Mackenzie

Sustainable Forest Management Plan

Mackenzie SFMP

2016 - 2017 Annual Report

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1.0 Introduction

This Annual Report of the Mackenzie Sustainable Forest Management Plan covers the reporting period of April 1, 2016 to March 31, 2017. This annual report is solely reporting the efforts of Canadian Forest Products Ltd. operating under Forest License A15384 within the Mackenzie TSA. Canfor completed a revision to the SFM plan with a significant change to the format/ template of the plan to align with a number of other Canfor SFMP's. Indicators were rearranged and re-numbered to align with the CSA standard, however there were no specific changes to the wording of the indicator statements. Additional background and support information was added to the SFM plan to complement the new plan format/ template. These minor changes to the plan will not change the operational practices of Canfor.

The CSA Standard provides SFM specifications that include public participation, performance, and system requirements that must be met to achieve certification. These specifications were the framework for the development of the Mackenzie SFMP. Canfor has existing management systems that contribute to the overall SFM strategy. These may include existing management systems such as ISO 14001 Forest Management Systems, standard work procedures, and internal policies.

One of the public participation strategies suggested in the CSA SFM Standard is the formation of a local group of interested and affected members of the public to provide input on an ongoing basis. This strategy provides the base for the formation of a Public Advisory Group (PAG) whose purpose is to achieve CSA standard's public participation requirements. A PAG was initially developed to assist with the development of the SFMP, this group is maintained to date and meets regularly to discuss changes to the plan when necessary as well as to discuss licensee performance and review audit results etc. A wide range of public sector interest groups from within the Mackenzie Forest District were invited to participate in the SFM process through the PAG. After completing the Terms of Reference in January 2006, the PAG established the SFMP Criteria and Elements Performance Matrix with the SFMP being completed in June of 2006. It is important to note, the Mackenzie SFMP is a working document and is subject to continual improvement. Over time, the document will incorporate new knowledge, experience and research in order to recognize society's environmental, economic and social values. For example, PAG involvement during 2010-11 was critical in updating the SFMP from the CSA Z809-02 to the CSA Z809-08 standard. There will be even further involvement in the coming years as Canfor transitions to the CSA Z809-16 standard.

This Annual Report summarizes Canfor's performance in meeting the indicator targets outlined in the SFMP over the Mackenzie Defined Forest Area (DFA). The DFA is the Crown Forest land base within the Mackenzie Resource Management District and the operating areas of Canfor, excluding woodlots, Community Forest, Parks, Protected Areas and private land. The intent of this Annual Report is to have sustainable forest management viewed by the public as an open, evolving process that is taking steps to meet the challenge of managing the forests of the Mackenzie DFA for the benefit of present and future generations.

The following Table summarizes the results for the current reporting period. For clarification of the intent of the indicators, indicators, objectives or the management practices involved, the reader should refer to the Mackenzie Sustainable Forest Management Plan Document.

1.1 List of Acronyms

Below is a list of common acronyms used throughout this annual report. For those wishing a more comprehensive list should consult the Mackenzie Sustainable Forest Management Plan.

AAC – Annual Allowable Cut
BCTS – BC Timber Sales
BEC – Biogeoclimatic Ecosystem Classification
BEO – Biodiversity Emphasis Option
BWBS – Black and White Boreal Spruce

CFLB – Crown Forested Land Base
CSA – Canadian Standards Association
CWD – Coarse Woody Debris
DFA – Defined Forest Area
ESSF – Engelmann Spruce Sub-alpine Fir
FMG – Forest Management Group
FRPA – Forest and Range Practices Act
FSR – Forest Service Road
GIS – Geographic Information System
LOWG – Landscape Objective Working Group
LRMP – Land and Resource Management Plan
LU – Landscape Unit
MoFR – Ministry of Forest and Range
NCI – North Central Interior
NDT – Natural Disturbance Type
NDU – Natural Disturbance Unit
NHLB - Non-Harvestable Land Base
OGMA – Old Growth Management Area
PAG – Public Advisory Group
PFI – Peak Flow Index
RMA – Riparian Management Area
RMZ – Resource Management Zone (landscape-level planning)
RMZ – Riparian Management Zone (riparian management)
RRZ – Riparian Reserve Zone
SAR – Species at Risk
SBS – Sub-Boreal Spruce
SFM – Sustainable Forest Management
SFMP – Sustainable Forest Management Plan
SWB – Spruce Willow Birch
THLB – Timber Harvesting Land Base
TOR – Terms of Reference
TSA – Timber Supply Area
VIA – Visual Impact Assessment
VQO – Visual Quality Objective

1.2 Executive Summary

Of the **48** indicators listed in Table 1, **45** indicators were met within the prescribed variances, **1** indicator is pending due to incomplete information, and **2** indicators were not met within the prescribed variances.

Table 1: Summary of results for the 2012-13 Reporting Year.

Indicator Number	Indicator Description	Target Met	Pending	Target Not Met
1.1.1	Productive forest representation	X		
1.1.2	Forest Area by Species Composition	X		
1.1.3a	Old forest	X		
1.1.3b	Interior forest	X		
1.1.3c	Biodiversity reserve effectiveness	X		
1.1.3d	Patch size	X		
1.1.4a	Wildlife Trees	X		
1.1.4b	Riparian Management area effectiveness	X		
1.1.4c	Dispersed Retention Levels	X		
1.2.1a	Species within the DFA	X		
1.2.1b	Sites of Biological Significance	X		
1.2.3	Proportion of Genetically Modified Trees in Reforestation Efforts	X		

Indicator Number	Indicator Description	Target Met	Pending	Target Not Met
1.4.2a	Heritage Conservation	X		
1.4.2b	Protection of Identified Sacred and Culturally Important Sites	X		
2.1.1a	Regeneration Delay	X		
2.1.1b	Free Growing	X		
2.2.1a	Site Conversion	X		
2.2.1b	Permanent Access Structures	X		
2.2.2a	Harvest Volumes		X	
2.2.2b	Prioritizing harvest of damaged stands	X		
3.1.1a	Sedimentation	X		
3.1.1b	Stream Crossings	X		
3.1.1c	Road re-vegetation	X		
3.1.1d	Road environmental risk assessments	X		
3.1.1e	Soil Conservation	X		
3.1.1f	Terrain Management	X		
3.1.2	Coarse Woody Debris	X		
3.2.1	Peak Flow Index	X		
5.1.1a	Non-Timber Benefits	X		
5.1.1b	First-order Wood Products	X		
5.2.2	Investment in Training and Skills Development	X		
5.2.3	Level of Direct and Indirect Employment	X		
5.2.4	Contract Opportunities for First Nations	X		
6.1.1	Understanding the Nature of Aboriginal Rights and Title	X		
6.1.2a	First Nations Concerns	X		
6.1.2b	First Nations Input into Forest Planning	X		
6.3.1	Local Investment	X		
6.3.2	Accidents	X		
6.3.3a	Signage	X		
6.3.3b	Safety Policies	X		
6.4.1	Satisfaction (PAG)	X		
6.4.2a	Input into Forest Planning	X		
6.4.2b	Public and Stakeholder Concerns	X		
6.5.1a	SFM Educational Opportunities	X		
6.5.1b	People Reached through Educational Outreach	X		
6.5.2a	Access to SFM Information	X		
6.5.2b	Communication of planned Deactivation Projects	X		
	Reportable Spills	X		
	Totals	**47**	**1**	**0**

1.3 SFM Performance Reporting

This annual report will describe the success in meeting the indicator targets over the DFA. The report will be available to the public and will allow for full disclosure of forest management activities, successes, and failures. Canfor has reported performance within its operating areas. Canfor is committed to work together to fulfill the Mackenzie SFMP commitments including data collection and monitoring, participation in public processes, producing public reports, and continuous improvement.

2.0 SFM Indicators, Targets and Variances

Indicator 1.1.1   Productive Forest Representation

Indicator Statement	Target and Variance
Total hectares logged in rare and un-common ecosystems.	Target: 0 ha Variance: 0%

Maintaining representation of a full range of ecosystem types is a widely-accepted strategy to conserve biodiversity in protected areas. Most species, 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. It is assumed that by maintaining the structure and diversity of ecosystems, the habitat needs of various species will be provided, resulting in populations being maintained.

A target of 0 hectares of rare or uncommon ecosystems logged per reporting period was selected in order to identify and conserve rare and uncommon ecological communities. These ecosystems were identified by mapping at the BEC variant and site series level. If these site series are encountered during field layout, they are assessed and reserved from harvest either through exclusion from the harvest area or through the designation of reserves around the site. Reported are the past 3 years of harvesting in rare and uncommon ecosystems according to an analysis of all ecology units harvested. The table below shows all of the ecosystems which are considered to "rare" or "un-common" as well as the amount in hectares harvested over the past three years.

Rare and Un-Common Ecosystems

Rare Ecosystem	Amount harvested by year in hectares		
	2014/2015	2015/2016	2016/2017
SBSvk\03	0	0	0
SBSWk1\05	0	0	0
ESSFmv3\06	0	0	0
ESSFmv2\06	0	0	0
ESSFmv4\05	0	0	0
BWBSdk1\09	0	0	0
BWBSdk1\07	0	0	0

Source: GIS analysis of all Site Plans harvested. WIM report for eco summary.
Indicator Discussion: GIS analysis identified 12 blocks that overlapped with rare eco polygons from the GIS layer. These areas were then field verified and either determined to be incorrectly typed in the GIS layer or removed from the block boundary.

Indicator 1.1.2   Forest Area by species composition

Indicator Statement	Target and Variance
Percent composition of forest type (treed conifer, treed broad leaf, treed mixed) >20 years old across DFA.	Target: Maintain baseline ranges and distribution into the future (measured every 5 years) Variance: +/-1%

Tree species composition, stand age, and stand structure are important variables that affect the biological diversity of a forest ecosystem - providing structure and habitat for other organisms. Ensuring a diversity of tree species within their natural range of variation, improves ecosystem resilience and productivity and positively influences forest health. Reporting on this indicator provides high level overview information on area covered by broad forest type, forest succession and management practices that might alter species composition.

The different stand types will be run using GIS analysis and VRI data. The baseline data was revised in 2013 after the DFA changed as a result of BCTS operating areas being removed from the DFA. Subsequent analysis will be done every 5 years in an effort to eliminate any bias from short term trends on the land-base, and to allow for the periodic updating of data sources. The indicator will be considered to have been met if the area for the 5-year reporting window maintains its area spread within 1 percent of baseline areas.

Analysis Year	Treed Conifer	Treed Broadleaf	Treed Mix
2013 (baseline)	90%	3%	7%
2014	90%	3%	7%
2015	90%	3%	7%
2016	90%	3%	7%
2017	90%	3%	7%

Source: GIS analysis of VRI data.
Indicator Discussion:

Indicator 1.1.3a   Old forest

Indicator Statement	Target and Variance
Percent of blocks that are within LU/BEC Groups that meet prescribed old-growth targets.	Target: 100% Variance: 0%

This indicator was chosen to monitor the amount of old forest within each Landscape Unit (LU) group. It is assumed that maintenance of all seral stages across the landscape will contribute to sustainability because doing so is more likely to provide habitat for multiple species as opposed to creating landscapes of uniform seral stage. Emphasis is placed on old forest because many species use older forests and the structural elements found therein (e.g. large snags, coarse woody debris, and multilayer canopies). These structural elements are difficult to recreate in younger forests. The Mountain Pine Beetle epidemic has presented challenges as older pine-leading stands are the most susceptible to infestation.

The Landscape Objectives Working Group (LOWG), which has representation from the Ministry of Forests, Lands and Natural Resource Operations and timber licensees, has developed Landscape Biodiversity Objectives for the Mackenzie Tiber Supply Area. The current status of Old Forest within the Mackenzie DFA is shown in the table below.

Old Forest:

Landscape Unit	BEC Group	Number of Blocks	Target % of Old Growth	Actual % of Old Growth	Number of Blocks that meet Old Growth Targets	Result
Blackwater	2	1	9	15	1	
	3	16			16	
	4	23	11	14.7	23	
*Connaghan Creek	2	1			1	
	4	2			2	
*Eklund	2	1			1	
	4	3			3	
	7	1			1	
*Gaffney	4	3			3	
*Gillis	7	1			1	
*Jackfish	2	4			4	
	7	8			8	
*Manson River	4	3			3	
Nation	4	3	16	12	3	
Philip	2	2	9	14.5	2	
	4	3	11	14.2	3	
Philip Lake	4	2	11	14.5	4	
*South Germanson - Upper Manson	7	5			5	
Total Blocks	82			Total blocks that meet target	82	100

Source: Mackenzie LOWG Analysis.

Indicator Discussion: The 2016-2017 Analysis for old and old interior forest was completed by BCTS. In the 2016/1 reporting year, there were 82 blocks harvested in 11 LUs. Connaghan Creek, Gaffney, Eklund, Manson River, Gillis, Jackfish and South Germansen LU's contain spatially defined OGMAs, therefore there are no targets for old growth as it is spatially defined and protected. These blocks automatically meet the objective.

Analysis shows that all other blocks harvested during the reporting period met Old Growth targets for their respective landscape units, except for 3 blocks within the Nation LU. These blocks were harvested for sanitation purposes at the direction of Mackenzie FLNRO to address a severe spruce bark beetle infestation, and therefore still meet the target for this indicator.

Indicator 1.1.3b   Interior Forest

Indicator Statement	Target and Variance
Percent of blocks that are within LU/BEC Groups that meet prescribed Interior Old targets.	Target: 100% Variance: 0%

Interior forest conditions refer to a situation where climatic and biotic characteristics are not significantly affected by adjacent and different environmental conditions (e.g., other seral stages, other forest or non-forest types, etc.). This indicator is important because provision of habitat for old-forest dependent species (see Indicator #1) can only occur if old forests are not significantly affected by adjacent

environmental conditions. Historically, natural disturbance events such as fire, insects, and wind led to diverse landscapes characterized by forests having these interior old forest conditions. Thoughtful planning of harvesting patterns can minimize "fragmentation" of the forested landscape and help create interior old forest conditions. Furthermore, the intent of this indicator is to have interior old forest conditions represented within all ecosystem types to further enhance ecosystem resilience. The targets for interior old are taken from the approved Mackenzie TSA Biodiversity Order and the current status of Old Interior forests for the Mackenzie DFA are listed in the table below.

Interior Old:

Landscape Unit	BEC Group	Number of Blocks	Target % of Old Interior	Actual % of Old Interior	Number of Blocks that meet Old Interior Targets	Result
Blackwater	2	1	10	425	1	
	3	16			16	
	4	23	10	115	23	
*Connaghan Creek	2	1			1	
	4	2			2	
*Eklund	2	1			1	
	4	3			3	
	7	1			1	
*Gaffney	4	3			3	
*Gillis	7	1			1	
*Jackfish	2	4			4	
	7	8			8	
*Manson River	4	3			3	
Nation	4	3	25	107	3	
Philip	2	2	10	233	2	
	4	3	10	100	3	
Philip Lake	4	2	11	14.5	4	
*South Germanson - Upper Manson	7	5			5	
	Total Blocks	82		Total blocks that meet target	82	100

Source: Mackenzie LOWG Analysis
Indicator Discussion: The 2016/2017 Analysis for old and old interior forest was completed by BCTS. In the 2016/2017 reporting year, there were 82 blocks harvested in 11 LUs.
Connaghan Creek, Gaffney, Eklund, Manson River, Gillis, Jackfish and South Germansen LU's contain spatially defined OGMAs, therefore there are no targets for old growth as it is spatially defined and protected. These blocks automatically meet the objective.

Analysis shows that all other blocks harvested during the reporting period met Old Interior targets for their respective landscape units.

Indicator 1.1.3c   Biodiversity Reserve Effectiveness

Indicator Statement	Target and Variance
Percentage of blocks and roads harvested that do not comply with Orders which legally establish protected areas, ecological reserves, or OGMAs.	Target: 0% Variance: 0%

Landscape level biodiversity reserves/ Protected Areas are areas protected by legislation, regulation, or land-use policy to control the level of human occupancy or activities (Canadian Standards Association, 2003). These include legally established Old Growth Management Areas (OGMAs), parks, ecological reserves, and new protected areas. As forestry activities may occur near these areas the chance exists for unauthorized harvesting or road construction to happen within these sites. The OGMAs in Mackenzie do allow for small amounts of disturbance for certain circumstances outlined within the Sustainable Forest Management Plan.

Biodiversity Reserves

Signatory	Number of Blocks and roads harvested			Blocks and roads harvested that are within protected areas, ecological reserves, or OGMAs	%in DFA
	Blocks	**Roads**	**Total**		
Canfor	82	214	296	0	0%

Source: GIS query.

Indicator Discussion: No unauthorized harvesting or road construction occurred during the reporting period. If OGMAs are harvested, this will be summarized here, but not reported as a violation of this indicator.

Indicator 1.1.3d   Patch Size

Indicator Statement	Target and Variance
Percentage of blocks harvested that meet the prescribed patch size target ranges or are trending towards the target range.	Target: 100% Variance: -30%

Patches often consist of even aged forests because most are the result of either natural disturbances such as fire, wind or pest outbreaks, or anthropogenic disturbance such as timber harvesting. Patches may be created through single disturbance events or through a series of events (i.e. a combination of natural disturbance and harvesting). Mature forests and younger forest patches represent a land base created from a history of disturbances, natural and otherwise. As such, forest stands and patches are often composed of a variety of species, stocking levels and ages. Currently, forest management practices have impacted the occurrence of many natural disturbance events, such as wildfire suppression. In the absence of natural disturbance, timber harvesting is employed as a disturbance mechanism and thus influences the distribution and size ranges of forest patches in a fashion that emulates historical natural disturbance events within the Mackenzie DFA. Past social constraints associated with harvesting and resulting patch size have led to fragmentation of the landscape beyond the natural ranges of variability, which has developed over centuries from larger scale natural disturbance. In order to remain within the natural range of variability of the landscape and move toward sustainable management of the forest resource, it is important to develop and maintain patch size targets based on historical natural patterns. This indicator monitors the consistency of harvesting patterns as it compares to the landscape unit group and the natural patterns of the landscape.

Patch Size

Signatory	Number of Blocks Harvested	Blocks harvested that meet or trend towards prescribed patch size target ranges	Percent
Canfor	82	82	100

Source: Mackenzie LOWG Analysis Results.

Indicator Discussion: Blocks that are harvested for pest or disease (salvage, sanitation) are considered to have met patch objectives, as harvesting for forest health reasons takes precedence over patch size targets. Through the Landscape Objectives Working Group (LOWG) more precise data has been provided by adjacent licensees (BCTS, Conifex, MK Fibre, Three Feathers Consortium) and the LOWG is jointly managing Landscape Biodiversity.
The 2016-2017 Patch analysis was completed by BCTS.
Analysis information from 2013 and 2014 indicated that the patch distribution was resulting in larger patch size classes where Canfor had been harvesting. Higher percentages within the larger patch size classes is a positive trend for NDT3 areas, however is not trending towards the targeted distribution range for NDT2 areas. Pine salvage harvesting is the leading cause for the higher percentage of larger patch size classes as there has been an increase in large blocks that have been harvested. However, during this reporting period, Canfor's harvesting activities have been geared towards small and medium patch distributions. As the larger areas of pine beetle infested wood have been addressed, Canfor is moving towards harvesting the smaller patches to clean up the remaining pine beetle infested trees, resulting in smaller patches than previous years.

Indicator 1.1.4a   Wildlife Trees

Indicator Statement	Target and Variance
Percentage of cutblocks that meet or exceed wildlife tree patch requirements.	Target: 100% Variance: 0%

Stand level retention, including wildlife tree patches, is managed by Canfor in the DFA on a site-specific basis. During the development of a cut block, retention areas are delineated based on a variety of factors. Stand level retention generally occurs along riparian features and will include non-harvestable and sensitive sites if they are present in the planning area. Stand level retention also aims to capture a representative portion of the existing stand type to contribute to ecological cycles on the land base. Wildlife tree patch percentage requirements are determined based on the landscape unit, BEC, and natural disturbance type. These values can be found in Canfor's Forest Stewardship Plan. Retention level in each block is documented in the associated Site Plan, recorded in the signatories' respective database systems and reported out in RESULTS on an annual basis.

Wildlife Trees

Signatory	Total Number of Cutblocks Harvested	Number of Cutblocks Harvested exceeding WTP requirements	Overall %
Canfor	82	82	100%

Source: Site Plans
Indicator Discussion: WTP targets come from Canfor's approved Forest Stewardship Plan and are specific to ecotype and Landscape Unit. Wildlife tree patches are tracked on a block by block basis but is managed at a landscape level. Of the 11 landscape units in which blocks were harvested, all had WTP % exceeding retention targets outlined in the Canfor Mackenzie FSP. The Connaghan Creek landscape unit had the lowest amount of WTP at 5.5%, however, this exceeded the landscape unit targets are 3.0% (ESSFmv3) and 5.2% (SBSmk1). The Nation LU had the highest amount of retention with WTPs of 18.2%, which exceeds the targets of 4.0% (SBSmk2), 4.4% (SBSmk1), and 4.7% (SBSwk2).

Indicator 1.1.4b   Riparian Management Area Effectiveness

Indicator Statement	Target and Variance
The percentage of forest operations consistent with riparian management area requirements as identified in operational plans and/or site plans.	Target: 100% Variance: 0%

Riparian features found in the field are assessed during the block lay-out stage to determine its riparian class and associated RRZ/RMZ/RMA. Appropriate buffers are then applied, considering other factors such as operability and wind firmness. Prescribed measures, if any to protect the integrity of the RMA are then written into the Site Plan. The target is a legal requirement. The target value of 100% has been established to reflect this and to ensure that all riparian management practices, specifically RRZ designation and management, continue to remain consistent with the pre-harvest operational plans.

Riparian Management

Signatory	Number of Forest Operations with Riparian Management Strategies identified in Operational Plans				Forest Operations Completed in Accordance with riparian management requirements	%in DFA
	Roads	Harvest	Silviculture	Total		
Canfor	214	82	0	296	296	100%

Source: Site Plans, Incident Tracking Systems.
Indicator Discussion: There were no instances identified and reported where riparian areas were compromised, other than where required for road crossings during harvesting, road building or site preparation activities.

Indicator 1.1.4c   Dispersed retention levels

Indicator Statement	Target and Variance
Percent of blocks meeting dispersed retention levels as prescribed in the site plan/logging plans	Target: 100% Variance: 0%

Operationally, harvest plans often include retention of dispersed trees such as snags, large live trees, deciduous trees, stub trees and understory trees. Dispersed retention provides stand level complexity and long term recruitment of coarse woody debris. Harvest value and ecological value can be optimized by selecting the variety of tree types (e.g., species, size, live and dead, etc.) that have high ecological value and low economic value, and through the number of trees retained.

Signatory	Total Number of Blocks Meeting Dispersed Retention Levels Defined in Site Plan	Total Number of Blocks Harvested	Percent
Canfor	82	82	100.0%

Source: Internal databases, and Incident Tracking Systems.
Indicator Discussion: There were no instances identified and reported where dispersed retention levels were not met. Harvesting supervisors review levels of dispersed retention post-harvest.

Indicator 1.2.1a   Species within the DFA

Indicator Statement	Target and Variance
Percentage of blocks and roads harvested that adhere to management strategies for Species at Risk, Ungulate winter ranges, and other local species of importance.	Target: 100% Variance: -10%

Fundamental to the correct identification of species and habitats is the incorporation of appropriate management strategies where forest activities have the potential to impact species and habitats. Identification of those animals, invertebrates, bird species, vascular plants, and plant communities that have been declared to be at risk is crucial if they are to be conserved. Appropriate personnel are key staff and consultants that are directly involved in operational forest management activities. By implementing training to identify species within the DFA, the potential for disturbing these species and their habitat decreases. Maintaining all populations of native flora and fauna in the DFA is vital for sustainable forest management, as all organisms are components of the larger forest ecosystem.

There are various sources to draw upon when developing the comprehensive list of species that are legally protected or species of importance within the DFA. The list of species in Appendix C includes species from the following sources:
1. Species at Risk Act
2. Legally established Ungulate Winter Ranges
3. Local species of importance.

Incorporation of local species of importance recognizes potential species that are not legally protected. Local species of importance can be proposed by First Nations, PAG members, the licensees, or by members of the public.

Species within the DFA

Signatory	Number of Forest Operations that coincide with Species at Risk, Ungulate Winter Ranges, or other local species of importance as identified in Operational Plans				Number of Forest Operations with Species at Risk, Ungulate Winter Ranges, or other local species of importance as identified in Operational Plans that adhere to specific management strategies.	% in DFA
	Roads	Harvesting	Silviculture	Total		
Canfor	113	24	19	156	156	100%

Source: Site Plans

Indicator Discussion: During the reporting period Canfor harvested 22 blocks that were overlapped by Ungulate Winter Range Order U-7-025 which protect high elevation caribou habitat. Of those 22 blocks, 17 blocks fell within the Specified Area which requires silviculture activities to minimize moose browse in order to reduce predation. The remaining 5 blocks were within the Core Area which restricts all harvest activities. However, these blocks were declared in 2014 under Section 14 of the *Forest Planning and Practices Regulation* (FPPR) which means that these areas are not subject to mandatory amendments under Section 8 of the *Forest and Range Practices Act* (FRPA).

Additionally, during the reporting period, 2 harvested blocks were overlapped by Ungulate Winter Range Order U-7-007 which protects low elevation, high value lichen habitat. The General Wildlife Measures outlined in the Order were followed during harvest which included in-block road deactivation to prevent snowmobile activity, as well as harvesting in winter with snow pack to protect at least 40% of the lichen. Finally, 19 blocks were planted that overlapped Ungulate Winter Ranges where specific management strategies were implemented where applicable.

Indicator 1.2.1b   Sites of Biological Significance

Indicator Statement	Target and Variance
Percentage of blocks and roads harvested that adhere to management strategies for sites of biological significance.	Target: 100% Variance: -10%

Sites of biological significance include areas that are critical for wildlife habitat, sensitive sites, and unusual or rare forest conditions or communities. Specific management strategies may be required to ensure that these sites are maintained within the DFA. This indicator will ensure that specific management (fine filter) strategies are developed to conserve and manage sites of biological significance. Many types of sites of biological significance are sufficiently known to allow the development of special management areas, or prescribe activities that will appropriately manage these areas. The management strategies will be based on information already in place (e.g., National Recovery Teams of Environment Canada, IWMS Management Strategy), legislation (provincial and national parks), Land and Resource Management Plans (LRMPs), and recent scientific literature. Management strategies will be implemented in operational plans such as site plans to ensure the protection of these sites. Training of appropriate personnel in the identification of these sites of biological importance is critical to the management and protection of these sites. Appropriate personnel include key signatory staff and consultants that are directly involved in operational forest management activities. Having appropriate personnel trained to identify sites of biological significance will reduce the risks of forestry activities damaging these sites.

This indicator evaluates the success of implementing specific management strategies for sites of biological significance as prescribed in operational, tactical and/or site plans. Operational plans such as site plans describe the actions needed to achieve these strategies on a site-specific basis. Once harvesting and other forest operations are complete, an evaluation is needed to determine how well these strategies were implemented. Developing strategies and including them in operational, tactical and/or site plans are of little use if the actions on the ground are not consistent with them. Tracking this consistency will ensure problems in implementation are identified and corrected in a timely manner.

Sites of Biological Significance

Signatory	Number of Forest Operations with Sites of Biological Significance Management Strategies Identified in Operational Plans				Forest Operations Completed in Accordance with Identified Strategies	% in DFA
	Roads	Harvesting	Silviculture	Total		
Canfor	0	0	0	0	0	100%

Source: Site Plans
Indicator Discussion: During the reporting period Canfor did not have any blocks or roads that had management strategies pertaining to sites of biological significance.

Indicator 1.2.3   Proportion of genetically modified trees in reforestation efforts

Indicator Statement	Target and Variance
Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use	Target: 100% conformance with the standards Variance: 0%

One of the primary management objectives for sustainability is to conserve the diversity and abundance of native species and their habitats. Silviculture practices that promote regeneration of native species, either through planting or other natural programs, assist in meeting these objectives. The well-being and productivity of future forests is dependent upon the structure and dynamics of their genetic foundation.

Seed used in Crown land reforestation that is consistent with provincial regulations and standards ensure regenerated stands are genetically diverse, adapted, healthy and productive, now and in the future. Suitable seed and vegetative lots must also be of a high quality and available in sufficient quantities to meet the specific stocking and forest health needs of a given planting site.

Regeneration will be consistent with provincial regulation and standards for seed and vegetative material use. Target - 100% conformance with the standards (0 percent variance). The Chief Forester's Standards for seed use allows for up to 5 percent of the seedlings planted in a year to be outside the seed transfer guidelines. In addition, there is an avenue in the standards to apply and receive approval for an Alternative Seed Use Policy. This built-in variance and flexibility with the standard is why there is no acceptable variance in the target of the SFMP indicator.

Signatory	Total Number of Seedlings Planted in Compliance with Legislative Requirements	Total Number of Seedlings Planted	Percent
Canfor	5,737,861	5,737,861	100%

Source: Internal databases.
Indicator Discussion: No trees were planted outside of the transfer limit during the reporting period, therefore, we are in compliance with legislative requirements.

Indicator 1.4.2a   Heritage Conservation

Indicator Statement	Target and Variance
Percentage of forest operations consistent with the Heritage Conservation Act.	Target: 100% Variance: 0%

The protection of cultural heritage values assures that they will be identified, assessed, and their record available to future generations. A cultural heritage value is a unique or significant place or feature of social, cultural, or spiritual importance. It may be an archaeological site, recreation site or trail, cultural heritage site or trail, historic site, or a protected area. Cultural heritage values often incorporate First Nation's heritage and spiritual sites, but they can also involve features protected and valued by non-Aboriginal people. Maintenance of cultural heritage values is an important aspect to sustainable forest management because it contributes to respecting the social and cultural needs of people who traditionally and currently use the DFA for a variety of reasons.

The indicator is designed to ensure that operational plans with identified strategies to conserve cultural heritage values have those strategies implemented on the ground. Tracking the level of implementation will allow Canfor to evaluate how successful this implementation is and improve procedures if required.

Heritage Conservation

Signatory	Total Number of Forest Operations that have associated sites protected under the Heritage Conservation Act (pre-1846)				Number of Forest Operations Completed in Accordance with the Heritage Conservation Act	Percent
	Roads	Harvesting	Silviculture	Total		
Canfor	0	1	0	1	1	100.0%

Source: Site plans.

Indicator Discussion: There was one block (GER017) harvested where a pre-1846 archaeological site was found during the Archaeological Impact Assessment (AIA). Additionally, two Areas of Archaeological Potential (AOP) were found. The pre-1846 archaeological site was excluded from the net merchantable area and buffered 30 meters to form part of one of the external Wildlife Tree Patches (WTP).

Blocks 6807, GER013, MAN015, and MAN011 all had AIAs completed and had CMTs and/or AOPs found. Any AOPs found were excluded from the merchantable area of the block and included in the gross block area as WTPs. The CMTs were flagged in the field, identified on the map, and stubbed above the scars where operationally feasible.

Finally, an Archaeological Overview Assessment was completed for block GER014. Nothing of significance was found so no AIA was needed.

Indicator 1.4.2b   Protection of identified sacred and culturally important sites

Indicator Statement	Target and Variance
Percent of identified Aboriginal forest values, knowledge and uses accommodated in forestry planning processes.	Target: 100%
	Variance: 0

Efforts have been made to understand which First Nation traditional territories fall within the Plan area and company Defined Forest Areas. Information sharing agreements are made with willing First Nation communities to promote the use and protection of sensitive information.

Planned blocks are shared with Aboriginal communities. Open communication with First Nations that includes a sharing of information enables the participants to understand and incorporate traditional knowledge into forest management options is the means to achieve the objective of the indicator.

The objective will be achieved as the participants become aware of culturally important, sacred and spiritual sites leading to appropriate management of and protection. This will be achieved by specifying measures in operational plans. The proper execution of plans will provide desired results of First Nations culturally important values and resources. Post-harvest evaluations and other inspections will assess plan conformance.

Signatory	Number of Aboriginal forest values, knowledge and uses brought forward that have been considered	Number of Aboriginal forest values, knowledge and uses brought forward	Percent
Canfor	2	2	100.0%

Source: Internal tracking databases.

Indicator Discussion: In the fall of 2013 Canfor, FLNRO and representatives from the Takla Lake FN met to discuss Canfor's proposed harvesting in the Manson and Germansen areas. A large area was identified as to be no harvesting, however no specific sites were identified by the Takla Lake FN within the area. The input was considered, however not included into operational plans. In the fall of 2014 the Takla Lake FN and Canfor had further discussions regarding their area of concern and some of the specifics. The area of concern was narrowed down to one drainage and a proposed road and blocks within that drainage. The FN family in the area has a trapline and historic trails they want to protect as

well as they have concerns about opening access to the area. Canfor proposed a number of operational controls and practices to the Takla Lake FN to address their concerns. Further discussions were had during the current reporting period with regards to the Manson and Germanson areas. Some accommodations made to address their concerns included dropping blocks related to significant cultural features, providing buffers on sacred areas, and the completion of Archaeological Impact Assessments. The Mcleod Lake Indian Band brought forward concerns relating to the protection of important habitat as well as traditional use areas. Canfor agreed to protect identified berry patches where possible.

Indicator 2.1.1a   Regeneration Delay

Indicator Statement	Target and Variance
The regeneration delay, by area, for stands established annually.	Artificial Regen: <4yrs Natural Regen: <7yrs Variance: +/- 5%

Regeneration delay is defined in this SFM plan as the time allowed in a prescription between the start of harvesting in the area and the earliest date by which the prescription requires a minimum number of acceptable, well-spaced trees per hectare to be growing in that area. There is a maximum permissible time allowed and comes from standards developed and/or approved by government. The regeneration delay period is usually within four years where planting is prescribed and seven years where the stand is expected to reforest naturally. Operationally, it is desirable to reforest as soon as possible post-harvest and the majority of blocks artificially regenerated (e.g. planted) meet regeneration delay within 2 years. Ensuring that all harvested stands meet the prescribed regeneration delay date within the specified time frame is an indication that the harvested area has maintained the ability to recover from a disturbance, thereby maintaining its resiliency and productive capacity. It also helps to ensure that a productive stand of trees is beginning to grow for use in future rotations. The current status of this indicator was derived from a review of signatories' records for the reporting period.

Regeneration Delay

Regen Delay
Natural Regenerated Strata by Reported Year
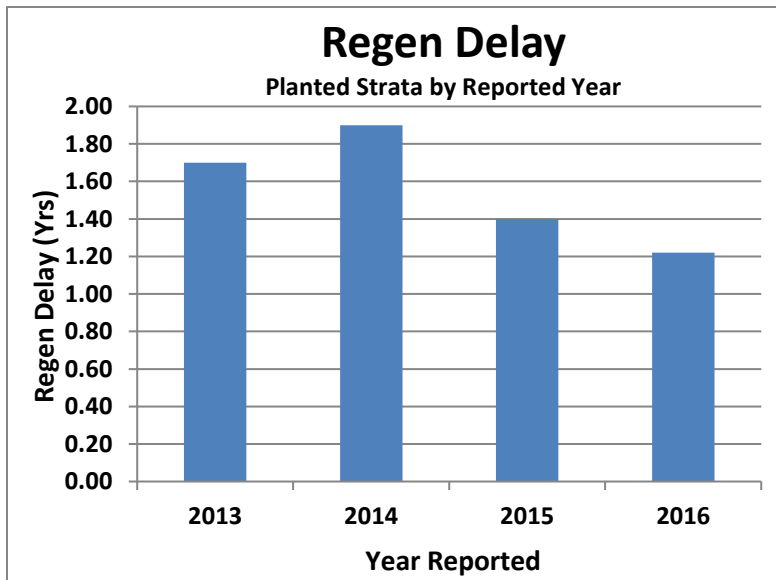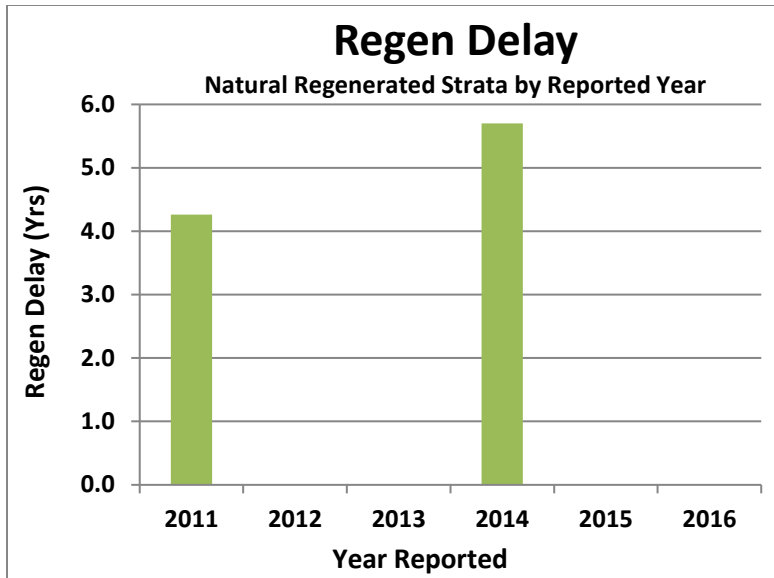
Source: Canfor Resources database.

Indicator Discussion: Included previous years as well to show trends where they exist. In 2015 there was 4050 ha declared Regen met through artificial (planted) regen, and no hectares declared as naturally regenerated.

Indicator 2.1.1b   Free Growing

Indicator Statement	Target and Variance
The % of block area that meets free growing requirements as identified in site plans.	Target: 100% Variance: -5%

A free growing stand is defined in this SFM plan as a stand of healthy trees of a commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees. The free growing status is somewhat dependent upon the regeneration delay date of a forest stand and could be considered the next reporting phase. A free growing assessment is conducted on stands based on a time frame indicated in operational plans. The late free growing dates are established based on the biogeoclimatic classification of the site and the tree species prescribed for planting after harvest.

In order to fulfill mandates outlined in legislation, standards are set for establishing a crop of trees that will encourage maximum productivity of the forest resource (BC MOF 1995b). The free growing survey assesses the fulfillment of a Licensee's obligations to the Crown for reforestation and helps to ensure that the productive capacity of the forest land base to grow trees is maintained. Continued ecosystem productivity is ensured through the principle of free growing. This indicator illustrates the percentage of block area that meets free growing obligations across the DFA.

Free Growing

Signatory	Number of hectares Required to Meet Free Growing During Period	Number of hectares declared Free Growing	% in DFA
Canfor	5379	5379	100%

Source: Resources.

Indicator Discussion: During the reporting period, there were 234 Standards Units due for free growing. Everything met the due date.

Indicator 2.2.1a   Site conversion

Indicator Statement	Target and Variance

The percent of gross land base in the DFA converted to non-forested land use through forest management activities.	Target: <5% Variance: 0%

In addition to maintaining the resources necessary for sustaining the resiliency of forest ecosystems, a stable land base within which productive capability is assessed is also required. To assess the maintenance of the productive capability of the land base, this indicator specifically tracks the amount of productive land base loss due to various non-forest uses. Removal of the productive land base occurs as a result of permanent access structures, including roads, landings and gravel pits, as well as converting forested areas to non-forest land use, such as range, seismic lines and other mineral exploration.

Conversion of the landbase to non-forest land also has implications for carbon sequestration. A permanent reduction in the forest means that the removal of carbon from the atmosphere and carbon storage will be correspondingly reduced. The data that is required for monitoring is the number of hectares of productive forest area lost due to conversion to a non-forest use.

Site Conversion

Signatory	Total CFLB	Area Converted to Non-Forest Land	Percent of THLB Area
Canfor	1,309,132	12,455	0.95%

Source: GIS analysis

Indicator Discussion: The area converted to non-forested land during the reporting period is less than 1%, therefore the site conversion target has been met.

Indicator 2.2.1b   Permanent Access Structures

Indicator Statement	Target and Variance
The percentage of gross cutblock area occupied by total permanent access structures.	Target: <5% Variance: +1%

This indicator measures the amount of area developed as permanent access structures (PAS) within cutblocks, in relation to the gross area of the blocks logged during that period. Limits are described in legislation in the Forest Planning and Practices Regulation, section 36. Permanent access structures include roads, bridges, landings, gravel pits, or other similar structures that provide access for timber harvesting. Area that is converted to non-forest, as a result of permanent access structures and other development is removed from the productive forest land base and no longer contributes to the forest ecosystem. Roads and stream crossings may also increase risk to water resources through erosion and sedimentation. As such, minimizing the amount of land converted to roads and other structures protects the forest ecosystem as a whole.

Permanent Access Structures

Signatory	Total Gross Cutblock Area	Total Cutblock Area in Permanent Access Structures	Percent
Canfor	4494.3	145.1	3.2%

Source: Site Plans

Indicator Discussion: This is a calculation using all of the blocks that had active harvesting during the reporting period.

Indicator 2.2.2a   Harvest volume

Indicator Statement	Target and Variance
Actual harvest volume compared to the apportionment across the DFA over each 5-year cut control period.	Target: 100%. Variance: +/- 10%.

To be considered sustainable, harvesting a renewable resource such as timber cannot deteriorate the resource on an ecological, economic or social basis. It is expected that certain resource values and uses will be incompatible; however, a natural resource is considered sustainable when there is a balance between the various components of sustainability. During Allowable Annual Cut (AAC) determination,

various considerations are examined including the long term sustainable harvest of the timber resource, community stability, wildlife use, recreation use, and the productivity of the DFA. The AAC is generally determined every five years by the Chief Forester of British Columbia, using a number of forecasts to assess the many resource values that need to be managed. On behalf of the Crown, the Chief Forester makes an independent determination of the rate of harvest that is considered sustainable for a particular Timber Supply Area (TSA).

The harvest level for a TSA must be met within thresholds that are established by the Crown. By following the AAC determination, the rate of harvest is consistent with what is considered by the province to be sustainable ecologically, economically and socially within the DFA. As stated above, the Chief Forester makes a determination of the rate of harvest for a particular TSA. The licensee then by law must achieve the AAC within the specified thresholds. Each truckload of wood is assessed and accounted for at a scale site if the cutting permit is billed as "scale-based" and if the cutting permit is "cruise-based" the timber is billed according to the volume in the timber cruise. The MFLNRO uses this information to apply a stumpage rate to the wood, and monitors the volume of wood harvested and compares it to the AAC thresholds.

The volume of timber actually harvested within the DFA will be determined annually by a review of MFLNRO timber scale billing summaries for the period of January 1st to December 31st each year, on an annual basis. Canfor will report the volumes harvested for the current cut control period they are in.

Harvest Volumes

Signatory	Volume Harvested					Total	5-year Apportionment	Percent of 5 year cut in DFA
	Year 1	Year 2	Year 3	Year 4	Year 5			
	2013	2014	2015	2016	2017			
Canfor	860,326	909,303	1,173,381	1,070,425		4,013,435	5,414,520	74%

Source: Cut control letters, Harvest Billing System

Indicator Discussion: 2013 was the beginning of a new cut-control period and Canfor expects that at the end of that period the entire cut will be harvested. Canfor's annual allowable cut (AAC) is 1,082,904 m3. In 2016 Canfor cut 98.8% of the annual allocation. The next reporting year is the 5th year of the cut control period after which the cut control will start over. Canfor will have to cut above their AAC in 2017 in order to meet the 5-year apportionment target.

Indicator 2.2.2b   Prioritizing harvest of damaged stands

Indicator Statement	Target and Variance
Percentage of area (ha) harvested that are damaged or considered a high risk to stand damaging agents.	Target: 100%. Variance: -20%.

Damaging agents are biotic and abiotic factors (fire, wind, insects etc.) that reduce the net value of commercial timber. To reduce losses to timber value it is necessary to ensure that if commercially viable timber is affected by damaging agents, that the timber is recovered before its value deteriorates. At the time of this SFMP's preparation, the most serious stand damaging agent in the Mackenzie DFA is the Mountain Pine Bark Beetle, which has killed millions of mature, commercially viable lodgepole pine. During the current reporting period, a Spruce Bark Beetle epidemic has become a serious concern to the Mackenzie Forest District. Efforts have been made to slow the spread using trap tree programs, pheromone lures, and sanitation harvests. Prioritizing infested stands for treatment can contribute to sustainable forest management in several ways. Removing infested trees can slow the spread of beetles to adjacent un-infested stands and allow Licensees to utilize trees before they deteriorate. Also, once harvesting is complete the area can be replanted, turning an area that would have released carbon through the decomposition of dead trees into the carbon sink of a young plantation.

Treating areas with stand damaging agents will provide other societal benefits. Burned and diseased killed stands may be aesthetically unpleasing, and their harvesting and reforestation will create a more pleasing landscape. Wind thrown stands restrict recreational use and can foster the growth of insect

pests such as the spruce bark beetle. Thus, prioritizing areas with stand damaging agents for treatment will help to maintain a more stable forest economy and achieve social benefits through enhanced aesthetics and recreational opportunities.

Prioritizing Harvest of Damaged stands

Signatory	Number of hectares harvested in the stands considered a high risk to stand damaging agents	total number of hectares harvested during the reporting period	% in DFA
Canfor	5241	5410	97%

Source: Site plans, cruise compilations.
Indicator Discussion: Calculated using net area to reforest (NAR + Rd area). 82 blocks harvested with 53 of those having more than 40% net pine at the cruise, therefore were deemed to be salvage. In addition, 26 blocks were prioritized due to spruce bark beetle attack and are considered damaged stands.

Indicator 3.1.1a   Sedimentation

Indicator Statement	Target and Variance
The percentage of identified unnatural sediment occurrences where mitigating actions were taken.	Target: 100% Variance: -5%

Sedimentation occurrences are detected by forestry personnel during stream crossing inspections, road inspections, silviculture activities, and other general activities. In addition, Canfor supervisors routinely fly their operating areas annually following spring freshet to look for any such occurrences. While in some situations the sites may have stabilized so that further sedimentation does not occur, in other cases mitigating actions may have to be conducted. This may involve re-contouring slopes, installing siltation fences, re-directing ditch lines, grass seeding, or deactivating roads.

Sedimentation

Signatory	Number of identified unnatural sediment occurrences	Number of identified unnatural sediment occurrences with mitigating actions taken	% in DFA
Canfor	1	1	100%

Source: ITS
Indicator Discussion:
In May of 2016, a layout contractor discovered a slump on a portion of the Chundoo Nu road that was constructed in the winter of 2016. The slump caused an unknown amount of sediment to enter a stream. A Registered Professional Engineer visited the site immediately after slump was discovered. A full investigation was completed, a remediation strategy identified, and the strategy fully implemented.

Indicator 3.1.1b   Stream Crossings

Indicator Statement	Target and Variance
Percentage of stream crossings appropriately designed and properly installed and/or removed.	Target: 100% Variance: -5%

Forestry roads can have a large impact on water quality and quantity when they intersect with streams, particularly by increasing sedimentation into water channels. Sediment is a natural part of streams and lakes as water must pass over soil in order to enter a water body, but stream crossings can dramatically increase sedimentation above normal levels. Increased sedimentation can damage spawning beds, increase turbidity, and effect downstream water users. When stream crossings are installed and removed properly, additional sedimentation may be minimized to be within the natural range of variation. Erosion control plans and procedures are used to ensure installations and removals are done properly. To calculate the success of this indicator it is important to ensure that a process is in place to monitor the quality of stream crossings, their installation, removal, and to mitigate any issues as soon as possible.

Stream Crossings

Signatory	Number of Stream Crossings			Number of Stream Crossings			% Total
	Installed	Removed	Total	Appropriately designed and properly installed	Properly removed	Total	
Canfor	18	20	38	18	20	38	100%

Source: Incident Tracking System, Supervisor Communication.
Indicator Discussion: No issues were identified in ITS and in conversations with harvesting supervisors.

Indicator 3.1.1c   Road Re-vegetation

Indicator Statement	Target and Variance
Percentage of road construction or deactivation projects where prescribed re-vegetation occurs within 12 months of disturbance.	Target: 100% Variance: -10%

This indicator was chosen as a way to assess our ability to minimize or at least reduce the anthropogenic effect of forest roads on adjacent ecosystems. In keeping with the common assumption of coarse-and medium-resolution biodiversity, our underlying assumption with this indicator was – re-vegetating roads will reduce the potential anthropogenic effects that roads have on adjacent ecosystems by minimizing potential for silt runoff or slumps, the amount of exposed soil, the potential for invasive plants to become established, and returning at least a portion of forage and other vegetation to conditions closer to those existing prior to management. Typically, Canfor vegetates and mulches stream crossings which show a potential for erosion, as well as any other sections of road deemed necessary by Forestry Supervisors.

Road Re-vegetation

Signatory	Total Number of Projects Where Re-vegetation is Prescribed	Number of Prescribed Re-vegetation Projects Completed within 12 months of disturbance	% in DFA
Canfor	20	20	100%

Source: Licensee tracking systems, Supervisor communication.

Indicator Discussion: This indicator is measured by identifying the number of bridge and major culverts installations and deactivations and then determining the number of these sites that are re-vegetated (seeded). It's Canfor's policy to re-vegetate these sites to control water flow and reduce siltation risk.

Indicator 3.1.1d   Road Environmental Risk Assessment

Indicator Statement	Target and Variance
Percentage of planned roads that have an environmental risk assessment completed.	Target: 100% Variance: -10%

Environmental risk assessments provide an indicator of "due diligence" in avoiding accidental environmental damage that has potential to occur from forest development in conditions of relatively unstable soil. Through the implementation of risk assessments, we expect to maintain soil erosion within the range that would normally occur from natural disturbance events under unmanaged conditions. Our assumption was – the more we can resemble patterns of soil erosion existing under unmanaged conditions, the more likely it will be that we do not introduce undue anthropogenic effects, from road construction, on adjacent ecosystems. The completion of environmental risk assessments on roads is completed by field staff during road layout. The assessments highlight areas of special concern that may require professional geotechnical or design work.

Road Environmental Risk Assessment

Signatory	Total Number of roads constructed	Number of constructed roads with environmental risk assessments completed	% in DFA
Canfor	214	214	100%

Source: Genus
Indicator Discussion: All layout is signed off by the person conducting this work as well as their supervisor in the layout package Certification Statement.

Indicator 3.1.1e   Soil Conservation

Indicator Statement	Target and Variance
Percentage of forest operations consistent with soil conservation standards as identified in operational plans and/or site plans.	Target: 100% Variance: 0%

Conserving soil function and nutrition is crucial for sustainable forest management. To achieve this, forest operations have limits on the amount of soil disturbance they can create. These limits are described in legislation in the Forest Planning and Practices Regulation, section 35. Soil disturbance is defined in this SFM plan as disturbance caused by a forest practice on an area, including areas occupied by excavated or bladed trails of a temporary nature, areas occupied by corduroy trails, compacted areas, and areas of dispersed disturbance. Soil disturbance is expected to some extent from timber harvesting or silviculture activities, but these activities are held to soil conservation standards in Site Plans (where they are more commonly known as "soil disturbance limits"). The Site Plan prescribes strategies for each site to achieve activities and still remain within acceptable soil disturbance limits.

Soil information is collected as a component of site plan preparation, and soil conservation standards are established based on the soil hazards for that block. To be within those limits there are several soil conservation strategies currently used. Forest operations may be seasonally timed to minimize soil disturbance. For example, fine-textured soils such as clays and silts are often harvested when frozen to reduce excessive compaction. EMS prework forms require equipment operators to be aware of soil conservation indicators outlined in the site plans. Once an activity is complete the final inspection form assesses the consistency with site plan guidelines. If required, temporary access structures are rehabilitated to the prescribed standards. Road construction within blocks is minimized, and low ground pressure equipment may be used where very high soil hazards exist.

Soil Conservation

Signatory	Number of Forest Operations			Forest Operations Completed in Accordance with Soil Conservation Standards	% in DFA
	Harvesting	Silviculture	Total		
Canfor	82	0	82	82	100%

Source: Site Plans, ITS, Harvest Inspections.
Indicator Discussion: There were no instances where operations were not consistent with targets for soil conservation set out in site plans.

Indicator 3.1.1f   Terrain Management

Indicator Statement	Target and Variance
The percentage of forest operations consistent with terrain management requirements as identified in operational plans and/or site plans.	Target: 100% Variance: 0%

Some areas subject to forest operations occur on slopes that warrant special terrain management requirements in operational plans (usually the site plan). These unique actions are prescribed to minimize the likelihood of landslides or mass wasting. Terrain Stability Assessments (TSA) are completed on areas with proposed harvesting or road development that has been identified as either unstable or potentially unstable. The recommendations of the TSA are then integrated into the site plan or road layout/design and implemented during forest operations.

Terrain Management

Signatory	Number of Forest Operations with Terrain Management Requirements Identified in Operational Plans				Forest Operations Completed in Accordance with Requirements	% in DFA*
	Roads	Harvesting	Silviculture	Total		
Canfor	0	3	0	3	3	100%

Source: Site Plans
Indicator Discussion: During the reporting period there were 3 blocks harvested (1648, 6717, MAN030) that had Terrain Stability Assessments completed on them prior to harvesting. Recommendations from the assessments were incorporated into the site plans and operations were consistent with the recommendations.

Indicator 3.1.2   Coarse Woody Debris

Indicator Statement	Target and Variance
The percent of blocks harvested that exceed coarse woody debris requirements.	Target: 100% Variance: 0%

Coarse woody debris (CWD) as a habitat element provides: 1) nutrients for soil development, 2) structure in streams to maintain channel stability, 3) food and shelter for animals and invertebrates, and 4) growing sites for plants and fungi. Past forestry practices have encouraged the removal of CWD from sites for a number of economic and/or safety reasons, presumably to the detriment of biological diversity. We use this indicator following harvesting to quantify CWD retained in blocks, wildlife tree patches, riparian areas, and in areas of un-salvaged timber. Within the NHLB we assume that natural processes will result in the maintenance of appropriate levels of CWD.

Post-harvest CWD levels will be measured as a standard component of either the silviculture survey or residue and waste survey. The interim target for CWD was taken from the FRPA *Forest Planning and Practices Regulation, Sec. 68* default requirements (BC. Reg 14/2004). Although the PAG members felt that this number was inadequate to protect this element of biodiversity, they recognized that insufficient information exists to determine either the amount of CWD left behind after harvesting or the amount of CWD that occurs in natural pre-harvest stands. Even so, we expect significantly more CWD than the target is retained after harvest and have committed to developing a more comprehensive CWD strategy pending availability of more data supporting a new CWD regulation.

Coarse Woody Debris

Signatory	Number of Blocks harvested	Number of blocks harvested that exceed CWD requirements	%in DFA
Canfor	82	82	100%

Source: Final harvest inspections, Incident Tracking Systems.
Indicator Discussion: This indicator applies to blocks only.

Indicator 3.2.1   Peak Flow Index

Indicator Statement	Target and Variance
Percent of watersheds containing approved or proposed development with Peak Flow Index calculations completed.	Target: 100% Variance: 0%

The peak flow index is an indicator that indicates the potential effect of harvested areas on water flow in a particular watershed. The H60 is the elevation for which 60% of the watershed area is above. The ECA or "Equivalent Clear-cut Area" is calculated from the area affected by logging and the hydrologic recovery of that area due to forest re-growth. After an area has been harvested, both winter snow accumulation and spring melt rates increase. This effect is less important at low elevations, since the snow disappears before peak flow. Harvesting at high elevations will have the greatest impact and is, therefore, of most concern. As a result, areas harvested at different elevations are weighted differently in the calculation of peak flow index. Most hydrologic impacts occur during periods of the peak stream flow in a watershed. In the interior of British Columbia, peak flows occur as the snowpack melts in the spring.

With PFI calculations now complete, the watersheds will next be evaluated to establish the watershed sensitivity and thereby the PFI risk (low to high). With the PFI risk ratings established, harvesting plans will have to consider the impact harvesting will have on the watershed in which it occurs. The goal, in watersheds with a high PFI risk rating, is to either postpone harvesting, or refer to a qualified registered professional for a detailed review.

Peak Flow Index

Licensee	Number of watersheds with harvest activities in the DFA	Number of those watersheds with Peak Flow Index calculations	Total % DFA
Canfor	29	29	100%

Source: GIS analysis – See Appendix 1 for a table with the current Peak Flow Index status of all watersheds Canfor was active in during the harvest period.
Indicator Discussion: Sensitivity calculations were completed in 2010 and 2011 for the majority of the watersheds we are/will be active in. Canfor GIS staff recalculate the current state and future state ECA/PFI on a regular basis.

Indicator 5.1.1a   Non-timber Benefits

Indicator Statement	Target and Variance
Conformance with strategies for non-timber benefits identified in plans.	Target: No non-conformances for site level plans Variance: 0

For the purpose of this plan non-timber benefits include; resource features, range features as well as visual quality. Resource features are elements that have a unique importance because specific ecological factors exist in combination at one place and don't often occur similarly elsewhere. Examples of resource features are caves, karst, recreation sites or crown land used for research to name a few. These features are generally considered to have value to society so we assume that through conservation of these features we are contributing to social value. Range features are often used by ranchers to allow livestock to feed and thus very important to the ranching industry. Conservation of these areas will help to assure their availability in the future. Examples of such features include naturally occurring grass lands, naturally occurring barriers which contain livestock to a specific area as well as any area that a rancher has grazing or hay cutting permits on, or identified areas that may be suitable for such permits in the future. Visual quality is managed in order to maintain areas of perceived beauty within the DFA.

The signatories currently plan and design their activities and/or blocks so as to manage or adequately protect non-timber benefits when they become known. Once a non-timber benefit becomes known, means of managing or protecting the feature are either iterated in the operational plan or tactical and/or site plans. These requirements are tracked and managed by Canfor as well as by the Compliance and Enforcement branch of the MFLNRO.

Signatory	Number of blocks and roads harvested with non-timber benefits identified in the site plan	Number of blocks and roads harvested with non-timber benefits whereby the associated results and strategies were not achieved	Variance
Canfor	6	0	0

Source: Site plans.
Indicator Discussion: There were 6 blocks harvested during the reporting period that had visual impact assessments completed for the areas of these blocks. Blocks RUP007, RUP006, MAN011, GER026, 6809, and 5590. Timber harvesting operations were consistent with the established visual quality objectives for the areas and the procedures for the assessments were followed.

Indicator 5.1.1b   First-Order Wood Products

Indicator Statement	Target and Variance
The number of first-order wood products produced from trees harvested from the DFA.	Target: 5 Variance: -2

This indicator helps to show how forest management activities can contribute to a diversified local economy based on the range of products produced at the local level. Forest management's contribution to multiple benefits to society is evident through this indicator, as well as an indication of the level of diversification in the local economy. First order wood products are often used to supply value-added manufacturers with raw materials for production, such as pre-fabricated house components. These provisions help to maintain the stability and sustainability of socio-economic factors within the DFA. By

ensuring a large portion of the volume of timber harvested in the DFA is processed into a variety of products at local facilities, the local economy will remain stable, diverse, and resilient.

First-Order Wood Products

Signatory	Saw logs	Pulp Logs	House logs	Lumber	Custom cut lumber	Trim Blocks	Pulp chips	OSB strands	Hog	Wood shavings	Plywood	Veneer	Pole Logs	Railway tie logs	Sawdust	Instruments	Finger joint	Total
Canfor	1	1	0	1	0	1	1	0	1	1	0	0	0	0	1	0	0	**8**

Source: Canfor: Site Superintendent communication/contractor communications.
Indicator Discussion: Primary and by-products sold to other local manufacturing facilities were counted.

Indicator 5.2.2   Investment in training and skills development

Indicator Statement	Target and Variance
Training in environmental and safety procedures in compliance with company training plans.	Target: 100% of company employees and contractors will have both environmental and safety training. Variance: -5%

Sustainable forest management provides training and awareness opportunities for forest workers as organizations seek continual improvement in their practices. Investments in training and skill development generally pay dividends to forest organizations by way of a safer and more environmentally conscious work environment. Assessing whether forest contractors have received both safety and environmental training is a direct way of measuring this investment. Additionally, training plans should be in place for employees of the forest organizations who work in the forest. Measuring whether the training occurred in accordance with these plans will confirm an organizations commitment to training and skills development.

Signatory	Total Number of Employees and Contractors Trained in EMS, FMS and Safety	Total Number of Employees and Contractors	Percent
Canfor	380	380	100.0%

Source: Eclipse, contractor records.
Indicator Discussion: Canfor supervisors train contractor foremen, principals and supervisors on our FMS, SFM and SWPs. It is then the responsibility of the contractor to train all other employees using the materials presented by Canfor.

Indicator 5.2.3   Level of direct and indirect employment

Indicator Statement	Target and Variance
Maintain the level of direct and indirect employment.	Target: 265 direct 53 indirect

Forests represent not only a return on investment (measured, for example, in dollar value, person-days, donations, etc.) for the organization but also a source of income and non-financial benefits for DFA-related workers, local communities and governments.

Organizations that harvest at sustainable harvest levels in relation to the allocated supply levels determined by government authorities continue to provide direct and indirect employment opportunities. The harvest level is set using a rigorous process that considers social, economic and biological criteria.

Targets for this indicator are based on 2010 baseline data of actual direct employment. Direct employment includes all staff and contractors paid directly by Canfor. Indirect employment levels are generated using the employment multiplier from the 2000 Timber Supply Review. Indirect employment is difficult to calculate therefore the multiplier is used, and is based on the number of direct jobs. If full-time employment targets are being met it will be assumed that indirect employment targets are also met.

Signatory	Number of Direct Jobs				Indirect Jobs Met (y/n)			
Canfor	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17
	329	431	514	575	Y	Y	Y	Y

Source: Human Resources documents, contractor communication.

Indicator Discussion: If the amount of direct jobs is met, it is assumed the amount of in-direct jobs will also be met. For this reporting period, there was an increase in woodlands employment as volumes harvested increased and silviculture manpower increased. Previous reporting did not include block and road development workers. Unionized mill employment remained steady with an increase in mill salary staff.

Indicator 5.2.4   Contract Opportunities to First Nations

Indicator Statement	Target and Variance
The number of contract opportunities with First Nations within the DFA.	Target: >5 Variance: -2

This indicator is intended to monitor the impacts of forest industry and government activities on the ability of First Nations to access forestry related economic opportunities. At present, this indicator is not intended to assess how successful First Nations are at taking advantage of the opportunities. Canfor has explored forestry related opportunities with First Nations in the past. Capacity amongst the First Nations to take advantage of opportunities will likely have to be addressed in order for available opportunities to be acted upon. This indicator tracks the existence of opportunities available.

Contract Opportunities to First Nations

Signatory	Contract Opportunities							Total for DFA
	Employment	Road Building & Deactivation	Other Volume Purchased	Logging	Silviculture Forestry	Other Contracts	Management Services	
Canfor	0	0	0	3	3	0	0	**6**

Source: Signatory contract records.

Indicator Discussion: Contracts are established with three separate First Nations for harvesting opportunities. One First Nation manages the harvesting themselves while two of the First Nations subcontract their volume to other harvesting contractors. Silviculture contracts to First Nations consist of manual brushing, stand spacing activities, some pile burning, and site preparation activities.

Indicator 6.1.1   Understanding of the nature of Aboriginal Rights and Title

Indicator Statement	Target and Variance
FMG employees will receive First Nations Awareness training as per the FMG Training Matrix.	Target: 100% Variance: 10%

Section 35 of the Constitution Act states "The existing aboriginal and treaty rights of Aboriginal Peoples of Canada are hereby recognized and affirmed". Some examples of the rights that Section 35 has been

found to protect include hunting, fishing, trapping, gathering, sacred and spiritual practices, and title. SFM requirements are not in any way intended to define, limit, interpret, or prejudice ongoing or future discussions and negotiations regarding these legal rights and do not stipulate how to deal with Aboriginal title and rights, and treaty rights.

The first step toward respecting Aboriginal title and rights, and treaty rights is compliance with the law. Section 7.3.3 of the CSA Z809-08 Standard reinforces legal requirements for many reasons, including demonstrating that Aboriginal title and rights, and treaty rights have been identified and respected. The reality in demonstrating respect for Aboriginal title and rights, and treaty rights can be challenging in Canada's fluid legislative landscape and therefore it is important to identify these legal requirements as a starting point. It is important for companies to understand applicable Aboriginal title and rights, and treaty rights, as well as the Aboriginal interests that relate to the DFA.

Both the desire of licensees to comply with laws and open communication with local First Nations requires that company staff members have a good understanding of Aboriginal title and rights and treaty rights.

Signatory	Number of staff who have completed First Nations Awareness training	Total number of staff who require the training.	Percent
Canfor	21	21	100%

Source: Employee training databases.
Indicator Discussion: Of the 23 FMG staff in Mackenzie, only 20 require this training as per the FMG training Matrix, WIM staff are exempt. There was a significant increase in the reporting period due to the addition of field operations and Transporter staff.

Indicator 6.1.2a   First Nations Concerns

Indicator Statement	Target and Variance
Percentage of operational concerns raised by First Nations that are considered and incorporated into operational and/or tactical plans.	Target: 100% Variance: -10%

Incorporating management strategies into the planning process to resolve issues raised by First Nations leadership is a key aspect to sustainable forest management. This indicator contributes to respecting the social, cultural heritage and spiritual needs of people who traditionally and currently use the DFA for the maintenance of traditional aspects of their lifestyle.

Forest planning can include information sharing for both operational and tactical plans. The FSP process is an example of operational plans referred to First Nations. AIAs, operating plans, block and road referrals, and annual operating maps are examples of tactical plans that may be referred to First Nations. Active forest operations are current harvesting, road construction, and mainline deactivation projects, planned vegetation management projects, as well as forest planning of new blocks and roads.

First Nations Concerns

Signatory	Number of concerns brought forward that have been considered and incorporated into operational plans	Total number of operational concerns brought forward	Percent
Canfor	1	1	100%

Source: Signatory communication records and operational plans.
Indicator Discussion: One First Nation identified concerns with harvesting within a large general area, however did not provide any specific sites/areas/features within the larger general area therefore we were unable to incorporate the concern into operational plans. There were several meetings and conversations with the First Nation. A general plan including access strategies and concessions have been incorporated into our operational plans to accommodate the First Nation.

Indicator 6.1.2b   First Nations Input into Forest Planning

Indicator Statement	Target and Variance
The number of opportunities for First Nations to provide meaningful input into our planning processes where active operations are within their respective traditional territories.	Target: >/= 2 per First Nation Variance: 0

This indicator was designed to list and report out on all documented opportunities provided to First Nations people to be involved in forest management planning processes. Incorporation of First Nations people and their unique perspective into the forest planning process is an important aspect of SFM. This indicator will contribute to respecting the social, cultural and spiritual needs of the people who traditionally and currently use the DFA for the maintenance of traditional aspects of their lifestyle. The Mackenzie SFM PAG is a process designed to identify public values and objectives within the DFA. Within the PAG process, First Nations has been identified as an important sector for representation.

First Nations Input into Forest Planning

Opportunity	Signatory	Tsay Keh	Kwadacha	Takla Lake	Nak'azdli	Mcleod Lake	West Moberly	Saulteau	Halfway River	Horse Lake
		FIRST NATION								
Operational planning referrals	Canfor	3		3	3	3	3	2		
Open house meetings	Canfor									
AIA referrals	Canfor	6		6	6	2	6			
Trade shows	Canfor	1	1	1	1	1	1	1	1	1
Formal operational meetings	Canfor	3		2	1			1	1	
Pest management prescription meetings and referrals	Canfor				2					
FSP referrals / consultation	Canfor	5	5	7	5	5	4	5	6	1
TOTAL		18	6	19	18	11	14	9	8	2

Source: Signatory communication records, COPI.
Indicator Discussion: Communication was in the form of information sharing for block planning, AIA referral as well as information sharing of the NIT and Pest Management Plan (PMP). The Kwadacha, Halfway River First Nation and Horse Lake First Nations were not included in referrals since Canfor has not been harvesting within these First Nations traditional territories in the recent past. Many referrals and discussions relating to the FSP occurred as the Canfor Mackenzie FSP is expiring in February 2018. A re-write is currently being completed.

Indicator 6.3.1   Local Investment

Indicator Statement	Target and Variance
The percent of money spent on forest operations and management on the DFA provided from local suppliers.	Target: 30% Variance: -5%

Forests provide many ecological benefits but they also provide substantial socio-economic benefits. In order to have sustainable socio-economic conditions for local communities associated with the DFA, local forest related businesses should be able to benefit from the work that is required in the management of the DFA. Furthermore, for small forestry companies to contribute to and invest in the local economy there must be assurances that there will be a consistent flow of work. In the same way that larger licensees depend on a secure flow of resources to justify investment in an area, small businesses depend on a sustained flow of opportunities to develop and invest in the local community.

Local is defined in this SFMP as the communities of Mackenzie, McLeod Lake, Germansen Landing, Manson Creek, Tsay Keh Dene, and Fort Ware. The total dollar value of goods and services purchased within the local communities will be calculated relative to the total dollar value of all goods and services used. This calculation will be used to derive the percentage of money spent on forest operations and management of the DFA from local suppliers. Woodlands employee salaries are considered goods purchased where the employee lives within the local area and therefore contribute to community stability.

Forest Operations and Management consider all money spent within the signatory's woodlands departments, excluding stumpage. Harvesting and road building costs, where applicable, will be included in the total.

Local Investment

Signatory	Money spent in local area on Forest operations and management	Total money spent on forest operations and management	% in DFA
Canfor	$48,344,339.76	$88,292,600.95	54.7%

Source: Accounting records
Indicator Discussion: Local spending includes logging, road building and maintenance, silviculture activities, woodlands related purchases at local vendors, staff salaries, etc.
2014-2015 saw a significant increase in total dollars spent in Canfor forest operation. The increase is a result of increased volume harvested, higher costs for harvesting and a couple of large road and infrastructure projects that were completed during the year. There was an increase in local spending from 46% to almost 55% between the last reporting period and this year's. This could be explained by an expansion of businesses and industry within the Mackenzie District.

Indicator 6.3.2   Accidents

Indicator Statement	Target and Variance
Number of lost time accidents in woodlands operations.	Target: 0 Variance: 0

Health and safety of forest workers and members of the public is an important quality of life objective that is essential to SFM. Canfor considers employee and public safety as a primary focus of all forestry related operations. Evidence of this high priority can be seen in various company mission statements and individual safety policies. This indicator was developed to track and report out on the number of lost time workplace accidents that occur within Canfor's Forest Management Group (FMG). Operations conducted outside the woodlands division and field operations have been excluded from this indicator; however, Canfor promotes safety in all aspects of forest management operations. Two types of workplace accidents are the most common within the forest industry including lost time accidents (LTA) or incidents where medical aid or treatment was necessary but no loss of work time was experienced by the employee. Through this indicator, only LTA will be tracked and monitored.

Accidents

Signatory	Number of Lost Time Accidents
Canfor	0

Source: Signatory safety records
Indicator Discussion: There were no lost time accidents reported for the Mackenzie FMG woodlands group during the reporting period.

Indicator 6.3.3a   Signage

Indicator Statement	Target and Variance
The percentage of operational activities in place that have the appropriate signage in place during the activity, and removed following the completion.	Target: 100% Variance: -20%

People value being informed of most activities that take place on public lands including those associated with industrial forestry. Signage establishes a standard for safety and otherwise helps inform public about the nature and extent of industrial activity. Conversely, if signage is not kept current, credibility of the signs declines resulting in a potential safety hazard. With this indicator, we will monitor our commitment to making information about our activities current and available to those traveling the roads and trails of the Mackenzie DFA.

Signage

Signatory	Number of completed operational projects requiring signage where the signs were posted during the activity and removed following completion	Number of Completed Operational Activities requiring signage	Percent
Canfor	82	82	100%

Source: Operational staff communication.
Indicator Discussion: This is managed almost exclusively by our logging contractors. Signs are posted for safety reasons during active operations, and the appropriate signs are removed when operations are complete**.**

Indicator 6.3.3b   Safety Policy

Indicator Statement	Target and Variance
Written safety policies in place and full implementation are documented.	Target: 1 Variance: 0

Each signatory has a written safety policy in place which is reviewed by the safety committee a minimum of once every year and revised as necessary and approved by management. If an incident occurs the cause of the incident is determined and recommendations are put forward. These recommendations may result in a change to a specific policy. Annual audits will be conducted and Action Plans developed for any item that requires attention detailing the person responsible for the item and the deadline for completion.

Safety Policy

Signatory	Written Safety Policies in Place and Implementation Documented? (Y/N)
Canfor	Y

Source: Canfor OH&S Manual and Occupational Health and Safety Statement.
Indicator Discussion: Canfor has a corporate safety policy that is reviewed and updated on a regular basis. The policy is part of the Safety Manual that is reviewed annually by the Canfor FMG and the Mackenzie Woodlands Safety committees.

Indicator 6.4.1   Satisfaction (PAG)

Indicator Statement	Target and Variance
The average overall percent of the PAG's satisfaction with PAG meeting process.	Target: 100% Variance: -20%

The PAG is one of the key elements of public involvement in the SFM process. The Mackenzie PAG provides guidance, input and evaluation during development of the SFMP. It is also instrumental in maintaining links to current local values and forest resource uses within the DFA. Therefore, it is important that Canfor has a positive and meaningful working relationship with the PAG. This indicator will use an average of the PAG meeting evaluation forms to determine the level of satisfaction of the PAG with the public participation process.

Following all PAG meetings to date, PAG participants completed meeting evaluations. One question is in the PAG meeting evaluation form to address this indicator which asked participants "What is your overall

satisfaction with the PAG process?" This indicator is specific to responses to question 11 during the reporting period.

PAG Satisfaction

Mackenzie DFA SFM Plan Public Advisory Group Meeting Evaluation Question			
Meeting Date	Score out of 5	Percent	Variance (from 100%)
May 8, 2016	4.5	90%	10%
October 5, 2016	4.5	90%	10%
January 25, 2017	4.7	94%	6%
Overall Score =		91%	9%

Source: PAG satisfaction surveys

Indicator Discussion: PAG satisfaction surveys are conducted at the end of each PAG meeting and the results are presented and discussed at the next PAG meeting. The results are a measure for the PAG facilitator and the licensee to identify areas to address or work on to improve the PAG process and communication.

Indicator 6.4.2a   Input into Forest Planning

Indicator Statement	Target and Variance
The number of opportunities for the public and/or stakeholders to provide meaningful input into forest planning.	Target: 6 Variance: -2

Forestry activities can impact a wide section of the public and individual stakeholders within the DFA. This indicator was designed to monitor the signatory's success at providing effective opportunities to residents and stakeholders to express concerns and be proactively involved in the planning process. This involvement may include the identification of areas of interest, definition of the nature of their interest in the land base, and any specific forestry activity that may impact their specific interests. This process ensures that when forestry activities are planned, information is exchanged in an effective and timely manner, so as to resolve potential conflicts before they occur. This process will help to identify the public values, interests and uses of the forest that will be considered within the signatories planning framework.

Stakeholders include the following forest sectors; trappers, guide outfitters, water license holders, range tenure holders, woodlot owners, private land owners, other licensees, and specific government agencies. Opportunities for input into forest planning will be offered to stakeholders where their tenured area coincides with the signatories planned activities.

Input into Forest Planning

Opportunity	The Number of Opportunities For Public And Stakeholders
	Canfor
FSP ads	2
FSP letters to stakeholders	106
LRMP meetings	
PMP original ads	
PMP letters to stakeholders	
PMP signage	
Other ads (deactivation plans)	
Field tours	1
Newsletters	
Open houses	

PAG Meetings	3
Documented meetings	9
Documented phone calls/emails	18
Information Sharing	31
TOTAL	**170**

Source: Signatory database/tracking systems.
Indicator Discussion: Canfor had many correspondences with members of the public including trappers, guides, general public as well as First Nations throughout the reporting period. There were 9 documented meetings with various stakeholders and 18 documented phone calls and meetings exchanged. A large portion of the opportunities for public and stakeholder involvement related to the new FSP that is currently being written.

Indicator 6.4.2b   Public and Stakeholder Concerns

Indicator Statement	Target and Variance
The number of operational concerns raised by the public and/or stakeholders that are considered and incorporated into operational and/or tactical plans.	Target: 100% Variance: -10%

All signatories solicit feedback for their public forest management plans in the DFA. As mentioned in previous indicators, public involvement is an important aspect of SFM as it promotes inclusiveness in how Crown forests are managed. Considering a diverse range of opinions and concerns will result in operational forest management decisions that consider views other than those of the forest industry. A forest industry that respects public and stakeholder input will maintain the support of the public, creating a more economically stable and open forest economy. Operational concerns from the public may be provided in many ways, including written letters, e-mails, or faxes received by Canfor. There may also be written comments made during an in-person or telephone meeting between a staff member and the person providing comment. This indicator will compare the number of operational concerns that have been acted on relative to the total number of operational concerns raised.

Public and Stakeholder Concerns

Signatory	Number of concerns brought forward that have been considered and incorporated into operational plans	Number of operational concerns brought forward	Percent
Canfor	4	4	100%

Source: COPI
Indicator Discussion: A Manson Creek community member came forward with concerns regarding a block adjacent to their property line. The block boundary was moved back from the property as well as the road to provide visual buffers. An area was also excluded to protect a water source.
A trapper expressed concern at our operations around his trapline. A buffer on the trap trail was offered as a solution but the trapper instead wanted Canfor to log up to the trail. All debris was removed from the trail so that the trapper could maintain access. Another block had adjustments made to harvest timing as to not interfere with the individual's winter trapping plans.
Finally, a guide/outfitter came forward with concerns relating to wildlife and access within one of Canfor's operating areas. As a result, Canfor dropped 3 blocks and excluded a large area from a 4th block. A trapper came forward with concerns around our plans near his trapline. Canfor provided a buffer along his trap trail and agreed to leave some logs once the bridge accessing the block was removed. Another concern was raised by the Manson Creek community members regarding a block that would impact their water source. Canfor was not aware of the source and was not informed until logging had commenced. Canfor made a number of accommodations that included deactivations of in-block roads, the installation of water controls, and the creation of a reserve along the gully above the water source. A trapper also raised a concern about a block (MAN061) that overlapped his trail. The block boundary was moved to exclude the trail from the block area.

Indicator 6.5.1a SFM Educational Opportunities

Indicator Statement	Target and Variance
The number of SFM educational opportunities and interactions provided.	Target: 2 Variance: 0

This indicator was designed to monitor the signatories' success at providing training and educational opportunities in sustainable forest management. SFM relies on residents and stakeholders making informed decisions on forest management. To achieve this, it is incumbent on the signatories to ensure the public are sufficiently informed about SFM to make the choices we request of them. The indicator is intended to ensure that the signatory provides the required opportunities for residents and stakeholders to learn about SFM. It is anticipated that educational opportunities will come in the form of open houses, public presentations, PAG meetings, the Mackenzie Trade Fair, and field tours of the signatory's operations.

SFM Educational Opportunities

Opportunity	The Number of SFM Educational Opportunities
Field tours	1
Newsletters	
Open houses	
Presentations	
PAG Meetings	3
Trade Shows, etc.	1
TOTAL	**4**

Source: Planning forester documentation.
Indicator Discussion: Three PAG meetings occurred during the reporting period, with one being a field tour. Staff also participated in an elementary school ecology field tour and set up a table at the Mackenzie Trade Show.

Indicator 6.5.1b People reached through educational outreach

Indicator Statement	Target and Variance
The number of stakeholders and members of the public who took part in an educational opportunity.	Target: 50 Variance: -10

The signatories are committed to working with directly affected stakeholders and members of the public on forest management issues and have a well-established history of participation in community meetings, including local planning processes. The sharing of knowledge and contributes to informed, balanced decisions and plans acceptable to the majority of public. When informed and engaged, members of the public can provide local knowledge and support that contributes to socially and environmentally responsible forest management. Canfor staff provided educational opportunities both at the request of their employer and of members of educational community in Mackenzie. The Participants have held open houses and participated in local trade fairs. Staff have also provided field tours and in class presentations for the local secondary school.

Signatory	Number of stakeholders who attended educational opportunities
Canfor	450

Source: Attendance records from events held.
Indicator Discussion: The Mackenzie Trade Fair had approximately 400 public attendees, PAG meetings, and an elementary school ecology program.

Indicator 6.5.2a   Access to SFM information

Indicator Statement	Target and Variance
The number of opportunities provided annually for access to SFM related documents.	Target: 3 Variance: 0

With this indicator we intend to monitor our effort to ensure effective and comprehensive distribution of the SFMP, annual reports, and audit results for the Mackenzie DFA. In order to gain trust and confidence in the SFMP process, it must be an open and transparent process. By ensuring access to the Plan, annual reports, and audit results, the results of our efforts in achieving sustainable forestry and continuous improvement can be clearly seen and monitored by the public, stakeholders, and First Nations. In this manner, the public, stakeholders and First Nations can hold the signatories accountable for achieving the desired results and have confidence that forest resources are being managed sustainably.

Access to SFM Information

Opportunity	The Number of Distribution/Access Opportunities
Newsletters	
Open houses / Trade Shows	1
SFM & PAG Meetings	2
Website	1
Distribution of SFM information	
TOTAL	**4**

Source: Signatory database and tracking systems, planning forester documentation.
Indicator Discussion: Canfor participated in the Annual Mackenzie spring trade fair where the SFMP is available and staff are available to discuss the contents and the PAG process.

Indicator 6.5.2b   Communication of Planned Deactivation Projects

Indicator Statement	Target and Variance
Percentage of off-block road deactivation projects that are communicated with applicable First Nations and Stakeholders.	Target: 100% Variance: -10%

The forest is utilized by a variety of users. Access to the forest resource is important to First Nations, stakeholders, and the general public. Deactivation of off-block access roads can limit or remove access to the forest for other users. Where the signatories need to deactivate off-block roads, communication of their intention is required. Our assumption with this indicator is simply that – by increasing communication regarding signatory deactivation plans among stakeholders, we can increase the efficiency of access to resources. For the purpose of this indicator, stakeholders include trappers, guides, private land owners, and woodlots.

Communication of Planned Deactivation Projects

Signatory	Number of deactivation projects communicated to First Nations and Stakeholders	Total number of deactivation projects completed	Percent
Canfor	0	0	100%

Source: Signatory communication records
Indicator Discussion: There were no major deactivation projects completed within the reporting period.

Indicator   Reportable Spills

Indicator Statement	Target and Variance
The number of FMS reportable spills.	Target: 0 Variance: ≤ 5

Canfor uses the Emergency Response and Preparedness Plan (EPRP) to prevent, manage and report spills. Canfor's Fuel Management Guidelines also apply to managing and preventing spills. Reportable spills are entered into ITS where they are tracked.

Reportable Spills

Signatory	Number of EMS Reportable Spills						
	Petroleum Products	Pesticides	Antifreeze	Battery Acid	Grease	Paints and Solvents	Total
Number of spills	3	0	0	0	0	0	3
Amount (L)							

Source: ITS

Indicator Discussion: There were 3 reportable spills during the reporting period. The first occurred when a subcontracted fuel transportation truck rolled into the ditch and spilled diesel in the ditch which permeated the soil adjacent to the road. A Geotechnical Site Assessment for the Contaminated Materials Removal was completed and implemented.

The second incident occurred when a piece of heavy equipment spilled hydraulic fluid. The engineers had used the wrong size fitting resulting in a leak. The spill was cleaned up with sawdust, absorbent pads, and granules. The machine was repaired and the crew received additional training.

The final spill occurred on the Transporter. A high deck operator was cleaning debris and caused a log to dislodge a hydraulic line. The line sprayed into the air and a small amount went into the Williston Reservoir. The crew used absorbent pads to clean up the spill on deck and repaired the hydraulic line. The spill was reported to the Provincial Emergency Program (PEP).

Appendix 1

2016-2017 ECA Analysis for Active Watersheds

Watershed	Watershed Area (ha)	Sensitivity Score	Max ECA Target (% Wshed)	Current Harvest Area (ha)	Current ECA Below	Current ECA Area (ha)	Current PFI	Future Harvest Area (ha)	Future ECA Below	Future ECA Area (ha)	Future PFI
Chu 1	1,056	2.8	49.8	243.9	299.5	299.5	28.4	243.9	481.1	481.1	45.6
Chu 2	610	2.5	55.4	345.4	134.9	134.9	22.1	345.4	162.1	162.1	26.6
Chu 3	861	2.0	60.0	586.2	339.2	339.2	39.4	586.2	373.3	373.3	43.3
Chu 4	1,641	2.4	57.7	435.4	263.1	263.1	16.0	435.4	268.3	268.3	16.4
Chunamon Creek	3,756		46.7	1,470.0	679.4	679.4	18.1	1,470.0	735.9	735.9	19.6
Mica Creek	2,537	3.1	44.4	205.2	140.2	140.2	5.5	205.2	128.8	128.8	5.1
Omin 1	622	2.4	58.4	113.2	169.4	169.4	27.2	113.2	180.9	180.9	29.1
Omin 2	1,002	2.5	56.0	449.5	440.0	440.0	43.9	449.5	458.0	458.0	45.7
Omin 3	1,959	1.8	60.0	574.2	618.1	618.1	31.6	574.2	782.0	782.0	39.9
Pete Fry Creek	2,177	2.5	55.9	433.8	291.8	291.8	13.4	433.8	268.8	268.8	12.4
Omineca-1	1,835	2.5	55.4	0.8	309.1	309.1	16.9	0.8	411.1	411.1	22.4
Omineca-2	855	1.7	60.0		170.3	170.3	19.9		170.3	170.3	19.9
Twenty Mile Creek	15,633	2.5	56.2	61.4	2,021.4	2,021.4	12.9	61.5	3,309.1	3,309.1	21.2
Ah Lock Creek	1,603	2.0	60.0	179.1	417.9	417.9	26.1	179.1	454.2	454.2	28.3
Germanson River	58,506	3.1	45.1	2,372.8	10,474.8	10,474.8	17.9	2,378.2	10,982.0	10,982.0	18.8
Goodasany Creek	5,808	2.4	58.4	594.0	1,724.3	1,724.3	29.7	594.0	1,814.9	1,814.9	31.3
Granite Creek	4,038	3.4	40.8	251.9	403.6	403.6	10.0	251.9	490.7	490.7	12.2
Jackfish Creek	13,329	1.9	60.0	890.3	3,183.0	3,183.0	23.9	932.9	4,137.7	4,137.7	31.0
Lost Creek	765	3.0	46.5	2.5	59.7	59.7	7.8	2.5	63.1	63.1	8.3
Manson Above the Lake	29,256	1.7	60.0	875.1	4,383.4	4,383.4	17.0	875.1	6,360.2	6,360.2	21.7
Plughat Creek	1,913	3.4	40.6	36.2	205.2	205.2	10.7	36.2	239.6	239.6	12.5
Slate Creek	1,900	2.0	60.0	230.0	571.0	571.0	30.1	230.0	701.7	701.7	36.9
South Germansen River	20,138	1.7	60.0	1,077.4	3,073.1	3,073.1	15.3	1,082.7	3,131.7	3,131.7	15.6
Treb Creek	1,569	2.9	48.7		441.4	441.4	28.1		677.2	677.2	43.2
Upper Manson Creek	20,303	3.1	44.7	259.0	3,052.5	3,052.5	15.0	259.0	3,903.1	3,903.1	19.2
Wassie Creek	263	1.6	60.0	57.2	121.6	121.6	46.3	57.2	122.7	122.7	46.7
Wolverine Creek	3,696	1.9	60.0	133.3	1,046.0	1,046.0	28.3	133.3	1,446.7	1,446.7	39.2
Bruin Creek	13,820	5.2	26.8	2,094.0	1,672.8	1,672.8	12.1	2,094.0	1,627.9	1,627.9	11.7
Chowika Creek	47,560	5.1	27.0	12,052.5	767.4	767.4	1.6	12,052.5	851.8	851.8	1.8
Collins Creek	12,100	5.8	23.9	1,173.1	1,525.1	1,525.1	12.5	1,173.1	1,733.1	1,733.1	14.3
Davis River	48,040	3.6	39.1	17,189.6	1,702.2	1,702.2	3.5	17,189.6	1,684.6	1,684.6	3.5
Lafferty Creek	18,070	3.9	35.2	4,357.4	1,732.3	1,732.3	9.5	4,357.4	2,035.4	2,035.4	11.2
Osilinka River	210,270	3.9	35.9	44,294.1	29,801.5	29,801.5	14.1	44,294.1	31,552.0	31,552.0	14.9
Shovel Creek	3,740	2.8	50.2	1,400.2	391.5	391.5	10.4	1,400.2	488.5	488.5	13.0
South of Collins	11,150	3.0	46.1	2,061.4	2,620.1	2,620.1	23.4	2,061.4	3,098.3	3,098.3	27.7
South of Lafferty	20,160	2.6	53.9	6,287.4	3,370.2	3,370.2	16.6	6,287.4	4,632.2	4,632.2	22.9
South of Shovel	20,900	3.1	45.3	6,309.3	3,042.2	3,042.2	14.5	6,309.3	3,216.2	3,216.2	15.3
Tutizika River	69,130	4.5	30.8	17,030.7	4,353.2	4,353.2	6.3	17,030.7	4,365.2	4,365.2	6.3
AKIE RIVER	65,609	2.0	63.0	977.2	3,252.6	3,252.6	5.0	977.2	3,502.9	3,502.9	5.3
AKIE00002	1,974	2.0	63.0		48.7	48.7	2.5		48.7	48.7	2.5
AKIE00003	6,671	2.0	63.0		20.0	20.0	0.3		20.0	20.0	0.3
AKIE00004	10,123	2.0	63.0		2.4	2.4	0.0		2.4	2.4	0.0
AKIE00005	7,627	2.0	63.0		23.1	23.1	0.3		23.1	23.1	0.3
AKIE00006	3,219	2.0	63.0		30.2	30.2	0.9		30.2	30.2	0.9
AKIEKA CREEK	4,091	2.0	63.0		33.6	33.6	0.8		33.6	33.6	0.8
ALEY CREEK	14,962			273.0	534.9	534.9	4.0	273.0	581.4	581.4	3.9
ATUNATCHE CREEK	59,515	2.0	63.0	3,367.8	3,241.6	3,241.6	5.5	3,367.8	2,981.6	2,981.6	5.0
BALDEN CREEK	17,361			0.1	204.5	204.5	1.2	0.1	228.8	228.8	1.3
BEVEL CREEK	8,750				453.4	453.4	5.2		453.4	453.4	5.2
BLACKWATER CREEK	49,590	2.0	63.0	17,424.6	12,833.3	12,833.3	25.9	17,555.5	14,219.0	14,219.0	28.7
BLANCHARD CREEK	6,691	2.0	63.0	183.7	463.9	463.9	6.9	183.7	457.3	457.3	6.8
BRUIN CREEK	13,931			1,318.0	2,465.8	2,465.8	17.7	1,318.0	2,383.9	2,383.9	17.1
CARPWSD000003	4,350	1.0	75.0	525.8	519.6	519.6	11.9	525.8	653.4	653.4	15.0
CARPWSD000006	3,868	2.0	63.0	1,163.1	1,126.1	1,126.1	29.1	1,163.1	1,060.8	1,060.8	27.4
CHICHOUYENILY CREEK	7,415	2.0	63.0	517.2	669.2	669.2	9.0	517.2	641.8	641.8	8.7
CHOWIKA CREEK	47,458			132.4	2,790.8	2,790.8	5.9	132.4	2,851.0	2,851.0	6.0
CIARELLI CREEK	11,745	2.0	63.0	2,145.7	2,615.5	2,615.5	22.3	2,145.7	2,754.2	2,754.2	23.5
CLEARWATER RIVER	63,101	2.0	63.0	2,659.9	2,336.9	2,336.9	3.8	2,659.9	2,292.3	2,292.3	3.6
COLBOURNE CREEK	28,904	2.0	63.0	2,728.8	2,765.2	2,765.2	9.6	2,728.8	2,906.5	2,906.5	10.1
COLIN CREEK	4,558	2.0	63.0		191.3	191.3	4.2		191.3	191.3	4.2
COLLINS CREEK	13,764			1,841.8	3,204.6	3,204.6	23.3	1,841.8	3,487.3	3,487.3	25.3
DASTAIGA CREEK	8,141	2.0	63.0	1,654.2	2,454.6	2,454.6	30.2	1,665.1	2,375.0	2,375.0	29.2
DAVIS RIVER	47,502			580.3	3,205.9	3,205.9	6.8	580.3	3,182.5	3,182.5	6.7
DEL CREEK	26,433	2.0	63.0	1,195.7	2,886.0	2,886.0	10.9	1,195.7	2,829.5	2,829.5	10.7
DES CREEK	3,332	1.0	75.0	673.0	767.2	767.2	23.0	673.0	773.8	773.8	23.2
DUCETTE CREEK	18,692	2.0	63.0	2.5	1,239.0	1,239.0	6.6	2.5	1,239.0	1,239.0	6.6
DUNNE CREEK	9,431	2.0	63.0	1,065.4	1,355.0	1,355.0	14.4	1,065.4	1,437.5	1,437.5	15.2

2016-

Watershed	Watershed Area (ha)	Sensitivity Score	Max ECA Target (% Wshed)	Current Harvest Area (ha)	Current ECA Below	Current ECA Area (ha)	Current PFI	Future Harvest Area (ha)	Future ECA Below	Future ECA Area (ha)	Future PFI
EKLUND CREEK	24,626	2.0	63.0	4,748.7	3,660.1	3,660.1	14.3	4,748.7	4,317.5	4,317.5	17.5
FINAWSD000020	3,543			392.1	339.5	339.5	9.6	392.1	321.7	321.7	9.1
FINAWSD000035	5,922			41.0	396.6	396.6	6.7	41.0	394.0	394.0	6.7
FINAWSD000036	3,703				151.5	151.5	4.1		151.5	151.5	4.1
FINAWSD000039	3,437	2.0	63.0	63.2	461.7	461.7	13.4	63.2	458.1	458.1	13.3
FINAWSD000040	5,092	2.0	63.0	580.2	572.8	572.8	11.3	580.2	639.1	639.1	12.6
FINAWSD000043	7,689	2.0	63.0	1,837.5	2,384.5	2,384.5	31.0	1,837.5	2,348.8	2,348.8	30.6
FINAWSD000044	3,682	2.0	63.0	127.6	1,118.0	1,118.0	30.4	127.6	1,312.7	1,312.7	35.7
FINAWSD000046	4,960	1.0	75.0	2,733.3	2,433.3	2,433.3	49.1	2,733.3	2,324.6	2,324.6	46.9
FINAWSD000050	3,403	2.0	63.0	1,306.2	1,236.2	1,236.2	36.3	1,306.2	1,162.3	1,162.3	34.1
FINLWSD000021	18,351	2.0	63.0		55.3	55.3	0.3		55.3	55.3	0.3
FINLWSD000028	14,583	2.0	63.0		0.0	0.0	0.0		0.0	0.0	0.0
FINLWSD000035	12,088	2.0	63.0		66.2	66.2	0.6		66.2	66.2	0.6
FINLWSD000066	5,205			309.3	1,231.4	1,231.4	23.7	309.3	1,217.2	1,217.2	23.4
FINLWSD000073	7,460	2.0	63.0	664.3	1,245.0	1,245.0	16.7	664.3	1,206.7	1,206.7	16.2
FRIES CREEK	7,544	2.0	63.0	1,603.9	1,125.5	1,125.5	14.9	1,603.9	1,091.1	1,091.1	14.5
GAFFNEY CREEK	49,277	2.0	63.0	15,872.5	15,276.2	15,276.2	31.0	15,874.5	15,365.5	15,365.5	31.2
GAGNON CREEK	11,303	2.0	63.0	2,445.7	1,366.5	1,366.5	12.1	2,445.7	1,290.0	1,290.0	11.4
GAUVREAU CREEK	20,292			162.3	232.5	232.5	1.2	162.3	222.3	222.3	1.1
GILLIS CREEK	62,390			9,339.3	17,868.5	17,868.5	28.6	9,339.3	17,333.4	17,333.4	27.8
HOLDER CREEK	8,198	1.0	75.0	3,112.7	2,721.5	2,721.5	33.2	3,112.7	2,722.1	2,722.1	33.2
IVOR CREEK	4,536			33.2	94.5	94.5	2.1	33.2	891.2	891.2	19.7
KIMTA CREEK	13,080	2.0	63.0	438.6	169.5	169.5	1.3	438.6	156.8	156.8	1.2
LAFFERTY CREEK	25,906			1,959.3	5,179.5	5,179.5	20.0	1,959.3	5,171.5	5,171.5	20.0
LAMONTI CREEK	4,249	2.0	63.0	331.2	136.9	136.9	3.2	331.2	127.2	127.2	3.0
LIGNITE CREEK	16,549	2.0	63.0	2,015.5	2,312.7	2,312.7	14.0	2,015.5	2,630.0	2,630.0	15.9
LOST CABIN CREEK	8,283			235.1	294.9	294.9	3.6	235.1	285.1	285.1	3.4
MANSON RIVER	41,103	2.0	63.0	12,190.4	10,483.8	10,483.8	25.5	12,190.4	10,444.4	10,444.4	25.4
MCDOUGALL RIVER	40,440	1.0	75.0	8,740.1	10,602.5	10,602.5	26.2	8,740.2	10,593.1	10,593.1	26.2
MISCHINSINLIKA CREEK	23,373	2.0	63.0	3,145.8	2,119.2	2,119.2	9.1	3,145.8	1,918.8	1,918.8	8.2
MUNRO CREEK	8,833	2.0	63.0	2,123.7	1,649.6	1,649.6	18.7	2,123.7	1,581.5	1,581.5	17.9
MUNRO LAKE	19,383	2.0	63.0	5,820.5	7,282.3	7,282.3	37.6	5,820.5	6,954.7	6,954.7	35.9
NABESCHE RIVER	64,695			5,119.3	3,843.9	3,843.9	5.9	5,119.3	3,551.8	3,551.8	5.5
NATION RIVER	68,740	2.0	63.0	20,231.5	27,080.4	27,080.4	39.4	20,270.2	26,942.0	26,942.0	39.2
NATRWSD000006	6,193	2.0	63.0	4,205.8	1,417.0	1,417.0	22.9	4,230.4	1,267.4	1,267.4	20.5
NATRWSD000018	12,267	2.0	63.0	2,065.6	2,236.3	2,236.3	18.2	2,113.8	2,225.3	2,225.3	18.1
OSPIKA RIVER	108,945			1,894.6	5,148.1	5,148.1	4.7	1,894.6	5,176.4	5,176.4	4.8
OSPKWSD000018	12,541				280.0	280.0	2.2		280.0	280.0	2.2
OSPKWSD000023	9,970			1.7	771.3	771.3	7.7	1.7	781.3	781.3	7.8
OSPKWSD000027	6,154			29.0	244.2	244.2	4.0	29.0	244.0	244.0	4.0
OSPKWSD000030	4,020				141.0	141.0	3.5		141.0	141.0	3.5
OSPKWSD000032	6,334			858.9	591.5	591.5	9.3	858.9	538.7	538.7	8.5
OSPKWSD000034	8,321			450.4	833.5	833.5	10.0	450.4	805.0	805.0	9.7
PARAWSD000024	2,386	2.0	63.0	1,331.8	649.3	649.3	27.2	1,331.8	623.2	623.2	26.1
PARAWSD000036	6,226	2.0	63.0	472.5	1,293.1	1,293.1	20.8	472.5	1,261.0	1,261.0	20.3
PARAWSD000057	5,604	2.0	63.0	1,162.2	1,257.1	1,257.1	22.4	1,162.2	1,188.8	1,188.8	21.2
PAUL RIVER	71,343			4,184.5	7,299.4	7,299.4	10.2	4,184.5	7,245.3	7,245.3	10.2
PCEAWSD000040	8,463			0.1	527.9	527.9	6.2	0.1	527.9	527.9	6.2
PEACE WILLISTON	530,117	2.0	63.0	97,506.9	93,835.9	93,835.9	17.7	97,521.4	91,036.9	91,036.9	17.2
PESIKA CREEK	71,968	2.0	63.0	187.6	4,591.7	4,591.7	6.4	187.6	4,582.5	4,582.5	6.4
PHILIP CREEK	69,399	2.0	63.0	26,277.2	24,538.5	24,538.5	35.4	26,532.6	24,836.1	24,836.1	35.8
POINT CREEK	9,959	2.0	63.0	792.1	327.1	327.1	3.3	792.1	271.2	271.2	2.7
POLICE CREEK	5,258			319.7	547.4	547.4	10.4	319.7	527.8	527.8	10.0
RAINBOW CREEK	30,872	2.0	63.0	10,091.5	12,440.7	12,440.7	40.3	10,120.0	12,385.5	12,385.5	40.1
RUBYRED CREEK	4,380			4.1	46.5	46.5	1.1	4.1	46.3	46.3	1.1
SCHOOLER CREEK	26,869			518.0	5,724.6	5,724.6	21.3	518.0	5,774.9	5,774.9	21.5
SCOTT CREEK	20,469	2.0	63.0	830.0	972.2	972.2	4.8	839.8	941.5	941.5	4.6
SCOVIL CREEK	11,457	2.0	63.0	2,802.5	2,484.6	2,484.6	21.7	2,802.5	2,329.3	2,329.3	20.3
SELWYN CREEK	15,399	2.0	63.0	147.8	32.4	32.4	0.2	147.8	21.1	21.1	0.1
STEVENSON CREEK	13,302			385.6	643.7	643.7	4.8	385.6	620.5	620.5	4.7
STRANDBERG CREEK	18,308	2.0	63.0	4,803.1	3,008.6	3,008.6	16.4	4,803.1	3,706.9	3,706.9	20.3
SYLVESTER CREEK	28,764	2.0	63.0	5,031.2	6,742.4	6,742.4	23.4	5,031.2	6,437.9	6,437.9	22.4
TRUNCATE CREEK	7,238	2.0	63.0	295.0	928.3	928.3	12.8	295.0	938.3	938.3	13.0
TSEDEKA CREEK	13,300	2.0	63.0	3,200.9	3,382.2	3,382.2	25.4	3,200.9	3,215.4	3,215.4	24.2
WEASEL CREEK	3,221			106.8	101.9	101.9	3.2	106.8	94.9	94.9	3.0
WEST NABESCHE RIVER	25,612			525.7	418.9	418.9	1.6	525.7	386.0	386.0	1.5
WESTON CREEK	10,743	2.0	63.0	1,388.8	935.1	935.1	8.7	1,388.8	873.1	873.1	8.1