



Multiple Resource Value Assessment (MRVA)

Dawson Creek Timber Supply Area

Peace Natural Resource District

December 2013

FOREWORD

Forest management in British Columbia is governed by a hierarchy of legislation, plans and resource management objectives. For example, federal and provincial acts and regulations, Land Use and Forest Stewardship plans, and protected areas and reserves collectively contribute to achieving balanced environmental, social and economic objectives. Sustainable forest management is key to achieving this balance and a central component of forest management certification programs. The purpose of the Multiple Resource Value Assessment (MRVA) report is to provide resource professionals and decision makers with information about the environmental component of this 'balance' so that they can assess the consistency of actual outcomes with their expectations.

The Forest and Range Practices Act (FRPA) lists 11 resource values essential to sustainable forest management in the province; biodiversity, cultural heritage, fish/riparian and watershed, forage and associated plant communities, recreation, resource features, soils, timber, visual quality, water, and wildlife. The MRVA report is a summary of the available field-based assessments of the conditions of these values. Field assessments are generally conducted on or near recently harvested cut blocks and therefore are only evaluating the impact of industrial activity and not the condition of the value overall (e.g. they don't take into account protected areas and reserves). Most of the information is focused on the ecological state of the values and provides useful information to resource managers and professionals on the outcomes of their plans and practices. This information is also valuable for communicating resource management outcomes to stakeholders, First Nations and the public, and as a foundation for refining government's expectations for sustainable resource management in specific areas of the province.

I encourage readers to review the full report and direct any questions or comments to the appropriate district office.

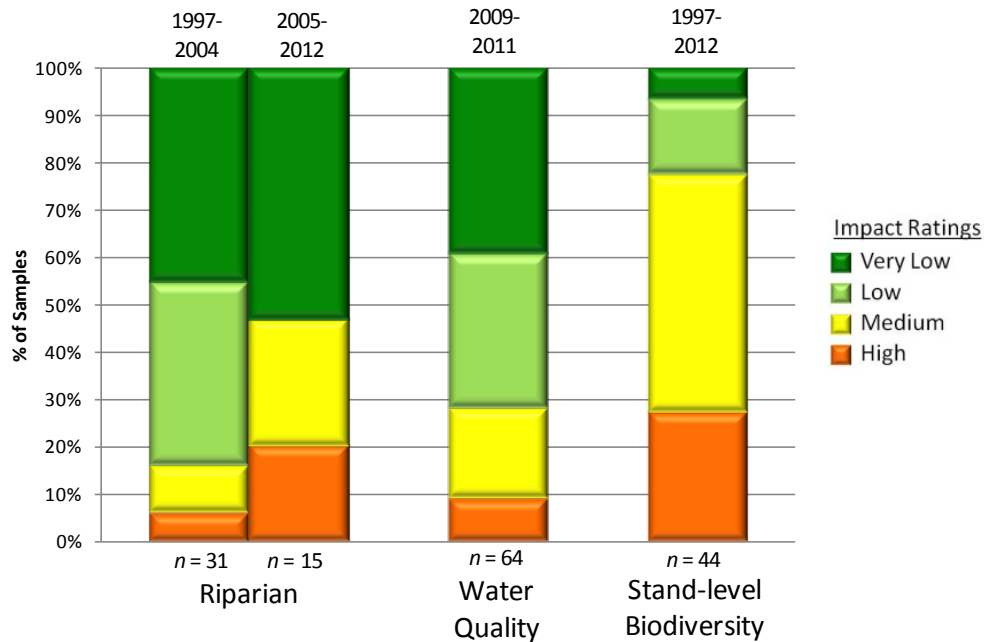
A handwritten signature in black ink, appearing to read 'Tom Ethier', is written in a cursive style.

Tom Ethier
Assistant Deputy Minister
Resource Stewardship Division
Ministry of Forests, Lands and Natural Resource Operations

MULTIPLE RESOURCE VALUE ASSESSMENTS—IN BRIEF

Multiple resource value assessments show the results of stand and landscape-level monitoring carried out under the Forest and Range Evaluation Program (FREP). This report summarizes results for riparian, biodiversity, and water quality (sediment) monitoring conducted in the Dawson Creek Timber Supply Area and includes a district manager commentary of key strengths and weaknesses. Through MRVA reports, decision makers communicate expectations for sustainable resource management of public resources and identify opportunities for continued improvement.

Figure 1: Dawson Creek Timber Supply Area site-level resource development impact ratings by resource value with trend (Riparian and stand-level biodiversity by harvest year/era. Water quality trends by evaluation year.)



Important Context for Understanding this Assessment

The extraction and development of natural resources, along with natural factors (e.g., insects, wind, floods), influence and impact ecological condition. The goal of effectiveness evaluations is to assess these impacts on the state of public natural resource values (status, trends, and causal factors); such evaluations *do not assess compliance with legal requirements*. These evaluations help resource managers:

- assess whether the impacts of resource development result in sustainable resource management
- provide transparency and accountability for the management of public resources
- support the decision-making balance between environmental, social, and economic factors
- inform the ongoing improvement of resource management practices, policies, and legislation.

The resource development impact ratings contained in this report are based on assessments conducted within the areas where resource extraction takes place and do not reflect the ecological contributions of parks, protected areas, or other conservancy areas.

Although this report focuses on forestry-related activities, FREP monitoring protocols have also been applied to other resource sector activities, including mining (roads) and linear developments (hydro and pipelines). Procedures are being adapted to expand monitoring into these resource sectors over time.

INTRODUCTION

The development of the *Forest and Range Practices Act (FRPA)* had several key objectives, including:

- simplifying the forest management legal framework
- reducing operational costs to both industry and government
- allowing “freedom to manage”
- maintaining the high environmental standards of the *Forest Practices Code of British Columbia Act (FPC)*.

As part of the results-based *FRPA* framework, the provincial government committed to conducting effectiveness evaluations and publically reporting the monitoring results. The science-based information provided by these evaluations will be used to determine whether *FRPA* is achieving the government’s objectives of maintaining high environmental standards and ensuring sustainable management of public resources. If those objectives are not being met the monitoring results will be used to help inform the necessary adjustments to practices, policies, and legislation. Government is delivering its effectiveness evaluation commitment through the Forest and Range Evaluation Program (FREP; for details, see <http://www.for.gov.bc.ca/hfp/frep/>). The 11 *FRPA* resource values monitored under FREP include: biodiversity, cultural heritage, fish/ riparian & watershed, forage and associated plant communities, recreation, resource features, soils, timber, visual quality, water and wildlife.

Multiple Resource Value Assessments (MRVAs) reflect the results of stand- and landscape-level monitoring carried out under FREP. The program’s stand-level monitoring is generally conducted on forestry cutblocks, resource roads, or other areas of industrial activity. As such, these evaluations provide a stewardship assessment of resource development practices. Landscape-level monitoring of biodiversity, visual quality, and wildlife resource values is more broadly an assessment of the overall landscape. Reports on MRVAs are designed to inform decision making related to on-the-ground management practices, statutory decision-maker approvals, and data for the assessment of cumulative effects.

This report summarizes FREP monitoring results for the Dawson Creek Timber Supply Area. MRVA reports clarify resource stewardship expectations, and promote the open and transparent discussion needed to achieve short- and long-term sustainable resource management in British Columbia.

MRVA reports are intended for those interested in the status and trends of resource values at the timber supply area (TSA) or natural resource district scale, such as natural resource managers and professionals, government decision makers, and First Nations. These reports are also useful in communicating resource management outcomes to the public.

Government managers and decision makers are encouraged to consider this information when:

- discussing district or TSA-level resource stewardship with staff, licensed stakeholders, tenure holders and First Nations
- clarifying expectations for sustainable resource management of public land
- integrating social and economic considerations into balanced decision making
- reviewing and approving forest stewardship plans
- developing silviculture strategies for TSAs
- assessing Timber Supply Reviews and their supporting rationale
- informing decision making at multiple scales.

Natural resource professionals are encouraged to consider this information, along with other FREP information such as reports, extension notes, protocols, and monitoring data to:

- maintain current knowledge of the resources they manage
- inform professional recommendations and decisions, particularly when balancing of environmental, social, and economic values
- enhance resource management, consultation, and treaty rights discussions between First Nations, government, and licensees.

Published FREP reports and extension notes contain detailed findings for each resource value. These documents are available on the FREP website at:

<http://www.for.gov.bc.ca/hfp/frep/publications/reports.htm>. Licensees can request data collected on their operating areas. FREP staff will assist licensees with the analysis of their data and the preparation of licensee-specific MRVA reports.

Although this MRVA report documents monitoring results at the district or TSA level, the MRVA concept is scalable. Reports for individual licensees, treaty settlement areas, or landscape units can be produced when sufficient monitoring data is available. Reports can also be prepared at the regional or provincial levels. This report provides site-level resource value assessments and trends through comparisons of cutblocks harvested before 2005 with those harvested in 2005 or later (where data is sufficient). FREP's site assessment monitoring results on each resource value are categorized by impact (very low, low, medium, or high). This classification reflects how well site-level practices achieve government's overall goal of sustainable resource management. Site-level practices that result in "very low" or "low" impact are consistent with sustainable management objectives. Practices resulting in "high" impact are seen as inconsistent with government's sustainability objectives. For a description of the MRVA methodology see Appendix 1.

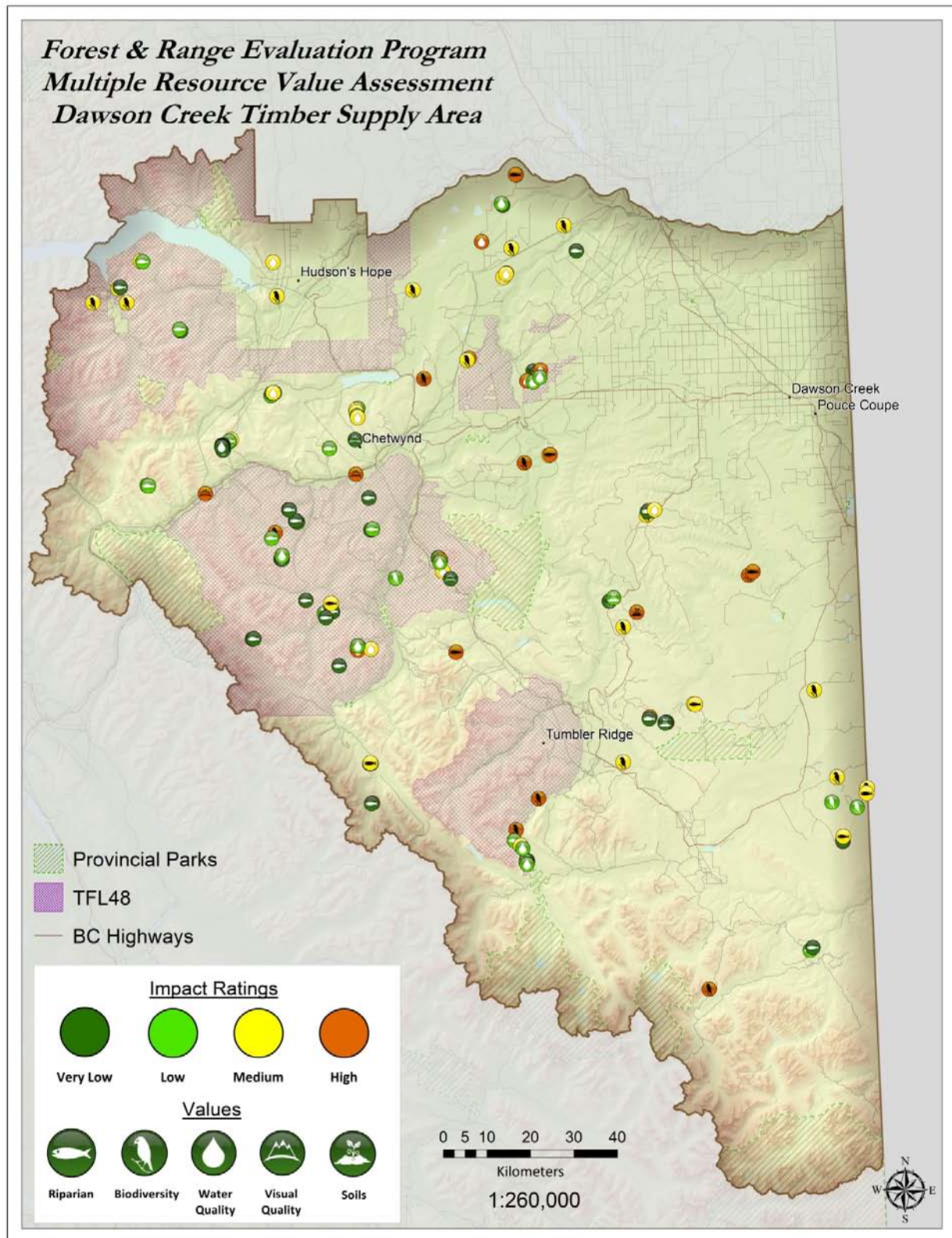
DAWSON CREEK TIMBER SUPPLY AREA – ENVIRONMENTAL AND STEWARDSHIP CONTEXT

This report covers the Dawson Creek TSA, including TFL 48 (figure 2). The Dawson Creek TSA is located in north-eastern British Columbia and is bounded by the Peace River to the north and the Alberta border to the east, the Hart Ranges to the west and Front Ranges to the south. The TSA and associated TFL cover approximately 2.9 million hectares. There are several provincial parks and protected areas in the TSA include a portion of Kakwa Provincial Park, Wapiti Lake Provincial Park, Monkman Provincial Park, Bearhol Lake Provincial Park, Gwillim Lake Provincial Park and Pine Le Moray Provincial Park. The population of this TSA is approximately 26 500 people with the largest community being the city of Dawson Creek. The Dawson Creek TSA lies completely within the area outlined as Treaty 8 Territory. Both the West Moberly and the Saulteau First Nations are signatories of Treaty 8 and have reserves and traditional territories within the TSA, with a population of more than 900 persons. The Halfway River First Nation and McLeod Lake Indian Band are also signatories of Treaty 8 and have traditional land-use interests within the TSA, but their reserves and traditional territories are outside the TSA. In addition, the Lheidli T'enneh Band (which is not part of Treaty 8) has traditional land use interests within the TSA, although its reserve is located outside the TSA. A significant number of Metis and other First Nations people reside within the TSA, notably in the Kelly Lake community.

The forests of the Dawson Creek TSA provide a wide range of natural resources, including forest products, forage, minerals, recreation and tourism amenities, oil and gas reserves, and fish and wildlife habitats. Approximately 25 percent of the timber profile is lodgepole pine, mostly in the foothills and on the higher ridges on the plateau. In 2004 the first infestations of mountain pine beetle (MPB) were discovered, and since that time the major licensees (that harvest conifer) have been targeting infested and susceptible pine stands. As this wood deteriorates, it is anticipated that the district will see a return to harvesting of the normal profile (approximately 2016). The deciduous licensees have been relatively unaffected by the beetle attack.

The forests of the Peace were originally dominated by wildfire, and in 2002 the “Natural Disturbance Units of the Prince George Forest Region: Guidance for Sustainable Forest Management” by Craig DeLong was adopted. Based on the natural range of variability concept, it allowed us to identify and legally establish large patches of old forest (Old Growth Management Areas) and to plan openings to achieve a more natural patch size distribution. All of the licensees have adopted this concept, resulting in a very wide range of openings for FREP to assess.

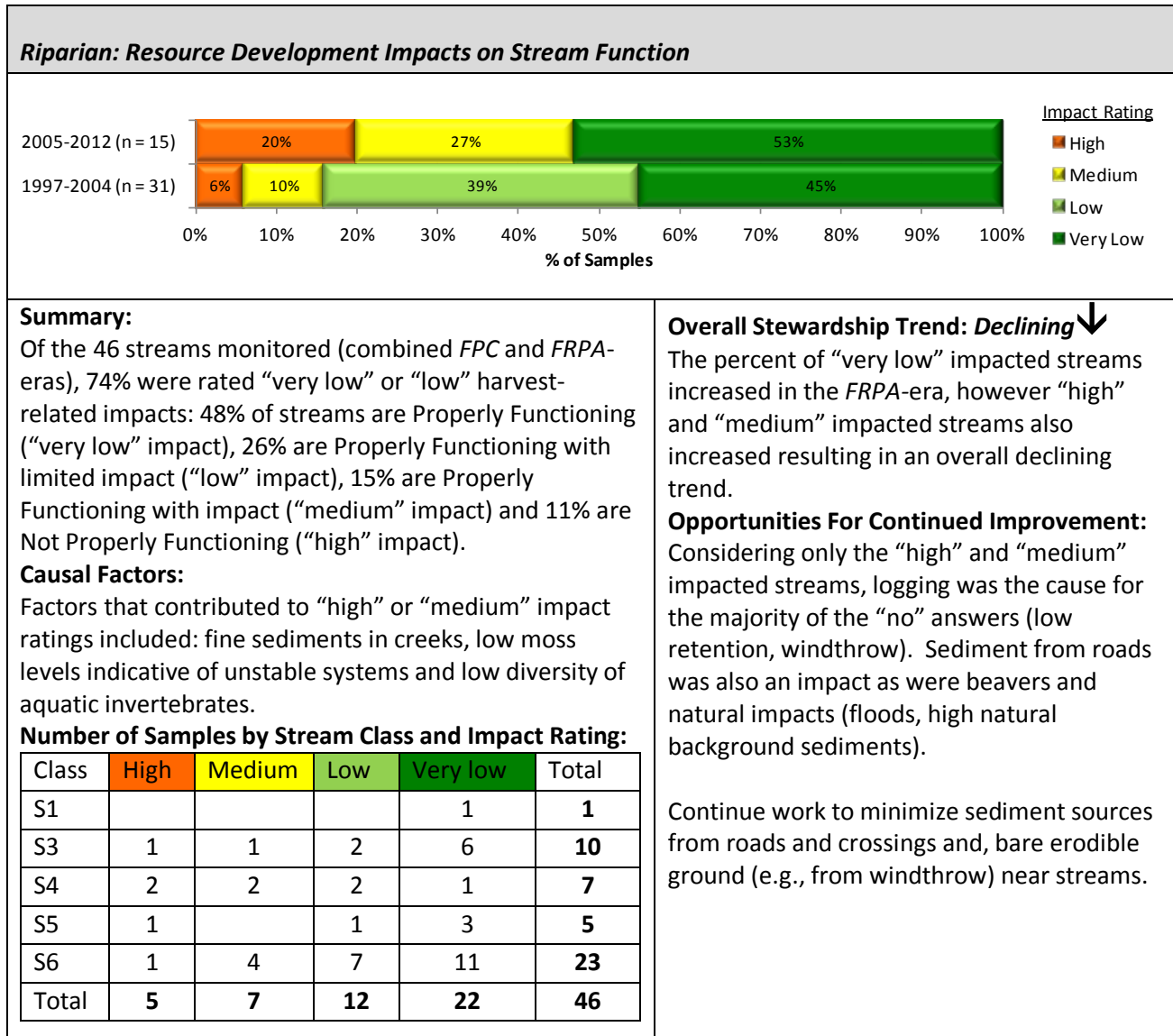
Figure 2: Dawson Creek Timber Supply Area, showing FREP sample locations and results (see <http://www.for.gov.bc.ca/hfp/frep/publications/mrva.htm> for a high-resolution version of this map).



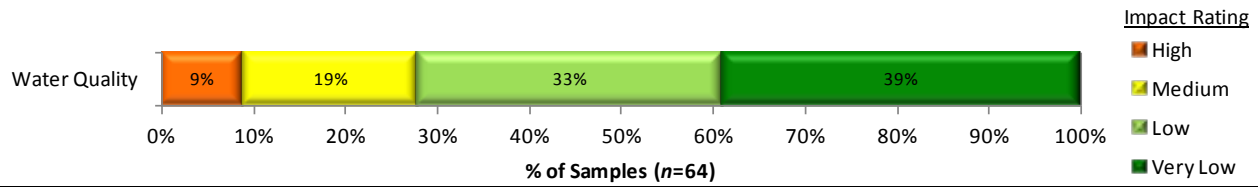
KEY RESULTS BY RESOURCE VALUE AND OPPORTUNITIES FOR CONTINUED IMPROVEMENT

Table 1 shows the resource values assessed for the Dawson Creek Timber Supply Area, and includes a summary of key findings, causal factors, trends, and opportunities for continued improvement. Data are presented for *FPC*-era samples at sites harvested before 2005 and *FRPA*-era samples at sites harvested in 2005 or later. This approximates the *Forest and Range Practices Act* (*FRPA*) era, and allows for a comparison between earlier and later stewardship practices. The impact rating indicates the effect of resource development on the resource value, from “very low” to “high” impact.

Table 1: Resource development impact rating, key findings, and opportunities for improvement by resource value for the Dawson Creek Timber Supply Area.



Water Quality (fine sediment): Resource Development Impacts on Water Quality



Summary:

Of the 64 road segments assessed, 72% were rated as “very low” or “low” road-related impact. Site assessments show the range for potential sediment generation as 39% “very low” (“very low” impact), 33% “low” (“low” impact), 19% “moderate” (“medium” impact), 5% “high” and 5% “very high” (“high” impact).

Causal Factors:

See opportunities for improvement for “high” or “medium” impacted road segments. Some opportunities will apply to ongoing maintenance issues, while others mainly apply to new road construction.

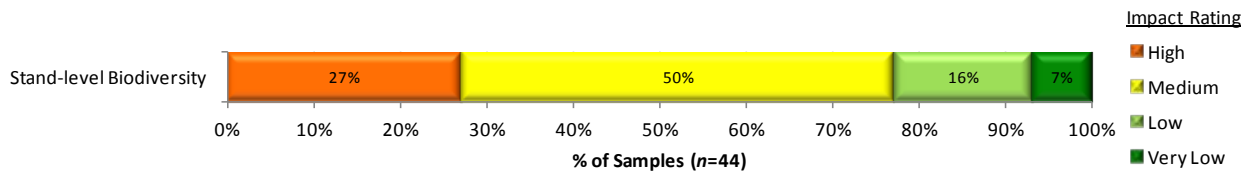
Overall Stewardship Trend: *Insufficient data*

There were just three harvest openings where sampling along roadway begins and 11 road segments sampled for water quality in the later sample years, therefore trend information is not currently available.

Opportunities For Improvement:

For the 28% “high” or “medium” impacted road segments, armouring, seeding and protecting bare soil would have decreased sediment for half of them. Other improvements considering road construction are avoiding long gradients coming up to streams and using more strategically placed culverts.

Stand-level Biodiversity: Resource Development Impacts on Stand-Level Biodiversity



Summary:

Of 44 cutblocks, 23% of sites were rated as “very low” or “low” harvest-related impact. Considering total retention, retention quality, and coarse woody debris quantity and quality, 7% sites are rated as “very low” impact on biodiversity, 16% as “low”, 50% as “medium” and 27% as “high”.

Causal Factors:

The range of coarse woody debris volumes in harvested areas is skewed slightly to the lower end of the baseline (coarse woody debris in retention patches of the same ecosystems). Coarse woody debris quality (in terms of volume from ≥20 cm dbh pieces, and density of big coarse woody debris ≥20 cm dbh and ≥10 m long) is skewed largely to the lower end of baseline. 82% of all the blocks had more than 3.5% retention. Average retention is 12.2%. The quality of the retention in terms of average density of large snags, large trees (≥40 cm dbh) and number of tree species retained is lower than expected compared to baseline (timber cruise data).

Overall Stewardship Trend: *Insufficient data*

There are only 13 samples from the FRPA-era and therefore not sufficient data.

Opportunities For Continued Improvement:

Leave retention greater than 3.5% on every cutblock. Leave more big pieces of coarse woody debris (i.e., big pieces) on the harvested area of cutblocks. Look to leave retention areas with higher densities of big trees for the site.

Visual Quality: Resource Development Impacts on Achievement of Visual Quality Objectives

There are only four Visual Quality samples in the Dawson Creek Timber Supply Area. Analysis will be completed in subsequent years when more samples are available.

Soils: Resource Development Impacts on Soil Productivity and Hydrologic Function

There are currently only three Soils samples in the Dawson Creek Timber Supply Area. Analysis will be completed in subsequent years when more samples are available.

Landscape-level Biodiversity: Is the forested matrix at the landscape-level providing the range of habitat understood as necessary for maintaining ecosystem function and old and mature forest dependant species?

In development. The three primary landscape-level biodiversity indicators are: (1) site index by leading species (ecosystem representativeness); (2) percent of TSA by age class (young, mid-, mature, and old forest); and (3) percent interior habitat of old forest. Each indicator is categorized by percent in non-commercial land base, timber harvesting land base, and protected areas. Data for these indicators is derived from Hectares BC and other spatial databases.

RESOURCE VALUE STEWARDSHIP RESULTS BY TIMBER SUPPLY AREA

Table 2 provides ratings of stewardship effectiveness at varying scales. Effectiveness is determined by the percentage of samples with a “very low” or “low” resource development impact rating. Appendix 2 shows results by resource value for the North, South and Coast Areas and the province as a whole.

Table 2: Stewardship effectiveness within the Northeast Region as determined by resource development impact rating (ID = Insufficient Data; sample sizes in brackets).

Resource Value	Effectiveness of Practices in Achieving Resource Stewardship Objectives: % Very low + Low Resource Development Impact Rating			
	Northeast Region Comparison			Northeast Region ^a
	Dawson Creek TSA	Fort Nelson District	Fort St. John TSA	
Riparian – all data	74% (46)	54% (68)	60% (10)	62% (124)
FRPA-era data	53% (15)	53% (30)	ID (0)	53% (45)
FPC-era data	84% (31)	55% (38)	60% (10)	67% (79)
Water quality – all data	72% (64)	ID (11)	ID (4)	76% (79)
Stand-level biodiversity –all data	23% (44)	58% (59)	ID (9)	40% (112)
FRPA-era data	ID (13)	67% (27)		51% (41)
FPC-era data	23% (31)	50% (32)		34% (71)

^a Includes the Fort Nelson and Peace Natural Resource Districts

DISTRICT MANAGER COMMENTARY¹

The monitoring results reported in this document definitely point to areas of improvement; the riparian and water quality assessments are what I would expect, rated “very low” to “low” impacts, however the stand-level biodiversity results are much less than I anticipated, with 50% being “medium” impact and 27% “high”. As noted in the report, there are only 13 *FRPA*-era samples for stand-level biodiversity, and therefore insufficient data to make any conclusions regarding any recent change in outcomes. However, I do expect that with more monitoring, the results will improve with potential increase possible from fewer very low retention cutblocks and retention of higher densities of valuable attributes such as big trees for the sites. The licensees operating in our district have committed to wildlife tree and coarse woody debris retention in their operations, and I fully expect that they will achieve the results as expressed in their forest stewardship plans (FSP). During the past year, all of our licensees have extended their current FSP’s, and part of the review and approval process included a review of the FREP samples by licensee, and though few, there were no significant issues noted.

In 2011 our district had two significant rain events (150 mm rain fell in Dawson Creek June 24-25th, and then another 80 mm July 8th). Of the four streams assessed after these events, one was severely impacted by the flood and was considered “highly” impacted due to natural causes. However, I am pleased to note that three were still in one of three properly functioning conditions, including two streams with full RMA retention that were rated “very low” impact despite the flood. Natural events such as these floods, torrents and our generally high natural sediment levels are a continual concern for Dawson Creek TSA streams. I look forward to future riparian assessments to determine any ongoing impact from these floods and what we can learn from them. As we continue to recover from that event, I do expect our results for both riparian and water quality to continue to improve.

The Peace continues to have several industries active on the land base, and not always subject to forest legislation (coal mining, wind power, oil and gas) which does make for some challenges as well. We encourage all industries to work together to protect all of our natural resources.

Going forward, I expect forest professionals will continue to implement practices that protect all of our natural resources, and I challenge them to achieve excellent resource management practices on all sites, and I expect our district results to improve.

¹ Commentary supplied by Peace Natural Resource District Manager, Rob Kopecky

APPENDIX 1: SUMMARY DESCRIPTION OF RESOURCE DEVELOPMENT IMPACT RATING CRITERIA

Table A1.1 shows the criteria used to determine the resource development impact ratings for each resource value. Detailed rating criteria, methodology, and definition of terms used are described in the companion document *FREP Technical Note #6: Methodologies for Converting FREP Monitoring Results to Multiple Resource Value Assessment (MRVA) Resource Development Impact Ratings* (http://www.for.gov.bc.ca/ftp/HFP/external/!publish/frep/technical/FREP_Technical_Note_06.pdf). The ratings of “very low”, “low”, “medium” and “high” are “technical ratings” based on best available science.

Table A1.1: Criteria for determining resource development impact rating outcomes for each resource value.

Resource Value	FREP Evaluation Question	Indicators	Resource Development Impact Rating Criteria	Very low	Low	Medium	High
Riparian	Are riparian forestry and range practices effective in maintaining the proper functioning of riparian areas?	Fifteen key questions (e.g., intact channel banks, fine sediments, riparian vegetation)	Number of “no” answers on assessment questions of channel and riparian conditions	0–2	3–4	5–6	> 6
Stand-level Biodiversity	Is stand-level retention providing the range of habitat and attributes understood as necessary for maintaining species dependant on wildlife trees and coarse woody debris?	Percent retention, retention quality from nine key attributes (e.g., big patches, density of large diameter trees), coarse woody debris volume, coarse woody debris quality from two key attributes (e.g., density of pieces \geq 10 m and 20 cm, and volume of large diameter pieces)	Cumulative score. A 60/40 weighting is used for tree retention versus coarse woody debris, recognizing the longer-term ecological value of standing retention.	> 70%	55–70%	40–55%	< 40%
Water Quality (sediment)	Are forest practices effective in protecting water quality?	Fine sediment potential	Fine sediment (m^3) due to expected surface erosion or past mass wasting	< 0.1	< 1	1–5	> 5
Soils	Are forest practices preventing site disturbance that is detrimental to soil productivity and hydrologic function?	Amount of access, restoration of natural drainage patterns, road side work area soil disturbance, amount of mature forest and coarse woody debris and restoration of natural drainage patterns	Overall assessment of practices on cutblock to maintain soil productivity and hydrologic function	Well	Moderately		Poor
Cultural Heritage	Are cultural heritage resources being conserved and where necessary protected for First Nations cultural and traditional activities?	Evidence and extent of damage to features, operational limitations, management strategies and type and extent of features	Combined overall cutblock assessment results with consideration of individual feature assessment results	See methodology report			
Timber: Stand Development Monitoring	What is the overall health and productivity of managed 20-40 year stands?	Impacts of forest health factors on stand stocking (ratio of total and well spaced)	Forest health damaging agent (% level of incidence) and level of stocking (well spaced stems per hectare)	\geq 1.7	0.8–1.69	0.3–0.79	0–0.29
Landscape-level Biodiversity	Is the forested matrix at the landscape-level providing the range of habitat understood as necessary for maintaining ecosystem function and old and mature forest dependant species?	Ecosystem representativeness, age class and interior old	Overall ranking: within protected and non-protected areas	Ranking under development			
Visual Quality	How are we managing views in scenic areas and achieving visual quality objectives?	Visual evaluation of block, design of block, percent of landform altered, impact of roads, tree retention and view point importance	Basic visual quality class (determined using the VQC definitions) is compared with the Adjusted VQC (derived using percent alteration measurements and adjustment factors) to determine if VQO is achieved.	VQO achieved, and % alteration low or mid-range	VQO achieved, but % alteration for one or both close to alteration limit	Only one method indicates VQO achieved	Both methods indicate VQO not achieved

APPENDIX 2: COMPARATIVE FREP RESULTS BY RESOURCE VALUE FOR OTHER AREAS

Table 2 describes overall ratings for the Dawson Creek Timber Supply Area as compared to adjacent TSAs. The table below describes the same results but by the North, South and Coast areas and the province as a whole. The three operational areas represent combined natural resource regions.

Table A2.1: FREP monitoring results by resource value for the North, South, and Coast Areas and the province as a whole compared to the Dawson Creek Timber Supply Area.

Resource Value	Effectiveness of Practices in Achieving Resource Stewardship Objectives: % Very low + low resource development impact rating (sample size in brackets)				
	Dawson Creek TSA	Forests, Lands and Natural Resource Operations Areas			Province
		North	South	Coast	
Riparian – all data	74% (46)	71% (654)	69% (678)	58% (451)	67% (1783)
FRPA-era data	53% (15)	71% (257)	68% (277)	62% (198)	67% (732)
FPC-era data	84% (31)	71% (394)	70% (401)	55% (253)	67% (1048)
Water quality – all data	72% (64)	66% (992)	70% (1515)	76% (1526)	71% (4033)
2010–2012 samples	ID (11)	67% (505)	70% (823)	79% (1021)	73%(2349)
2008–2009 samples	77% (53)	64% (487)	70% (692)	70% (505)	68% (1684)
Stand-level biodiversity all data	23% (44)	42% (655)	54% (780)	77% (455)	56% (1890)
FRPA-era data	ID (13)	49% (270)	61% (347)	84% (201)	63% (818)
FPC-era data	23% (31)	38% (385)	49% (433)	72% (254)	50% (1072)