Multiple Resource Value Assessment (MRVA)

North Coast Timber Supply Area

Coast Mountains 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.

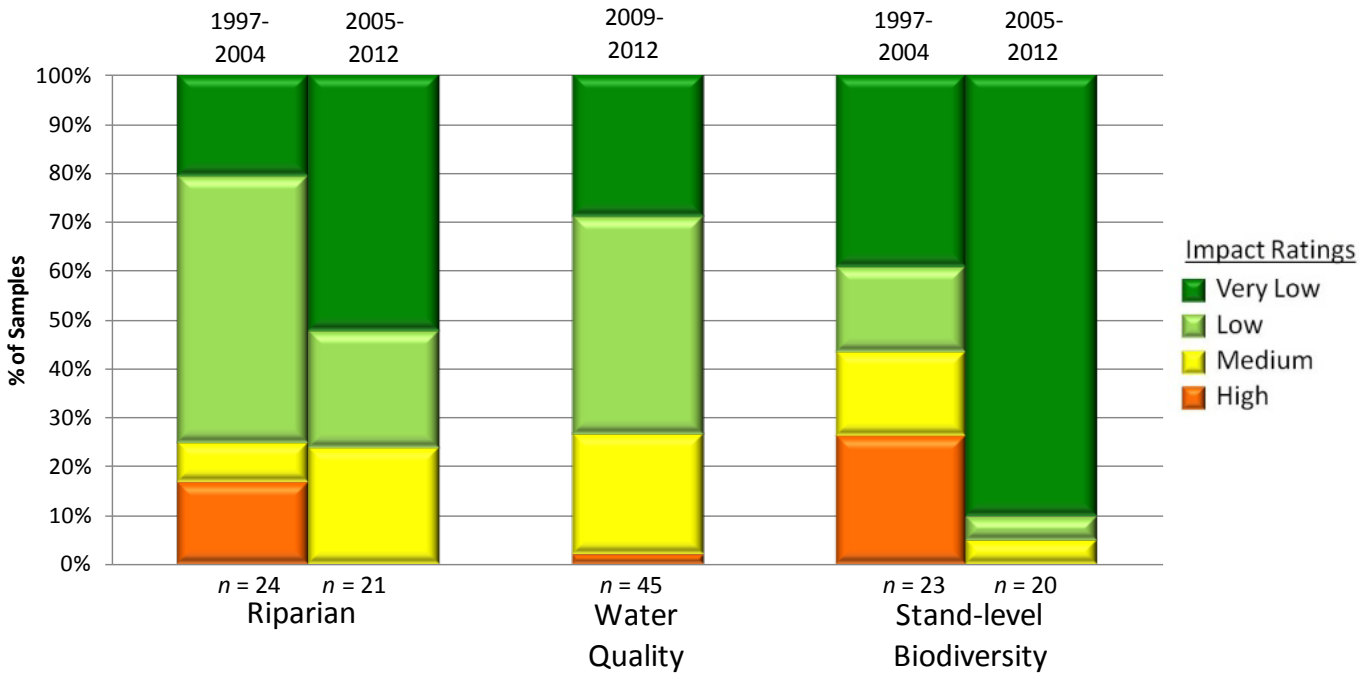
I encourage readers to review the full report and direct any questions or comments to the appropriate district office.

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, water quality (sediment), and biodiversity monitoring conducted in the North Coast 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: North Coast Timber Supply Area site-level resource development impact ratings by resource value with trend (Riparian and stand-level biodiversity trend 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 North Coast 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, licenced 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 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.

NORTH COAST TSA – ENVIRONMENTAL AND STEWARDSHIP CONTEXT

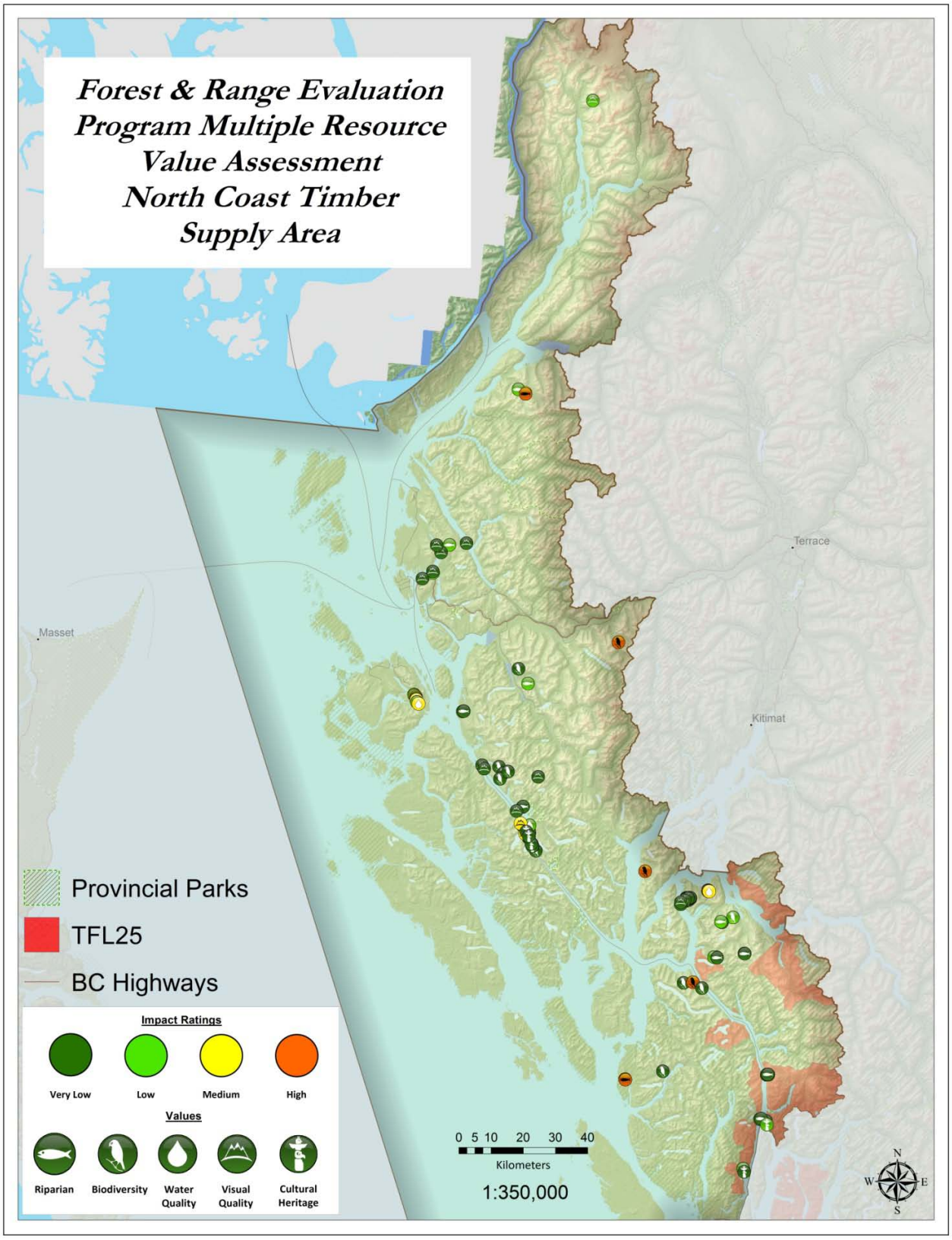
This report covers the North Coast TSA including a portion of Tree Farm Licence (TFL) 25 (figure 2). It is located in northwest British Columbia and is bordered to the west across Hecate Strait by the Queen Charlottes TSA; to the south by the Mid Coast TSA; to the southeast by Tree Farm Licence (TFL) 25; to the east by the Nisga'a Treaty Lands, as well as the Nass and Kalum TSAs and TFLs 1 & 41. The TSA and associated TFL cover approximately 1.84 million hectares and are part of the Coast Mountains Resource District. There are a large number of parks and protected areas including Khutzeymatteen Provincial Park and multiple conservancy areas. This diverse landscape is home to a variety of terrestrial and marine wildlife, including black-tailed deer, grizzly and black bears, wolves, sea mammals, raptors, and sea birds. Key sources of employment include: the public sector, forestry, tourism, fishing /trapping, construction, agriculture / food and other sources. The majority of the TSA is within the traditional territories of the Tsimshian First Nations, of which, four of seven villages, the Kitkatla, Hartley Bay, Metlakatla, and Lax Kw'alaams First Nations are inside the district boundary. Of the other three villages, Klemtu is just south of the district boundary, and Kitsumkalum and Kitselas are up stream on the Skeena River. The Haisla First Nation also has traditional territory within the TSA. The Heiltsuk and Gitanyow have also claimed traditional interests within this TSA. With the implementation of the Nisga'a Final Agreement, Nisga'a Treaty Lands have been transferred out of the North Coast TSA.

The TSA has unique characteristics and operational challenges. Terrain and timber profile are the two most predominant limiting factors to resource development. Historically, most of the sawlogs harvested from the North Coast TSA were shipped to the Vancouver log market. Pulp was also shipped out to mills on the south coast following the closure of the Skeena Cellulose Port Edward pulp mill in 2001 although in recent years most pulp generally remains on site as waste. The declining lumber market resulted in a shift from hemlock/balsam harvest to primarily cedar which has remained comparatively stable in price. Of note, harvest levels in this TSA have not reached the AAC in more than a decade.

Timber profiles in the North Coast TSA are characterized by overmature hemlock leading stands with high percentages of pulp grade wood and minor amabilis fir, spruce and cedar components. The North Coast TSA has the highest road construction costs in the province. Most harvesting is aerial selection of cedar stands although some conventional ground based harvesting is still occurring on Porcher Island. This has resulted in concerns being raised about disproportionate levels of cedar harvest when compared to the hemlock leading timber profile most prevalent in this TSA.

The North Coast TSA has an abundance of cultural heritage features which often results in increased development costs due to the need to complete archaeological assessments. In addition, difficult terrain in the North Coast TSA requires significant investments in road engineering and construction which can often be at risk due to landslides and mass wasting. High fisheries values are found across the region and salmon and fish bearing streams are predominant throughout the TSA which require fisheries assessments and careful road construction and maintenance practices to protect. Drop zones, log dumps or barge ramps are utilized to manage log handling into an often sensitive marine environment. The North Coast TSA is also subject to EBM requirements which constrain timber harvesting practices along the coast. Scenic areas and visual quality objectives have been established in the district since the mid 90's. The viewscapes within North Coast TSA are highly sensitive to forest harvesting and often require assessments and visual design. Risk of windthrow is significant as well due to extreme winter winds experienced along the coast. Partial cutting and variable retention harvesting systems are especially vulnerable to these high winds. Windthrow assessments are often required particularly in visually sensitive areas or those approaching VQO percent alteration thresholds.

Figure 2: North Coast Timber Supply Area, showing FREP sample locations and results.

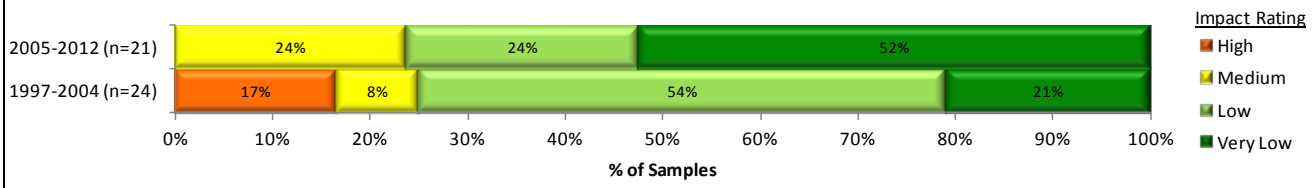


KEY RESULTS BY RESOURCE VALUE AND OPPORTUNITIES FOR CONTINUED IMPROVEMENT

Table 1 shows the resource values assessed for the North Coast 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 North Coast Timber Supply Area.

Riparian: Resource Development Impacts on Stream Function



Summary:
Of the 45 streams monitored (combined *FPC* and *FRPA* eras), 76% were rated "very low" or "low" harvest-related impacts: 36% of streams are Properly Functioning ("very low" impact), 40% are Properly Functioning with limited impact ("low" impact), 16% are Properly Functioning with impact ("medium" impact) and 9% are Not Properly Functioning ("high" impact).

Causal Factors:
Factors that contributed to "high" or "medium" impact ratings included: impacted riparian vegetation in first 10 m, logging slash in the streams, and insufficient vegetation retained to maintain an adequate root network or large woody debris supply.

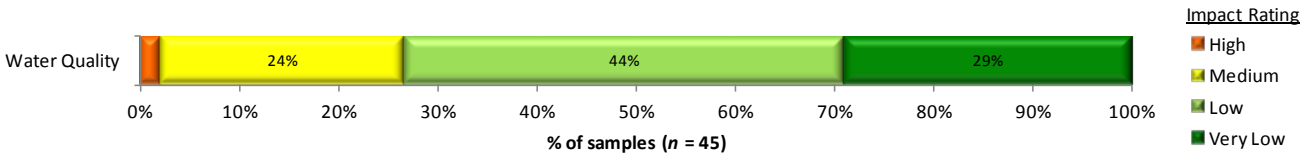
Number of Samples by Stream Class and Impact Rating:

Class	High	Medium	Low	Very low	Total
S1				1	**1**
S2				1	**1**
S3	2		2	2	**6**
S4			1	2	**3**
S5			1	1	**2**
S6	2	7	14	9	**32**
Total	**4**	**7**	**18**	**16**	**45**

Overall Stewardship Trend: *Improving* ↑
There are higher percentages of "very low" impacted stream reaches in the *FRPA*-era compared to the *FPC*-era and no high impacted streams.

Opportunities For Continued Improvement:
9 of the 11 "high" or "medium" impacted streams were S6 streams. Of these 9 S6 streams, 8 had little or no retention in the first 10 m. One S6 with ten metres of retention was impacted by windthrow. Two "high" impact streams were S3 with full 20 m Riparian Reserve Zone (RRZ) protection, but no retention of trees or understory in the management zone. Windthrow was a major issue for these two streams.
Windthrow management is an ongoing challenge in this timber supply area. Utilize the Riparian Management Area for windthrow protection of the RRZ when warranted by risk conditions. If no treed retention can be left on S4-S6 streams, retain deep rooted understory vegetation for ongoing bank stability. Take care to keep logging slash out of streams to avoid stream blockages.

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



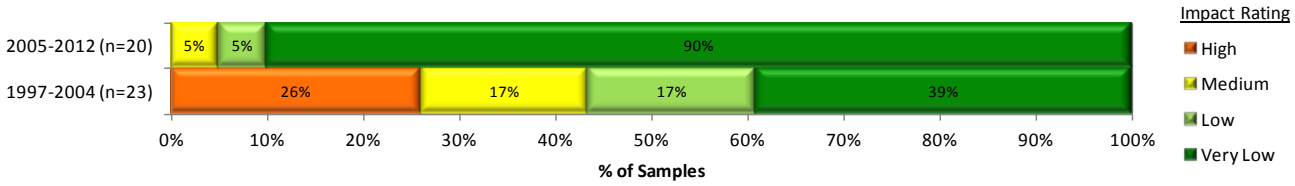
Summary:
This data is very preliminary with the sampled road segments originating from only five harvested cutblocks. Of the 45 road segments assessed, 73% were rated as "very low" or "low" road-related impact. Site assessments show the range for potential sediment generation as 29% "very low" ("very low" impact), 44% "low" ("low" impact), 24% "moderate" ("medium" impact), 2% "high" or "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***
Trending for water quality is based on survey years, to capture impact of road traffic and maintenance. There is currently not sufficient data to allow for trending with only five harvested cutblocks as origins for the 45 road segments assessed for water quality. This is a very small sample which may not represent the TSA.

Opportunities For Improvement:
The most frequent suggested improvements are to armour, seed and protect bare soil; armour areas of concentrated flow, and, to use cross ditches and kickouts.

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



Summary:

Of 43 cutblocks sampled (combined *FPC* and *FRPA* eras), 70% of sites were rated as "very low" or "low" harvest-related impact. Considering total retention, retention quality, and coarse woody debris quantity and quality, 63% sites are rated as "very low" impact on biodiversity, 12% as "low", 12% as "medium", and 14% as "high" impact. Two other blocks were sampled but did not have plot data on tree retention where retention existed (likely a safety issue) and could not be rated.

Causal Factors:

82% of all blocks had more than 3.5% tree retention, increasing to 100% in the *FRPA*-era. Average retention increased from 17.5% in the *FPC* to 53.4% in *FRPA*-era. Average cutblock size was fairly constant around 27 ha. Dispersed retention was used much more in the *FRPA*-era, accounting for most of the increase in average % retention. Retention quality in terms of large snags, ≥70 cm dbh trees and tree species diversity is lower compared to that expected from baseline. Coarse woody debris quantity has increased in the *FRPA*-era, with amounts of coarse woody debris skewed to higher levels compared to the baseline of coarse woody debris found in retention patches. Coarse woody debris quality in terms of big pieces (≥20 cm & 10 m) has increased.

Overall Stewardship Trend: *Improving* ↑

The increasing stewardship trend was driven by the large increase in average % retention, and coarse woody debris quality. There was a small increase in retention quality. Coarse woody debris volume was high in both era's increasing from average of 381 m^3/ha in the *FPC*-era to 505 m^3/ha in the *FRPA*-era.

Opportunities For Continued Improvement:

Continue leaving retention on every cutblock, however the overall value of the very high retention (>30% for 53% of the sampled blocks) may be questioned. Continue trend to good quality coarse woody debris (i.e., big pieces). Leave higher densities of big trees for the site.

Visual Quality: Resource Development Impacts on Achievement of Visual Quality Objectives (VQO)

Summary:

There are currently 14 Visual Quality samples in the North Coast TSA. Nine of these samples originated from openings harvested using Forest Development Plan under the *FPC* (6 "very low" impacts to achieving the VQO, 1 "low" impact and 2 "medium" impacts). The other 5 were harvested under Forest Stewardship Plans under *FRPA* and all of these 5 readily met their VQO (5 "very low" impact). Analysis will be completed in subsequent years when more samples are available.

Cultural Heritage: Resource Development Impacts on Cultural Heritage Resources
There are currently six Cultural Heritage Samples in the North Coast TSA. 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?
This protocol is 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 COMPARISON

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 stewardship effectiveness results by resource value for the North, South and Coast Areas and the province as a whole.

Table 2: Stewardship effectiveness within the Skeena 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 (sample size in brackets)							
	Skeena Region Comparison							
	North Coast TSA	Lakes TSA	Morice TSA	Kispiox TSA	Nass TSA	Bulkley TSA	Kalum TSA	Skeena Region[a]
Riparian – all data	**76%** (45)	**64%** (36)	**74%** (42)	**85%** (27)	**ID** (9)	**90%** (31)	**75%** (53)	**77%** (243)
FRPA-era data	76% (21)	68% (19)	83% (18)	ID (9)		93% (14)	73% (15)	80% (100)
FPC-era data	75% (24)	59% (17)	67% (24)	83% (18)		88% (17)	81% (36)	75% (141)
Water quality – all data	**ID** (45)[b]	**52%** (83)	**46%** (92)	**93%** (58)	**ID** (15)	**100%** (53)	**84%** (119)	**73%** (465)
2010–2012 samples		ID (35)	ID (46)	ID (32)		100% (46)	83% (103)	79% (291)
2008–2009 samples		48% (48)	43% (46)	ID (26)		ID (7)	ID (16)	63% (174)
Stand-level biodiversity –all data	**74%** (43)	**28%** (46)	**38%** (29)	**76%** (37)	**36%** (11)	**33%** (48)	**52%** (46)	**48%** (260)
FRPA-era data	95% (20)	17% (23)	50% (14)	83% (18)		30% (30)	87% (15)	55% (121)
FPC-era data	57% (23)	26% (23)	27% (15)	68% (19)		39% (18)	35% (31)	42% (139)

[a] Nadina, Coast Mountains and Skeena-Stikine Resource Districts

[b] Water Quality data from North Coast TSA has just five cutblocks where sampling originates and this is not considered sufficient data for comparison between TSA's.

DISTRICT MANAGER COMMENTARY[1]

Trends and Concerns:

Of the three values with adequate data to perform analysis (Stand-level Biodiversity, Riparian and Water Quality), a trend of increasing "very low" and "low" impact ratings is shown for both Riparian (1%) and Stand-level Biodiversity (38%). Water Quality did not have sufficient data to allow for analysis. Samples considered to have "high" and "medium" impact from resource development are 25% for Riparian, 5% for Stand-level Biodiversity and 3% for Water Quality. District FREP effectiveness evaluations should continue to monitor these values to ensure licensees are aware of the need to improve performance or monitor future changes and I encourage licensees to continue diligence in managing these values as well.

Areas of Focus:

The North Coast TSA overlaps the core traditional territory of eight First Nations and is rich in Cultural Heritage Resources (CHR). All forest licensees operating in the district must account for CHR in their forest stewardship plans and operational plans by carrying out Archaeological Impact Assessments and obtaining site alteration permits when impacting features protected by the Heritage Conservation Act where CHR features cannot be protected from forest harvesting and road building operations. FREP effectiveness evaluations for CHR should include North Coast TSA in subsequent years to monitor this important value. It is hoped that refocusing the district's FREP program to CHR will result in better protection measures utilized by licensees and enhance relationships with local First Nations by making this value a priority.

Future Opportunities:

A shift in the district's FREP sampling is recommended into other values such as Partial Timber Cutting to examine stewardship of cedar harvest (an issue raised in a 2008 Forest Practices Branch report) in the North Coast TSA. It is recommended that staff continue to monitor water quality as this value is of critical importance to the fisheries values in the district. The protection of streams from sediment delivery from roads is critical in fish bearing watersheds (particularly salmon streams) and water quality will be a key value to monitor where road construction and maintenance is occurring.

[1] Commentary supplied by Coast Mountains Natural Resource District Manager, Barry Dobbin

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 ≥ 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)	≥ 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 North Coast TSA as compared to adjacent TSAs and districts. 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 North Coast TSA.

	Effectiveness of Practices in Achieving Resource Stewardship Objectives: % Very low + low resource development impact rating (sample size in brackets)				
		Forests, Lands and Natural Resource Operations Areas			
Resource Value	North Coast	North	South	Coast	Province
Riparian – all data	**76%** (45)	**71%** (654)	**69%** (678)	**58%** (451)	**67%** (1783)
FRPA-era data	76% (21)	71% (257)	68% (277)	62% (198)	67% (732)
FPC-era data	75% (24)	71% (394)	70% (401)	55% (253)	67% (1048)
Water quality – all data	**ID** (45)	**66%** (992)	**70%** (1515)	**76%** (1526)	**71%** (4033)
2010–2012 samples		67% (505)	70% (823)	79% (1021)	73%(2349)
2008–2009 samples		64% (487)	70% (692)	70% (505)	68% (1684)
Stand-level biodiversity all data	**74%** (43)	**42%** (655)	**54%** (780)	**77%** (455)	**56%** (1890)
FRPA-era data	95% (20)	49% (270)	61% (347)	84% (201)	63% (818)
FPC-era data	57% (23)	38% (385)	49% (433)	72% (254)	50% (1072)