

SFMP# 2 Amendment #3

Scope of Amendment:

This amendment to SFMP# 2 adds new CSA indicator #67. This revision to SFMP# 2 is made to effect continuous improvement and conformance with the core indicator content requirements of the CSA Z809-08 standard.

No revisions have been made to the regulatory performance indicators contained in SFMP#2. 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. The indicator that is the subject of this amendment is not considered a regulatory performance indicator, rather it is considered as a CSA indicator only.

Therefore this amendment to the SFMP CSA indicator matrix does not require government approval or formally advertised public review. It must be noted that the CSA indicator that is the subject of this amendment was thoroughly reviewed with the Fort St. John Pilot Project public advisory group (PAG).

Monitoring of management performance under indicator # 67 will begin with cut blocks harvested after April 1, 2015.

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



Date: March 27, 2014

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Planning Coordinator-North
Forest Management Group
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Details of Amendment:

The following indicator #67 is added to SFMP# 2. Indicator #67 will become effective April 1, 2015 for the purposes of monitoring management performance to the indicator target.

6.67 RARE ECOSYSTEMS

Indicator Statement	Target Statement
Percentage of the area of rare ecosystem groups reserved from harvest.	100% of the area of rare ecosystem groups will be reserved from harvest.
SFM Objective: Maintain the diversity and pattern of communities and ecosystems within a natural range	
Linkage to FSJPPR: N/A	

Acceptable Variance:

10% of the total rare ecosystem group forest area may be harvested, where required to construct safe access or in situations where less overall environmental disturbance is created by building access through the rare ecosystem group versus building access to avoid the rare ecosystem group. Based on assessments completed by professionals, those sites deemed poor representations of the rare ecosystem group may be harvested.

What is this indicator and why is it important?

Maintaining representation of a full range of ecosystem types is a widely accepted strategy to conserve biodiversity. Ecosystem conservation represents a coarse-filter approach to biodiversity conservation. It assumes that by maintaining the structure and diversity of ecosystems, the habitat needs of various species will be provided. For many species, if the habitat is suitable, populations will be maintained.

The following is adapted from Bunnell 2002 and Wells et. al. 2003. Habitat structures and patterns are “medium filters” that are monitored by the indicators of, forest type, seral stage, patch size, snags/cavity sites, coarse woody debris, riparian, shrubs, and wildlife tree patches, and are designed to capture the habitat requirements of many species. There are, however, many more species about which we know little, but that may be restricted to particular ecosystem types or geographic localities. Most species, but especially those for which knowledge is sparse or absent, are best sustained by ensuring that some portion of each distinct ecosystem type is represented in a relatively unmanaged state.

Unmanaged stands also play an important role as a precautionary buffer against errors in efforts intended to sustain species in the managed forest. While we can develop management practices intended to keep many forest-dwelling species in managed forests, we also recognize that we have insufficient knowledge to ensure that proposed practices will meet all species’ requirements in managed stands. That is particularly true of the many poorly known, or completely unknown, organisms. Unmanaged stands are an ecological safeguard against the inevitable errors that may occur during management.

Poorly understood functions also will be sustained in unmanaged areas. For example, natural disturbances can occur that would otherwise be suppressed or reduced. While some aspects of natural disturbance can be mimicked in managed stands, other aspects cannot be (e.g., large patches of burned snags, or large areas attacked by spruce or balsam bark beetles). Some species benefit from or rely on these features of natural disturbance, and so may not be productive in managed landscapes.

A final function of unmanaged areas in the landscape is to provide an ecological baseline against which the effects of human activities can be compared (Arcese and Sinclair 1997). This role as a benchmark is especially critical in the long-term monitoring required to assess effectiveness of forest practices. It is preferable to conduct this type of representative management based on site series or clusters of site series or plant associations. An unmanaged condition for the purposes of this indicator is considered as areas not contributing to the long-term harvest level within the DFA or non-timber harvesting land base (Non-THLB).

For the purposes of this SFMP rare forest ecosystem groups are defined as those forest ecosystem groups that make up less than 0.1% (2,166 ha) of the forested portion of the crown forest landbase (2,166,838 ha).

Current Status:

Rare ecosystems are frequently identified as focal points for conservation concern. Provincially, ecosystems are listed based largely on frequency of occurrence or rarity. There are at least three broad reasons for creating local lists, including:

- to help assess the status of an ecosystem throughout a planning area;
- to focus attention and tracking on ecosystems that merit conservation concern; and
- to help rank allocation of resources to conservation efforts, such as parks, Wildlife Habitat Areas, Old Growth Management Areas (OGMA's) or Wildlife Tree Patches (WTPs).

An analysis of ecosystem representation across all Canfor licensee operations was conducted in 2011¹. This analysis predicted the abundance and representation of ecosystem groups within four distinct regions and 13 management units across Canfor and BCTS operations in BC. The following steps were carried out for this analysis:

- Identifying the non-harvesting land base,
- Classifying the forested land base into ecosystem groups, and
- Evaluating the amount and how the ecosystem groups are distributed in the harvesting and non-harvesting land base.

Classification of the landscape into units that represent the diversity of ecosystems is fundamental to representation analysis. Representation studies worldwide have used various classification systems based on landform-vegetation classes (Awimbo, Norton, and Overmars 1996), climate-physiography-soil-vegetation interactions (Lapin and Barnes 1995), breeding bird communities (Saetersdal and Birks 1993), and physiography alone (Wessels, Freitag, and van Jaarsveld 1999). The Biogeoclimatic Ecosystem Classification (BEC) (Pojar, Klinka, and Meidinger 1987) integrates climate, soils, and vegetation into a hierachal scheme that lends itself well to representation analysis for forest ecosystems of British Columbia.

Definition of ecosystem types requires classification at an ecologically appropriate scale (Pregitzer, Goebel, and Wigley 2001). Existing provincial BEC mapping is commonly used for coarse filter management using the variant level. This information is often too general since variants describe climate and may contain a wide range of ecosystems that may respond differently to forest management. Conversely, representation at the BEC site series level is not appropriate for a coarse filter approach for practical reasons (too many groups) and because there is limited evidence that organisms are linked to this level of detail (Huggard 2000; Bunnell et al. 2003).

The goal for the ecosystem classification was to identify a level of site series aggregation that recognizes the uniqueness of individual sites while providing logical ecosystem units for coarse filter management. Ralph Wells created groups of site series (ecogroups) for this analysis using statistical methods (described in more detail in Appendix C: Site Series Cluster Analysis of the Ecosystem Representation Analysis Report). Expert review of the ecogroups was provided by Bruce Rogers and Michael Ryan (Research Ecologists, MFLNRO).

The Fort St John MU is approximately 4.7 million hectares in north-eastern BC. It is mostly in the North-East Plains region, with the western portion of the MU in the North-East Mountains region. The Timber Harvesting Landbase makes up 51% of the Crown Forest Landbase. The Crown Forested Landbase includes 16,354 ha of area that is considered as non forest ecogroup area (alpine, wetlands, parkland non forest variants).

¹ *Ecosystem Representation Analysis Final Report January 18th, 2012* Forest Ecosystem Solutions Ltd.

Table 1 Net down summary

Classification	Net Area (ha)
Total TSA Area	4,676,639
Excluded Land	525,837
Non-forest Land	1,822,588
Crown Forested Land Base (CFLB)	2,328,215*
Parks, Reserves and Recreation Areas	80,901
Wildlife Habitat	63,389
Riparian Reserve Zones	34,740
Visual Quality Objective (VQO) preservation	2,849
Environmentally Sensitive Areas (ESA)	44,562
Physically Inoperable	27,559
Economically Inoperable (Variable NHLB)	889,466
Timber Harvesting Land Base (THLB)	1,184,748

*Includes 161,354 ha of non forest ecogroup area.

There are six forested BEC variants in the Fort St John MU, and the highest BEC responsibility is for variant BWBSwk2 at 89%. The ecogroups that occur within this variant in Fort St. John are:

- BWBSwk2 – North-East Plains 3, 6, 11, 12, 14, 19, 20, 26, 27, 28, and 31

Ecosystem Representation Analysis examines the proportion of each ecosystem unit that is expected to remain unharvested. A level of representation of ecogroups in the non harvesting land base (NHLB) provides an ecological safeguard to ensure that some portion of each distinct ecosystem type is represented on the landbase in a relatively unmanaged state. See Table 2 for the analysis of ecogroup representation within the NHLB.

There are a total of 36 ecogroups in Fort St John, 11 in the North-East Mountains region and 25 in the North-East Plains. The North-East Mountains groups have very high NHLB representation (all greater than 50%), and the North-East Plains groups range from a low of 25% for group 24 to 91% representation for group 22. Overall, there is 47% representation of ecogroups in the NHLB.

Table 2 Fort St John MU representation of ecogroups in the NHLB

Region	Group Number	Group Name	Forest Area (ha)	Percent NHLB
NE Mtns	69	hygric SWBmk	2,303	53.2%
	68	subhygric-hygric SWBmk	26,063	58.0%
	25	submesic-mesic SWBmk	95,221	58.5%
	46	submesic-subhygric SWBmk	2,656	63.0%
	9	subxeric ESSFmv4	180	68.5%
	30	subxeric-mesic ESSF	107,640	69.7%
	21	subxeric-hygric ESSF	4,915	70.7%
	43	hygric ESSFmv4	219	70.7%
	48	mesic-hygric ESSF/SBS	29,184	71.6%
	5	subxeric SWBmk	2,538	74.9%
NE Plains	3	xeric SWBmk	891	76.0%
	24	submesic-subhygric BWBWmw	227,678	24.8%
	21	submesic-hygric BWBSmw\$	208,483	30.5%
	20	mesic-subhygric BWBSwk2\$	679	40.4%
	26	submesic-mesic BWBSwk	148,886	40.5%
	19	submesic-mesic BWBSwk2\$	36,681	43.2%
	16	submesic-subhygric BWBSmk\$	103,220	44.1%
	31	mesic-hygric BWBSwk\$	2,965	44.4%
	11	submesic BWBSwk2\$	4,255	45.5%
	8	submesic BWBSmk\$	21,459	46.2%
	33	hygric BWBSwk3	207	46.8%
	12	submesic-mesic BWBS	535,897	47.7%
	27	subhygric-hygric BWBSwk2	30,492	49.6%
	9	submesic-subhygric BWBS\$	8,135	51.5%
	25	mesic-hygric BWBS (horsetail)	294,252	52.9%
	6	xeric-subxeric BWBSwk2	410	53.6%
	28	mesic-subhygric BWBSwk2	8,466	54.1%
	4	xeric-subxeric BWBS	2,674	59.0%
	1	xeric-subxeric BWBSmk\$	1,840	68.3%
	34	subhygric-hygric BWBSmk	9,048	69.0%
	15	submesic-subhygric BWBS	48,486	69.6%
	23	mesic-subhygric BWBSmw\$	4	69.8%
	14	subxeric-hygric BWBS	200,299	74.2%
	3	xeric-subxeric BWBSwk\$	36	77.5%
	2	xeric-subxeric BWBSmw\$	10	86.0%
	22	submesic BWBS\$	467	91.1%
				2,166,838
				48.8%

Most of the ecogroups have low abundance, the most common is North-East Plains group 12, at 25% of the CFLB (Table 3). The rarest is North-East Plains group 23, with only 4 ha total. There are 11 ecogroups that are rare, with an abundance of less than 0.1% (Table 3).

Table 3 Ecogroup abundance in the Fort St. John MU

Region	Group Number	Group Name	Forest Area (ha)	Abundance (% of CFLB)	Status
NE Mtns	9	subxeric ESSFmv4	180	0.0%	Rare
	43	hygric ESSFmv4	219	0.0%	Rare
	3	xeric SWBmk	891	0.0%	Rare
	69	hygric SWBmk	2,303	0.1%	
	5	subxeric SWBmk	2,538	0.1%	
	46	submesic-subhygric SWBmk	2,656	0.1%	
	21	subxeric-hygric ESSF	4,915	0.2%	
	68	subhygric-hygric SWBmk	26,063	1.2%	
	48	mesic-hygric ESSF/SBS	29,184	1.3%	
	25	submesic-mesic SWBmk	95,221	4.4%	
	30	subxeric-mesic ESSF	107,640	5.0%	
NE Plains	23	mesic-subhygric BWBSmw\$	4	0.0%	Rare
	2	xeric-subxeric BWBSmw\$	10	0.0%	Rare
	3	xeric-subxeric BWBSwk\$	36	0.0%	Rare
	33	hygric BWBSwk3	207	0.0%	Rare
	6	xeric-subxeric BWBSwk	410	0.0%	Rare
	22	submesic BWBS\$	467	0.0%	Rare
	20	mesic-subhygric BWBSwk2\$	679	0.0%	Rare
	1	xeric-subxeric BWBSmk\$	1,840	0.1%	Rare
	4	xeric-subxeric BWBS	2,674	0.1%	
	31	mesic-hygric BWBSwk\$	2,965	0.1%	
	11	submesic BWBSwk2\$	4,255	0.2%	
	9	submesic-subhygric BWBS\$	8,135	0.4%	
	28	mesic-subhygric BWBSwk2	8,466	0.4%	
	34	subhygric-hygric BWBSmk	9,048	0.4%	
	8	submesic BWBSmk\$	21,459	1.0%	
	27	subhygric-hygric BWBSwk2	30,492	1.4%	
	19	submesic-mesic BWBSwk2\$	36,681	1.7%	
	15	submesic-subhygric BWBS	48,486	2.2%	
	16	submesic-subhygric BWBSmk\$	103,220	4.8%	
	26	submesic-mesic BWBSwk	148,886	6.9%	
	14	subxeric-hygric BWBS	200,299	9.2%	
	21	submesic-hygric BWBSmw\$	208,483	9.6%	
	24	submesic-subhygric BWBWmw	227,678	10.5%	
	25	mesic-hygric BWBS (horsetail)	294,252	13.6%	
NE Plains	12	submesic-mesic BWBS	535,897	24.7%	

2,166,838

100.0%

Table 4 Rare Ecogroups BEC site series and association

Region	Ecogroup Number	Ecogroup Name	BEC Site Series	Moisture-Nutrient regime	Site Association
NE Mtns	3	xeric SWBmk	SWB mk-02	Very xeric-subxeric; very poor-poor	Sw - Scrub birch - Cladina
	9	subxeric ESSFmv4	ESSF mv4-02	Subxeric-submesic; poor	BIP1 - Crowberry - Cladina
	43	hygric ESSFmv4	ESSF mv4-05	hygric; poor-rich	BI - Alder - Horsetail
NE Plains	1	xeric-subxeric BWBSmk\$	BWBSmk-102\$	xeric-subxeric; poor-rich	At - Soopolallie - Kinnikinnick
	2	xeric-subxeric BWBSmw\$	BWBSmw102\$	xeric-subxeric; poor-rich	At - Soopolallie - Kinnikinnick
	3	xeric-subxeric BWBSwk\$	BWBSwk1-102\$	xeric-subxeric; poor-rich	At - Kinnikinnick - Fuzzy-spiked wildrye
			BWBSwk2-102\$	xeric-subxeric; poor-rich	At - Kinnikinnick - Fuzzy-spiked wildrye
	6	xeric-subxeric BWBSwk	BWBSwk2-102	xeric-subxeric; very poor-medium	PI - Lingonberry - Reindeer lichen
	20	mesic-subhygric BWBSwk2\$	BWBSwk2- 110\$	mesic-subhygric; medium-rich	At - Highbush cranberry - Bluebells
	22	submesic BWBS\$	BWBSwk1-103\$	submesic; medium-rich	At - Rose - Fuzzy-spiked wildrye
	23	mesic-subhygric BWBSmw\$	BWBSmw-110\$	mesic-subhygric; rich	AT - Highbush-cranberry - Oak fern
	33	hygric BWBSwk3	BWBSwk3-111	hygric; very poor-poor	Sb - Horsetail - Steppe-moss

Forecasting Assumptions and Analytical Methods:

Does forecasting apply (y/n)? Yes

Area identified as rare ecosystems within the Fort St. John MU represents 4,943 ha or 0.23% of the crown forested land base.

It is anticipated that rare ecosystems, as defined by the current ecosystem representation analysis, will be maintained into the future. It is anticipated that a diversity of ecosystems exhibiting "rare" attributes will be maintained, thereby enabling a diversity and abundance of naturally occurring plants, animals and their habitats to be maintained into the future.

Strategy and Implementation Schedule:

Ecological site identification consists of collecting accurate site, soil, and vegetation information, and then using the various tools and descriptive material presented in the publications "A Field Guide For Ecosystem Identification for the Boreal White and Black Spruce Zone of British Columbia" and "A Field Guide for Site Identification and Interpretation for the Northern Rockies Portion of the Prince George Forest Region" to identify the site unit that best fits the information collected. The development of an appropriate management prescription depends on accurate site description and other site-specific data (e.g., slope gradient, soil texture), as well as correct site unit identification. Combining site identification with the collection of site, soil, and vegetation data provides the most complete ecological description of a site. The intent is to reserve the area of representative rare ecosystems encountered in the field during harvest block layout activities.

There is much natural variability in ecosystems, and it is important to approach ecosystem classification with that understanding. Not every ecosystem can be easily "pigeonholed" into a classification unit. To be reserved from harvest, a candidate "rare" ecosystem must be a good representation of the ecogroup considered to be rare by the ecosystem representation analysis. Based on assessments completed by forest professionals, those ecosystems that exhibit significant variability that prevents definitive identification and are therefore deemed poor representation of the rare ecogroup, may not be reserved from harvest.

All cut block layout completed after June 2014 will incorporate an assessment of ecological site classification to identify rare ecosystems at the fieldwork stage of development. When a mapable unit (typically ≥ 1.0 ha that are not part of complexes) of the ecosystems noted as rare in Table 3, are identified in the field, they will be reserved from harvest. In situations where the rare ecogroup is part of a site series complex, the rare ecogroup will be reserved from harvest if the site series complex is ≥ 2 ha in size and the rare ecogroup comprises greater than 60% of the total area of the site series complex.

Periodically, revision of the list of rare ecosystems may occur by way of ecosystem representation analyses conducted in conjunction with Timber Supply Review processes or by stand alone ecosystem representation analyses, which may be triggered by forest inventory or predictive ecosystem mapping updates for the DFA.

Monitoring Procedure:

Monitoring of management performance under indicator # 67 will begin with cut blocks harvested after April 1, 2015.

Annually report any incidents of harvesting that occurred in ecosystem groups defined as rare. During development of site level plans blocks are compared against the predictive rare ecosystem data and retention activities identified where the presence of the rare ecosystem is confirmed in the field. The results of the ground confirmation will be reported annually in the annual report.

Linkages to Operational Plans:

In order to ensure that 100% of the rare ecosystem groups are reserved from harvesting, the following actions will be undertaken.

- Prior to layout being conducted a map identifying the predicted locations of rare ecosystems is compared to proposed road and block locations.
- The requirement to reserve rare ecosystems from harvest is reviewed with layout staff and contractors during the pre-work stage. This will enable the layout crews to identify any of the rare ecosystem sites during their fieldwork.

- Where representative rare ecosystem groups are identified in the field, the areas will be reserved from harvest or road construction by either removing the area from the harvest block or incorporating the area in WTP's or other reserves.
- In the situations noted above where a rare ecogroup is not reserved from harvest, a rational describing the reasons for harvesting the ecogroup will be prepared by the prescribing professional.

Linkages to LRMP:

This indicator helps to support the following LRMP objectives by ensuring that rare forest ecosystem groups are maintained over time across the DFA.

*Maintain functioning and healthy ecosystems,
Enhance timber harvesting and a sustainable long-term supply,
Maintain timber harvesting and forest management opportunities,
Manage for forest health.*

Details of Amendment:

Following is the revised CSA Matrix 47, which reflects the addition of Indicator #67 to SFMP #2.

47.0 CSA Matrix² Fort St. John Pilot Project SFM Matrix

6.0 The SFM Performance Requirements: CCFM Criteria and CSA SFM Elements	Value	Objective	CSA core Indicator (for reference only)	SFMP Indicator	Target
The organization, in conformance with the public participation process requirements set out in Section 5, will identify DFA-specific values, objectives, indicators and targets for each of the CSA SFM Elements described in Clauses 6.1-6.6, as well as any other values associated with DFA.			Indicator - a variable that measures or describes the state or condition of a value.		Target - a specific statement describing a desired future state or condition of an indicator. Targets should be clearly defined, time-limited, and quantified, if possible.
CCFM Criterion 1 – Conservation of Biological Diversity					
Conserve biological diversity by maintaining integrity, function and diversity of living organisms and the complexes of which they are part.					
Element 1.1 Ecosystem Diversity - Conserve ecosystem diversity at the stand and landscape levels by maintaining the variety of communities and ecosystems that naturally occur in the DFA					
Ecosystem Diversity					
Maintain the diversity and pattern of communities and ecosystems within a natural range					
1.1.1 - Ecosystem area by type					
17 - Representative Examples of Ecosystems					
1.1.2 - Forest area by type or species composition	1 - Forest Types				
					All forest type groups by landscape unit will meet or exceed the minimum area percentage in table 9

² matrix number reflects the PAG meeting at which it was approved.

	28 - Species Composition	Relative change in plantation composition versus harvest composition for spruce and pine	The relative proportion of spruce and pine planted annually will equal the proportions harvested annually (excluding fill planting)
1.1.3 - Forest Area by serial stage or age class	2 - Seral Stage	The minimum proportion (%) of late seral forest by NDU	The minimum proportion (%) of late seral forest by NDU as identified in table 11 will be met
	3 - Patch Size	Percent area by Patch Size Class (0-50, 51-100, and >100 ha) by NDU	A minimum of 9 of 18 of the baseline targets for early patches will be achieved during the term of this SFMP
	5 - Snags / cavity Sites	Number of snags and/or live trees (>23 cm dbh) per ha on prescribed areas	Retain annually an average of at least 6 snags and/or live trees (>23cm dbh) per hectare on prescribed areas
1.1.4 - Degree of within-stand structural retention	9 - Wildlife Tree Patches	Cumulative Wildlife Tree Patch percentage in blocks harvested under the FSJPPR in each Landscape Unit	Cumulative Wildlife Tree Patch % will meet or exceed the minimum target in each LU (Blueberry 6%, Halfway 3%, Kahntah 7%, Kobes 5%, Lower Beatton 8%, Milligan 6%, Tommy Lakes 3%, Trutch 5%, Sikanni 4%, Graham 4%, Crying Girl 6%)
	1.2.1 - Degree of habitat protection for selected focal species, including species at risk	5 - Snags / Cavity Sites	See indicator # 5
	Suitable habitat elements for indicator species. Maintain habitats for species at risk	6 - Coarse Woody Debris Volume	See indicator # 6
Element 1.2 Species Diversity - Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time, including habitats for known occurrences of species at risk.	Species Richness	7 - Riparian Reserves	The number of non-compliances to riparian reserve zone standards
	1.2.2 - Degree of suitable habitat in the long term for selected focal species, including	8 - Shrubs	The proportion of shrub habitat (%) by Landscape Unit
			No non-compliances to riparian reserve zone standards
			Each landscape unit will meet or exceed the baseline target (%) proportion of shrub habitat

species at risk	9 - Wildlife Tree patches	See indicator # 9	
11 - Species at Risk Stand Level Management Guidelines	The percentage of SLP's prepared annually for 'effected' cutblocks that incorporate one or more stand level species at risk management guidelines	100% of SLPs prepared annually for effected cutblocks will incorporate one or more species at risk management guidelines	
16 - Ungulate Winter Ranges, Wildlife Habitat Areas & MKMA	Proportion of activities consistent with the objectives of the Muskwa-Kechika Management Area (MKMA), and general wildlife measures for Ungulate Winter	All pilot Participant activities will be consistent with the objectives of the MKMA, and general wildlife measures for Ungulate Winter Ranges and Wildlife Habitat Areas	
17 - Representative Examples of Ecosystems	See indicator # 17		
1.2.3 - Proportion of regeneration comprised of native species	10 - Invasive Plants / Noxious Weeds	The % prohibited and primary noxious weeds, and known invasive weed species of concern, in seed mix analysis	Seed mix analyses will have 0% content of prohibited and primary noxious weeds and known invasive plants, as identified in the most current publication of "Listing of Invasive Plants", available from the Peace River Regional District

	the DFA.	17 - Representative Examples of Ecosystems	See indicator # 17	
18 - Graham Harvest Timing	The number of clusters in the Graham IRM Plan area where active operational harvesting is concurrently occurring		Operational harvesting within the Graham IRM Plan area will be constrained to no more than 1 'cluster' of cutblocks at any one time	
19 - Graham Merch Area	Cumulative merchantable area (hectares) within blocks harvested in the Graham IRM Plan area since 1997		The cumulative merchantable area (hectares) within harvested blocks will not exceed the planned maximum cumulative harvest areas, as measured at the end of each time period: Period 2 (April 2012): 6569 ha; Period 3 (April 2017): 9355 ha	
20 - Graham Connectivity	Area (hectares) harvested in cutblocks in the Graham IRM area, within the permanent alluvial and non-productive/non-commercial components of the connectivity corridors		Zero hectares harvested within cutblocks in the permanent alluvial and non-productive/non-commercial components of the connectivity corridors	
21 - MKMA harvest			A minimum of one long-term harvest plan submitted no later than 1 year following government approval of a landscape unit objective under the MKMA Act, that applies to the Fort St. John TSA portion of the MKMA	

		The percentage of harvested areas that create openings greater than 1 hectare within 100 metres of RRZ's in identified major river corridors	No openings exceeding 1 hectare in blocks within the major river corridors harvested under the FSJPPR (i.e. after November 15, 2001)
	22 - River Corridors	57 - Number of known Values and Uses addressed in Operational Planning	Percentage of known traditional site-specific aboriginal values and uses that are addressed in operational plans
		15 - Class A Parks, Ecological Reserves & LRMP Designated Protected Areas	See indicator # 15
		16 - Ungulate Winter Ranges, Wildlife Habitat Areas & MKMA	See indicator # 16
	1.4.2 - Protection of identified sacred and culturally important sites in SMZ areas	17 - Representative Examples of Ecosystems	See indicator # 17
		18 - Graham Harvest Timing	See indicator # 18
		19 - Graham Merch Area	See indicator # 19
		20 - Graham Connectivity	See indicator # 20
		21 - MKMA harvest	See indicator # 21

			The area weighted average establishment delay for coniferous regeneration will not exceed two years. The area weighted average establishment delay for deciduous regeneration will not exceed three years. The area weighted average establishment delay for mixedwood stands regeneration will not exceed three years
	30 - Establishment Delay (years)		
	2 - Seral Stage	See indicator # 2	
	9 - Wildlife Tree Patches	See Indicator # 9	
	24 - Permanent Access Structures	Percentage of the total area in Managing Participants' cutblocks occupied by permanent access structures, in which harvesting was completed	A maximum of 5% of the total area in Managing Participants' cutblocks occupied by permanent access structures in which harvesting was completed, as determined on a 3 year rolling average
	Non-Core		
	26 - Salvage	The relative proportion of area of merchantable fire-damaged stands salvaged within a management intensity class	The relative proportions of salvage will be highest in the high intensity zones, and lowest in the low intensity zones over the SFM Plan period (April 1, 2010 - March 31, 2016)
	49 - Forest Health FOS Planning	Percentage of new conifer-leading harvest blocks in the 2010 FOS that are pine-leading	A minimum of 60% of new conifer-leading harvest blocks in the 2010 FOS will be pine-leading
Element 2.2 Forest Ecosystem Productivity - Conserve forest ecosystem productivity and productive capacity by maintaining	Ecosystem Productivity	Ecosystem functions capable of supporting naturally	2.2.1 - Additions and deletions to the forest area 24 - Permanent Access Structures See indicator # 24

ecosystem conditions that are capable of supporting naturally occurring species. Reforest promptly and use tree species ecologically suited to the site	occurring species exist within the range of natural variability	40 - Coordinated Developments	Number of coordinated developments	Report annually the number of proposed coordinated developments that occurred	
		66 - Deletions to Forest Area	Percentage of gross crown forest landbased in the DFA converted to non-forest land use through forest management activities of the participants during the term of SFMP #2.	Less than 0.6% of the gross crown forest landbase in the DFA will be converted to non-forest land use through forest management activities of the participants during the term of SFMP #2.	
		25 - Forest Health	See Indicator # 25		
		31 - Long Term Harvest Level	Long-term harvest level (LTHL) as measured in cubic metres per year (m^3/yr)	We will propose an Allowable Annual Cut (AAC) that sustains the LTHL of the Defined Forest Area (DFA)	
	2.2.2 - Proportion of the calculated long-term sustainable harvest level that is actually harvested	32 - Site Index	Site index	Average post harvest site index will not be less than average pre-harvest site index on blocks harvested under the pilot project regulation	
		Productive Capacity for Timber	Maintain or enhance landscape level productivity	Jan 1 2010- Dec 31 2016: Industry Participants: -Not to exceed 110% of the combined cumulative coniferous AAC for the 6 year period, -Not to exceed 110% of the combined cumulative deciduous AAC for the 6 year period. BCTS Participant: -Not to exceed 110% of the combined cumulative coniferous commitment offered for sale for the 6 year period, -Not to exceed 110% of the combined cumulative deciduous commitment offered for sale for the 6 year period	
		53 - Cut Control	Percentage of total Allowable Annual Cut (AAC) charged to licensee tenure holders or BCTS Participants during the term of the SFMP	CCFM Criterion 3 – Conservation of Soil and Water Resources	
				Conserve soil and water resources by maintaining their quantity and quality in forest ecosystems.	

<p>Element 3.1 Soil Quality and Quantity - Conserve soil resources by maintaining soil quality and quantity</p> <p>Protect soil resources to sustain productive forests</p>	<p>3.1.1 - Level of Soil Disturbance</p> <p>3.1.2 - Level of downed woody debris</p>	<p>4 - Soil Disturbance</p> <p>32 - Site Index</p>	<p>Number of blocks with non-conformances to soil disturbance limits reported annually by Managing Participant</p> <p>See indicator # 32</p>	<p>Zero blocks will have non conformances to soil disturbance limits</p>
	<p>3.2.1 - Proportion of watershed or water management areas with recent stand-replacing disturbance</p> <p>Maintenance of water quantity</p>	<p>6 - Coarse Woody Debris Volume</p> <p>34 - Peak Flow Index</p>	<p>The percentage of watersheds achieving baseline targets for the peak flow index and the percent of watershed reviews completed where the baseline target is exceeded</p>	<p>95% or more of the watersheds will be below the baseline target. All watersheds that exceed the baseline target will have a watershed review completed wherever new harvesting is planned</p>
<p>Element 3.2 Water Quality and Quantity - Conserve water resources by maintaining water quality and quantity</p>	<p>Maintenance of water quality</p>	<p>Non-Core</p> <p>7 - Riparian Reserves</p>	<p>See indicator # 7</p>	

		The percentage of surveyed stream crossings annually identified with a high WQCR rating on forestry roads within the DFA for which participants have stewardship (*WQCR – water quality concern rating)	On an annual basis, fewer than 30% of the total number of surveyed stream crossings on roads for which the participants have stewardship will have 'High' WQCR
	35 - Water Quality Concern Ratings	The number of annual non-conformances to SLP measures related to protecting stream bank, stream channel stability and riparian vegetation from harvesting or silviculture activities	No non-conformances to SLP measures related to protecting stream bank, stream channel stability and riparian vegetation from harvesting or silviculture activities
	36 - Protection of Stream banks and Riparian Values of Small Streams	Number of spills of a reportable substance (i.e. antifreeze, diesel fuel, gasoline, greases, hydraulic oil, lubricating oil, methyl hydrate, paints and paint thinners, solvents, pesticides, and explosives) entering water bodies	Zero spills entering water bodies
CCFM Criterion 4 – Forest Ecosystem Contributions to Global Ecological Cycles			
	Maintain forest conditions and management activities that contribute to the health of global ecological cycles.		
Element 4.1 Carbon Uptake and Storage - Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems.	Carbon Uptake and Storage	Maintenance of the processes for carbon uptake and storage	4.1.1 - Net Carbon Uptake 24 - Permanent Access Structures See indicator # 24

		29 - Reforestation Assessment	See indicator # 29	
		30 - Establishment Delay	See indicator # 30	
		38 - Carbon Sequestration Rate	Maintenance of DFA Average carbon sequestration rates	Maintain DFA average carbon sequestration rates that are consistent with or greater than natural sequestration rates
		39 - Ecosystem Carbon Storage	The percentage of ecosystem carbon stored in the Fort St. John DFA relative to projected natural levels	Maintain ecosystem carbon storage at a minimum of 95% of projected natural storage levels
		2.1.1 - Reforestation Success	See indicators # 25, 27, 28, 29, 30 (related to CSA z809-08 Core Indicator 2.1.1 above)	
		Sustain forest lands within our control within the DFA	2.2.1 - Additions and deletions to the forest area	See indicators # 24, 40, 55 (related to CSA z809-08 Core Indicator 2.2.1 above)
CCFM Criterion 5 – Multiple Benefits to Society				
Sustain flows of forest benefits for current and future generations by providing multiple goods and services.				
Element 4.2 Forest Land Conversion - Protect forest lands from deforestation or conversion to non-forests, where ecologically appropriate.	Forest Land Base	Provide opportunities for a feasible mix of timber, recreational activities, and non-timber commercial activities.	5.1.1 - Quantity and quality of timber and non-timber benefits, products, and services produced in	18 - Graham Harvest Timing See indicator # 18
Element 5.1 Timber and Non-Timber Benefits - Manage the forest sustainably to produce an acceptable and feasible mix of timber and non-timber benefits. Evaluate timber and non-timber forest products and forest-based services.	Timber and Non-Timber Multi-use Benefits		19 - Graham Merch Area See indicator # 19	21 - MKMA harvest See indicator # 21

the DFA	31 - Long Term harvest Level (Timber)	See indicator # 31	
41 - Range Action Plan	Percent consistency with mutually agreed upon action plans for range	Operations 100% consistent with resultant range action plans	
42 - Damage to Range Improvements	Number of range improvements damaged by Participants' activities	Zero range improvements damaged by Participants' activities	
43 - Recreation Sites (Non - Timber)	The number of recreation sites maintained by Participants	Participants will maintain a minimum of one recreational site within the DFA	
44 - Visual Quality Objectives	Consistency with Visual Quality Objectives (VQO's)	Pilot Participants' forest operations will be consistent with the established VQO's	
45 - Recreation Opportunity Spectrum	Area in primitive and semi-primitive non-motorized classifications of the Recreation Opportunity Spectrum (ROS) for the Graham, Sikanni and Crying Girl LU's	A minimum of 65,839 ha in primitive ROS area (100% of 1996 primitive ROS area) and 180,726 ha in semi primitive non-motorized ROS area (50% of the 1996 total semi primitive NM ROS area) in the combined Graham, Crying Girl and Sikanni LU's (excluding the Graham Lauier and Redfern-Kelly PA's)	
46 - Actions Addressing Guides, Trappers, and Other Interests	Percentage of operations consistent with mutually agreed upon action plans for guides, trappers and other known non-timber commercial interests	100% of operations will be consistent with action plans for guides, trappers and other non-timber commercial interests	

			The annual equivalent of a minimum of 70% of the DFA's harvest is primary processed in the DFA	
	47 - Timber processed in the DFA (Timber)	Volume of timber processed in the DFA in proportion to volume harvested in the DFA		
	48 - Summer and Fall Volume Deliveries	See Indicator # 48		
	51 - Timber Profile - Deciduous (Timber)	The area(ha) of deciduous leading cutblocks identified in Supply Block F for harvest during the term of the SFMP	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	
Non - Core	52 - Timber Profile - Coniferous (Timber)		April 1, 2006 - March 31st, 2011: 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. April 1, 2011-March 31st, 2016: 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.	
	53 - Cut Control (Timber)	See indicator # 53		
Element 5.2 Communities and Sustainability - Contribute to the sustainability of communities by providing diverse opportunities to	Sustainable and Viable Communities	Maintain viable timber processing facilities in the DFA. No	5.2.1 - Level of investment in initiatives that contribute to 47 - Timber Processed in the DFA	See Indicator # 47

derive benefits from forests and by supporting local community economies.	
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decrease in the LTHL in the DFA	community sustainability
	48 - Summer and Fall Volume Deliveries
	48 - Summer and Fall Volume Deliveries between May 1st and November 30th
	50 - Coordination
	51 - Timber Profile - Deciduous
	52 - Timber Profile - Coniferous
	54 - Dollars Spent Locally on each Woodlands Phase
	55 - Direct and Indirect Employment

decrease in the LTHL in the DFA	community sustainability
	48 - Summer and Fall Volume Deliveries
	48 - Summer and Fall Volume Deliveries between May 1st and November 30th
	50 - Coordination
	51 - Timber Profile - Deciduous
	52 - Timber Profile - Coniferous
	54 - Dollars Spent Locally on each Woodlands Phase
	55 - Direct and Indirect Employment

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
Percentages of SFMP's and FOS's prepared jointly by the Participants	100% of all SFMP's and FOS's will be jointly prepared by the Participants
See Indicator # 51	
See Indicator # 52	
	Woodlands Phases to be monitored:
	Logging/hauling: minimum of 80%
	Road construction and maintenance: minimum of 80%
	Silviculture: minimum of 5%
	Planning and administration: minimum of 50%
	Report the current level of direct and indirect employment expressed as a factor of harvest level times employment multiplier

	Non - Core	31 - Long Term Harvest Level See Indicator # 31	
	5.2.2 - Level of investment in training and skills development	63 - Worker Training See Indicator # 53	Percentage of managing participants' employees training that is consistent with training plans
		12 - Forest Workers Safety	Implementation and maintenance of certified safety program
	Provide a safe work environment for DFA forestry workers and the public.	48 - Summer and Fall Volume Deliveries See Indicator # 48	Each managing participant will implement and maintain a certified safety program
	Contribute to Worker and Public Safety. Communities Participate in the Use and Management of the Forest	5.2.3 - Level of direct and indirect employment	54 - Dollars Spent Locally on Each Woodlands Phase See Indicator # 54
		55 - Direct and Indirect Employment See Indicator # 55	
	5.2.4 - Level of Aboriginal participation in the forest economy	23 - Value and Total Number of contracts Awarded to First Nations See Indicator # 23	Value and total number of contracts awarded annually to First Nations

CCFM Criterion 6 – Accepting Society's Responsibility for Sustainable Development	Society's responsibility for sustainable forest management requires that fair, equitable, and effective forest management decisions are made.
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		Percentage of affected First Nations invited to participate in information sessions or presentations related to the participants' practices and /or plans (SFMP, FOS, and PMP's)	100% of affected First Nations will be invited to participate in information sessions or presentations related to the participants' practices and /or plans (SFMP, FOS, and PMP's)
	33- First Nations Consultation & Information Sharing	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
6.1.1 - Evidence of a good understanding of the nature of Aboriginal title and rights	56 - Maintenance of Wildlife and Fisheries Habitat		
Recognition of Treaty 8 rights and respect of aboriginal rights through maintenance of landscape level biodiversity			
Element 6.1 Aboriginal and Treaty Rights - Recognize and respect Aboriginal title and rights, and treaty rights. Understand and comply with current legal requirements related to aboriginal title and rights, and treaty rights.	Aboriginal and Treaty Rights	6.1.2 - Evidence of best efforts to obtain acceptance of management plans based on aboriginal communities having a clear understanding of the plans	33- First Nations Consultation & Information Sharing See Indicator # 33
		6.1.3 - Level of management and/or protection of areas where culturally	33 - First Nations Consultation & Information Sharing See Indicator # 33

	important practices and activities (hunting, fishing, gathering) occur	57 - Number of Known values and Uses Addressed in Operational Planning See Indicator # 57	The number of hectares removed annually from the participants' aerial herbicide plans based on input from First Nations or the public and final treatment layout	The participants will report annually, the number of hectares removed from the participants' aerial herbicide plans based on input from First Nations or the public and final treatment layout
		6.2.1 - Evidence of understanding and use of Aboriginal Knowledge through the engagement of willing Aboriginal communities, using a process that identifies and manages culturally important resources and values	33 - First Nation Consultation & Information Sharing See Indicator # 33	57 - Number of Known values and Uses Addressed in Operational Planning See Indicator # 57
	Element 6.2 Respect for Aboriginal Forest Values, Knowledge and Uses - Respect traditional Aboriginal forest values, knowledge, and uses as identified through the Aboriginal input process.	Respect known traditional aboriginal forest values and uses. Involve First nations in review of forest management plans, provide understanding of forest management plans.	62 - Brushing Program Aerial Herbicide Use See Indivator # 62	62 - Brushing Program Aerial Herbicide Use See Indivator # 62

23 - Value and Total Number of contracts Awarded to First Nations	See Indicator # 23	
41 - Range Action Plan	See indicator # 41	
46 - Actions Addressing Guides, Trappers, and Other Interests	See Indicator # 46	
6.3.1 - Evidence that the organization has co-operated with other forest-dependent businesses, forest users, and the local community to strengthen and diversify the local economy	Provide opportunities for a range of interests to access benefits	
Element 6.3 Forest Community Well-Being and Resilience - Encourage, co-operate with, or help to provide opportunities for economic diversity within the community.	Fair Distribution of Benefits and Costs	
47 - Timber Processed in the DFA	See Indicator # 47	
54 - Dollars Spent Locally on Each Woodlands Phase	See indicator # 54	
55 - Direct and Indirect Employment	See Indicator # 55	

6.3.2 - Evidence of co-operation with DFA - related workers and their unions to improve and enhance safety standards, procedures, and outcomes in all DFA - related workplaces and affected communities	12 - Forest Workers Safety	See Indicator # 12		
Provide opportunities for First Nations to participate in forest economy.	6.3.3 - Evidence that a worker safety program has been implemented and is periodically reviewed and improved	63 - Worker Training	See Indicator # 63	
	Non - Core	23 - Value and Total Number of contracts Awarded to First Nations	See Indicator # 23	

		59 - Terms of Reference (TOR) for the Public Participation Process.	Current Terms of reference (TOR) for the FSJPPR public participation process	Biennial review of the TOR for the FSJPPR public participation process (PAG)
	6.4.1 - level of participant satisfaction with the public participation process	64 - PAG Satisfaction Surveys	Level of satisfaction with the public participation process as measured by PAG surveys	At least an 80% (average score of 4 out of 5) satisfaction level as measured from PAG surveys
	To facilitate a satisfactory public participation process. To develop satisfaction with the public participation process	41 - Timber Range Action Plans	See Indicator # 41	
	Element 6.4: Fair and effective decision - making - Demonstrate that SFM public participation process is designed and functioning to the satisfaction of the participants and that there is general public awareness of the process and its progress.	Opportunity for Public participation 6.4.2 - Evidence of efforts to promote capacity development and meaningful participation in general	46 - Actions Addressing Guides, Trappers, and Other Interests See indicator # 46	Compliance with the public review and comment process identified in the FSJ Pilot Project Regulation
		58 - Regulatory Public Review and comment Process	100% compliance with public review and comment processes identified in the FSJ Pilot Project Regulation	
		59 - Terms of Reference (TOR) for the Public Participation Process.	See Indicator # 59	

		Respond to 100% of public inquiries regarding Participants' forestry practices, that are additional to the Pilot Public Review and Comment processes, within one month of receipt		
60 - Public Inquiries	The percentage of timely responses to public inquiries			
61 - Educational Outreach	Number of people to whom information, presentations, or field trips provided annually	Minimum of 40 people provided information, presentations, or field trips		
64 - PAG Satisfaction Surveys	See Indicator # 64			
23 - Value and Total Number of contracts Awarded to First Nations	See Indicator # 23			
6.4.3 - Evidence of efforts to promote capacity development and meaningful participation for Aboriginal communities	33 - First Nations Consultation & Information Sharing	See Indicator # 33		
57 - Number of Known values and Uses Addressed in Operational Planning	See Indicator # 57			

			60 - Public Inquiries See Indicator # 60
Element 6.5 Information for decision - making - Provide relevant information and educational opportunities to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.	<p>Relevant information used in the decision making process is provided to PAG, general public, and affected parties</p> <p>Information for Decision-making</p>	<p>6.5.1 - Number of people reached through educational outreach</p> <p>6.5.2 - Availability of summary information on issues of concern to the public</p>	<p>61 - Educational Outreach See Indicator # 61</p> <p>60 - Public Inquiries See Indicator # 60</p> <p>65 - Availability of Information on Issues of Concern SFM Monitoring report made available to the public annually</p>

List of CSA Matrix Revisions

SFMP Amendment #3

- New Indicator #67 added to SFMP, via Amendment #3, becomes effective April 1, 2015.