



Licensee Performance Evaluation

2002 - 2007



Natural Resources

INTRODUCTION

There are ten Crown Timber Licenses within New Brunswick. These are managed by six forestry companies through Forest Management Agreements with the Department of Natural Resources under the authority of the *Crown Lands and Forests Act*. See Table 1 for a listing of Crown Timber Licenses and the associated Licensees.

The management system, established under the *Crown Lands and Forests Act*, is monitored by the Department of Natural Resources on behalf of government and the citizens of New Brunswick. Under this system government sets objectives and standards for the management of provincial Crown lands, and the Licensees are responsible to plan and implement the various activities required to achieve those objectives.

The *Crown Lands and Forests Act*, requires the Minister of Natural Resources to evaluate Licensee forest management performance at five-year intervals. Performance evaluation results are used in the Minister's decision to extend the length of the Forest Management Agreement for each license. Performance reviews were conducted in 1987, 1992, 1997 and in 2002. The review of the fifth five-year management period is now complete. This review evaluated Licensee performance with respect to the following components.

1. Implementation of the 2002 Management Plan (2002 - 2007 Activities)
 - a) Harvesting
 - b) Silviculture
 - c) Biodiversity
 - d) Working Near Water
 - e) Deer Wintering Area Management

2. Development of the 2007 Management Plan

A description of each component, the associated performance measurement criteria, and thresholds of acceptance for each is outlined in Appendix 1.

A summary of Licensee performance with respect to each of the six evaluation components is presented in Table 2. The following narrative provides additional detail for each component.

1. IMPLEMENTATION OF THE 2002 MANAGEMENT PLAN (2002 – 2007 ACTIVITIES)

HARVESTING

Licensee performance with respect to timber harvesting was assessed through the following six indicators.

Indicators 1 and 2 assessed the volumes of spruce, fir, jack pine and hardwood, respectively; that were sustainably harvested from the General Forest. Both indicators were successfully addressed by all licensees.

Indicators 3 and 4 assessed the total volumes of spruce, fir, jack pine and hardwood, respectively; that were sustainably harvested on the entire license. Both indicators were successfully addressed by all licensees.

Indicator 5 assessed the amount of commercial thinning conducted in the General Forest relative to the area approved in the management plan. Commercial thinning, which was assessed for the first time, is an important activity in sustaining wood supply. This measure was successfully addressed by all licensees. With respect to License 8, AV Nackawic, the new Licensee is credited with passing this indicator as they were the Licensee for only one year of the five-year period. This time span did not provide sufficient time for AV Nackawic to correct the commercial thinning deficiency.

Indicator 6 (non-clearcut harvest) was assessed for the first time. Non-clearcut harvest treatments are important for meeting timber and habitat objectives. This measure was successfully addressed by all licensees.

SILVICULTURE

Indicators 7 and 8 assessed how well Licensees complied with the prescribed levels of softwood planting and pre-commercial thinning, respectively, on their Crown licenses. It is noted that both indicators were successfully implemented on all licenses.

Overall, 58,791 hectares were planted and 94,920 hectares were pre-commercially thinned by licensees during the five-year period.

Indicator 9 (remedial treatment) measures how well licensees thinned over dense plantations or re-planted insufficiently stocked plantations to enable them to meet established standards. Relative to the previous period, there was significant improvement in this indicator as all licensees for the first time successfully addressed this indicator.

BIODIVERSITY

Maintenance of Vegetation Communities (Indicator 10) and Wildlife Habitat Types (Indicator 11) are important components of biodiversity on Crown land. Given the importance of biodiversity to the general public, this component was added to the licensee performance evaluation process for the first time. All licensees are to be fully recognized as both indicators were successfully implemented on all Crown licenses.

WORKING NEAR WATER

Indicators 12, 13 and 14

The protection of water quality and aquatic habitat was addressed by licensees through maintenance of watercourse buffer zones, installation of watercourse crossings and the respect for watercourses when conducting harvest operations. The performance threshold for all these indicators was successfully met on all 10 licenses.

DEER WINTERING AREA MANAGEMENT

Indicators 15, 16 and 17

This component of licensee performance evaluation measures how well licensees implemented the management plans approved for deer wintering areas. The performance threshold for all three indicators was successfully met on all 10 licenses.

License 5 was only 16 ha short of the performance target for Indicator 16. Since they prepared an additional 812 ha of first time DWA plans (Indicator 15) that were not required, the Licensee is deemed to have successfully performed with respect to deer wintering area management.

2. PREPARATION OF THE 2007 MANAGEMENT PLAN

Indicators 18, 19 and 20

Forest Management Plans are based on an 80-year projection of sustainable timber supply and an 80-year projection of wildlife habitat supply. The Management Plan outlines the planned actions on the license for a 25-year period to meet government's timber and non-timber objectives. Management Plans are prepared for each of the 10 Crown Timber Licenses. Each of these plans is updated every 5 years with the next revision scheduled for 2012.

Licensees were evaluated on the content and submission dates of key junctures in the management planning process, with the critical measure being the acceptance of the final Management Plan by January 31, 2007. This was the first time since 1987 that all licensees fully complied with the requirements for management plan development and submission.

The next five-year review of Licensee performance will be conducted in 2012.

**TABLE 1
CROWN TIMBER LICENSES AND ASSOCIATED LICENSEES**

License Name	Licensee
Upsalquitch	Bowater Maritimes Inc.
Nepisiguit	UPM-Kymmene Miramichi Inc.
Lower Miramichi	UPM-Kymmene Miramichi Inc.
Upper Miramichi	UPM-Kymmene Miramichi Inc.
Kent	Weyerhaeuser Company Limited
Queens-Charlotte	J. D. Irving, Limited
Fundy	Irving Pulp and Paper Limited
York	AV Nackawic Inc.
Carleton	Fraser Papers Nexfor
Restigouche-Tobique	Fraser Papers Nexfor

TABLE 2
SUMMARY OF PERFORMANCE OF CROWN TIMBER LICENSEES FOR 2002 - 2007 PERIOD

Components of the Evaluation Criteria	1. Implementation of 2002 Forest Management Plan			License Performance (Percent)										
	No.	Performance Measurement	Acceptable Threshold	Lic 1	Lic 2	Lic 3	Lic 4	Lic 5	Lic 6	Lic 7	Lic 8	Lic 9	Lic 10	
Harvesting	1	Volume of Softwood Harvested from the General Forest	≤ 101%	100	88	98	98	99	101	97	95	98	95	
	2	Volume of Hardwood Harvested from the General Forest	≤ 101%	94	69	92	80	101	98	98	91	96	81	
	3	Total Volume of Softwood Harvested from the Entire License	≤ 101%	100	89	99	98	99	99	96	94	101	98	
	4	Total Volume of Hardwood Harvested from the Entire License	≤ 101%	88	66	91	84	97	96	97	86	91	77	
	5	Commercial Thinning Conducted in the General Forest	≥ 75%	n/a ⁴	n/a ⁵	95	82	90	112	n/a ⁶	26 ³	n/a ⁹	78	
	6	Non-Clearcut Harvest Conducted in the General Forest	≥ 75%	n/a ⁷	85	82	103	103	95	91	94	77	100	
Silviculture	7	Softwood Planting Conducted in the General Forest	≥ 95%	104	102	101	100	104	100	100	122	98	106	
		Total hectares of tree planting conducted		5,740	3,515	7,221	8,070	530	15,257	6,611	2,163	1,982	7,703	58,791
	8	Pre-Commercial Thinning Conducted in the General Forest	≥ 95%	103	116	112	115	114	109	114	108	124	117	
		Total hectares of pre-commercial thinning conducted		5,019	6,257	8,778	17,171	2,957	15,558	10,980	8,909	5,336	13,955	94,920
Biodiversity	9	Remedial Treatment of Plantations in the General Forest	≥ 95%	97	100	100	100	100	100	100	99	100	100	
	10	Maintenance of Vegetation Communities on the License ¹	≥ 95%	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	
Working Near Water	11	Maintenance of Wildlife Habitat Types on the License ¹	≥ 95%	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	
	12	Buffer Zone Infraction	≥ 90%	100	100	100	100	99	100	100	100	100	100	
	13	Infractions for Machine Use in or Adjacent to a Watercourse	≥ 90%	100	100	100	100	100	99	100	99	100	100	
Deer Wintering Area Management	14	Infractions With Respect to Watercourse Crossing Installations	≥ 95%	99	100	99	97	100	97	96	95	96	96	
	15	Extent of 1st-Time DWA Management	≥ 75%	n/a ⁴	91	94	97	n/a ^{4,2}	629	926	77	239	88	
	16	Extent of Follow-up DWA Management	≥ 90%	94	100	100	100	88 ²	104	100	96	95	93	
	17	Infractions Related to Habitat Status (DWA and OSFH)	≥ 90%	100	100	97	98	100	100	100	100	100	100	
	2. Development of 2007 Forest Management Plan			Licensee Performance										
Management Planning	18	Submission of Management Plan Proposal by February 15, 2006	Acceptance by Regional Director	yes	yes	yes	yes	yes	yes	yes	yes	yes ⁸	yes ⁸	yes ⁸
	19	Submission of Spatial Management Plan by June 30, 2006		yes	yes	yes	yes	yes	yes	yes	yes	yes ⁸	yes ⁸	yes ⁸
	20	Submission of Finalized Management Plan by January 31, 2007		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes ⁸	yes ⁸

Notes

- The performance measures for Biodiversity (#10) and Habitat (#11) contain several objectives for each License. A rating of "PASS" in this table means that all objectives were achieved by the Licensee.
- Performance is acceptable. License 5 was only 16 ha. short of the performance threshold for measure 16, however they prepared 810 ha. of first-time DWA plans that were not required for measure 15..
- Performance is acceptable. The acquisition of the York License in January 2006 provided insufficient time for AV Nackawic Inc. to meet the commercial thinning targets.
- The abbreviation "n/a" indicates that this performance measure was "not applicable" to this License. This activity was not scheduled in the management plan.
- Achievement of the 170ha commercial thinning target was waived by DNR because suitable conditions did not exist on License 2 as proposed in the management plan.
- The performance measure for commercial thinning was not applicable to License 7 because it was not scheduled in the management plan. A total of 177ha was however implemented.
- The performance measure for non-clearcut harvesting was not applicable to License 1 because it was not scheduled in the management plan. A total of 513ha was however implemented.
- DNR approved extensions to management planning deadlines. These were achieved by the Licensee.
- The performance measure for commercial thinning was not applicable to License 9 because it was not scheduled in the management plan. A total of 81ha was however implemented.

LICENSEE PERFORMANCE EVALUATION
(Criteria & Indicators for the 2007 Review)

Mar 29, 2004

The *Crown Lands and Forest Act* requires that the Minister of Natural Resources evaluate the forest management performance of each Crown Timber Licensee at five-year intervals. Performance evaluation results are used in the Minister's decision to extend the length of the Forest Management Agreements. Performance reviews have been conducted every 5 years since 1987 and the next review will occur in 2007.

The purpose of this document is to identify the criteria and indicators for the 2007 review. The following addresses the four key elements of the evaluation methodology.

WHO IS BEING EVALUATED?

The Licensee Company is being evaluated, not individuals within the company.

WHO IS MAKING THE EVALUATION?

The Minister of Natural Resources makes the formal evaluation using information provided by Departmental staff. This information is a compilation of data collected for the various performance criteria during each year of the five-year period, and communicated to Licensees through annual review sessions

WHAT IS THE TIMING OF THE EVALUATION?

The formal evaluation will be performed on each License by October 1, 2007. In keeping with the ISO 14001 Standard for Environmental Management Systems for all Crown Licenses, regular measurements of the indicators can be made at any time to track performance. This is a critical element that will allow Licensees the opportunity to adjust and improve their operations over the five-year period. DNR will participate in this process on an annual basis by reviewing interim results with Licensees and signing-off on each data set by October each year.

WHAT ARE THE EVALUATION CRITERIA?

The evaluation of performance addresses both the implementation of the 2002 Management Plan and the development of the Licensee's 2007 Management Plan. There are 20 Indicators, organized under 6 separate Criteria that will be used to measure Licensee performance in 2007.

CROWN LAND OBJECTIVES: THE VISION DOCUMENT

In 1994, DNR introduced a document entitled "A Vision for New Brunswick Forests: Goals and Objectives for Crown Land Management". The Vision document outlines the goals and objectives for Crown land forest management including timber, wildlife habitat, biodiversity conservation and water quality. The Vision document was updated in 1999 and will be updated periodically to provide the foundation for the development and evaluation of the implementation of each subsequent management plan.

Achievement of the management objectives identified in the 1999 Vision document hinges upon implementation of the management strategy approved in the 2002 Forest Management Plan. This strategy is the product of an array of management activities and their combined influence on the development of the forest. Therefore, the first phase of the performance assessment addresses how successful the Licensee was at implementing the management activities between 2002 and 2007 as identified in the 2002 Management Plan.

LICENSEE PERFORMANCE CRITERIA AND INDICATORS

The following 6 Criteria and 20 Indicators will form the measure of Licensee Performance Evaluation in 2007. With the exception of Indicators 10 and 11, the information used in the evaluation will be accumulated over the period April 1, 2002 to March 31, 2007:

HARVESTING

The total sustainable harvest level approved for each License is derived from four forest zones: the General Forest, Deer Wintering Areas, Old Spruce-Fir Habitat, and Watercourse Buffer Zones.

The volume identified from the latter three zones is area based, and its realization is subject to the extent of harvest operations actually conducted within these zones. Furthermore, any volume shortfall from these three zones cannot be offset by a corresponding increase in harvest volume from the General Forest, as doing so would compromise its sustainability.

The sustainable harvest level approved for the General Forest is also partly determined by the amount of Commercial Thinning approved in the management plan. In addition, Non-clearcut harvest treatments are important for meeting timber and habitat objectives as well as objectives related to aesthetics. Consequently, both are important indicators of Licensee Performance.

The database for this evaluation component will include harvest volumes from April 1, 2002 through to, and including, March 31, 2007. First Nations allocations and harvest levels are not included in any of the performance evaluation calculations.

Indicator 1 The Spruce-Fir-Jack Pine (SPFJP) volume harvested from the General Forest during the period, as a ratio of the allocated volumes in Schedule F. **Performance is successful with a ratio less than or equal to 1.01.**

$$\frac{\text{SPFJP harvested from the General forest}}{\text{Allocated volumes in Schedule F}} \leq 1.01$$

Indicator 2 The hardwood (HWD) volume harvested from the General Forest during the period, as a ratio of the allocated volume in Schedule F. **Performance is successful with a ratio less than or equal to 1.01.**

$$\frac{\text{HWD harvested from the General forest}}{\text{Allocated volumes in Schedule F}} \leq 1.01$$

Indicator 3 The SPFJP volume harvested from the entire License during the period, as a ratio of the allocated volumes in Schedule F. **Performance is successful with a ratio less than or equal to 1.01.**

$$\frac{\text{Total SPFJP volume from the entire License}}{\text{Total Allocated volumes in Schedule F}} \leq 1.01$$

Indicator 4 The HWD volume harvested from the entire License during the period, as a ratio of the allocated volumes in Schedule F. **Performance is successful with a ratio less than or equal to 1.01.**

$$\frac{\text{Total HWD volume from the entire License}}{\text{Total Allocated volumes in Schedule F}} \leq 1.01$$

Indicator 5 The total area of Commercial Thinning (CT) completed in the General Forest on the License during the period compared to the total area of CT approved in the Management Plan*. **Performance is successful with a ratio greater than or equal to 0.75.**

$$\frac{\text{Total area of CT in the General Forest}}{\text{Total CT approved for the General Forest in the Management Plan}} \geq .75$$

**Note: Provided suitable areas are actually available for treatment as determined by mutual agreement between DNR and the Licensee.*

Indicator 6 The total area of Non-clearcut harvest completed in the General Forest on the License during the period compared to the total area of Non-clearcut harvest approved in the Management Plan*. **Performance is successful with a ratio greater than or equal to 0.75.**

$$\frac{\text{Total area of Non-clearcut in the General Forest}}{\text{Total Non-clearcut approved for the General Forest in the Mgt. Plan}} \geq .75$$

**Note: The Non-clearcut area is determined by subtracting the total area clearcut from the total*

harvest area.

SILVICULTURE

The approved 2002 Management Plans have identified, for the General Forest, minimum levels of softwood planting and pre-commercial thinning for each License. Implementation of these levels may, however, be constrained by the availability of seedlings and silviculture funding. The level of silviculture funding and seedling availability will be used to establish the annual silviculture target area for planting and pre-commercial thinning that is possible for each License.

In addition, for 2002 Management Plan wood supply expectations to be met, plantations must develop as forecast and be available for harvest at the designated time and volume. To achieve this, standards have been established (5th Year Plantation Status and 10th Year Plantation Survey) to differentiate stand stocking, competition, and density conditions under which yield expectations will be met. Plantations that do not meet these standards must be remedially treated during the period. The document entitled "Evaluating Licensee Performance: Remedial Plantation Treatment" details the process and assessment procedures used to identify plantations requiring remedial treatment.

For silviculture, the period for evaluation may be extended to September 30, 2007 to allow for treatment of additional areas arising from silviculture reconciliation and 5th and 10th year assessment.

Indicator 7 The total area of softwood planting in the General Forest on the License completed during the period, as a ratio of the total planting target area established for the period. **Performance is successful with a ratio greater than or equal to 0.95.**

$$\frac{\text{Total area of softwood planting in the General Forest}}{\text{Total planting target for the General Forest}} \geq .95$$

Indicator 8 The total area of pre-commercial thinning in the General Forest on

the License completed during the period, as a ratio of the total pre-commercial thinning target area established for the period.

Performance is successful with a ratio greater than or equal to 0.95.

$$\frac{\text{Total area of pre-commercial thinning in the General Forest}}{\text{Total pre-commercial thinning target for the General Forest}} \geq .95$$

Indicator 9 The area of plantation that was remedially treated during the period as a ratio of the area requiring treatment as per DNR standards. **Performance is successful with a ratio greater than or equal to 0.95.**

$$\frac{\text{Area of plantation receiving remedial treatments}}{\text{Area of plantation requiring remedial treatments}} \geq .95$$

BIODIVERSITY

Maintenance of Vegetation Communities and Wildlife Habitat Types are important components of biodiversity on Crown land. The VISION document defines a minimum area for each Vegetation Community and Wildlife Habitats Type that must be maintained on each License. The period for this evaluation will be from April 1, 2004 to March 31, 2007.

Indicator 10 The area of each Vegetative Community maintained on the License as a ratio to the required levels of each Vegetative Community approved in the management plan. **Performance is successful with a ratio for each Vegetation Community that is greater than or equal to 0.95.**

$$\frac{\text{Area of Vegetative Community maintained on the License}}{\text{Area of Vegetative Community approved in the Mgt. Plan}} \geq .95$$

Indicator 11 The area of each Wildlife Habitat Type maintained on the License as a

ratio to the required levels of each Wildlife Habitat Type approved in the management plan. **Performance is successful with a ratio for each Wildlife Habitat Type that is greater than or equal to 0.95.**

$$\frac{\text{Area of Wildlife Habitat Type maintained on the License}}{\text{Area of Wildlife Habitat Type approved in the Mgt. Plan}} \geq .95$$

WORKING NEAR WATER

Watercourse buffer zones are maintained to protect water quality, aquatic habitat and other aesthetic values. The Licensee is responsible for maintaining buffer zones that are approved in the Operating Plan or covered by the Clean Water Act.

To protect water quality and aquatic habitat, machine use in and adjacent to watercourses is not permitted, except for road and crossing construction. The Licensee is responsible to ensure that road and crossing construction is restricted to approved locations.

Watercourse crossing standards are designed to provide unrestricted fish passage, the ability to discharge low, normal, and high water events while remaining stable and to limit the addition of sediment into the watercourses. The Licensee is responsible for installing watercourse crossings to standards identified in the FMM and all relevant Provincial and Federal acts and regulations.

Indicator 12 The number of harvest blocks without a penalty in buffer zones along all watercourses as a ratio to the total number of harvest blocks operated. **Performance is successful with a ratio greater than or equal to 0.90.**

$$\frac{\text{No. of blocks without a penalty in buffers on all watercourses}}{\text{Total number of harvest blocks}} \geq .90$$

Indicator 13 The number of harvest blocks without a penalty for machine use in or

adjacent to a watercourse as a ratio to the total number of harvest blocks operated. Performance is successful with a ratio greater than or equal to 0.90.

$$\frac{\text{No. of blocks without a "machine use in a watercourse" penalty}}{\text{Total number of blocks}} \geq .90$$

Indicator 14 The number of watercourse crossings without an installation penalty, as a ratio to the total number of watercourse crossings completed. Performance is successful with a ratio greater than or equal to 0.95.

$$\frac{\text{No. of crossings of watercourses without a penalty}}{\text{Total number of crossings}} \geq .95$$

DEER WINTERING AREA MANAGEMENT

The Forest Management Plan outlines the Licensee's strategy for management of deer winter habitat on the License. Prior to any activity in a Deer Wintering Area there must be a specific management plan that describes the planned treatments in that Deer Wintering Area by five-year periods. Active management can improve the long term supply of moderate and severe winter habitat.

Indicator 15 Planning - The area of 1st-Time DWA Management Plans submitted to standard, as a ratio to the total area of DWA identified in the 2002 License Management Plan requiring 1st-Time DWA Management Plan development. Performance is successful with a ratio greater than or equal to 0.75.

$$\frac{\text{Total area of 1}^{\text{st}}\text{-Time DWA plans submitted to standard}}{\text{Total area of DWA requiring plans}} \geq 0.75$$

Indicator 16 Planning - The area of follow-up DWA Management Plans submitted to

standard, as a ratio to the total area of DWA identified in the 2002 License Management Plan requiring follow-up DWA Management Plan development. **Performance is successful with a ratio greater than or equal to 0.90.**

$$\frac{\text{Total area of follow-up DWA plans submitted to standard}}{\text{Total area of DWA requiring plans}} \geq 0.90$$

Indicator 17 The number of DWA and OSFH harvest blocks without a habitat status penalty as a ratio to the number of DWA and OSFH harvest blocks operated. **Performance is successful with a ratio greater than or equal to 0.90.**

$$\frac{\text{No. of DWA \& OSFH harvest blocks without penalty}}{\text{Total number of DWA \& OSFH blocks operated}} \geq .90$$

DEVELOPMENT OF THE 2007 MANAGEMENT PLAN

The Management Plan underpins all future forest management activities. Evaluation of the 2007 Forest Management Plan will focus on the Licensees' performance related to their ability to meet objectives as outlined in the December, 2004 version of the document entitled: "A Vision for New Brunswick Forests: Goals and Objectives for Crown Land Management". Minimum standards have been established for the 2007 management plan and are found in Appendix 7.

With regard to the submission schedule, there are three critical dates that must be met so that operating plans can be approved and volume allocations made in time for the 2007 operating year. Providing DNR meets its obligations as indicated below for the three critical dates, if minimum standards are not met, the Regional Director shall not accept the plan and Licensee management planning performance will be deemed unsatisfactory. In the event that either of the last two critical dates are impacted by a previously missed date due to DNR inaction, then those critical dates will be delayed by a corresponding time period.

Indicator 18 August 31, 2005: Submission of a management plan proposal (that addresses the objectives in the Vision document) to DNR for approval, providing DNR defines objectives in the VISION document by

December 31, 2004.

Indicator 19 April 30, 2006: Submission of a spatial management plan to DNR for approval that meets the minimum standards, providing DNR reviews management plan proposals by October 31, 2005.

Indicator 20 January 31, 2007: Submission of finalized spatial management plan incorporating results of the DNR review and meeting the minimum standards, providing DNR reviews blocked plans by September 30, 2006.

SUMMARY

The 6 criteria and 20 indicators for the 2007 Licensee Performance Evaluation are summarized in Table 1.

TABLE 1: Licensee Performance Criteria and Indicators

Implementation of 2002 Forest Management Plans			
CRITERIA	INDICATOR		Threshold
HARVESTING	1	The Spruce-Fir-Jack Pine (SPFJP) volume harvested from the General Forest during the period, as a ratio of the allocated volumes in Schedule F.	≤ 1.01
	2	The hardwood volume (HWD) harvested from the General Forest during the period, as a ratio of the allocated volume in Schedule F.	≤ 1.01
	3	The SPFJP volume harvested from the entire License during the period, as a ratio of the allocated volumes in Schedule F.	≤ 1.01
HARVESTING	4	The HWD volume harvested from the entire License during the period, as a ratio of the allocated volumes in Schedule F.	≤ 1.01

Implementation of 2002 Forest Management Plans			
CRITERIA	INDICATOR	Threshold	
	5	The total area of Commercial Thinning (CT) completed in the General Forest on the License during the period compared to the total area of CT approved in the Management Plan.	≥.75
	6	The total area of Non-clearcut harvest completed in the General Forest on the License during the period compared to the total area of Non-clearcut harvest approved in the Management Plan.	≥.75
SILVICULTURE	7	The total area of softwood planting in the General Forest on the License completed during the period, as a ratio of the total planting target area established for the period.	≥.95
	8	The total area of pre-commercial thinning in the General Forest on the License completed during the period, as a ratio of the total pre-commercial thinning target area established for the period.	≥.95
	9	The area of plantation that was remedially treated during the period as a ratio of the area requiring treatment as per DNR standards.	≥.95
BIODIVERSITY	10	The area of each Vegetative Community maintained on the License as a ratio to the required levels of each Vegetative Community approved in the management plan.	≥.95
BIODIVERSITY	11.	The area of each Wildlife Habitat Type maintained on the License as a ratio to the required levels of each Wildlife Habitat Type approved in the management plan.	≥.95

Implementation of 2002 Forest Management Plans			
CRITERIA	INDICATOR	Threshold	
WORKING NEAR WATER	12	The number of harvest blocks without a penalty in buffer zones along all watercourses as a ratio to the total number of harvest blocks operated.	≥ .90
	13	The number of harvest blocks without a penalty for machine use in or adjacent to a watercourse as a ratio to the total number of harvest blocks operated.	≥ .90
	14	The number of watercourse crossings without an installation penalty as a ratio to the total number of watercourse crossings completed.	≥ .95
DEER WINTERING AREA MANAGEMENT	15	The area of 1 st -Time DWA Management Plans submitted to standard, as a ratio to the total area of DWA identified in the 2002 License Management Plan requiring 1 st -Time DWA Management Plan development.	≥ .75
	16	The area of follow-up DWA Management Plans submitted to standard, as a ratio to the total area of DWA identified in the 2002 License Management Plan requiring follow-up DWA Management Plan development.	≥ .90
	17	The number of DWA and OSFH harvest blocks without a habitat status penalty as a ratio to the number of DWA and OSFH harvest blocks operated.	≥ .90

Implementation of 2002 Forest Management Plans			
CRITERIA	INDICATOR		Threshold
DEVELOPMENT OF THE 2007 MANAGEMENT PLAN	18	Submission of management plan proposal by August 31, 2005.	All Vision document objectives addressed in management plan proposal submitted by August 31, 2005.
DEVELOPMENT OF THE 2007 MANAGEMENT PLAN	19	Submission of spatial management plan by April 30, 2006.	All minimum standards in spatial management plan met by April 30, 2006.
	20	Submission of finalized management plan by January 31, 2007.	All minimum standards in finalized management plan met by January 31, 2007.

APPENDIX 1

Sample tables and calculations to track Harvest Performance (Indicators 1-6)

SPFJP Volume (m3)

Year	General Forest	MCFH	DWA	Buffers	Prot Areas	Total
2002	412474	8334	3012	0	0	423820
2003	362640	5714	19199	298	0	387851
2004	265290	6853	24663	0	0	296806
2005	285778	14549	51563	9851	0	361741
2006	285778	14550	51563	9851	0	361742
Total	1611960	50000	150000	20000	0	1831960
AAC (Sch F)	337000	10000	30000	4000	0	381000
Per TOT	1685000	50000	150000	20000	0	1905000
Perf Criteria	95.7%					96.2%

Indicator

1

3

HARDWOOD Volume (m3)

Year	General Forest	MCFH	DWA	Buffers	Prot Areas	Total
2002	27296	256	201	0	0	27753
2003	24576	381	1280	20	0	26257
2004	17686	457	644	0	0	18787
2005	22052	970	3438	0	0	26460
2006	19632	970	3438	657	0	24697
Total	111242	3034	9001	677	0	123954
AAC (Sch F)	22467	667	2000	267	0	25401
Per TOT	112335	3335	10000	1335	0	127005
Perf Criteria	99.0%					97.6%

Indicator

2

4

Indicator 5: COMMERCIAL THIN AREA

Year	General Forest CT Area (ha)
2002	552
2003	861
2004	527
2005	634
2006	701
Total (actual)	3275
Mgt Plan Tot	3475
Perf Criteria	94.2%

Indicator 6: NON_CLEARCUT AREA

Year	General Forest Non-CC Area (ha)
2002	2245
2003	1972
2004	2133
2005	1625
2006	1700
Total (actual)	9675
Mgt Plan Tot	10875
Perf Criteria	89.0%

Note: Non-clearcut area is determined by subtracting the total area clearcut from the total harvest area.

APPENDIX 2

Sample tables and calculations to track Silviculture (Indicators 7-9)

Indicator 7: SOFTWOOD PLANTING

Year Planted	Planting Area Implemented	Planting Target
2002-2003		
2003-2004		
2004-2005		
2005-2006		
2006-2007		
Total	a)	b)
Measure of Success = $a \div b \times 100 = \text{_____}\%$ Successful Performance = $\geq 95\%$		
<u>NOTE:</u> <ul style="list-style-type: none"> • Applies to planting conducted in the general forest • Analysis uses the results from the year-end reconciliation process • Evaluation period April 1, 2002 to March 31, 2007 		

Indicator 8: PRE-COMMERCIAL THINNING

Year Thinned	Pre-commercial Thinning Area Implemented	Pre-commercial Thinning Target
2002-2003		
2003-2004		
2004-2005		
2005-2006		
2006-2007		
Total	a)	b)
Measure of Success = $a \div b \times 100 = \text{_____}\%$ Successful Performance = $\geq 95\%$		
<u>NOTE:</u> <ul style="list-style-type: none"> • Applies to pre-commercial thinning conducted in the general forest • Analysis uses the results from the year-end reconciliation process 		

- Evaluation period April 1, 2002 to March 31, 2007

Indicator 9: REMEDIAL TREATMENT

Year of Plantation Establishment	Actual Area Planted ¹ (ha)	Actual Area Surveyed ² (ha)	Plantation Area Requiring Treatment (ha)				Area (ha) Treated to Standard ³
			Stocking		Density		
			5 th -year	10 th -year	10 th -year	10 th -year delayed ⁴	
1987							
1988							
1989							
1990							
1991							
1992							
1993							
1994							
1995							
1996							
1997							
1998							
1999							
2000							
2001							
Total	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>		<i>F</i>

The percent of area requiring remedial treatment that was actually completed is calculated by the following formula.

$$\text{Measure of success} = (F \div ((A - B) + C + D + E)) \times 100$$

Successful measure $\geq 95\%$.

¹ Total License Annual Report area (ha) of general forest, non-roadside plantations (full and fill) created in each year (treatment codes BF, BP, AF, AP, XF, or XP).

² Total area (ha) of general forest, non-roadside plantations (full and fill) reported annually in the 5th or 10th-year reports (treatment codes BF, BP, AF, AP, XF, or XP).

³ All area in this column must have been treated after the survey indicating its failure and before September 30, 2007 and come from plantations with treatment codes RF or RP.

⁴ This column contains a summary of area where assessment and/or treatment will be delayed until the next 5 year period because of inadequate height.

APPENDIX 3

Sample tables and calculations for tracking Biodiversity (Indicators 10 & 11)

The period for evaluation of these indicators is April 1, 2004 to March 31, 2007. Both the Vegetation Community and Wildlife Habitat Type Indicators are measured as the area associated with the License-specific objectives achieved at the end of the period (that will be determined from the updated GIS-based inventory) expressed as a ratio of the objective levels for each License-specific Vegetation Community and Wildlife Habitat Type defined in the Vision document and updated to April 1, 2004.

HOW IS IT MEASURED?

1. Use the 2002 Management Plan cover that records the Vegetation Community and Wildlife Habitat Type for each of the forest stands on the Licence.
2. Intersect the above cover with the forest inventory updated for the 2006-07 operating year. Harvest treatments intersected would include all clearcuts.
3. From the above intersection, record in a table the area for each Vegetation Community and Wildlife Habitat Type at the end of the 2002-07 period (see sample table below for Vegetation Community analysis).
4. Compare the above area with the lesser of:
 - (i) the level from the Vision document; OR,
 - (ii) the projected level at the end of period 1.

The area for each Vegetation Community and Wildlife Habitat Type, (from Step 3 above), must be at least 95% of the objective from Step 4.

Sample table of Vegetation Community analysis. A similar table would be developed for Wildlife Habitat Type analysis.

VegComm/ Ecoregion	Objective	Current Area	CC Area *	CT Area	Patch Cut Area	Selection Cut Area	Shelterwood Area	Strip Cut Area	Net Area (current area - cc area)
BF 1	8660	34962	354		1.73				34608
BF 3	1970	3848	76				6		3773
BF 5	310	232	0						232
BS 1	4160	30842	254		5				30588
BS 5	390	1711	49						1662
BS 6	4520	22476	550		6.64	4		2	21926
CE 3	750	233	0						233
CE 5	430	1827	7			1			1820
JP 1	1000	3320	58						3262
PI 3	50	0	0						0
PI 5	50	0	0						0
PI 6	130	7	3						4
SP 1	3920	2907	0		4				2907
SP 3	5260	18478	358		2.09	1	15		18120
SP 5	1280	7476	186			38	7	1	7290
SP 6	1990	1188	3						1185
THP 3	820	2117	17		4	43	27		2100
THP 5	920	3041	10			7			3031
THSW 3	980	2468	47			10		16	2421
THSW 5	660	2432	23		3	13			2409
THSW 6	800	911	15			7		3	896

*Based on the 2002 approved model, only clear-cut treatments will remove a stand from a vegetative community state. Stands treated through any partial harvest results in the stand remaining a vegetative community.

Shaded rows are those Vegetative Communities that are below the objective levels.

Appendix 4

Sample calculations for Working Near Water (Indicators 12-14)

Indicator 12: Watercourse buffer zones

Formula: $1 - (a \div b)$

where: a = the number of harvest blocks that incurred one or more penalties for *failure to maintain a buffer zone appropriate for the approved objective(s)*. (Penalty 37)

b = the total number of approved harvest blocks that were treated between April 1, 2002 and March 31, 2007.

Performance threshold: ≥ 0.90

Indicator 13: Machine use in and adjacent to watercourses.

Formula: $1 - (a \div b)$

where: a = the number of harvest blocks that incurred one or more penalties for *unauthorized machine operation in or adjacent to a watercourse* or wetland. (Penalties 17 & 18)

b = the total number of approved harvest blocks that were treated between April 1, 2002 and March 31, 2007.

Performance threshold: ≥ 0.90

Indicator 14: Watercourse crossings

Formula: $1 - (a \div b)$

where: a = the number of crossings that incurred one or more penalties for *improperly installed watercourse crossing*. (Penalties 23, 24, 25, 26, 27, 30, 31)

b = the total number of watercourse crossings installed between April 1, 2002 and March 31, 2007.

Performance threshold: ≥ 0.95

Appendix 5

Performance Related Penalties Associated With Watercourse Crossings

- a) Unauthorized travel through watercourse with vehicle/equipment in relation to crossing construction.
 - b) Excessive bulldozing, excavation, fording, or machine operation in a watercourse during crossing construction, road construction, or yarding.
 - c) Unauthorized grubbing of ground vegetation on a road right of way within 30 meters of watercourse > 0.5 meters in width.
 - d) Grubbing of ground vegetation on road right of way within 10 meters of a watercourse < 0.5 meters in width.
 - e) Installed watercourse crossing (culvert, bridge) smaller in size than that specified in operating plan.
 - f) Unauthorized installation of watercourse crossing between Oct 1st and May 30th..
 - g) Improperly installed watercourse crossing
 - a. crossing not properly stabilized (Appendix 10 FMM),
 - b. installed watercourse crossing (culvert, bridge) smaller in size than specified in Operating Plan
 - c. culvert length inadequate to prevent steep slopes in excess of 2:1 (H:V),
 - d. culvert slope exceeds 0.5% without approved fish passage measures incorporated
 - e. culvert must be imbedded 15 cm in streambed.
-

Appendix 6

Sample calculations for Deer Wintering Area Management (Indicators 15-17)

Indicator 15: 1st-Time DWA Management Plans

Formula: $a \div b$

where: a = the total hectares of DWA for which 1st-Time DWA Management Plans were submitted to standard during the period.

b = the total hectares of DWA identified in the 2002 Forest Management Plan for 1st-Time DWA Management Plan development.

Performance threshold: ≥ 0.75

Indicator 16: Follow-up DWA Management Plans

Formula: $a \div b$

where: a = the total hectares of DWA for which Follow-up DWA Management Plans were submitted to standard during the period.

b = the total hectares of DWA identified in the 2002 Forest Management Plan for Follow-up DWA Management Plan development.

Performance threshold: ≥ 0.90

Indicator 17: Habitat Status in DWA and OSFH areas

Formula: $1 - (a \div b)$

where: a = the number of harvest blocks in DWA and OSFH that incurred a penalty for *failure to comply with the approved pre/post treatment habitat status*. (Penalty 38)

b = the total number of approved harvest blocks in DWA and OSFH areas that were treated between April 1, 2002 and March 31, 2007.

Performance threshold: ≥ 0.90

Appendix 7

Minimum Standards for 2007 Forest Management Plans (Indicators 18-20)

In the Management Plan, the Licensee must demonstrate an ability to:

- i) incorporate management objectives as defined in the 2004 version of the Vision document;
- ii) design and develop an appropriate spatial management strategy.

Specifically, minimum standards for management plan preparation are defined as follows:

i) Quality of resource information: the most up to date version of the forest inventory for the Licence must be used. This includes, but is not limited to, updated inventory for silviculture (planting & spacing) and disturbance (harvest, fire, major windthrow, etc.). It also includes assurance that existing treatments are correctly aged and that aging is reflected in the wood supply model.

ii) Management aspects addressed: a thorough analysis of resource issues and management alternatives will be incorporated in the management plan and will include:

- Partial harvest and uneven-aged management regimes for appropriate hardwood and softwood stand types.
- Hardwood and softwood supply challenges and opportunities.
- Product quality in terms of average tree size.
- Specific strategies for management and maintenance of Deer Wintering Areas, Old Spruce Fir Habitat, vegetation Communities and Wildlife Habitat.
- Presentation of management alternatives (including a standardized base-line run) and justification of chosen strategies.

iii) Analysis methodology: the foundation for the management plan analysis rests on 4 key elements:

- Stand Level Forecasting: models designed by the NB Growth 7 Yield Unit will
-

form the basis of stand level forecasts.

- Forest Characterization: will be performed in consideration of biological (stand condition) and physical (location and availability) attributes.
- Forest Level Forecasts: will be made using DNR approved models.
- Management Design: Licensees must examine a wide array of management alternatives and to clearly reveal the implications of each alternative in terms of important forest level outputs.

iv) Content and presentation format: the management plan will include all of the elements as described in the "Management Plan Format" section of the Vision document.
