201	10%	32675	43%	28918	38%	31650	42%	38486	51%	75636	23

NDU Sub-Unit	Landscape Unit	< 40 years				40 - 100 years				101 - 140 years				> 140 years					
		2017		2025															
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Grand Total	
Northern Boreal Mountains	LU_NAME	Young		Young		Mid		Mid		Mature		Mature		Old		Old		Grand Total	
	Graham	245	1%	4	0%	5732	18%	3918	12%	7997	25%	8367	26%	18025	56%	19708	62%	31998	
	Sikanni	822	0%	86	0%	23262	13%	14790	8%	57350	32%	58108	33%	96379	54%	104829	59%	177813	
	Trutch									4	100%	4	100%					4	
	Grand Total	1067	1%	90	0%	28994	14%	18708	9%	65350	31%	66479	32%	114404	55%	124537	59%	209815	37

NDU Sub-Unit	Landscape Unit	< 40 years				40 - 100 years				101 - 140 years				> 140 years					
		2017		2025															
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Grand Total	
Omenica Mountains	LU_NAME	Young		Young		Mid		Mid		Mature		Mature		Old		Old		Grand Total	
	Crying Girl					33	18%	33	18%	115	64%	91	51%	32	18%	56	31%	180	
	Graham	290	0%	288	0%	5026	5%	4699	5%	26616	27%	20915	21%	68227	68%	74257	74%	100159	
	Grand Total	290	0%	288	0%	5059	5%	4732	5%	26731	27%	21006	21%	68259	68%	74313	74%	100338	41

NDU Sub-Unit	Landscape Unit	< 40 years				40 - 100 years				101 - 140 years				> 140 years					
		2017		2025															
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Grand Total	
Omineca Valley	LU_NAME	Young		Young		Mid		Mid		Mature		Mature		Old		Old		Grand Total	
	Crying Girl					0		0		3.9	57%	3.9	57%	2.9	43%	2.9	43%	6.8	
	Graham	141.8	2%	138.3	2%	1146.4	13%	926.2	11%	4392.6	51%	3561.4	42%	2887.8	34%	3942.7	46%	8568.6	
	Grand Total	141.8	2%	138.3	2%	1146.4	13%	926.2	11%	4396.5	51%	3565.3	42%	2890.7	34%	3945.6	46%	8575.4	16

Forecasting Assumptions and Analytical Methods:

Does forecasting apply (y/n)? Y

The existing FOS was incorporated into the forest inventory. Stands that are proposed to be harvested were removed, and existing inventory polygons were aged to the end of the SFMP. The seral stage distribution levels were based on productive forest area contributing to meeting the seral stage targets. Non- productive or Non-Commercial forested areas ('Projected Type Identity' = 5 or 6 in VRI files) do not contribute to meeting seral stage targets.

Long term projections of seral stage distribution were completed, and presented as part of SFMP # 1. The Forest Estate model used in that analysis (Forest Service Simulator FSSIM ver.3.0).employed a one decade look ahead function, which allowed some harvesting in the late seral provided the late seral target could be achieved in the next decade.

Current harvest levels and seral targets were forecasted and achieved for 400 years into the future.

Some level of natural disturbance continues to occur over time across the land base. Disturbance was therefore modeled in the NHLB as well. The rate of disturbance was determined by analyzing the amount of fire disturbance since the advent of fire suppression for each NDU. The rate used was 0.1% of the area per year for the Boreal Plains, Boreal Foothills and Omineca Valley NDU's, 0.08% of the area per year for the Northern Boreal Mountains NDU and 0.03% for the Omineca Mountains NDU.

Strategy and Implementation Schedule:

The graduated indicator target is reflective of the time required to conduct the many iterative analyses required to move from the current system of managing late seral forest retention utilizing a non spatial approach to identification of spatially explicit OFMAs. Seral targets, as described earlier, are based on ranges appropriate to a very large natural disturbance unit (NDU). The Fort St. John DFA only includes a portion of these large NDU's that span areas outside the DFA. As a result of this, some flexibility in reaching the targets is appropriate. During development of the FOS Participants will consider the 'current' seral stage state versus 'target' when developing the plans. Plans will normally be developed that maintain consistency with the target. Circumstances may warrant short term deviations from the target (e.g. forest health, large disturbances, poor economic conditions etc) and are acceptable. Harvesting in older stands can still occur provided an analysis is completed to demonstrate there is a high likelihood of achieving the target within a 20 year time frame.

MFLNRO has endorsed the concept of managing by seral stage at an NDU level. Participants will work with government to identify spatially explicit old forest reserves termed as Old Forest Management areas (OFMAs) within priority NDUs during the term of SFMP# 3. A higher proportion of Old Forest Management Areas may be identified in the alluvial portion of the Boreal Plains NDU (i.e. the Boreal Plains Alluvial NDU sub unit – Sikanni-Fontas RMZ).

Old Forest Retention Targets in the Fort St. John TSA

The major forest licensee's in the Fort St. John TSA have been implementing Delong's guidance on a landscape unit level in the 2004 Sustainable Forest Management Plan (SFMP). In 2009 the technical

working group for the SFMP discussed how to implement the NDU guidance in the new SFMP. The working group focused on implementing those aspects of NDU guidance related to the quality and quantity of old forest retention. A two phase approach was agreed upon with phase one establishing the amount of old forest retention required and phase two establishing spatial Old Forest Management Areas (OFMAs).

In phase one the technical working group reviewed the Delong 2002 direction and agreed to set the legal old growth retention target at the lower end of the natural range of variation. While the old growth retention targets are set at the lower end of the natural range of variation it should be noted that the end result is an equivalent or greater area under old forest management objectives than required by the Provincial Non-Spatial Old Growth Order.

The old growth targets apply to the Crown Forest Land base (CFLB) within the Fort St John TSA. The CFLB is the productive forested crown land which does not include area that is non-crown, non-forest, and non-productive forest. Area within Woodlots and First Nations Reserves do not contribute to meeting the old forest retention targets. Area within Parks and Protected Areas will contribute to maintaining old forest retention in accordance with the Landscape Unit Planning Guide.

In determining the old growth area targets, it was discovered that the Boreal Plains NDU may not achieve the old forest retention target for two reasons. The primary reason is the considerable amount of pine forest in the Boreal Plains NDU and that the pine stands in the Fort St John TSA rarely survive to the age of 140 years. The second factor is the level of natural and anthropogenic disturbances in the area. This NDU has a high incidence of natural forest fires and an extensive history of industrial development.

In order to offset the shortfall, younger forests may be included in the spatial old forest management areas (OFMA) to act as recruitment areas. The principle behind recruitment stands is to protect the sites from disturbance to allow the natural aging process to develop mature and old forests that contain the desired old forest attributes. With respect to the non spatial late seral forest retention targets, old and near old forest will be considered as contributing to the late seral retention target.

The Participants will implement the following strategies for OFMA replacement. In the areas with natural disturbance cycle of <150 years (Boreal Plains, Boreal Foothills - Mountain, Boreal Foothills – Valley & Omineca Valley NDUs) a system of rotating reserves is recommended. These reserves would be scheduled to be cut when reserve areas of relatively equal size have been identified that can take their place. The intent would be to always have some large reserves of forest that are old but not so old as to be unnatural and highly susceptible to stand replacement forest insect or disease outbreaks.

In the remaining reporting units (Northern Boreal Mountains, Omineca Mountains NDUs) a strategy of irregularly dispersed large semi-permanent reserves is recommended. The more uneven-aged forests in these reporting units are less susceptible to stand replacement events and therefore have a higher likelihood of maintaining old forest structure over long periods of time. Replacement may be necessary but is not expected to be required on a continuous basis as in the rotating reserve strategy.

Many of the OFMAs are drawn adjacent to proposed cut blocks. The SFMP allows for some flexibility to address this type of operational issue; up to 15% in OFMAs less than 50 ha. or 10% or 40 ha., whichever is less, in OFMAs of 50 ha. or greater may be disturbed by harvesting of pre-existing FOS blocks and /or

access development (to reach timber outside the OFMA that is blocked by the OFMA without invoking the requirement to replace the harvested OFMA area. The intent of the flexibility is to allow for minor adjustments to OFMA boundaries to minimize the impacts to the forest industry while maintaining the biological integrity of the OFMA.

Monitoring Procedure:

There are multiple steps that are required to be completed for reporting this indicator. The calculations are described below:

The first step in reporting the amount of non spatial old forest will be to update and project the forest cover for all disturbances to the current reporting period based on Land and Resources Manager (LRM) data (i.e. recent harvesting). Each stand is assigned to either the deciduous or coniferous group based on the leading species and a seral stage based on the age of the leading species for the rank 1 layer. The area of each stand is then summed for each NDU and expressed as a percentage of the productive forested area within the NDU.

The second step is to include all proposed harvesting, project ages to the end of the proposed development period and calculate the seral stage distribution as described above.

The first step in identifying spatial OFMAs is to determine the amount of old forest on the land base that is already constrained from harvesting. Four broad criteria of constraint are considered to directly contribute to old forest retention; old forests in parks, old forest in Ungulate Winter Range (UWR) and Wildlife Habitat Areas (WHA) where timber harvesting is prohibited, riparian reserve zones and old forest in wildlife tree patches (WTP) in existing and proposed cut blocks.

Parks - While parks are not part of the crown forested land base, the area of old forest within parks is counted as contributing to the old growth target.

Ungulate Winter Range - The high elevation UWR in the Fort St John TSA has established objectives that restrict forest harvesting and road building. Therefore, any old forests within the UWR are expected to remain undisturbed and are considered as contributing to the old growth targets.

Riparian Reserves. Current forest management practices preclude harvesting of riparian forests along many streams. The current timber supply review for the Fort St John TSA produced a data coverage that removed riparian forests from the timber harvesting land base. This data may be used to determine the amount of old forest reserved along streams and these riparian reserve areas have been recognized as contributing to the old growth targets.

Wildlife Tree Patch - WTPs form part of the stand level objectives for the maintenance of biodiversity. Any WTP that meets the age criteria for old forests and is greater than 2 hectares in size is also considered to contribute to the old growth targets.

Specific OFMAs will be selected using age class themed Vegetation Resource Inventory (VRI) mapping. Areas with forest harvesting constraints such as steep slopes and visually sensitive areas will be included in OFMAs where possible to minimize the impacts on the timber harvesting land base. Habitat features, such as significant mineral licks, low elevation caribou winter habitat, wildlife travel corridors and cultural heritage values will also be considered in the selection of OFMAs. The avoidance of approved and proposed cut blocks and areas with short term forest harvesting interest is a priority to reduce the

impacts to the timber supply. Where possible, OFMA polygons will be delineated using boundaries that will be readily identified in the field (roads, cut blocks, streams and heights of land). Many of the OFMA identified to date include areas of mature and immature forests that are considered to contribute to the old growth target as recruitment areas. Some OFMA polygons may also include areas of non CFLB; while this area does not contribute to the old growth targets, they may be included in the OFMA for simplification of boundary identification.

Forest Operations Schedules (FOS) will be consistent with this indicator, an analysis will be completed when FOS's are developed to assess impact of the harvesting activity proposed by the FOS on late seral retention. OFMA areas will be depicted on FOS maps and will be treated as rotating reserves. The OFMA areas developed by the Participants may form the basis of an Old Growth Management proposal to be submitted to MFLNRORD for consideration for legal designation as Old Growth Management Areas.

Linkages to Operational Plans

FOS's will be analyzed to ensure they are consistent with the targets and implementation schedule for seral stage prior to publication. Proposed development will be adjusted if necessary to ensure consistency with targets or recruitment strategies.

Linkages to LRMP:

This seral stage indicator helps to support the following LRMP objectives by maintaining late seral forested land base proportions consistent with the natural range of variation:

- *Maintain functioning and healthy ecosystems.*
- *Maintain Guide Outfitting opportunities.*
- *Maintain Caribou habitat.*
- *Maintain habitat for priority furbearing species.*
- *Protect or enhance habitats for red and blue listed species.*

New Indicator #70 – Residual Fibre Utilization

Details of Amendment:

Addition of new Indicator # 70 – Residual Fibre Utilization, to SFMP# 3. The addition of Indicator # 70 **addresses SFMP#3 approval condition 1c.** New Indicator #70 is not being proposed as a legal indicator and therefore does not require approval from MFLNRORD. For the purposes of monitoring management performance to the indicator target and the SFMP Timber Harvesting Strategy, Indicator #70 will become effective April 1, 2020.

#70 Residual Fibre Utilization

Indicator Statement	Target Statement
The volume of residual fibre that is being utilized for products other than lumber and oriented strand board production.	Report out annually on the volume of residual fibre utilized by facilities in the production of commodities other than lumber and oriented strand board.
SFM Objective:	
Linkage to *FSJPPR*:	

Acceptable Variance:

No variance.

What is this indicator and why is it important

With the concern for the efficient utilization of a shrinking timber supply, this indicator reports out on how much residual fibre is being utilized for products other than lumber and/or OSB production. This fibre may come directly from timber harvesting, secondary harvesting, or residuals from sawmill production. It is important to note that utilization of this fibre is very sensitive to economic factors. The report out will also indicate what the annual harvest (conifer and deciduous) was for the reporting year. The list of products generated utilizing residual fibre may change from year to year as the demand for certain products change. Some of the reporting items will include:

- Salvage volume from other industries such as oil and gas, etc
- Timber volume retained in cutblocks for future harvest (excludes Wildlife Tree Patches)
- Sawlog harvest volume (Conifer),
- Deciduous harvest volume for OSB production,
- Pulp log harvest volume delivered to pulp mill,
- Residual fibre harvest from cutblock (post primary harvest),
- Harvest from Fibre Supply Licence to Cut
    - will reference if this fibre comes from a fibre recovery zone,
- Primary harvest specifically for non lumber/OSB product (ie. Chipping on site, bioenergy product, soil remediation, etc)
- Residual fibre from sawmill for:
    - Pellet production
    - Chips for Pulp Mill

- Hog fuel for power production
- other

Current Status

Canfor has and continues to seek expressions of interest from other potential users of the residual fibre generated from our timber harvesting activities. Canfor is currently in discussion with a couple of industrial businesses regarding their interest in using residual wood fibre from our harvesting operations for use in generating soil remediation products and drilling mud remediation, for use by the oil and gas industry. These businesses are trying to secure clients for their products. The economic downturn in the oil and gas sector has resulted in significant reductions in oil and gas activity, which is making it difficult for these emerging business to secure clients for their products. The current lack of market demand for use of on block residual fibre (logs, branches, tops) makes it uneconomic at this time to haul the residual material from the bush to a processing facility.

In addition, recent sawmill closures in the forest industry have resulted in a shrinking chip supply for the pulp and paper industry. This has been a positive influence leading to increased harvest of pulp quality stands in the Fort St John TSA. This trend is expected to continue as the sawmilling industry right sizes in response to shrinking fibre supplies, created by climate change which has resulted in increased timber losses due to wildfires and forest insect epidemics such as the mountain pine beetle. Dead conifer stands which are no longer merchantable for sawlog production present a wildfire hazard. Increased pulp log quality stand harvest will utilize material that otherwise would be left in unharvested forest stands and in cull piles on harvested blocks. The harvest of these pulplog quality stands will reduce wildfire risk on the landbase and improve overall utilization of the timber resource.

Forecasting Assumptions and Analytical Methods:

Does forecasting apply? (y/n) No

Strategy and Implementation Schedule:

The Participants will continue to seek out economically viable uses for the residual fibre generated by our harvesting operations.

Monitoring Procedure:

The Participants will annually report the amount of:

- residual fibre utilized resulting from lumber and OSB production, and
- on block residual fibre utilized to generate products other than lumber and OSB.

Linkages to Operational Plans

FOS's will be analyzed to ensure they are consistent with emerging targets and implementation schedules for on block residual fibre use. Proposed development will be adjusted if necessary to ensure consistency with targets or utilization strategies.

Linkages to LRMP:

The residual fibre utilization indicator helps to support the following LRMP objectives by maximizing use of on block residual fibre:

- *Maintain functioning and healthy ecosystems.*
- *Encourage utilization of pulp quality stands.*

Replacement of existing Indicator #52- Timber Profile Conifer (Height Class 2 Pine)

Details of Amendment:

Replacement of existing SFMP #3 Indicator #52 – Timber Profile Conifer (Height Class 2 Pine) with two indicators that focus on addressing the Annual Allowable Cut partition referenced in the Fort St John Timber Supply Area (TSA) Rationale for Allowable Annual Cut Determination, dated May 10, 2018. The addition of Indicator #52 AAC Partition – Conifer Planning and Indicator #52A AAC Partition – Conifer Harvest Performance, **addresses SFMP#3 approval condition 1a & 1b.** Replacement Indicators #52 & #52A are proposed as a legal indicators and therefore require approval from MFLNRORD. For the purposes of monitoring management performance to the indicator target and the SFMP Timber Harvesting Strategy, Indicators #52 & #52A will become effective April 1, 2020. Replacement indicators #52 & 52A are legal indicators for evaluating performance to the SFMP Timber Harvesting Strategy 4.1.4 AAC Rationale Assumptions.

Green highlight denotes the proposed revision.

#52 AAC Partition - conifer Planning

Indicator Statement	Target Statement
~~The percentage of the total cutblock area in harvested blocks that was identified as preharvest height-class two pine inventory types.~~ The volume of conifer species that has been identified in planned cutblocks in the FOS within the Core partition area.	~~April 1, 2016 - March 31, 2022: 8% or more of the total coniferous cutblock area harvested by managing Participants during the 5-year period will be in height-class two pine inventory types.~~ A) In the Core area non spruce conifer species will comprise, a minimum of 50% of the total planned conifer harvest volume. B) The Core area will have a maximum of 56% of the total planned conifer harvest volume identified in the Fort St John TSA area.
SFM Objective:	
Linkage to *FSJPPR*:	

New Harvest Performance Indicator

#52A AAC Partition - conifer Harvest Performance

Indicator Statement	Target Statement
The volume of conifer species (measured using planning stage block volume data), that has been harvested by the Participants within the Core partition area since May 10, 2018.	On a three year rolling average: A) Conifer harvest in the Core area will not exceed an average of 672,000 m3 annually. B) In the Core area non spruce conifer species will comprise, a minimum of 50% of the total conifer volume harvested by the Participants.
SFM Objective:	

Linkage to *FSJPPR*:

Acceptable Variance:

- 20% Variance on the target due to: Reduction in block volume from WTP's, revisions to Old Seral Retention, other retention, VRI inaccuracies, harvest deferrals necessary to address public, First Nation or stakeholder concerns. – This variance gives us flexibility to meet the target with planned blocks in light of the uncertainties inherent in the VRI and harvest scheduling.
- If PVOSB mill is down for greater than six months, deciduous blocks contributing conifer volume will not be tallied. (Incidental coniferous volume within planned deciduous blocks will not be tallied because the deciduous blocks will not be harvested.)
- If the harvest planning indicator is not met, the Participants have one year to amend the FOS to get it back into compliance.
- BCTS monitoring, volume is considered harvested once the volume has been sold.
- This indicator is to be reviewed after the next Timber Supply Review (TSR) to ensure continued relevance to the new TSR.

What is this indicator and why is it important

The Fort St John TSA TSR #3 AAC Determination, dated May 10, 2018 established the AAC for the Fort St John TSA at 2,115,000 m3. The AAC determination also identified a non legal partition to the AAC as follows:

1. Coniferous species: a maximum of 1,200,000 m3 for coniferous species of which no more than 672,000 m3 may be harvested from the 'core area'. Within the core area spruce should comprise no more than 50% of the conifer volume; and
2. Deciduous species: a maximum of 915,000 m3 for deciduous species of which, no more than 512,000 m3may be harvested from the 'core' area.

The core area consists of the Blueberry, Kobes, Halfway, Lower Beatton and the southern portion of the Tommy Lakes landscape units. This AAC determination will remain in effect until a new AAC is determined. The partition is intended to result in a more balanced distribution of timber harvesting throughout the Fort St John TSA. Harvesting similar timber profiles to those assumed in the TSR process can help support the maintenance of sustainable long-term timber supplies. Harvest performance in smaller diameter pine stands was identified as a priority in TSR 2, but due to the damage inflicted on the pine resource from the mountain pine beetle, is no longer considered a priority in the current AAC determination.

This indicator is intended to track the Participants conformance with the AAC partition identified in the current AAC determination.

Current Status

The AAC partition was identified May 10, 2018. Harvesting conducted after that date is expected to conform to the non legal partition. Following is a summary of the Participant's planned harvest opportunities by geographic area and harvest performance in the 2018-19 reporting year.

Table 14: FOS Proposed Conifer Harvest Geographic Distribution

	Conifer Volume in Unharvested FOS Blocks						
Geographic Area	**Spruce Volume (m3)**	**Non Sx Conifer Volume (m3)**	**Total Conifer volume (m3)**	**Spruce Proportion of Total Mgmt. Unit Conifer Volume**	**Partition Area Proportion of Total TSA Conifer Volume**	**Core Target Spruce Proportion**	**TSA Total Harvest Target Proportion**
Core	2,976,646	1,376,603	4,353,249	**68%**	**58%**	<50.1%	<56.1%
Periphery	2,467,228	726,139	3,193,367	77%	42%	N/A	>43.9%
FSJ TSA	5,536,532	2,010,084	7,546,616	73%	100%	N/A	

As of the date of preparation of this amendment the total AAC managed by the Participants is 1,106, 096 m3. Considering the AAC managed by the Participants of 1,106, 096 m3, as of the SFMP amendment date, the FOS contains roughly 6.8 years worth of unharvested conifer volume. This volume was planned prior to the announcement of the TSR AAC partition.

Table 15: FOS Completed Conifer Harvest Geographic Distribution

	Reporting Period					
	2018 - 2019		**2019 - 2020**		**2020 - 2021**	
Managing Participant	**Core Total Conifer Harvest Volume (m3)**	**Core Spruce Harvest Volume (m3) & Proportion of Total Core Conifer Harvest (%)**	**Core Total Conifer Harvest Volume (m3)**	**Core Spruce Harvest Volume (m3) & Proportion of Total Core Conifer Harvest (%)**	**Core Total Conifer Harvest Volume (m3)**	**Core Spruce Harvest Volume (m3) & Proportion of Total Core Conifer Harvest (%)**
Canfor	455,069	382,640 (84%)				
BCTS	470,390	253,128 (54%)				
BCTS Surrendered Volume*	-111,401	-80,443 (72%)				
LP	0	0				
Total	**814,058**	**555,325 (68%)**				

The harvest completed in the 2018-19 reporting year was planned (blocks developed, cutting authorities acquired) 1 to 2years prior to the announcement of the Fort St John TSA AAC partition.

* A total of 10 BCTS TSLs sold during the period of April 1, 2018 to March 31, 2019 were surrendered unharvested to BCTS. This volume will be resold at a later date.

Forecasting Assumptions and Analytical Methods:

Does forecasting apply? (y/n) No

Strategy and Implementation Schedule:

As mentioned, harvest scheduling is typically planned 1-3 years in advance of the desired harvest date. Because of the lead time required to develop cutblock harvest plans and acquire necessary cutting and road permits, the Participants will require up to 3 years to revise their harvest plans in order to bring their harvest performance into conformance with the AAC partition. FOS amendments will be generated by the Participants, adding blocks where geographically necessary, to bring the FOS harvest opportunities in line with the coniferous AAC partition.

The AAC determination rationale does not specify how performance to the partition is to be measured (units) or monitored (periodicity). The reporting proposed by the Particpant's will include annual performance and average performance over the 3 year rolling period. The 3 year rolling period for harvest performance monitoring provides flexibility to ramp up revision of harvest scheduling plans over a few years to conform with the non legal partition. It also provides flexibility to overcut in an individual year, followed by undercutting to ensure that over the reporting period, the intent of the partition is achieved – this is similar flexibility to that provided by cut control requirements which are monitored over a 5 year period.

Monitoring Procedure:

The Participants will annually report the amount of:

- The proportion of spruce conifer harvest in the Core area, and
- The proportion of total TSA conifer harvest within the Core area.

Both indicators will use the block volume data generated at the FOS planning stage. Cruise and or scale volume data may be used where available for reporting harvest performance.

Linkages to Operational Plans

FOS's and harvest performance will be analyzed to ensure they are consistent with the TSA AAC partition. Proposed development will be adjusted if necessary, to ensure consistency with targets identified in the SFMP which are designed to generate conformance with the AAC partition.

Linkages to LRMP:

The coniferous planning and harvest performance indicator helps to support the following LRMP objectives by maximizing use of on block residual fibre:

- *Maintain timber harvesting and forest management opportunities.*
- *Enhance timber harvesting and a sustainable long term timber supply.*

Replacement of existing Indicator #51 – Timber Profile Deciduous (Supply Block F)

Details of Amendment:

Replacement of existing SFMP #3 Indicator #51 – Timber Profile Deciduous with two indicators that focus on addressing the Annual Allowable Cut partition referenced in the Fort St John Timber Supply Area (TSA) Rationale for Allowable Annual Cut Determination, dated May 10, 2018. The addition of Indicator #51 AAC Partition – Deciduous Planning and Indicator #51A AAC Partition – Deciduous Harvest Performance, **addresses SFMP#3 approval condition 1a & 1b.** Replacement Indicators #51 & #51A are proposed as legal indicators and therefore require approval from MFLNRORD. For the purposes of monitoring management performance to the indicator target and the SFMP Timber Harvesting Strategy, Indicators #51 & #51A will become effective April 1, 2020. Replacement indicators #51 & 51A continue as legal indicators for evaluating performance to the SFMP Timber Harvesting Strategy 4.1.4 AAC Rationale Assumptions.

Green highlight denotes the proposed revision.

#51 AAC Partition – Deciduous Planning

Indicator Statement	Target Statement
~~The area (ha) of deciduous-leading cutblocks identified in Supply Block F for harvest during the term of the SFMP.~~ The volume of deciduous species that has been identified in planned cutblocks in the FOS within the Core partition area.	~~A minimum of 200 ha of deciduous-leading cutblocks located in Supply Block F will be identified for harvest during the term of the new SFMP.~~ The Core area will have a maximum of 56% of the total planned deciduous harvest volume identified in the Fort St John TSA area.
SFM Objective:	
Linkage to *FSJPPR*:	

New Harvest Performance Indicator!!

#51A AAC Partition – Deciduous Harvest Performance

Indicator Statement	Target Statement
The volume of deciduous species (measured using planning stage block volume data), that has been harvested by the Participants within the Core partition area since May 10, 2018.	On a 3 year rolling basis, deciduous harvest in the Core area will not exceed an average of 512,000 m3 annually.
SFM Objective:	
Linkage to *FSJPPR*:	

Acceptable Variance:

- 20% Variance on the target due to: Reduction in block volume from WTP's, revisions to Old Seral Retention, other retention, VRI inaccuracies, harvest deferrals necessary to address public, First Nation or stakeholder concerns. – This variance gives the Participants flexibility to meet the target with planned blocks in light of the uncertainties inherent in the VRI and harvest scheduling.
- If FSJ sawmill mill is down for greater than six months, conifer blocks contributing deciduous volume will not be tallied. (Incidental deciduous volume within planned conifer blocks will not be tallied because the conifer blocks will not be harvested.)
- If the harvest planning indicator is not achieved, the Participants have one year to amend the FOS to get it back into compliance.
- BCTS volume is considered harvested once the volume has been sold.

What is this indicator and why is it important

The Fort St John TSA TSR #3 AAC Determination, dated May 10, 2018 established the AAC for the Fort St John TSA at 2,115,000 m3. The AAC determination also identified a non legal partition to the AAC as follows:

3. Coniferous species: a maximum of 1,200,000 m3 for coniferous species of which no more than 672,000 m3 may be harvested from the 'core area'. Within the core area spruce should comprise no more than 50% of the conifer volume; and
4. Deciduous species: a maximum of 915,000 m3 for deciduous species of which, no more than 512,000 m3may be harvested from the 'core' area.

The core area consists of the Blueberry, Kobes, Halfway, Lower Beatton and the southern portion of the Tommy Lakes landscape units. This AAC determination will remain in effect until a new AAC is determined. The partition is intended to result in a more balanced distribution of timber harvesting throughout the Fort St John TSA. Harvesting similar timber profiles to those assumed in the TSR process can help support the maintenance of sustainable long-term timber supplies. Harvest performance in smaller diameter pine stands was identified as a priority in TSR 2, but due to the damage inflicted on the pine resource from the mountain pine beetle, is no longer considered a priority in the current AAC determination.

This indicator is intended to track the Participants conformance with the AAC partition identified in the current AAC determination.

Current Status

The AAC partition was identified May 10, 2018. Harvesting conducted after that date is expected to conform to the non legal partition. Following is a summary of the Participants' planned harvest opportunities by geographic area and harvest performance in the 2018-19 reporting year.

Table 16: FOS Proposed Deciduous Harvest Geographic Distribution

Geographic Area	Total Deciduous Volume (m3)	Mgmt. Unit Proportion of Total TSA Deciduous Volume	AAC Partition Total Harvest Proportion Target
Core	2,515,406	**57%**	<56.1%
Periphery	1,925,613	43%	>43.9%
FSJ TSA	4,441,019	100%	

As of the date of preparation of this amendment the total deciduous AAC managed by the Participants is 843,000 m3. As of the SFMP amendment date, the FOS contains roughly 5.2 years worth of unharvested deciduous volume. This volume was planned prior to the announcement of the TSR AAC partition.

Table 17: FOS Completed Deciduous Harvest Geographic Distribution

	Reporting Period					
	2018 - 2019		**2019 - 2020**		**2020 - 2021**	
Managing Participant	**Periphery Total Deciduous Harvest Volume (m3)**	**Core Deciduous Harvest Volume (m3) & Proportion of Total TSA Deciduous Harvest (%)**	**Periphery Total Deciduous Harvest Volume (m3)**	**Core Deciduous Harvest Volume (m3) & Proportion of Total Core Deciduous Harvest (%)**	**Periphery Total Deciduous Harvest Volume (m3)**	**Core Deciduous Harvest Volume (m3) & Proportion of Total Core Deciduous Harvest (%)**
Canfor	17,893	340,656 (95%)				
BCTS	0	237,567 (100%)				
BCTS Surrendered Volume*	0	-186,163				
LP	0	0				
Total	**17,893**	**392,060 (95.6% in Core)**				

The harvest completed in the 2018-19 reporting year was planned (blocks developed, cutting permits acquired) 1 to 2years prior to the announcement of the Fort St John TSA AAC partition. In August 2019 Louisiana Pacific Canada indefinitely shut down the Peace Valley OSB plant.

Going forward, future deciduous harvest scheduling will be planned individually by Canfor, LP and BCTS for their respective deciduous tenures (Canfor will no longer conduct deciduous planning, harvest and reforestation activities on behalf of LP).

* A total of 10 BCTS TSLs sold during the period of April 1, 2018 to March 31, 2019 were surrendered unharvested to BCTS. This volume will be resold at a later date.

Forecasting Assumptions and Analytical Methods:

Does forecasting apply? (y/n) No

Strategy and Implementation Schedule:

As mentioned, harvest scheduling is typically planned 1-3 years in advance of the desired harvest date. Because of the lead time required to develop cutblock harvest plans and acquire necessary cutting and road permits, the Participants will require up to 3 years to revise their harvest plans in order to bring their harvest performance into conformance with the AAC partition. FOS amendments will be generated by the Participants, adding blocks where geographically necessary, to bring the FOS harvest opportunities in line with the deciduous AAC partition.

The AAC determination rationale does not specify how performance to the partition is to be measured (units) or monitored (periodicity). The reporting proposed by the Particpant's will include annual performance and average performance over the 3 year rolling period. The 3 year rolling period for harvest performance monitoring provides flexibility to ramp up revision of harvest scheduling plans over a few years to conform with the non legal partition. It also provides flexibility to overcut in an individual year, followed by undercutting to ensure that over the reporting period, the intent of the partition is achieved – this is similar flexibility to that provided by cut control requirements which are monitored over a 5 year period.

Monitoring Procedure:

The Participants will annually report the amount of:

- The proportion of total TSA deciduous harvest within the Core area.

Both indicators will use the block volume data generated at the FOS planning stage. Cruise and or scale volume data may be used where available for reporting harvest performance.

Linkages to Operational Plans

FOS's and harvest performance will be analyzed to ensure they are consistent with the TSA AAC partition. Proposed development will be adjusted if necessary, to ensure consistency with targets identified in the SFMP which are designed to generate conformance with the AAC partition.

Linkages to LRMP:

The deciduous planning and harvest performance indicator helps to support the following LRMP objectives by maximizing use of on block residual fibre:

- *Maintain timber harvesting and forest management opportunities.*

- *Enhance timber harvesting and a sustainable long term timber supply.*

Revision of existing Indicator #49 - Forest Health FOS Planning

Details of Amendment:

Revision of existing SFMP #3 Indicator #49 – Forest Health FOS Planning which focused on addressing the mountain pine beetle infestation to detecting and managing abroad spectrum of significant forest health damaging agents. Revision of the indicator and target of Indicator #49 – Forest Health FOS Planning, **addresses SFMP#3 approval condition 1a & 1c.** Revised Indicator #49 – Forest Health FOS Planning will continue as a legal indicator and therefore requires approval from MFLNRORD. For the purposes of monitoring management performance to the indicator target and the SFMP Forest Health Management Strategy, revised Indicator #49 will become effective April 1, 2020.

Green highlight denotes the proposed revision.

49 FOREST HEALTH FOS PLANNING

Indicator Statement	Target Statement
~~Percentage of new conifer-leading harvest blocks in the 2017 Forest Operations Schedule that are pine-leading.~~ Percentage of significant detected forest health damaging agents which have treatment plans prepared and implemented.	~~A minimum of 50% of new conifer-leading harvest blocks in the 2017 FOS will be pine-leading.~~ 100% of significant detected forest health damaging agents will have treatment plans prepared and implemented within 1 year of initial detection.
SFM Objective: Maintain or enhance landscape level productivity Maintain a natural range of variability in ecosystem function, composition and structure which allows ecosystems to recover from disturbance	
Linkage to *FSJPPR*: For the purposes of Section 42 of the *FSJPPR* this indicator statement, target statement and acceptable variance will be used to determine if forest practices are consistent with the Forest Health Management Landscape Level Strategy.	

Acceptable Variance:

A 20% variance (i.e. minimum of 80% of significant detected forest health damaging agents) is required in the event some FOS blocks are dropped due to other First Nation, stakeholder or public interests. A variance of 1 year is permissible to provide for data collection and engagement with forest health specialists, First Nations, stakeholders and the public.

What is this indicator and why is it important?

This indicator describes the effectiveness of the forest health management strategy in addressing identified forest health issues. The current process of detection has to date been successful in identifying significant forest health issues, as broad based pest incidence surveys have not identified any substantial catastrophic losses to damaging agents which have gone undetected. This indicator will

identify that treatment plans are developed and implemented in a timely manner to address significant forest health issues that are detected.
Significant detected forest health damaging events are defined as those identified as:

- medium or high risk from the severity classification system (see Table 18, below), or
- forest health events identified as significant by the MFLNRORD, or
- damage which threatens the achievement of silviculture stocking standards within a plantation, or
- damage which threatens the survival of 10% or more of the trees in a merchantable stand greater than 50 hectares in size.

Current Status:
Participants and the MFLNRORD have conducted detection programs across most of the Fort St John TSA, focusing primarily on existing or proposed development areas. Some overview flights in other parts of the DFA have been undertaken where forest health issues in adjacent TSA's posed a potential threat to stands within the DFA. Fire and windthrow damage has been routinely identified from field information and overview flights, and salvage programs developed as required. Other forest health issues in the DFA have been sporadic and localized since significant forest utilization commenced, as most of the forest stands are relatively young.

Historically, the MFLNRORD has on one occasion, requested a pest inventory assessment for a spruce beetle outbreak near Wonowon. Surveys showed the pest was limited in extent, and salvage logging was conducted to address the concern. Of late, forest health management focused on the mountain pine beetle outbreak which began locally in the later part of the term of SFMP# 2. The mountain pine beetle infestation has significantly declined to the point where it is no longer of sufficient significance to be considered the primary forest health agent requiring management in the Fort St John TSA.

Free-growing damage (health) standards are used to assess stand health in plantations.
Harvesting is currently the most commonly applied treatment and control for protecting mature timber inventories for fire, wind damage, and spruce beetle. Fill-planting is the most commonly applied treatment for damage to plantations from frost and winter desiccation, which are the most prevalent abiotic factors.

Participants utilize the forest health management expertise in the Canadian Forestry Service and MFLNRORD as needed. The Canadian Forestry Service holds extensive historical information (old Forest Insect and Disease Survey), and it also houses expert diagnostic services, and conducts research relevant to forest health management. The MFLNRORD also has leading experts in diagnostics, management and training.

Forecasting Assumptions and Analytical Methods:
Does forecasting apply? No

Strategy and Implementation Schedule:

1. The participants will establish, and maintain a summary of damaging agents and their estimated incidence, current status and their potential impacts. **Table** is the initial estimate of incidence and severity of damaging agents in the DFA.

Table 18: Estimated Incidence, Severity, Current Conditions and Potential Impact of Damage Agents in the Fort St. John DFA

Pest Damage Agent	Estimated Incidence (area affected of DFA) by Severity Class (low, mid & high)			Severity Class Risk Breakpoints (Low, Mid & High Risk)	Current conditions	Potential Impact
	Low	Mid	High	e.g., prefixes denote classification is under development	Estimated extent of pest damage in the DFA, and type of damage	Type of damage, and seral stage affected
Spruce beetle	98.5%	1.5%	0	E.g., <2%, 2-10%, >10%	Uncommon, stem mortality; central, western and northern areas of DFA	Stand destroying (mature)
Eastern spruce budworm	99%	1%	0%	E.g.,<5%, 5-25%, >25%	Common, annual conditions dependant, northern areas of DFA	Stand destroying (mature & early seral understorey)
Foliar diseases of deciduous (*Venturia sp.*)	70%	25%	5%	E.g.,<10%, 10-30%, >30%	Ubiquitous/common, annual moist-weather condition dependant, often severe growth impact	Severe growth reduction, reduces stand density (early seral)
Pine stem rusts	70%	25%	5%	<10%, 10-20%, >20% (Pers comm., R.W. Reich)	Ubiquitous/common, localized mid-high severity	Stem mortality, reduces stand density (early seral)
Insect defoliators of deciduous	80%	10%	10%	E.g.,<10%, 10-30%, >30%	Periodical, wide range of severity; growth reduction	Limited stem mortality, growth reduction (early to mature seral)
Wood decay fungi	30%	40%	30%	E.g.,<10%, 10-30%, >30%	Ubiquitous, variable by stand	None to severe wood quality effects (mature)
Wildlife browse (hares, elk etc) Livestock	90%	10%	0%	E.g.,<10%, 10-30%, >30%	Ubiquitous but localized both conifer & deciduous	Low to severe growth reduction (early seral)
Livestock	90%	10%	0%	E.g.,<10%, 10-30%, >30%	Localized to range tenures on both conifer & deciduous	Low to severe growth reduction & mortality (early seral)
Mountain pine beetle	99.5%	0.5%	0	E.g., <2%, 2-10%, >10%	Uncommon	Stand destroying (mid-to-late-mature)
Warren's root collar weevil	99%	1%	0	E.g., <2%, 2-10%, >10%	Ubiquitous but localized stem mortality	Scattered stem mortality (early seral, <10yrs)
Tomentosus root rot	95%	4%	1%	<6, 6-15, 15+ (Pers 27omm.., R.W. Reich)	Common below 700m a.s.l. (I.e., ~ 5000 ha in DFA)	Low to severe growth reduction, limited mortality & windthrow (early to mature)
Spruce weevil	97%	2%	1%	E.g., <2%, 2-10%, >10%	Uncommon, localized attack; stem deformity and growth reduction	Stem deformity and growth reduction (early seral)
Western balsam bark beetle	95%	5%	0%	E.g., <2%, 2-10%, >10%	Common but variable attack intensity	Stand destroying (mature)
Conifer foliar diseases	80%	10%	10%	E.g.,<10% ,10-20%, >10%	Uncommon, localized attack; growth reduction	Growth reduction (early to mature seral)
Eriophyid mites	99%	0%	1%	E.g.,<1% 1-10%, >10%	Very uncommon, localized attack; little growth reduction	Growth reduction (early seral, predominantly on deciduous)
Abiotic: Frost	85%	10%	5%	E.g.,<1% 1-10%, >10%	Common, localized to widespread damage	Growth reduction, sometimes stem deformity or stem mortality (early seral is most severely affected)
Abiotic: Snow-press	97%	3%	0%	E.g.,<1% 1-10%, >10%	Common, localized to widespread damage	Stem deformity to breakage (early to mid seral)
Abiotic: Hail	99%	0%	1%	E.g.,<1% 1-10%, >10%	Common, localized damage; most affects deciduous species	Stem damage or forking (early)

Pest Damage Agent	Estimated Incidence (area affected of DFA) by Severity Class (low, mid & high)			Severity Class Risk Breakpoints (Low, Mid & High Risk)	Current conditions	Potential Impact
	Low	Mid	High	e.g., prefixes denote classification is under development	Estimated extent of pest damage in the DFA, and type of damage	Type of damage, and seral stage affected
Abiotic: Winter Desiccation (Red belt)	97%	1%	2%	E.g.,<1% 1-10%, >10%	Common, localized mid – high elevation bands or plantations at any elevation; on conifer species	Foliage mortality on mature, or seedling mortality in plantations
Abiotic: Sunscald	99%	1%	0%	E.g.,<1% 1-10%, >10%	Uncommon, localized to widespread damage	Stem mortality (early to mid seral)
Abiotic: Windthrow	85%	10%	5%	E.g.,<1% 1-10%, >10%	Uncommon, localized to widespread damage	Stem breakage (mature)
Abiotic: Fire	99%	<1%	<1%	<5% mortality-5-30% mortality; >30% mortality	Uncommon to common, localized to widespread damage, highly variable occurrence annually	Stem quality to stem and stand mortality
Abiotic: Flooding	95%	4%	1%	E.g.,<1% 1-10%, >10%	Uncommon, localized to widespread damage	Stem mortality (early to mature)
Abiotic: H2S etc gas	99%	<1%	<1%	E.g.,<1% 1-10%, >10%	Uncommon, localized near energy operations	Growth reduction to mortality (early to mature)

This table will be updated as new information becomes available.

2. The participants will maintain and refine a detection and monitoring program for damaging agents over the landbase by:
   a) continuing to conduct aerial and ground surveys in management zones in which forest operations will be proposed during the term of this plan if there is an identified forest health issue .
   b) continuing to conduct aerial surveys in other parts of the DFA if there is reason to suspect potential forest health issues may exist in these areas.
   c) ensuring appropriate forest workers, consultants and industry staff, are competent at identifying specific forest health concerns within the Fort St John TSA.
   d) maintaining a record of agent incidence and intensity.
3. Active Participants will address fire management issues in fire preparedness plans that outline objectives, duties and responsibilities related to minimizing fire risk, and responding to fire occurrence.
4. The Participants will develop treatment plans for significant forest health issues. Treatment plans will identify the location of the significant concern, and an implementation schedule for the proposed treatments. Treatment plans will be developed using forest health specialists as needed. Plans will consider the risk presented by the damaging agent, and the cost: benefits of a range of available options. Some of the more common options which may be employed are:
   - relocating harvesting activities to meet forest health management requirements,
   - pheromone baiting and lethal trap programs (trap trees in forested conditions, and lethal traps in mill yard conditions),
   - incorporating forest health requirements into cutblock designs where necessary to prevent the development of forest health problems (e.g., cold air drainage for frost potential, or understorey management for eastern spruce budworm),
   - fill-planting or species conversion for plantation related problems

- doing nothing, if so warranted by the level of risk and cost : benefit analysis.

5. General measures to be implemented for potential significant problems, depending on site conditions, are summarized in Table 8.

Table 8: Detection & Monitoring, and Treatment Groupings for Damage Agents

	Damage Agents			
Forest Health Management Groupings	Spruce beetle Eastern spruce budworm Mountain pine beetle Fire	Defoliators of deciduous species Western balsam bark beetle Red-belt desiccation	Tomentosus root rot Wildlife browse Pine stem rusts Wood decay fungi Windthrow	Foliar diseases of deciduous & coniferous species Spruce weevil Warren's root collar weevil Eriophyid mites **Frost, snow-press, hail, sunscald, flooding
Detection and Monitoring	*Detect and Monitor via aerial surveys, and pre-harvest operations surveys and assessments*	*Detect and Monitor via aerial surveys (for areas classified as high risk, or anecdotal observations)*	*Detect and Monitor during pre-harvest, and reforestation success survey operations.*	*Detect and Monitor during silviculture surveys*
Treatment or Control	*Implement containment sanitation and salvage harvesting strategies*	*Fill planting of plantations.*	*Prescribe pest control or salvage strategies at pre-harvest phase; for pine stem rusts; genetically resistant stock types and/or fill-planting*	*Fill-planting of plantations.*

Monitoring Procedure:

The Participants retain records of all significant forest health damaging agents detected. Forest health information on areas or damage agents of broad concern affecting or potentially affecting more than one participant (e.g., mountain pine beetle, spruce bark beetle) will be forwarded to the MFLNRORD. Participants will notify the MFLNRORD following treatment action on high-risk damage agents. A summary of significant pest conditions and treatment plans will be presented in each annual report.

Linkages to Operational Plans:

Site Level Plans will identify significant forest health concerns and proposed treatment options. Forest Operations Schedule's (FOS's) will be modified as needed to relocate harvesting to address forest health issues.

Linkages to LRMP:

The forest health management strategy links to the LRMP indirectly and supports the biodiversity strategy through its direction to manage for seral stages, and, it links directly to the General Management Direction (Forest Management) by "encouraging forest harvesting patterns and block sizes

which emulate natural disturbance patterns found within the planning area." The forest health management strategy further links to other specific LRMP objectives:

- *Maintain functioning and healthy ecosystems*
- *Manage for forest health*
- *Minimize losses to the timber harvesting land base*
- *Enhance timber harvesting and a sustainable long-term supply*

Revision of existing Indicator #48 - Summer and Fall Volume Deliveries - Variance Statement

Details of Amendment:

The variance statement for existing indicator #48 - Summer and Fall Volume Deliveries, is revised. The revision **addresses the indefinite closure the of Peace Valley OSB mill.** Revisions to Indicator #48 will become effective April 1, 2020 for the purposes of monitoring management performance to the indicator target. Revised indicator #48 will continue as a non legal indicator for evaluating performance to the SFMP Timber Harvesting Strategy and therefore does not require approval from MFLNRORD.

Because there are no revisions proposed to the indicator strategy and descriptive text, they are not presented here.

Green highlight denotes the proposed revision.

48 SUMMER AND FALL VOLUME DELIVERIES

Indicator Statement	Target Statement
Volume of timber (m^3) delivered annually to wood processing facilities within the Fort St. John Defined Forest Area (DFA) wood processing facilities between May 1st and November 30th	Minimum of 100,000 m^3 to conifer mills in the DFA Minimum of 185,000 m^3 to deciduous mills in the DFA
SFM Objective: Maintain viable timber processing facilities in the DFA	
Linkage to *FSJPPR*: N/A	

Acceptable Variance:

The target volumes assume planned production levels are achieved at the local mills. Allowable variances for the minimum acceptable deliveries may be reduced proportionally for the number of actual operating weeks, divided by the normal fifty operating weeks of the facilities per year. The indicator and target or portions thereof, will not apply during periods of indefinite mill closures or curtailments.

Revision of existing Indicator descriptive text - #41 - RANGE ACTION PLANS

Details of Amendment:

Revisions are proposed to the strategy for implementing indicator #41 – Range Action Plans. The indicator and Target statements are not revised. The revision **addresses SFMP approval condition #2.** Revisions to Indicator #41 will become effective April 1, 2020 for the purposes of monitoring management performance to the indicator target. Revised indicator #41 will continue as a non legal indicator for evaluating performance to the SFMP Range & Forage Strategy and therefore does not require approval from MFLNRORD.

Revisions to Indicator Descriptive Text

- Detailed description regarding the formality and process of a mutually agreed upon action plan.
- More emphasis on the frequency and timing of meaningful communication attempts for Managing Participants to reach out to range tenure holders.
- Terminology change to better describe Managing Participant's different engagement formats and tracking systems

41 RANGE ACTION PLANS

Indicator Statement	Target Statement
Percent consistency with mutually agreed upon action plans for range	Operations 100% consistent with resultant range action plans.
SFM Objective: Provide opportunities for a feasible mix of timber, recreational activities, and non-timber commercial activities	
Linkage to *FSJPPR*: N/A	

Acceptable Variance:

Variances are permissible only on reaching mutual agreement between the affected range tenure holder and Participant.

What is this indicator and why is it important?

The forest and range industries are active on the same crown landbase in much of the Fort St. John TSA. This extensive overlap of tenures frequently results in one industry's operations impacting the other's activities. For example, forestry activities may cause the removal of or rendering ineffective the natural range barriers. Natural range barriers may be rivers, rock faces, dense timber stands or other naturally occurring features that stop or significantly impede livestock movement. These known or identified natural range barriers are particularly important for range tenure holders to manage livestock according to tenure boundaries, as well as preventing livestock wandering on roads with high traffic and consequently pose safety risks to the public. The Managing Participants may choose to adjust forestry

activities or seek MFLNRORD approval for installation of cattle guards or fences to mitigate the effect of removing or rendering ineffective the known or identified natural range barriers. Participants may help range tenure holders with installation of these range developments.

Some other resulting issues from forestry activities may include loss of grazing opportunities through seed choice, timing of operations and herbicide use. Addressing these overlapping tenure issues successfully requires open communication of interests and expectations, a proactive process to address issues, and commitment to implement mutually agreed upon actions. This indicator is important in that it demonstrates the Participants' commitment to track and follow through to completion mutually agreed actions, which may have target completion dates months or years after the action is initiated.

Current Status:

Prior to 2013, Timber Range Action Plans (TRAPs) was the main documentation template for developing strategies to mitigate range and forestry activities' impacts on one another. However, over time, the formality and process of TRAP that originated from the Timber and Range Impact Mitigation Committee (TRIM C) project has become less formal. Since 2018, other formats of documents have been started to be used to record mutually agreed upon action plans.

Table 32 provides a summary of mutually agreed range action plans that were developed and completed, as well as a summary of comprehensive TRAP's prepared from April 1st , 2004 through March, 31st , 2019 (SFMP #1, SFMP #2 and SFMP#3):

The Participants completed all proposed mutually agreed action plans during this time period.

Table 32: Results of Mutually Agreed Range Action Plans

Annual Reporting Period	**# Timber Range Action Plans (TRAPs)**	**# Mutually Agreed Upon Action Plans**
2004-05	0	N/A
2005-06	6	N/A
2006-07	4	N/A
2007-08	5	N/A
2008-09	1	N/A
2009-10	1	N/A
2010-11	3	N/A

2011-12	0	N/A
2012-13	0	N/A
2013-14	1	N/A
2014-15	5	N/A
2015-16	1	N/A
2016-17	0	N/A
2017-18	0	N/A
2018-19	0	1
Total	**27**	**1**

Forecasting Assumptions and Analytical Methods:
It is anticipated that implementation of the indicator strategy will minimize the negative impact on range resources resulting from harvest operations.

Strategy and Implementation Schedule:

At the FOS stage and the Amendment stage, forestry staff will invite range tenure holders to engage in discussions to formulate a mutually agreed action plan to address issues impacting range values and developments arising from the proposed forestry activities on their tenure area. To formulate such plans, forestry and range tenure holders should start by examining the timber harvesting proposal and its anticipated impact on features such as natural range barriers, existing range developments and existing fence lines. Mitigation strategies will be identified to alleviate the impacts of the proposed forestry activities. Cattle guard construction and fencing are commonly used tools to minimize the impacts of natural range barrier removal. District Manager approval will be sought where the Participants propose damaging or modification of existing range developments, or construction of new range developments. Managing Participants may help the range tenure holder to implement the approved modifications to existing range developments or construction of new range developments. Where natural range barriers will be removed by timber harvesting, acceptable strategies may include retention of patches of forest left intact in the field as buffers or reserves, construction of debris fences, installation of cattleguards and/or traditional post and wire fences.

Additionally, if range tenure holders identify an issue related to their tenure at other times such as field operations or block layout stage, a range tenure holder engagement meeting may be held to address the concern.

These action plans and dates will be documented and entered as range issues into the Participant's tracking systems, responsibilities will be identified and communicated to affected staff, and progress will

be tracked through to the completion of the action. In the event circumstances require that changes be made to the action plan the forestry supervisor making the change will note in the action plan what change was made, indicate in the plan that he has discussed and got agreement from the range tenure holder for the change, and notify any responsible parties of the changes made.

Participants will inform MFLNRORD range staff of the range discussions, and providing the range tenure holder agrees, invite MFLNRORD to participate in discussions to develop range action plans. MFLNRORD attendance and participation is encouraged by the Participants as the MFLNRORD are the owners of all range developments on crown land and must authorize the destruction, modification or construction of existing or new range developments.

Monitoring Procedure:
An annual review of the Participant's tracking systems will identify the number of Timber and Range Action Plans (TRAPs) planned and the number of other mutually agreed upon action plans.

Linkages to Operational Plans:
Forest Operations Schedules, Pesticide Management Plans, and other operational plans which require public review and comment will be referred to range tenure holders, and actions agreed to will be identified in the final submission of these plans.

Site Level Plans, harvesting and silviculture plans will be consistent with any relevant mutually agreed range tenure action plans.

Linkages to LRMP:

This indicator supports the continuation of range activities within the Fort St. John TSA, and therefore supports the following LRMP objectives:

- *Maintain livestock grazing opportunities on existing tenures.*
- *Maintain or enhance opportunities for livestock grazing*

Revision of existing Indicator #42 - DAMAGE TO RANGE IMPROVEMENTS

Details of Amendment:

Revision of existing SFMP #3 Indicator #42 – Damage to Range Improvements, indicator and target statements to include reference to natural range barriers and specify timeline for repair of range developments damaged by the Participants activities. The revised target provides flexibility to react to notices of existence of natural range barriers received from range tenure holders well after completion of logging. Revision of the indicator and target of Indicator #42 – Damage to Range Improvements, **addresses SFMP#3 approval condition 2.** Revised Indicator #42 – Damage to Range Improvements will continue as a legal indicator and therefore requires approval from MFLNRORD. For the purposes of monitoring management performance to the indicator target and the SFMP Range and Forage Strategy, revised Indicator #42 will become effective April 1, 2020.
Green highlight denotes the proposed revision.

42 DAMAGE TO RANGE IMPROVEMENTS

Indicator Statement	Target Statement
Number of natural range barriers or range improvements ~~damaged~~ rendered ineffective by Participants' activities.	~~Zero~~ Natural range barriers or range improvements ~~will be damaged or~~ rendered ineffective by Participants' activities will be repaired within 2 years of harvest completion.
SFM Objective: Provide opportunities for a feasible mix of timber, recreational activities, and non-timber commercial activities	
Linkage to *FSJPPR*: For the purposes of Section 42 of the *FSJPPR* this indicator statement, target statement and acceptable variance will be used to determine if forest practices are consistent with the Range and Forage Management Landscape Level Strategy.	

Acceptable Variance:

The indicator target would not apply if a Participant can implement alternative mitigation strategies to the satisfaction of the range tenure holder and if required, approval from MFLNRORD. In the event that a natural range barrier is not identified prior to harvesting, Managing Participants have to develop and implement mitigation strategies to alleviate the impact of lost or ineffective natural range barrier in less than two years from the completion of harvesting, provided that the range tenure holders raise concerns regarding the natural range barrier to the Managing Participants within 180 days of completion of primary harvesting activities.

Temporary removal or alteration of a range development to enable short-term forestry activities to proceed is permissible. However repairs to or replacement of improvements must be completed in less than two years from harvest completion. For the purposes of this indicator, the terms range improvement and range development have the same meaning.

What is this indicator and why is it important?

The overlapping nature of forest and range tenures may result in natural range barriers and range developments being present in cutblocks planned for harvest by the forest industry. A natural range barrier can be a river, rock face, dense timber or any other naturally occurring feature that stops or significantly impedes livestock movement to and from an adjacent area. Range developments include fences, cattle guards, dugouts, or trails constructed by range-tenure holders for specific range management purposes. Range developments are considered the property of the provincial government. Natural range barriers and range developments may intentionally be lost or rendered ineffective in order to conduct forestry activities. In cases where natural range barriers or range developments are not made known to the forest tenure holder, they may be inadvertently damaged by the forest industry.

Alteration or removal of natural range barriers and range developments may occur, on the understanding that the developments or range barrier will be reconstructed or replaced in a timely manner, preferably prior to the next scheduled turnout of cattle for summer grazing, to the standard specified in the MFLNRORD Peace Natural Resource District range structure guidelines. Variances to the range development standards may be requested where appropriate e.g. use of non-treated posts, smooth wire. MFLNRORD District Manager approval is required to build, modify or temporarily destroy a range development such as a fence, cattleguard, etc.

All concerns raised by the range tenure holders will be dealt with by the Participants in a timely manner. The two year period identified in the target statement is meant to accommodate situations where concerns were raised regarding damage to natural range barriers or developments long after completion of the timber harvest activities. This allows the Participants time for discussion with the range tenure holder and MFLNRORD to develop mitigation plans and seek authorisation of those plans. It also considers time required to address logistical concerns such as the availability of fence materials and adverse weather conditions.

This indicator demonstrates the Participants' commitment to address direct impacts to natural range barriers and range tenure developments resulting from forestry activities, and to minimize disruption to range tenure holders.

Current Status:

In the 2018-2019 reporting year, three cases of range developments being damaged by licensee Participants' activities were recorded. In two instances, Managing Participants had to temporarily remove fence lines to allow road entry, as well as making sure harvesting operations could be conducted safely. Managing Participants repaired both fence lines within one year of the occurrence of the instance. In the other instance, the Managing Participant received a complaint that a cattle guard was filled in with mud from grading and not functioning properly. The Managing Participant developed mitigation strategies to the satisfaction of the range tenure holder within one year of the occurrence of the instance.

There was a total of 16 instances of damaged range developments between April 1, 2009 and March 31, 2019 resulting from the Participants' activities. All 16 had mitigation strategies developed, tracked and

successfully implemented to repair the damage in a timely manner, consistent with the indicator's target.

Damages to natural range barriers will begin to be reported in the 2019-2020 annual report.

Forecasting Assumptions and Analytical Methods:

It is anticipated that implementation of the indicator strategy will minimize the negative impact on range resources resulting from harvest operations.

Strategy and Implementation Schedule:

As of 2019, there are no natural range barriers or range developments mapped on the publicly available government mapping layers.

Information on the location and pre-harvest condition of natural range barriers and range developments are provided by range tenure holders through responses to referral requests on Forest Operations Schedules, and other operational plans (e.g. PMP's), or range-related mutually agreed action plans. In addition, natural range barriers and range developments may be identified and mapped during Site Level Plan (SLP) field data collection.

With the acknowledgement of range tenure holders, Managing Participants may contact the MFLNRORD for guidance and administrative support during discussions with range tenure holders to develop mitigation strategies. A copy of mutually agreed upon action plans will be provided to the MFLNRORD. Participants will seek District Manager approval of plans to construct, modify, remove, damage or destroy a range development.

Actions that the Managing Participants may implement when planning harvesting activities which may negatively impact natural range barriers and/or range developments are:

- Proactively contact range tenure holders and affected First Nations in situations where proposed timber harvest cutblocks may overlap natural range barriers or range developments, to determine if mitigation plans are necessary.
- Confirm with the MFLNRORD Range Officer and range tenure holder whether harvesting and road construction will remove or render ineffective a natural range barrier or range improvement.
- Where it is confirmed that timber harvesting or road construction will damage a range improvement, develop mitigation plans and seek authorization from MFLNRORD if the mitigation plan requires the Participant to construct, modify, remove, damage or destroy a range development on crown range.
- Make adjustments to road and/or cut block locations to reduce or eliminate impact to the natural range barrier or range development.

When developing strategies to restrict cattle movement in situations where it is anticipated that timber harvesting will remove or render ineffective natural range barriers, the Managing Participants may consider implementing the following strategies:

- Retain a reserve of trees wide enough to significantly impede the movement of cattle. Consult with the range tenure holder and the MFLNRORD Range Officer to identify the appropriate reserve size.
- Construct range developments such as post and wire fence lines, debris fences and / or cattle guards upon receipt of appropriate approvals.
- Make adjustments to road and/or cut block locations to reduce or eliminate impact to the natural range barrier.

Proposed actions related to mitigating damage to range developments, are tracked by the Participants in the Participants' forest management data tracking systems (e.g. COPI, LRM).

The location of natural range barriers and range developments are shown on operational maps, and pre-works with the Participants staff and contractors to identify what measures are needed, if any, to avoid, modify, temporarily remove and/or repair such structures.

Damage to natural range barriers and range developments is recorded by Participant staff through field inspections. Staff develop action plans to ensure mitigation, repair, or restoration measures are authorised by MFLNRORD and conducted in a timely manner.

Monitoring Procedure:

The Participant's tracking systems identify all action plans and target dates, including those derived from range-related mutually agreed action plans. An annual review of the tracking system will identify all range damage issues, and note whether the target and completion dates are consistent with this indicator.

Linkages to Operational Plans:

Range-related actions and target deadlines arising out of operational plan referrals of FOS's and PMP's etc. will be tracked in the incident tracking systems.

Provided the features are known and their locations shared with the Participants, Site Level Plans will identify natural range barrier and range development locations, if their location causes them to be at risk of damage from the Participants' operations, and what measures are necessary to protect or otherwise mitigate negative impact to natural range barriers and range developments resulting from timber harvesting and road construction operations.

Linkages to LRMP:

This indicator supports range management activities within the Fort St. John TSA, and therefore supports the following LRMP objectives:

- *Maintain livestock grazing opportunities on existing tenures.*
- *Maintain or enhance opportunities for livestock grazing.*

REVISION OF EXISTING INDICATOR #10 - NOXIOUS WEED AND INVASIVE PLANT CONTENT

Details of Amendment:

Revision of existing SFMP #3 Indicator #10 – Noxious Weed and Invasive Plant Content, indicator and target statements to include reference to noxious weed and invasive plants listed in current Provincial & Federal Regulations and Regional District guidelines. Revision of the indicator and target of Indicator #10 – Noxious Weed and Invasive Plant Content provides clarity regarding the plants considered to be noxious weeds and invasive species and commits to using seed lots certified as meeting the Canadian Seed Growers Association requirements to be considered as free of weed seed. Revised Indicator #10 – Noxious Weed and Invasive Plant Content will continue as a legal indicator and therefore requires approval from MFLNRORD. For the purposes of monitoring management performance to the indicator target and the SFMP Range and Forage Strategy, revised Indicator #10 will become effective April 1, 2020.

Green highlight denotes the proposed revision.

10 NOXIOUS WEED AND INVASIVE PLANT CONTENT

Indicator Statement	Target Statement
The percent of ~~prohibited and primary~~ noxious weeds, and known invasive plant ~~weed~~ species of concern in the seed mix analyses.	~~Seed mix analyses will have 0% content of prohibited and primary noxious weeds and known invasive weed species of concern plants as identified in the most current publication of "Invasive Plant Council Peace River Regional District Strategic Plan and Profile of Invasive Plants and Noxious Weeds and the provincial Prohibited Weed List" available from the Peace River Regional District~~ Seed lots utilized by the Participants will meet standards established by the Canadian Seed Growers Association regarding allowable content of seeds of noxious weeds and invasive plants as identified in the most current Provincial and Federal Regulations, and Regional District guidelines.
SFM Objective: Suitable habitat elements for indicator species	
Linkage to *FSJPPR*: For the purposes of Section 42 of the *FSJPPR* this indicator statement, target statement and acceptable variance will be used to determine if forest practices are consistent with the Range Management Landscape Level Strategy.	

Acceptable Variance:

The primary objective of seeding is to control erosion to protect water resources, with a secondary objective to discourage the establishment of invasive weeds and in some cases provide forage opportunities for cattle and/or wildlife. All seed lots sold in Canada go through a certification process

where the seed lot is tested to rate the weed content. Typically it is rated with an allowable maximum amount of weeds per 25g of seed. All weed and germination testing information is identified on the Certificates for that particular lot of seed. So for the purposes of this indicator, if the amount of weeds in the seed lot sample is below the allowable amount, the seed lot is considered to be “weed free”.

What is this indicator and why is it important?

There are 10 categories of seed certification according to the Canada Seeds Regulations and referenced in the British Columbia Rangeland Seeding Manual. All of them list a specific amount of allowable "weed" content, weed meaning any seed that is not the designated seed (so not necessarily invasive). It should be noted that both "Canada Certified" seed categories also permit inclusion of a small amount of identified primary and secondary noxious weeds. A seed lot’s certification is not based on the number of weeds it has, but on it’s vigour and purity. Therefore, a "common" seed certification could have a lower percentage of weeds and noxious species than a "pedigreed" or "certified" seed certification. The intent here is to use seedlots appropriate to the site conditions and management intent with as little weed seed content possible.

Natural species diversity can be negatively impacted by the aggressive germination and growth of noxious or invasive weeds. These weeds may occupy sites that might normally be occupied by naturally occurring vegetation such as herbs or shrubs, and may negatively impact natural or seeded domestic range and wildlife forage resources.

Following road construction, right-of-ways are grass seeded to minimize erosion and provide forage. This is the most significant manageable potential source of weed introduction to forested landscapes. By using site appropriate seed mixes certified to be free of specified weed species, complete with Canada Certified seed analyses, the Participants forestry operations can minimize the likelihood of accidentally introducing invasive plants and noxious weeds.

Current Status:

All reclamation seed broadcast by the licensee Participants during the 2018-19 reporting period is certified as having 0% content of prohibited and primary noxious weeds, and known regional invasive weed species of concern, as identified in the Sustainable Forest Management Plan.

For all broadcast seeding completed by BCTS licensees during the 2018-19 reporting period, the review of seed tags and seed analysis certificates verified 0% content of prohibited and primary noxious weeds, and known regional invasive weed species of concern, as identified in the Sustainable Forest Management Plan.

The Participants are not aware of any occurrence of noxious weeds occurring on forestry rights-of-way to date as a result of grass seeding activities.

Forecasting Assumptions and Analytical Methods:

Does forecasting apply (y/n)? Yes

It is anticipated that implementing the indicator strategy will reduce the potential for the introduction of noxious and invasive weed species through the road reclamation activities of the Participants. This will contribute to the maintenance of healthy ecosystems.

Strategy and Implementation Schedule:

For the purposes of this indicator, the Participants will refer to the most current versions of the following documents:

1) The Canada Weed Seed Order
2) The List of Regulated Invasive Plants in BC
3) The Peace River Regional District's Invasive Plant Program Strategic Plan and Profile

Within those documents the following categories are applicable to the implementation of this indicator:

- Prohibited noxious and primary noxious weeds as identified in the Canada Weed Seed Order
- Provincially noxious and regionally noxious species on the List of Regulated Invasive Plants in BC
- Regional Early Detection and Rapid Response as indicated in the Regional District Strategic Plan
- Category A and Category B species as indicated in the Regional District Strategic Plan

The Licensee Participants will review Canadian seed analysis certificates prior to purchasing seed lots to ensure there are no species in any of the above categories present. The licensee Participants will retain the Canadian seed analysis certificates after purchasing seed, to verify that species in the above categories are not present.

BCTS will request and retain seed tags from TSL holders, and review the associated seed analysis certificates to determine conformance to the indicator target.

Staff responsible for grass seeding will refer to the federal, provincial and regional noxious weed and invasive plant lists in the above noted documents to determine if changes to the lists have occurred in the last year. The staff will then confirm from the certificate that the seed is free of species in the above categories, and file the seed analysis certificate for future reference. In the rare event that urgent circumstances require the use of seed that does not meet the target, the supervisor will report the variance to the person responsible for the SFMP annual report. For these variance areas the supervisor will schedule action items in the incident tracking system to inspect the seeded areas within one year. In the event any weeds of concern are noted during the inspection, the supervisor will consult with government agencies on a site-specific basis on how to address the weed occurrence.

In situations where certified "weed free" seed is not available, the Participants will consider implementing alternative erosion control measures where practicable and appropriate.

In addition to ensuring the seed mix to be used is "free" of prohibited and primary noxious weeds and known regional invasive weed species of concern, the Participants will implement the following three additional measures to prevent the introduction and spread of noxious weeds and invasive plants:

1) Complete employee training and improve contractor awareness about noxious weeds and invasive plants.

2) Report any invasive plants or noxious weeds found during forest operations.

3) Compare the location of FOS blocks to the Provincial data set of known locations of noxious weeds and invasive plants to determine if there is any overlap. Where existing sites are found within cutblocks, one or more of the following activities may be implemented on that block:

   i. Enter the site into the block tracking application (LRM etc.)

   ii. Avoid disturbing the infested site where feasible.

   iii. Complete operations when there is decent snowpack where feasible.

   iv. Where known sites couldn't be avoided during forestry activities, visually inspect workers and equipment and remove any plant parts and mud prior to leaving the block.

   v. Treating invasive plants appropriately prior to commencement of activities.

      1. Appropriate treatment options for each species can be found in PRRD document: Profile of Invasive Plant Species within the Peace River Regional District or the Provincial document: Best Practices for Preventing the Spread of Invasive Plants during Forest Management Activities.

   vi. Minimize unnecessary soil disturbance and revegetate road surfaces as quickly as possible.

Monitoring Procedure:

This indicator will be monitored by an annual review of the seed analysis certificates and a review of the incident tracking system. Inspection and actions to address variances will be recorded and clearly identified and tracked in the Participants' incident tracking system by the responsible supervisor. Variances and follow-up inspections and actions will be noted in the Annual Report.

Linkages to Operational Plans:

None

Linkages to LRMP:

This indicator will assist in minimizing the spread of invasive plants and noxious weeds, which will enhance the establishment of plant species that meet other objectives, such as erosion control and foraging opportunities. Controlling noxious weeds has positive impacts on other non-timber resource values (e.g. Range). Therefore, this indicator supports the following LRMP objectives:

- *Control the spread of invasive plants and noxious weeds*
- *Restore functioning and healthy ecosystems*

Revision of existing Indicator descriptive text - #56 - MAINTENANCE OF WILDLIFE AND FISHERIES HABITAT VALUES

Details of Amendment:

Revisions are proposed to the description of the management intent of indicator #56 – Maintenance of Wildlife and Fisheries Habitat Values. The indicator and Target statements are not revised. The revision **addresses SFMP approval condition #3c.** Revisions to Indicator #56 will become effective April 1, 2020 for the purposes of monitoring management performance to the indicator target. Revised indicator #56 will continue as a non legal indicator and therefore does not require approval from MFLNRORD. It is included in this SFMP amendment for purposes of describing conformance with the conditions identified in the SFMP# 3 approval.

Green highlight denotes the proposed revision.

6.56 MAINTENANCE OF WILDLIFE AND FISHERIES HABITAT VALUES

Indicator Statement	Target Statement
Conformance to the SFMP indicators and targets pertinent to the maintenance of wildlife and fisheries habitat.	Participants will conform to the identified SFMP indicators and targets pertinent to the maintenance of wildlife and fisheries habitat.
SFM Objective: Recognition of Treaty 8 rights and respect of aboriginal rights through maintenance of landscape level biodiversity	
Linkage to *FSJPPR*: N/A	

Acceptable Variance:

Variances provided in the specific indicators will apply.

What is this indicator and why is it important?

This indicator ties the indicators associated with ecosystem diversity, species diversity, and water quality and quantity management to practices that are important to maintaining habitat for species that are the focus of hunting, fishing and trapping activities. The ability to practice these activities are rights held by First Nations under Treaty 8. These indicators incite implementation of management practices which result in the maintenance of wildlife and fisheries habitat, thereby supporting the hunting, fishing, and trapping rights embodied in Treaty 8.

The Fort St John TSA is within the larger geographic area of Treaty 8 of 1899, which established hunting, fishing and trapping as treaty rights for the local aboriginal First Nations communities. The rights as such are available across the treaty area and have no site specificity or quantum. The following First Nations have known traditional territory in the DFA: Prophet River, Doig River, Blueberry River, Halfway River, West Moberly, Saulteau, Fort Nelson, Horse Lake and Dene-Tha' (Assumption).

Maintenance of hunting, trapping and fishing opportunities are provided through the suite of SFMP ecological indicators noted below, which prompt actions that maintain habitat for fish and wildlife species across the Fort St John TSA.

Hunting and trapping opportunities are provided by effective habitat management practices designed to create a range of seral stages and forest types across the landscape. Moose, elk and caribou are iconic ungulate species found in the Fort St John TSA. Moose are of particular importance to First Nations as a food source. Some of the common commercial furbearer species in the DFA are fisher, marten, lynx, wolf and wolverine. Maintenance of connectivity corridors across the landscape is also an important consideration for maintaining ungulate and furbearer habitat.

This indicator reports on the participant's performance addressing the ecological indicators that are important to the maintenance of wildlife and fisheries habitat, with the intent being to maintain

hunting, fishing and trapping opportunities, which will allow Treaty 8 First Nations to practice their treaty rights.

Hunting and trapping rights are generally upheld by meeting Criterion 1 – Conservation of Biological Diversity, Element 1.1 Ecosystem Diversity – specifically #2 Seral Stage and #3 Patch Size, and Element 1.2 Species Diversity, more specifically by meeting the objective of suitable habitat elements and its relevant indicators: #5-Snags/Cavity sites, #6-Coarse Woody Debris, #7-Riparian Reserves, #8- Shrubs and #9-Wildlife Tree Patches.

Fishing rights are generally upheld by meeting Criterion 3 – Conservation of Soil and Water Resources, Element 3.2 Water Quality and Quantity, and more specifically by meeting the indicators of maintaining water quality (#35- WCQR, # 36-Protection of Streambanks, # 37- Spills Entering Waterbodies), and water quantity (#34- Peak Flow Index) within the natural ranges of variation.

The following indicators are pertinent to the maintenance of wildlife and fisheries habitat and used to measure the effectiveness of the Participants habitat management practices:

Ecosystem and Species Diversity Indicators supporting hunting and trapping opportunities:

- 6.1 Forest Types
- 6.2 Seral Stages
- 6.3 Patch Sizes
- 6.5 Snags/Cavity Sites
- 6.6 Coarse Woody Debris Volume
- 6.7 Riparian Reserves
- 6.8 Shrubs
- 6.9 Wildlife Tree Patches
- 6.11 Species At Risk Stand Level Management Guidelines
- 6.22 Riparian Corridors

Water Quality and Quantity Indicators supporting fishing opportunities:

- 6.34 Peak Flow Index
- 6.35 Water Quality Concern Rating
- 6.36 Protection of Streambanks and Riparian Values on Small Streams
- 6.37 Spills Entering Waterbodies

In addition, Indicator 6.5 Snags/Cavity Sites, Indicator 6.6 Coarse Woody Debris Volume and Indicator 6.22 River Corridors contribute to furbearer management, ensuring furbearer habitat and travel corridors are protected at the stand and landscape levels.

The indicator identifies and measures the Participants' effectiveness in recognizing and respecting existing treaty rights and in managing wildlife and fisheries habitat. In doing so the Participants demonstrate their role of recognizing and respecting society's commitment to sustain core traditional values and ways of life for First Nations in the DFA.

Current Status:

Participants refer SFMP's, FOS's and PMP's to affected First Nations for review and comment on how the plans may impact the First Nations' ability to practice the Treaty rights to hunt, fish and trap. In many cases First Nations are not able to provide site-specific comment regarding the impact of these plans on their ability to practice their treaty rights.

Where site-specific comments are provided, Participants may be able to mitigate the impact of planned activities on treaty rights by modification of planned activities. In situations where no site specific comments are provided, it is felt that the positive management of the indicators pertinent to the practice of treaty rights will result in continued opportunities for First Nations to practice treaty rights to hunt, fish, and trap.

Currently, the Participants are working on identifying additional connectivity corridors to better protect the connectivity of habitats for big game species, furbearers, fish and other wildlife species. Once identified, the connectivity corridors will be spatially defined on FOS maps.

During the period of April 1, 2018 to March 31, 2019 the Participants conformed to 14 of the 14 related indicators. Participants did not achieve the target of Indicator 6.9 Widlife Tree Patches.

Forecasting Assumptions and Analytical Methods:

Implementation of the indicator strategy will result in the maintenance of stand and landscape level habitat attributes, such as coarse woody debris and wildlife trees, that will benefit forest dwelling species.

Strategy and Implementation Schedule:

The Participants will:

- Continue to manage the indicators pertinent to the practice of treaty rights.
- Continue to engage with First Nations in the development of strategic and operational plans.
- Report annually on the performance of the indicators as noted above.

Monitoring Procedure:

The Participants will annually review conformance to the 14 related indicators, and based on that review determine the level of conformity to this indicator's target, which will be documented in annual reports.

Linkages to LRMP:

- *Maintain fish habitat and water quality for priority fish species.*
- *Maintain habitat for priority furbearing species.*
- *Maintain high capability ungulate winter habitat.*
- *Manage critical wetland habitats for waterfowl and other wildlife species.*
- *Protect or enhance habitats for red and blue listed species.*

Revision of SFMP# 3 Table 8 - Landscape Level Strategies and Related Performance Indicators

Details of Amendment:

Revisions are proposed to the Table of Performance Indicators used to evaluate conformance to the SFMP Landscape Level Strategies. Revisions to Table 8 - Landscape Level Strategies and Related Performance Indicators, will become effective April 1, 2020 for the purposes of monitoring management performance to the landscape level strategies. Revised Table 8 will continue as legal SFMP content and therefore requires approval from MFLNRORD.

Green highlight denotes the proposed revision.

Table 8: Landscape Level Strategies and Related Performance Indicators Submitted for Approval

Landscape Level Management Strategy (& Section No.)	Legal Indicators for Evaluating LLS (S.42 of *FSJPPR*)	Indicators Affecting Part 3 Div 5 (Sec 35(5) or 35(6))	Related Non-Legal Indicators
4.1 Timber Harvesting	18 (Graham Timing) 19 (Graham ha) 20 (Graham Connectivity) 21 (MKMA) 50 (Coordination) 51 (AAC Partition-Deciduous Planning) 51A (AAC Partition Deciduous Harvest Performance) 52 (AAC Partition-Conifer Planning) 52A (AAC Partition Conifer Harvest Performance)		27 (Silv.Systems) 48 (Deliveries) 53 (Cut Control) 70 (Residual Fibre Utilization)
4.2 Road Access	24 (Perm Access) 45 (R.O.S.)	24 (Perm Access)	40 (Coord Developments)
4.5 Patch/Seral/Adjacency	2 (Seral Stage)* 3 (Patch Size)* 6 (CWD) 9 (WTP)	6 (CWD) 9 (WTP)	

Landscape Level Management Strategy (& Section No.)	Legal Indicators for Evaluating LLS (S.42 of *FSJPPR*)	Indicators Affecting Part 3 Div 5 (Sec 35(5) or 35(6))	Related Non-Legal Indicators
4.3 Riparian	7 (Reserves) 22 (River Corridors) 34 (Peak Flow Index) 36 (Streambanks)	7 (Reserves) 22 (River Corridors)	
4.9 Visual	44 (VQO)	44 (VQO)	
4.6 Forest Health	1 (Forest Types) 2 (Seral Stage)* 3 (Patch Size)* 13 (Seed Use) * 25 (Forest Health-Silv) 49 (Forest Health-FOS)		26 (Salvage)
4.4 Range & Forage	10 (Noxious Weeds) 42 (Damage to Range Improvements)		41(Range Action Plans)
4.7 Reforestation	13 (Seed Use)* 28 (Species Comp.) 29 (Reforest. Assess.) 30 (Est. Delay)	13 (Seed Use)* 29 (Reforest. Assess.)	14 (Decid. Regen)
4.8 Soil	4 (Soil Disturbance)		
*denotes indicators that are used to measure more than one strategy			

The SFMP must specify the provisions, if any, of Part 3 Division 5 of the *FSJPPR* and the schedules that are to be affected through the application of the proposed landscape level strategy, and include rationales on how these will provide at least equivalent protection for forest resources, be consistent with the preamble to the Act, and provide for adequate management and conservation of forest resources. The SFMP must also include any applicable performance standards that are to be used for the purposes of Part 3 Division 5, and the associated schedules, of the *FSJPPR*. These can be found in section 8 “Changes to Requirements” of the SFMP.