May 6, 2016

Medway District Forest Management Plan

NOVA SCOTIA

Medway District
Forest Management Plan

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TABLE OF CONTENTS

Page

List of Figures 3

List of Tables 4

List of Appendices 4

1.0 Introduction 5

2.0 Management Objectives, Strategies, and Indicators 15

3.0 Predictable Influence of Pests, Pathogens, and Non-commercial Species 42

4.0 Access and Harvest Schedules 42

5.0 Monitoring Forest Changes and Assessing Environmental and Social Impact 43

6.0 Management Plan Revision 44

7.0 Forest Worker Training 44

Glossary of Terms and Abbreviations 45

References 49

LIST OF FIGURES

Page

Figure 1. Medway District 7

Figure 2. Ecodistricts 9

Figure 3. Natural disturbance regimes 10

Figure 4. Forest community type.....11

Figure 5. Forest cover type distribution 12

Figure 6. Current age class distribution by management status 13

Figure 7. Land capability class distribution.....14

Figure 8. Conceptual plan for the Western Crown Land.....15

Figure 9. Increase in late seral stage forest planned as a result of harvest 18

Figure 10.Longer-term objectives for increase late seral stage forest 19

Figure 11.Objective for increasing multi-aged and old growth forest that will occur as a result of harvest and silviculture prescriptions over a 100-year time horizon.....19

Figure 12.Yield curve for plantations established on various site classes compared to the natural spruce yield curves for those sites 26

Figure 13.Habitat suitability for common nighthawk 33

Figure 14.Habitat suitability for golden-crowned kinglet.....34

Figure 15. Habitat Suitability for American marten 34

LIST OF TABLES

Table 1. Average annual harvest from Medway District 2013-2037 24

Table 2. Area harvested by harvest method and area of silviculture treatment (Yearly Average).....25

Table 3. Herbicide use in Medway District 32

LIST OF APPENDICES

Appendix I – Medway District cabin leases.

Appendix II – Mersey woodlands forestry policy

Appendix III – Medway District landscape zones

Appendix IV – Plantations and non-native species plantations

Appendix V – Species at Risk that may occur in Medway District

Appendix VI – Unique areas program

Appendix VII – Socio-economic data and analysis

Appendix VIII – Medway Community Forest

1. Introduction

Medway District is part of the former Bowater Mersey Paper Company lands, referred to as the "Mersey Woodlands", purchased by the Province of Nova Scotia from Resolute Forest Products in 2012. Sustainable Forestry Initiative (SFI) certification is in place and is being maintained by the Nova Scotia Department of Natura Resources (NSDNR). SFI certificate - CERT.0065792 were transferred to NSDNR by SAI Global following successful audits in 2013.

NSDNR is committed to sustainable forest management through the implementation of the Nova Scotia Forestry Code of Practice and through maintaining the commitment of forest certification that preexisted on the Mersey Woodlands. The Medway District is managed to meet the requirements of the SFI Principles for Sustainable Forestry, and although discontinued, the Medway District was certified to the Forest Stewardship Council (FSC) standard until February 2016. The Management plan and HCV report will continue to be implemented.
This Medway Forest Management Plan is based on a 100-year projection of forest development given the current forest condition (2000-2005 aerial photograph interpreted forest inventory updated to account for harvest and silviculture activity to 2012), anticipated forest growth, and management interventions planned over that period.

The sustainable harvest level has been calculated for the full 100-year time horizon; however, details on harvest and silviculture levels and prescription listed in the Plan cover the first 25 years beginning in 2013. The Plan will be updated every five years.

The Province of Nova Scotia is committed to establishing a Community Forest Pilot Project on a portion of Medway District. NSDNR has a formal agreement with the Medway Community Forest Cooperative for management responsibility of specified lands including the ability to create a separate forest management plan. Forest Management Activities on Community Forest lands will meet the requirements of the Medway District Management Plan until a separate plan, meeting the requirements of the agreement, has been created.

Land leased to cabin owners are excluded from the scope of forest management certification. A map showing the location of cabin leases in Medway District is included in Appendix I.

1.1 Vision

This Medway District Management Plan has been developed to reflect the new approach to managing natural resources described in *The Path We Share, A Natural Resources Strategy for Nova Scotia*, which includes:

- Nova Scotia is rich in natural resources including biodiversity, forests, geological resources, cultural values and provincial parks.
- Individuals and groups interested in our natural resources work together with government to manage these resources wisely.
- All Nova Scotians benefit from the natural health and wealth of the province.

Medway District is a healthy, productive forest rich in timber, ecological and social values including cultural values. Our objective in developing this forest management plan is to take full advantage of these attributes for benefit of present and future generations through a management process that achieves sustainability, transparency, diversity, collaboration and informed decision making.

1.2 Mersey Woodlands Forest Policy

The Mersey Woodlands Forest Policy (Appendix II) documents commitments being made by the NSDNR regarding forest management activities on the Mersey Woodlands. These commitments will guide the development of the Forest Management Plan and will be communicated to all staff, license/agreement holders and contractors working on these lands.

1.3 Ownership and Management

Medway District consists of approximately 92,130 hectares of forest land owned by the Province of Nova Scotia in Annapolis, Lunenburg, and Queens Counties of western Nova Scotia (Figure 1). It is part of the Acadian Forest Region described as a transitional forest between the Boreal and Great Lakes – St. Lawrence Forest Regions, characterized by shade-tolerant softwood forests of red spruce, eastern hemlock, and white pine and shade-tolerant hardwood forests of sugar maple, beech, and yellow birch.

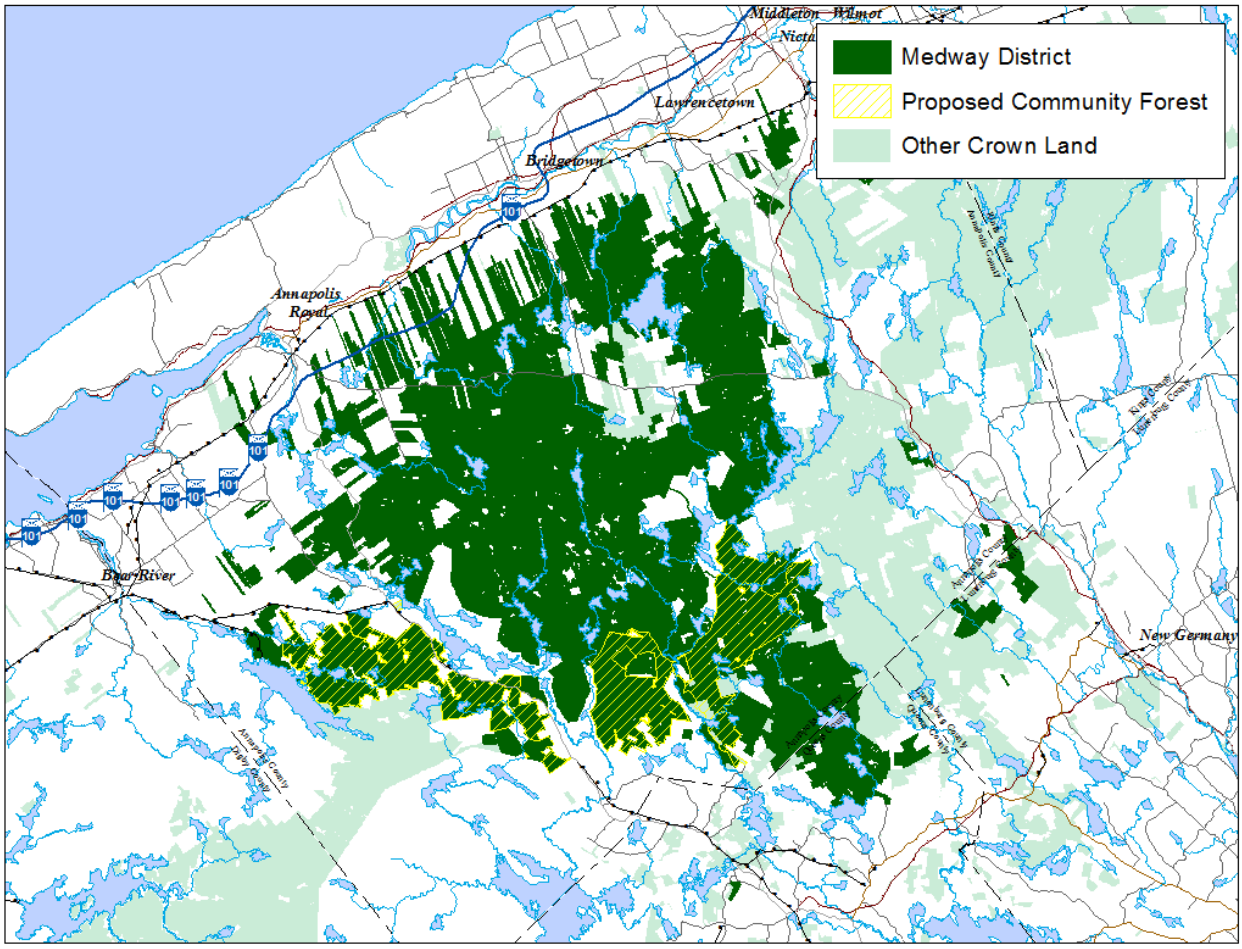


Figure 1. Medway District.

1.4 Ecological Land Classification

The Medway District lies within Nova Scotia's Western Ecoregion. Most of the Medway Lands are within the South Mountain Ecodistrict with a small amount at the north end being in the Valley Slope Ecodistrict and at the south end in the Lahave Drumlins Ecodistrict (Figure 2). The South Mountain, Valley Slope and Lahave Drumlins Ecodistricts is described in DNR Report 2003-2 "Ecological Land Classification for Nova Scotia" as follows:

> South Mountain Ecodistrict:
> Land is underlain by granite and reaches a maximum elevation of approximately 250 metres above sea level. The predominant soils are well-drained sandy loams that have developed on granite till. For the most part the soils are shallow, stony, and dry. Furthermore the landscape is dotted with large granite boulders which restrict operability and in some cases limit stocking levels within forest stands.

The climate consists of warm early springs and warm dry summers, which when combined with coarse textured shallow soils, creates periods in the growing season where moisture deficits can be significant. Winters are moderately mild, however, snow accumulation will occur at higher elevation within this Ecodistrict.

Fire has played a dominant role in shaping the forests of this Ecodistrict and fire species such as white pine, red pine, and red oak occur on sites where the soils are well drained, as would be found on upper slopes and ridges.

Valley Slope Ecodistrict:

Includes a series of hills and slopes with northwesterly aspect. Climate is influenced by the westerly exposure creating a warm climate. This area is far enough inland that the cold waters from the Bay of Fundy do not impact local climate, these slopes have been used extensively for apple orchards and mixed farming. Soils are underlain with Devonian granite. Soils on this parent material tend to be coarse to moderately coarse, well drained, and commonly gravelly with surface stones limiting both operability and tree stocking levels.

On upper slopes of the well-drained areas of the Ecosection there are tolerant hardwood hills comprised of sugar maple, beech, and yellow birch with scattered white pine. Further down the slope and in shaded ravines, hemlock and red spruce are found. On moist soils, the climax forest is comprised of tolerant softwoods, including red spruce, hemlock, white pine, and balsam fir.

LaHave Drumlins Ecodistrict:

Shallow, stony till derived from the underlying slates dominate this Ecodistrict. Most of the soils can be characterized as well-drained, shallow, sandy loams except those developed on drumlins, which tend to be deeper and less stony. In the eastern portion of the Ecodistrict the soils tend to be moderately well-drained, shallow, stony, gravelly sandy clay loams which are deeper and less stony conditions of the drumlins. Variation do occur in the drumlin fields near New Ross where a reddish, moderately fine-textured till overlies the granite bedrock and is stony and shallow. Much of the area between the drumlins tends to be shallow, imperfectly drained till with slate bedrock just below the surface. The terrain is considered hummocky with poorly drained soils in the depressions.

This Ecodistrict is dominated by coniferous forests, but tolerant hardwoods will be found on the tops of drumlins and on the upper slopes of well-drained hills. Sugar maple, red oak and beech are also found on the valley floors of the major waterways. Hemlock, red spruce and white pine will be found on the side slopes of the drumlins and on the moist soils of lower slopes. Large areas of imperfectly drained soils occupy the areas between drumlins and, in most cases, forests of black spruce with white pine are dominant. After disturbance, balsam fir is an early component of the coniferous forest in this Ecodistrict.

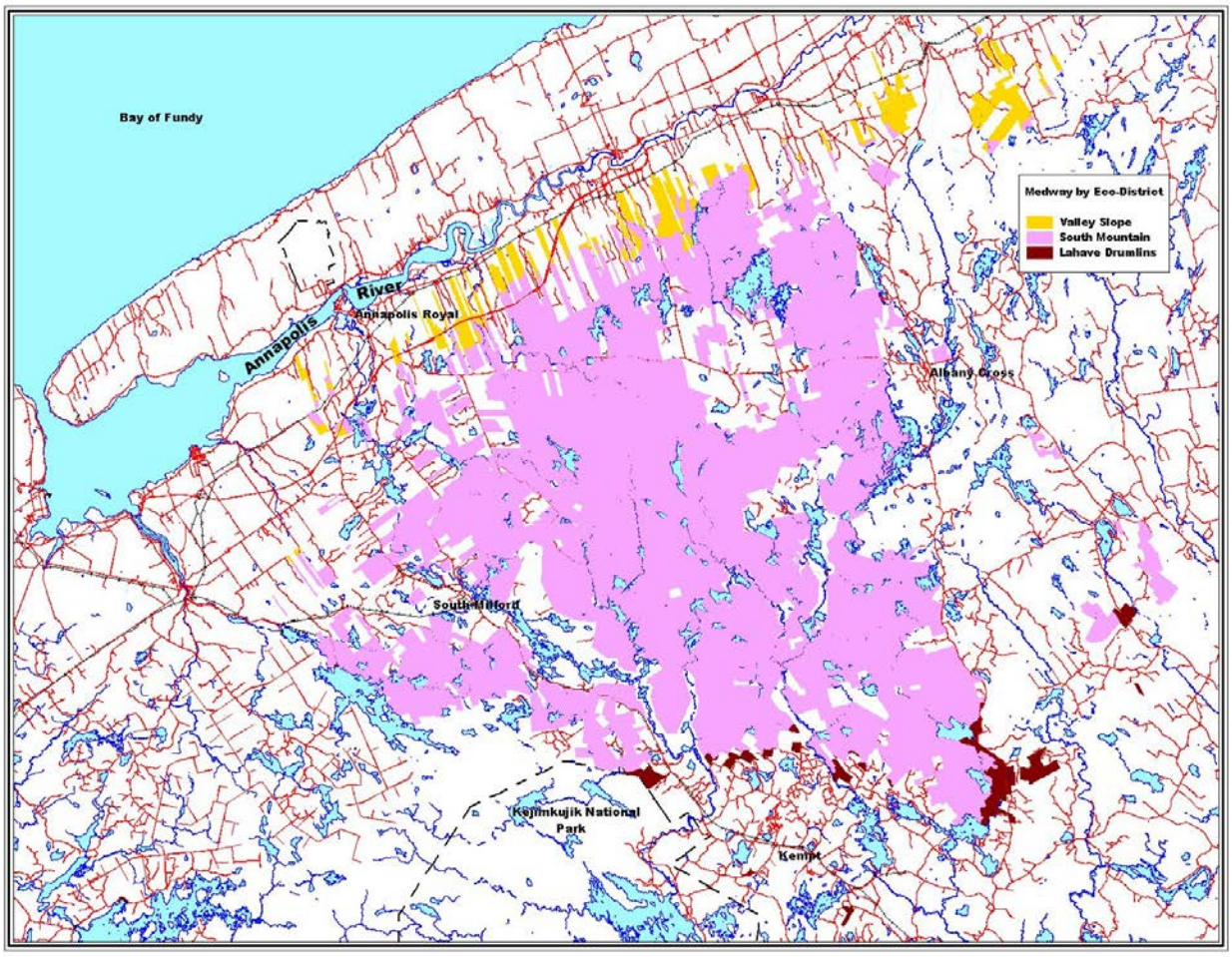


Figure 2. Ecodistricts.

1.5 Natural Disturbance Regimes

Forests are dynamic and understanding the landscapes natural disturbance patterns guide management of the forest to reflect natural conditions. Natural disturbance regimes have been predicted for the forest areas of the Province by NSDNR. Climax forest types for various areas are known using permanent sample plot (PSP) data, old forest research data, historical accounts of forest conditions and recorded natural disturbance across the Province. These climax forest types contribute to the understanding of the natural disturbance regimes which are categorized as either frequent stand initiating, infrequent stand initiating, or Gap dynamic replacement.

Frequent stand initiating is defined a disturbance when the intensity results in the rapid mortality of all or most of the existing forest stand to the extent that a new forest of relatively even-age is able to become established and dominate the site.

Infrequent stand initiating disturbance regime describes a forest disturbance events when the time interval between stand initiating events is typically less frequent than the longevity of the climax species that would occupy the site. This creates an uneven-aged or multi-cohort forest stand condition.

Gap dynamic disturbance regime describe a forest disturbance event that are at a small scale which could include mortality of individual trees. This creates gaps or openings in the canopy that provides opportunity for shade tolerant species to regenerate.

A complete description of the methodology used in determining natural disturbance regimes can be found in the NSDNR report *Mapping Nova Scotia's Natural Disturbance Regimes* (2008).

Natural disturbance regimes associated with Medway District are shown in Figure 3.

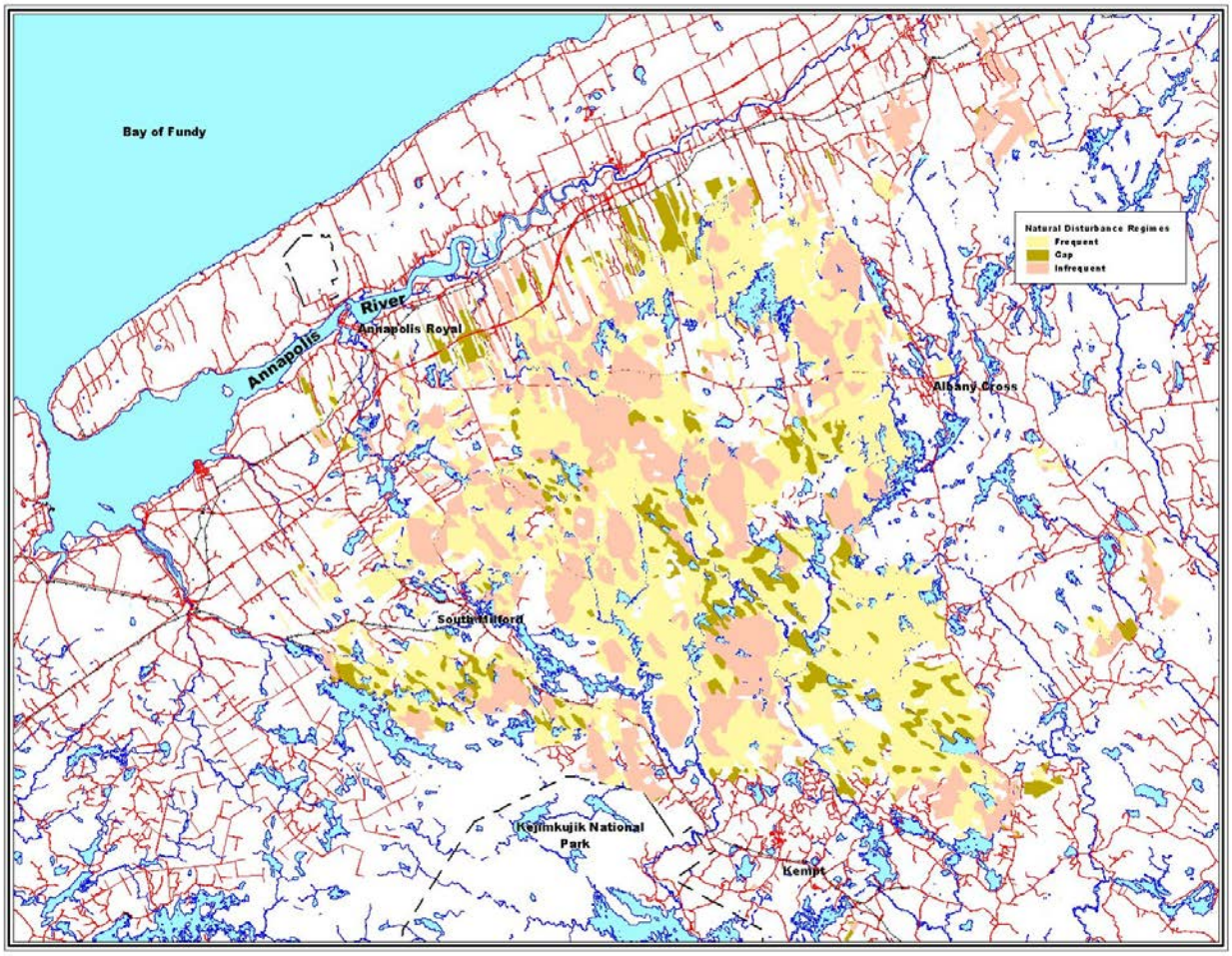
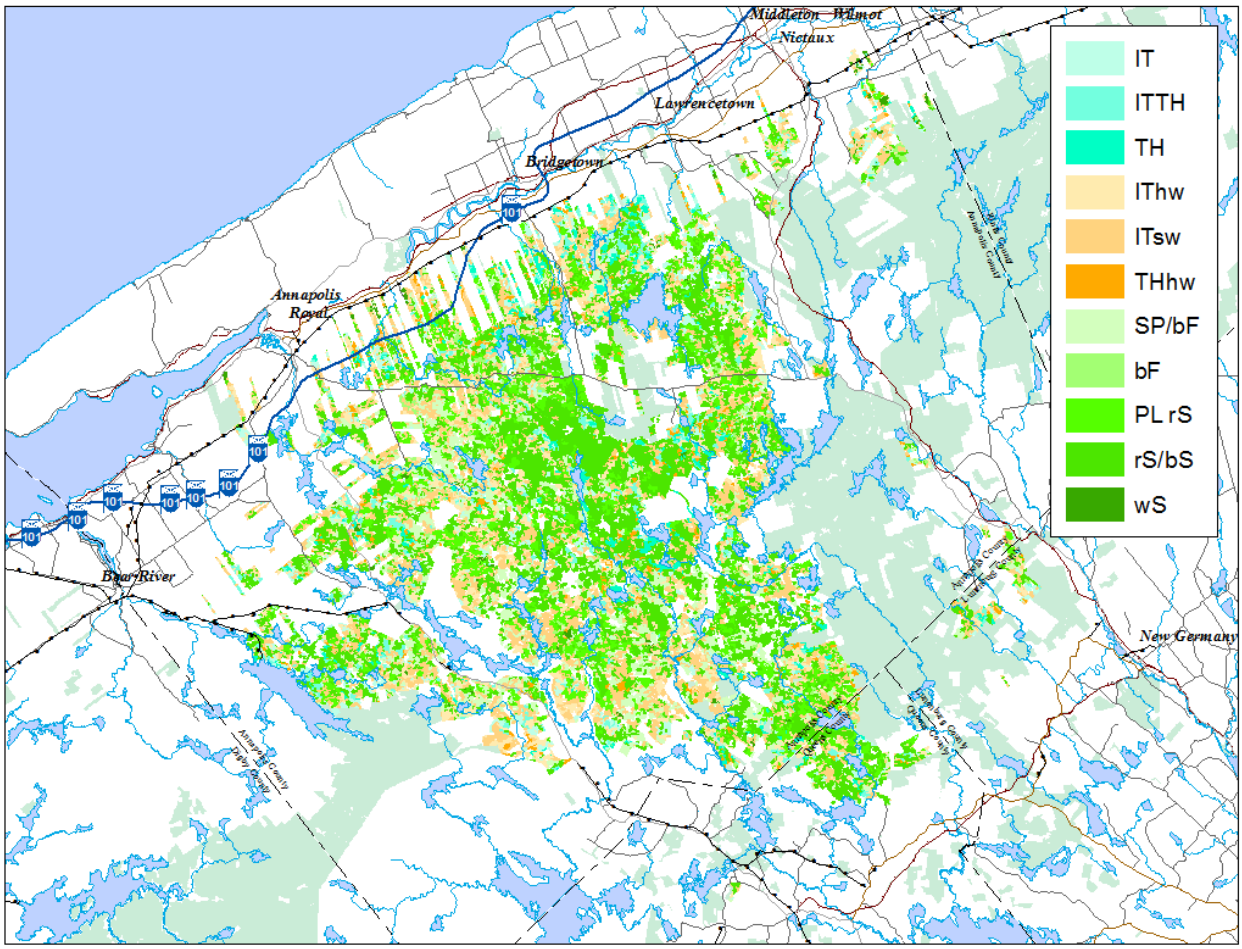


Figure 3. Natural disturbance regimes.

1.6 Forest Inventory

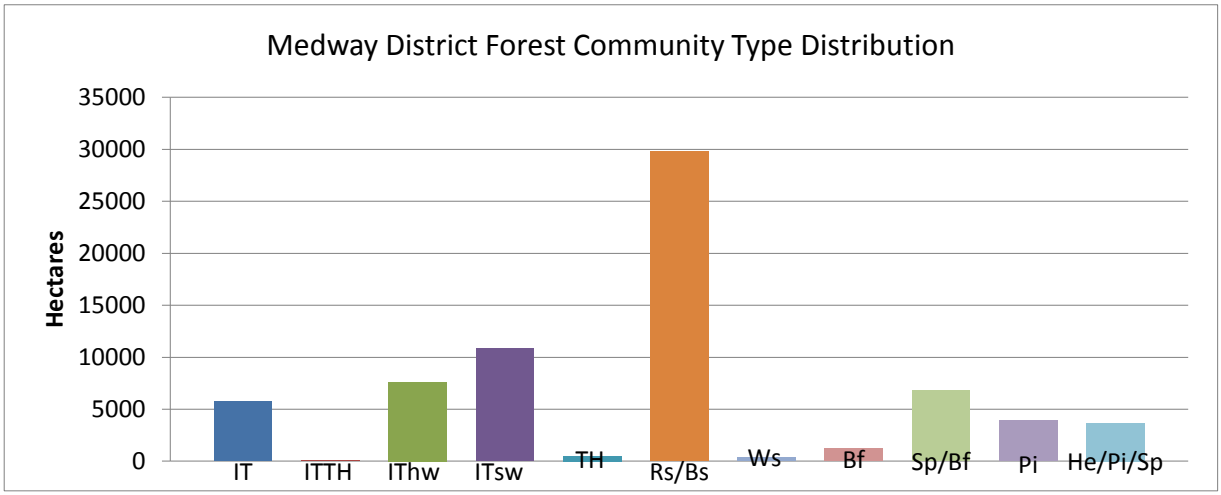
Detailed forest inventory information based on 2000-2005 aerial photograph interpretation is contained within a geographic information system (GIS). Forest stand information in inventory data include species composition, height, age, stocking, site index, and past silviculture and harvest treatments. Forest inventory data has been updated to include forest harvesting and silviculture activities up to 2012.

The dominant forest cover in the Medway District is softwood. Softwood stands are generally comprised of varying proportions of red and black spruce, balsam fir, and white pine with eastern hemlock and intolerant hardwood being less common. Past silviculture treatments favoured red and black spruce, white pine, and eastern hemlock; regardless, a variety of species are typically found in managed stands. A map showing the spatial distribution of the forest community types is shown in Figure 4. The area of each forest community type is shown in Figure 5.



IT: Intolerant Hardwood, ITTH: Intolerant and Tolerant Hardwood, IThw: Intolerant Hardwood/ Hardwood Leading, ITsw: Intolerant Hardwood/ Softwood Leading, TH: Tolerant Hardwood, Rs/Bs: Red/ Black Spruce Dominant, WS: White Spruce Dominant, Bf: Balsam Fire Dominant, PLrs: Planted red spruce, Sp/Bf: Spruce/Fir Dominant, Pi: Pine Dominant, He/Pi/Sp: Mixed Hemlock/ Pine / Spruce

Figure 4. Forest community types.

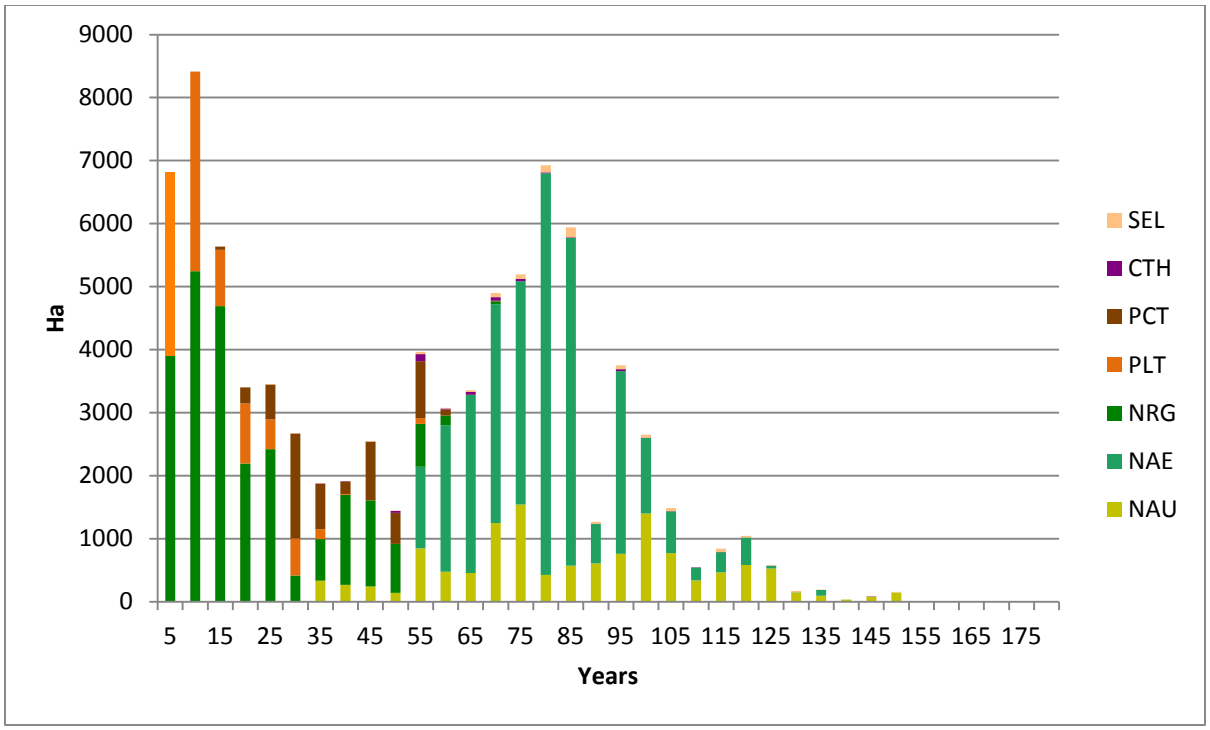


IT: Intolerant Hardwood, ITTH: Intolerant and Tolerant Hardwood, IThw: Intolerant Hardwood/ Hardwood Leading, ITsw: Intolerant Hardwood/ Softwood Leading, TH: Tolerant Hardwood, Rs/Bs: Red/ Black Spruce Dominant, WS: White Spruce Dominant, Bf: Balsam Fire Dominant, Sp/Bf: Spruce/Fir Dominant, Pi: Pine Dominant, He/Pi/Sp: Mixed Hemlock/ Pine / Spruce

Figure 5. Forest cover type distribution.

The current 5 year age class distribution of the forest in Medway District is dominated with red and black spruce forest types (Figure 6). Every stand is assigned a specific age class for inventory and wood supply forecasting purposes, but many of these stands have trees of several age classes and are considered uneven-aged.

Past silviculture and harvesting treatments and natural disturbance patterns shape the age class distribution of the forest. Since 1980 approximately 9,300 hectares have been planted and 5,900 hectares have been pre-commercially thinned in Medway District. Partial harvest methods became more common in the past 15 years with approximately 400 ha of commercial thinning and 800 ha selection harvesting completed over that period.



SEL: Selection Harvest, CTH: Commercial Thinning, PCT: Precommercial Thinning, PLT: Planted, NRG: Natural Regeneration, NAE: Natural Unmanaged Even-age, NAU: Natural Unmanaged All-age

Figure 6. Current age class distribution by management status.

Land Capability (LC) represents site productivity, and is an indication of maximum volume or wood that could be produced under natural conditions on a site per year. It is expressed in m3/ha/year and will vary depending on tree species. LC is influenced by site conditions such as soil type, water drainage, geology, slope position, and climate. The higher the LC value the more productive or capable the site is to grow wood. The LC of a site is defined and used to model forest change overtime and contributes to estimating the sustainable harvest levels.

Another indicator used to determine sustainable harvest levels is mean annual increment (MAI), which is average growth per year of a tree or group of trees of a specific age. It is also expressed as m3/ha/year. The MAI of a stand is influenced by silviculture treatments such as pre-commercial thinning and weeding.

LC class is to be applied to fully stocked, even-aged forest stands that have had no management intervention. Stands that are density controlled, by either pre-commercial thinning or planting treatments for example, would expect to yield a higher MAI than the LC would indicate. Stands that encounter early suppression or lower than full stocking would result in lower MAI's than predicted. Together the LC value and MAI value of a stand contributes to determining sustainable harvest levels.

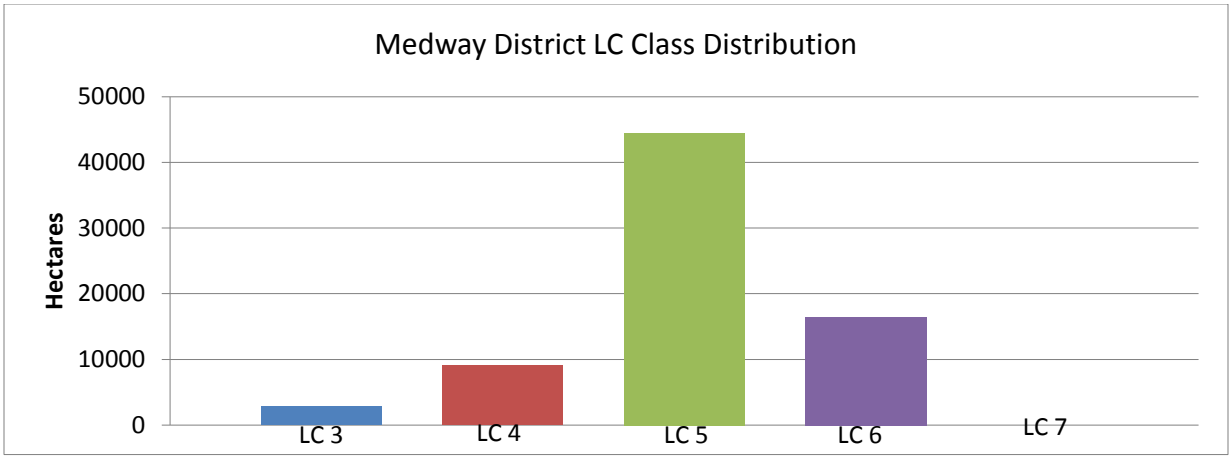


Figure 7. Land capability class distribution

1.7 History of Ownership and Management

The Mi'kmaq of Nova Scotia advise that they have sustainably used these lands in accordance to the philosophy of Netukulimk to support their people for centuries. In most recent history, the Medway District were previously owned by Bowater Mersey Paper Company Ltd. (BMPC) and were purchased by the Province of Nova Scotia in December 2012. BMPC managed forest lands in western Nova Scotia since the mid-1920s. BMPC purchased land over time and from a number of sources. The most active era for land purchases came between 1929 and 1941 with acquisitions of over 158,000 hectares from J.L. Miller, A.A. Miller, Lewis Miller and Company Limited, Macleod Pulp and Paper Company, Barnjum Forest Foundation, and Annapolis Lumber. In 1968, approximately 24,000 hectares were purchased in Annapolis County from Hollingsworth and Whitney. Much of the current Medway District would have been obtained by BMPC through these purchases.

BMPC's forest management activity in Medway District began in West Dalhousie in 1945. In 1948, logging and road construction began in the southern end of the district and intensified in 1954 in efforts to salvage an extensive area of mature timber blown down during Hurricane Edna.

Current forest conditions indicate that a combination of clearcutting and selective harvesting was used in the early days of logging in Medway District.

Through the 1960s and 1970s as skidders replaced horses, manual felling, delimbing, and skidder operations were the normal means of harvest. This evolved into manual felling, skidding, and mechanical delimbing at roadside through the late 1970s until the mid-1990s when mechanized shortwood harvest systems were introduced.

2. Management Objectives, Strategies and Indicators

The Nova Scotia Code of Forest Practice establishes principles for conducting forest management activities that are mandatory on all Provincial Crown land and provide the framework for objectives and strategies in this Forest Management Plan.

The objectives and strategies align with the requirements of the Forest Stewardship Council Maritime Standard and the Sustainable Forestry Initiative Standards.

Western Crown Land Planning Units

Following the purchase of the Bowater Mersey Woodlands by the Province of Nova Scotia in 2012, NSDNR engaged the public to help develop a plan for the newly acquired public land. The process was known as the Western Crown Land Planning process and it included various public open houses and on-line submission process.

In March 2014, DNR released the conceptual plan for the Western Nova Scotia Crown land. The conceptual plan took into consideration the input and comments received during the consultation process held throughout 2013. The updated Western Crown Land Plan is based on input from hundreds of Nova Scotians.

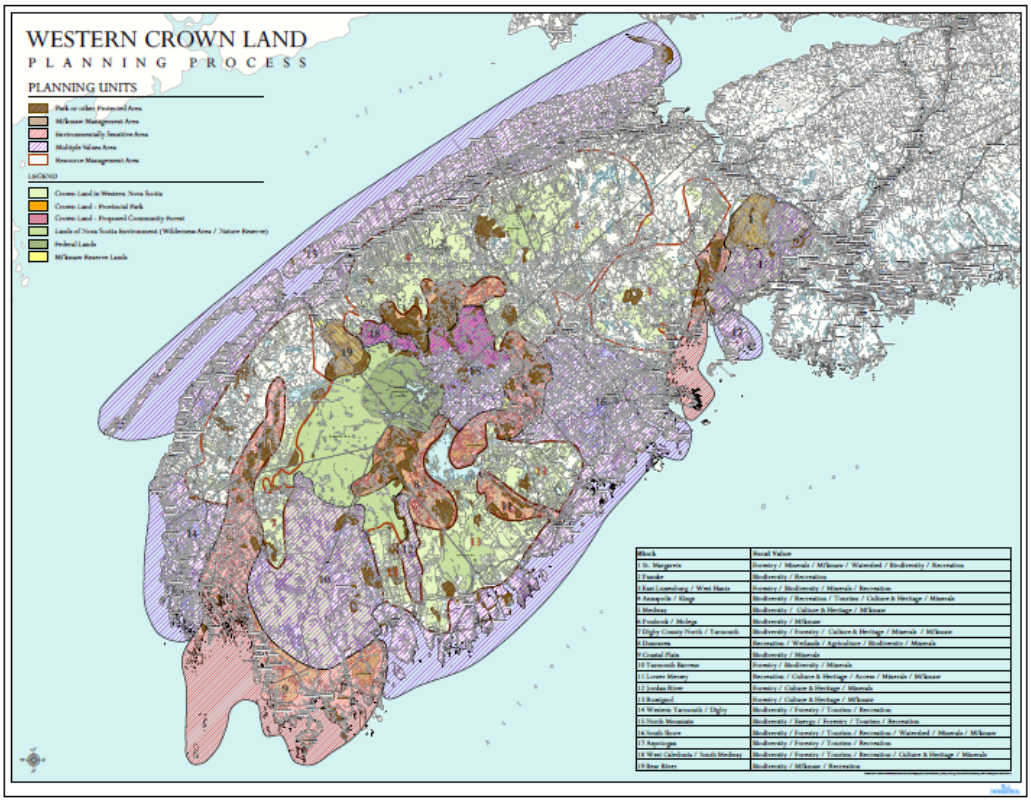


Figure 8. Conceptual plan for the Western Crown land.

A result of the Western Crown Land planning process was a map identifying various planning units. These planning units include Parks and other Protected Areas, Mi'kmaw Management areas, Environmentally Sensitive Areas (ESA), Multiple Value Areas and Resource Management Areas (Figure 8).

The Medway District includes Parks and Protected Areas planning units, ESA and Resource Management Areas. Detailed management strategies for all the planning units have not been completed at this time. However, there are Interim management strategies for the ESA areas, which will become final management strategies by August 2015.

The plan also calls for the province to explore opportunities for a Mi'kmaq forestry initiative with the Assembly of Nova Scotia Mi'kmaq Chiefs.

Mi'kmaq Engagement

The Medway District Forest Management Plan has been provided to the Mi'kmaq for their review. Feedback was received and various suggestions have been included in this document while others will need further discussions between DNR and the Assembly.

Stakeholder Engagement

The Medway District Forest Management Plan has been provided to the members of the Nova Scotia Native Council, Mersey Woodlands Advisory Committee, Mersey Tobeatic Research Institute, and Ecology Action Centre for their review. Various comments were received and considered in the development of this management plan. This document will be available on-line for further public review.

Management Objectives and Strategies

Objective 1. Forest management practices will be designed and conducted to conserve and enhance the health and natural diversity of Nova Scotia's forest ecosystems.

Landscape Level Strategy:

- Current condition of forest community groups in the Medway District has been compared to the natural condition for the South Mountain Ecodistrict to determine a landscape level strategy for restoring the range of local natural variability. Comparison of current versus natural conditions and explanation of restoration strategies is documented in "Management Strategies for the Medway District to Restore Features of the Acadian Forest Based on Natural Disturbance Regimes" (Bowater 2012).

- Three levels of management intensity were used in developing the Ecological Landscape Zones in Medway District to sustain the natural ecological functions including:
    - Forest conservation reserves: designated, and proposed, protected areas where no forest management activity will occur.
    - Extensively management forest: lands managed for multiple values using ecosystem based techniques that conserve biodiversity and natural ecosystem conditions and processes.
    - Intensively managed forest: lands managed to optimize resource production from sites but maintained in a forested state

  A map of showing the location of Medway District landscape management zones is included in Appendix III.

  Where extensively and intensively managed forest intersect conservation planning units, identified in " A Conceptual Plan for Western Nova Scotia", resource management activities will align with conservation requirements such as specific project locations, levels of activity and seasonal restrictions.

- The DNR Old Forest Policy to identify old growth and the best old forest restoration opportunities on at least eight percent of publicly owned forest land in each of the province's 38 forested ecodistricts will be considered in identifying old forest reserves in Medway District.

- Harvest and silviculture prescriptions in the extensive management zone will be guided by the objective to sustain ecological functions in various ecodistricts and ecosections they intersect.

- Offsite and exotic tree species will not be used for reforestation and stand conversion in the extensive and conservation zones. Future management interventions will be designed to eliminate offsite and exotic tree species where they currently exist in these zones.

- Intensive management zones, where plantations may be established, will be limited to 10% of the Medway District.

- Harvest techniques and silviculture prescriptions will promote vegetation types characteristic of the Acadian Forest Region in western Nova Scotia and will increase multi-aged, old growth and late seral state forest.

- The increase in late seral stage forest planned as a result of harvest prescriptions in the 2013-2017 operating plan are shown in Figure 8. Long-term objectives for increasing late seral stage forest in Medway District are shown in Figure 9.

- The planned increase in multi-aged and old growth forest that will occur as a result of increased selection harvest over a 100-year time horizon are illustrated in Figure 10.

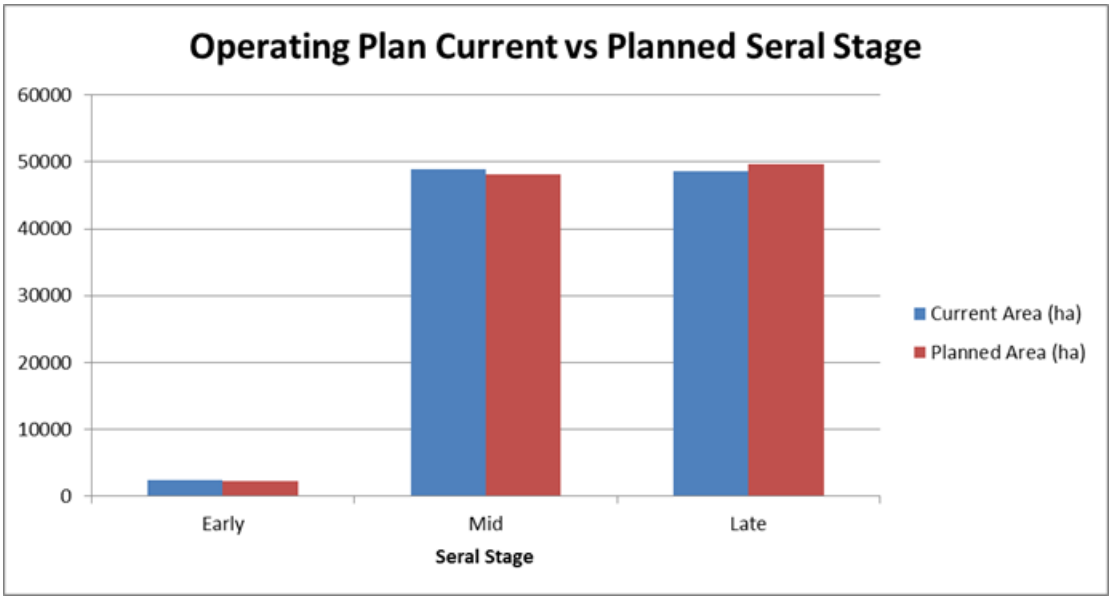


Figure 9. Increase in late seral stage forest planned as a result of harvest prescriptions in the 2013-2017 operating plan.

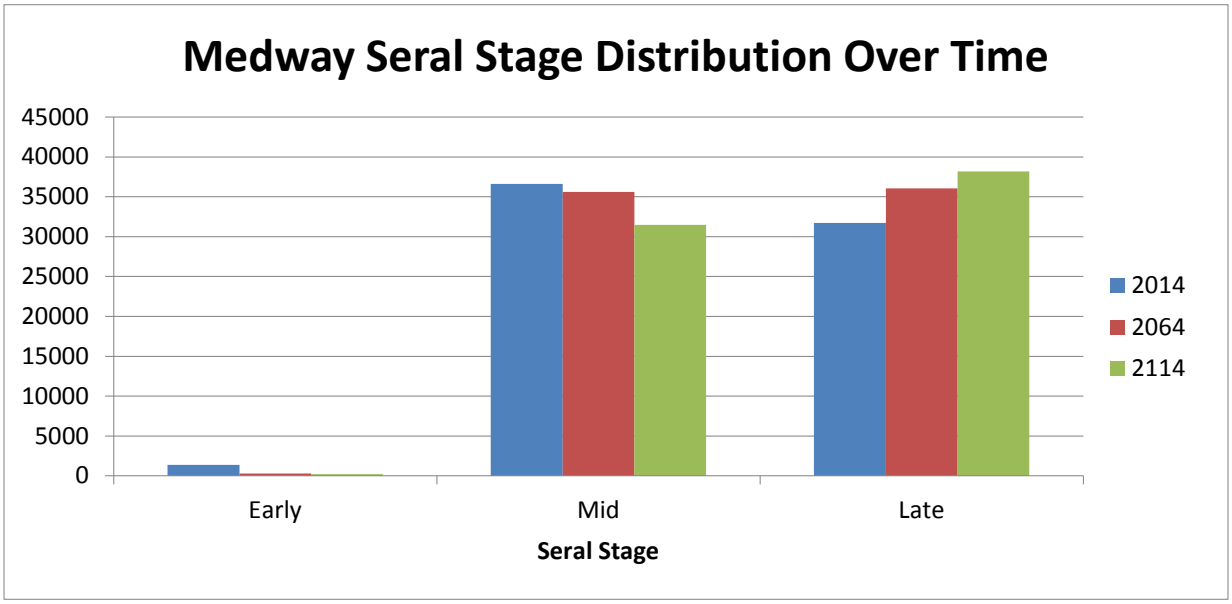


Figure 10. Long-term objectives for increasing late seral stage forest in Medway District.

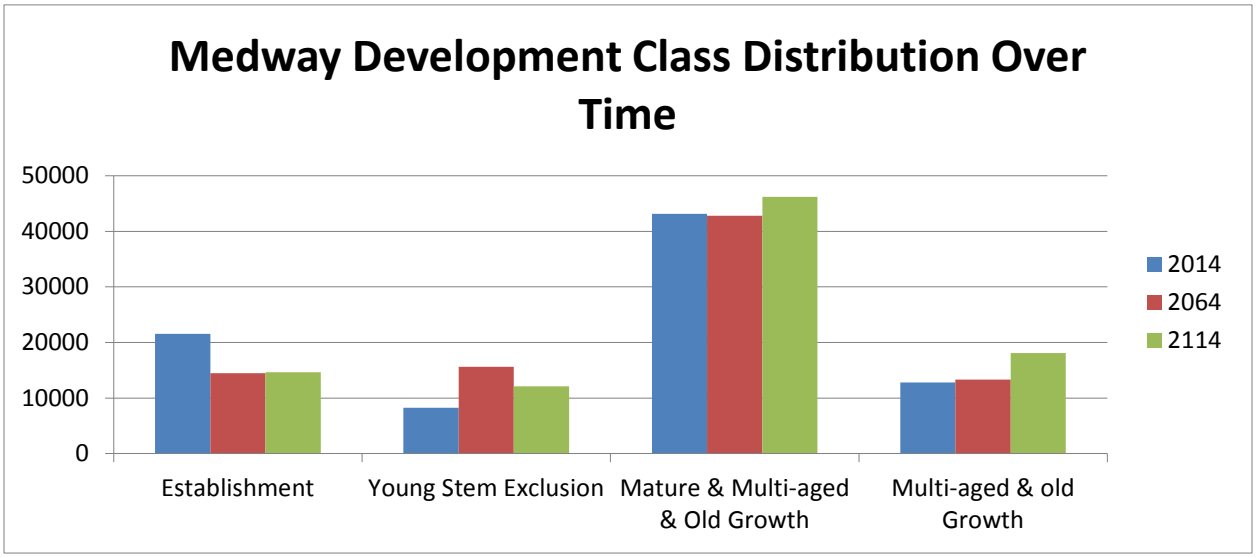


Figure 11. Objective for increasing multi-aged and old growth forest that will occur as a result of harvest and silviculture prescriptions over a 100-year time Horizon

Stand Level Strategy:

- Standard Operating Procedures (SOPs) for harvest and silviculture planning require prescriptions that:
  a) Consider landscape level objectives to restore natural variability of community groups.
  b) Consider values associated with planning units defined "A Conceptual Plan for Western Nova Scotia" developed through the Western Crown Land Planning Process.
  c) Mimic natural disturbance and sustain natural ecosystems structure and function.
  d) Promote regeneration of native species typical of the ecosystem.

e) Maintain or restore species diversity by using the FEC to guide forest management prescriptions to reach appropriate species composition in extensively managed forests with consideration of DNR's objective to reduce clearcutting. The percent of clearcutting will be reduced to 50%.

- While natural disturbance regimes and vegetation types are the basis of harvest and silviculture prescriptions, the risk of blow-down and potential for species in the current stand to develop into the natural vegetation type through selection harvesting are also considered.

- On sites where the natural vegetation type has been significantly altered as a result of past forest management, measures will be taken during the next scheduled intervention to facilitate the restoration of the site to an appropriate vegetation type.

Indicators

- Percent of total area designated in each of three landscape ecological management zones: conservation area, extensively managed forest, and intensively managed forest.

- Percent of total area in Medway District converted to plantation (as defined by FSC Maritime Standard).

- Percent of harvest and silviculture operations in compliance with specifications for prescription.

Monitoring and Reporting:

- Percent of areas in each zone will be reviewed every five years in conjunction with the update of the Medway District 25 Year Forest Management Plan.

- Compliance with SOPs and treatment prescriptions is verified through compliance checks on all operations and an internal audit of Forest Management Plan requirements. Results of compliance checks are reported monthly, results of internal audit and summary of compliance checks is reported annually at Management Review.

- Regeneration surveys are completed on all harvest areas within three years of the harvest. Results of regeneration surveys are compiled and reported annually at Management Review.

- Area in Medway District in plantation (as defined FSC Maritimes Standard) will be tracked and reported annually at Management Review.

Objective 2: Forest management practices will be conducted according to the Ecological Land Classification system for Nova Scotia.

Landscape Level Strategy

- Medway District lies within the Valley Slope, Lahave Drumlins and South Mountain Ecodistricts of the Western Ecoregion. The landscape spatial structure, natural disturbance processes and forest composition inherent to these ecological planning units will be used to guide forest management activities.

Stand Level Strategy

- Areas planned for harvest, will have a pretreatment assessment (PTA) prepared that describes site and forest condition.

- SOPs developed for planning harvest and silviculture operations require the use of the Forest Ecosystem Classification for Nova Scotia (FEC) in determining appropriate prescriptions.

Indicator

- The percent of harvest operations that have had a PTA and treatment prescription developed based on FEC.

Monitoring and Reporting

- Compliance verified through the Integrated Resource Management approval process.

Objective 3: Forest management practices will recognize the contribution of protected and wilderness areas in preserving the natural forest heritage within Nova Scotia.

Stand Level Strategy

- SOPs for planning road location require consideration for minimizing conservation impacts in areas adjacent to boundaries of Provincial Wilderness Areas and parks.

- Legally designated protected areas will be classified as forest conservation zones and considered High Conservation Value Forests (HCVF).

Indicator

- Percent of roads, in areas adjacent to boundaries of Provincial Wilderness Areas and parks, in locations that minimize conservation impacts.

- Percent of the legally designated protected areas classified as forest conservation zone.

Monitoring and Reporting

- Compliance with requirements of SOPs for planning road location will be verified through compliance checks on road construction operations. Results of the internal audit and a summary of compliance checks will reported annually at Management Review.

- List of legally designated protected areas.

Objective 4: Forest management practice will be designed and conducted in a manner that maintains and enhances the quality of air, soil and water.

Landscape Level Strategy

- SOPs for planning roads require measures be taken to avoid wetlands, watercourses and areas where depth to water table and soil type create increased risk of soil damage.

- No more than 25% of a designated water supply area will be in a state of recent (5 years or less) forest timber harvest except under circumstances where harvesting is prescribed to salvage wood from areas damaged by natural disturbance.

- Forest management in designated municipal water supplies will comply with Source Water Protection Plans designed to protect water supplies as developed by the water authority.

- Road densities will be minimized through strategic planning of new and temporary access, road decommissioning, and timber harvest scheduling.

Stand Level Strategy:

- Specifications for biomass harvest, included in SOP for harvest operations, require minimum retention levels depending on site productivity.

- Measure to be taken to minimize soil disturbance on all harvest operations involving off-road equipment including the requirement to comply with guidelines established for the FEC are documented in SOPs for operation of off-road equipment.

- SOPs for location and development of roads, landings and borrow pits include measures to be taken to minimize the area taken out of forest production.

Indicators

- Percent of roads that meet the requirement of the SOPs for planning road location.

- Percent of harvest and silviculture operations in compliance with measures to minimize soil disturbance.

- Percent of roads, landings and borrow pits that meet the requirements of relevant SOPs.

Monitoring and Reporting

- Compliance with requirements of SOP for planning road will be verified and reported through an annual internal audit of management plan requirements and reported annually at Management Review.

- Results of compliance checks on road building are reported regularly, results of the internal audit and a summary of compliance checks will be reported annually at Management Review.

Objective 5: Forest management will be designed and conducted with consideration of potential effects of climate change and opportunities to maintain and enhance carbon sinks

Landscape Level Strategy

- Forest management activities will increase carbon sequestration through:
  a) Measures taken to ensure all harvested areas meet minimum standards for stocking of acceptable species.
  b) The use of genetically improved seedlings on all planting operations.
  c) Minimum retention requirements on all harvest operations
  d) Conservation of wetlands

- Species listed as acceptable growing stock will include natural species diversity.

- Road construction and bridge and culvert installation and partial harvest specifications will account for the predicted increase in extreme weather events.

- Forest monitoring programs have been implemented to detect outbreaks of pests and pathogens.

- Harvest and silviculture prescriptions based on FEC will promote the establishment of a natural range of species resulting in forests that are more adaptable to changing climate.

Indicators

- Percent of harvested areas adequately stocked with acceptable species through natural regeneration.

- Percent of roads, bridges, culverts and partial harvest operations that meet specifications defined in SOPs.

- Number of instances of pest or pathogen infestation identified.

Monitoring and Reporting

- Results of regeneration surveys to be reported annually at Management Review.

- Compliance with specifications for road construction, bridge and culvert installation and harvest prescriptions will be verified with compliance checks and an annual internal audit of management plan requirements. Results of compliance checks will be reported quarterly, annual through the internal audit and summary of compliance checks will be reported annually at Management Review.

Objective 6: Forest management practices will be designed and conducted to secure a long-term sustainable harvest of forest products.

Strategy: Timber Harvest

- Sustainable harvest levels are determined using a Woodstock Forest Development Model based on current forest conditions, silviculture treatments, and restrictions in place to ensure non-timber objectives are met. The average annual harvest for each of the first five-year periods is included in Table 1. The area to be harvested by harvest method and silviculture treatments planned for the first five periods is included in Table 2. The area being proposed as a Community Forest has been included in the wood supply analysis, but the model accounts for no wood flow during Period 1 (or the first five years).

- Operational plans are developed that reflect the sustainable harvest levels by harvest method and silviculture treatments required to support the sustainable harvest.

- SOPs for harvest operations require optimum utilization of merchantable wood from all harvest operations.

- All harvest areas will be assessed for natural regeneration within three years of harvest. Areas that do not meet minimum standard for stocking with acceptable species will be planted as required in SOPs for silviculture.

- In the event of a large scale disturbance in Medway District, harvest plans will be altered to direct efforts toward salvaging merchantable timber.

Table 1

AVERAGE ANNUAL HARVEST FROM MEDWAY DISTRICT 2013-2037

Period	Annual Softwood Harvest (tonnes)	Annual Hardwood Harvest (tonnes)	Total Annual Harvest (tonnes)
2013-2017	60,859	17,357	78,216
2018-2022	60,859	17,357	78,216
2023-2027	60,859	17,357	78,216
2028-2032	60,859	17,357	78,216
2033-2037	60,859	17,357	78,216

Table 2

AREA HARVESTED BY HARVEST METHOD AND AREA OF SILVICULTURE TREATMENT

Period	Clearcut Harvest (ha)	Variable Retention (ha)	Shelterwood (ha)	Selection (ha)	Pine Seed Tree (ha)	Commercial Thinning (ha)	Plant (ha)	PCT (ha)
2013-2017	3516	584	2567	1710	211	169	246	910
2018-2022	3546	713	3504	972	19	35	295	1092
2023-2027	3188	585	3717	346	213	266	339	1150
2028-2032	3697	577	3144	6	19	226	353	1380
2033-2037	3384	677	823	384	3	439	283	1406

Establishment of Plantations

- Ten percent of the Medway forest has been designated as an Intensive Management Zone where a wide range of management options can be used to create and maintain plantations in order to maximize fiber yield. Plantations are created when management interventions result in conditions that lack characteristics of the natural ecosystem for the site**.** They may be established in areas that have been planted or have natural regeneration. Site preparation using barrels and chains is the most common method of site preparation and is prescribed to maximize the number of plantable sites and ensure full stocking of planted trees. Control of competition for crop trees is accomplished through manual weeding or precommercial thinning. A map indicating the location of the Intensive Management Zone is included in Appendix III.

- While the species composition and stand structure may differ from natural forest, plantations still contribute ecological values. The forest cover created by plantations provides habitat connectivity and cover for wildlife species, protects riparian areas and watercourses, and creates a carbon sink that sequesters carbon at a high rate. Patches of natural forest within plantations, created as wildlife clumps during harvest, are left to develop within the plantation.

Landscape Level Objectives for Plantations:

a) No more than 10 percent of Medway District will be intensively managed as plantations.
b) Mitigate loss of harvest volume resulting from the establishment of conservation areas, and maintenance of high conservation values.
c) Plantations will be established on areas of higher-than-average productivity so as to maximize the increase in fiber yield as a result of intensive management.
d) Plantations will be distributed throughout the management unit so any potential negative effects of intensive practices are not concentrated in one area.
e) Intensive Management Zones will incorporate existing intensively managed stands.

Stand Level Objectives for Plantations

a) Greater than 80 percent stocking with planted trees.
b) Species planted will be native to the Acadian forest.
c) Maximize fibre production by using genetically improved seed for all plantations.
d) Genetically modified organisms (GMO) will not be used in plantations.
e) Maintain “free to grow” at all stages of development.

f) Minimize ecological impact by maintaining coarse, woody debris, wildlife clumps, and riparian buffers.
g) Maximum size of a plantation will be 50 hectares.
h) The expected growth of plantations compared to natural stands for various site classes is illustrated in Figure 11.

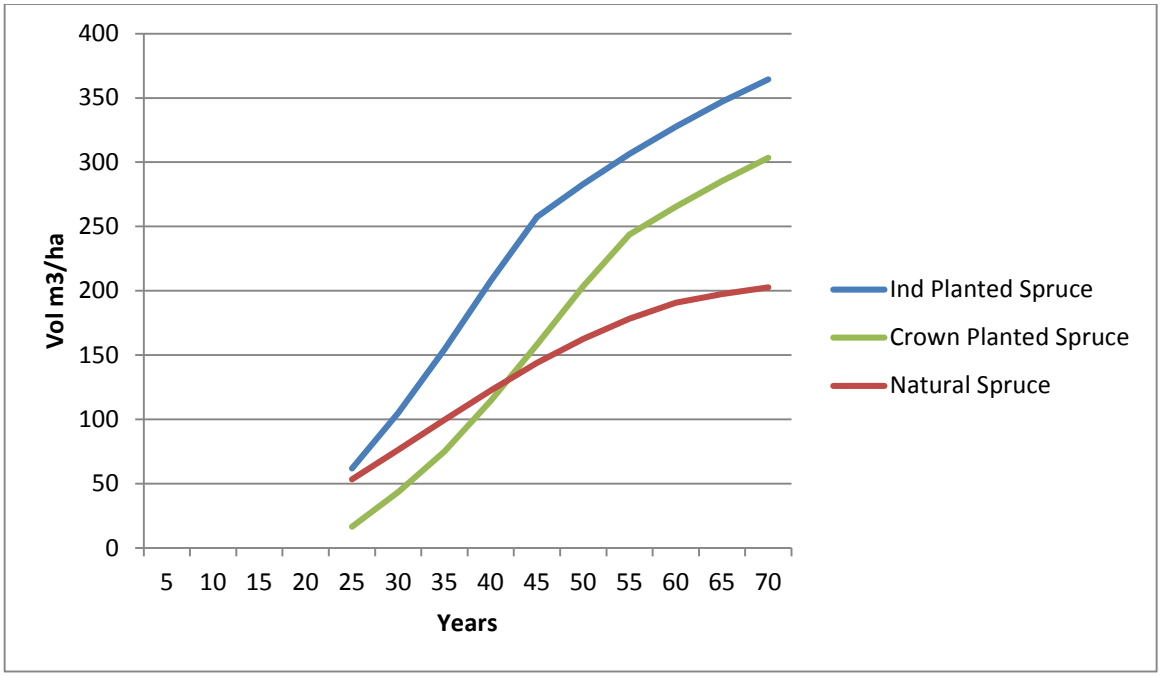


Figure 12. Yield curve for plantations established on various site classes compared to the natural spruce yield curves for those sites.

Plantations Established Prior to FSC Certification

- From 1985 to 1995 the practice of brush raking sites was used to remove coarse, woody debris, improve access to cutover sites by planters, and increase the number of suitable planting sites per hectare. Planting was often followed by herbicide application to control broadleaf competition and/or manual weeding to reduce competition from naturally regenerated softwood species. These brush-raked sites (350 hectares) have had stand structure and species composition altered by management intervention to the extent that they are considered plantations. These areas are included in the Intensive Management Zone and their locations are indicated on the map included in Appendix III.

- A list of existing plantations with information on their location, size, species planted, prior forest cover, ecological values, and past silviculture treatments is included in Appendix IV.

Areas Planted That Are Not Plantations

- Natural regeneration of species native to the Acadian forest is the preferred method of stand establishment in the extensively managed zone. In areas where stocking is not acceptable, a full- or fill-plant will be recommended with species that reflect the desired natural vegetation type for the site. These species include red spruce, black spruce, red pine, white pine, and eastern hemlock. Although trees will be planted in the extensive zone to ensure successful regeneration, these sites will be managed to maintain characteristics of the natural ecosystem so will not be considered plantations as they are defined by FSC maritime standard.

- Areas planted prior to 1985 and from 1995 to present have naturally regenerating softwood and hardwood species developing together with planted seedlings. Stand tending has ensured, and will continue to ensure, natural stand structure, stand diversity, early successional habitats, and coarse, woody debris are not significantly altered. As a result, these regenerating areas will not be considered Plantations.

Non-native (Exotic) Species

- Approximately 30 hectares in nine locations in Medway District have been planted with non-native species. A general description of the sites is included in Table 3b. Non-native species planted are Norway and Sitka spruce, both of which have low risk of invasion or adverse effects on surrounding habitat. A map of site locations is included in Appendix IV.

- Sites planted with non-native species will be restored to Acadian forest species appropriate for the site following regular schedule of harvest and silviculture treatments.

Indicators

- Volume of timber products harvested by harvest method compared to levels determined to be sustainable.

- Silviculture program implemented compared to levels required to support sustainable harvest.

- Percent of harvest areas regenerated to acceptable species through natural regeneration or planting.

Monitoring and Reporting

- Harvest volume by species and product will be reported annually and reported at the Management Review.

- Silviculture programs will be reported annually at Management Review.

- Results of regeneration surveys will be reported annually.

- Growth and condition of areas planted are assessed the year the plantation is established and three years following to determine survival of planted trees and silviculture prescriptions required to control competition.

- A formal assessment of areas meeting the FSC definition of plantations will be made 15 years following planting and every five years after that to assess survival and growth of planted trees and the ecological and cultural impact of the plantation. Plantations established prior to FSC certification that have reached 15 years of age will have growth plots established within the five years covered by this management plan (2013-2017).

- Areas planted with non-native species will be monitored every five years for growth, invasiveness, unusual mortality, disease or insect outbreak, and adverse ecological impacts. The initial assessments of all sites will be completed within the time period covered by this Plan (2013-2017).

Objective 7: Forest management practices will be designed and conducted to improve productivity, quality and value of forests and forest products.

Strategy:

Productivity:

- The levels of various silviculture treatments used in the calculation of annual allowable cut (AAC) will be basis for a silviculture program implemented in Medway District. Specifications for silviculture treatments are documented in SOPs for silviculture.

Harvest and Regeneration:

- A sustainable harvest level will be calculated using the Woodstock forest development model with the objective to maximize the economic return through the harvest of forest products from the extensive and intensive management zones over a period of 100 years.

- Operating plans for timber harvesting will be developed based on results from the PTA to reflect stand conditions (age, site, cover type) identified for harvest by the wood supply model for the current 5 year period.

- Specifications for harvest methods are defined in SOPs for harvest planning and operations.

- The potential for natural regeneration will be assessed for all mosaic and variable retention harvest operation. Those areas with low potential for regeneration, verified through field inspection, will be planted within three years of harvesting.

- SOPs for silviculture requires regeneration surveys to be completed on all mosaic, variable retention and seed tree harvested areas within three years of harvest. Any site that does not meet minimum stocking of preferred crop trees will be planted or seeded.

Vegetation Management (stand release)

- Areas planted will be assessed three years following planting to measure survival of planted trees and assess competing vegetation. Stand release treatment will be prescribed where survival and growth of crop trees is significantly hindered by competing vegetation as required by SOPs for silviculture.

Density Management

- All harvested areas, including those planted, will be assessed 10 to 15 years following harvest to determine density and stocking by species.

- Areas will be prioritized for pre-commercial thinning based on total density, stocking of preferred crop trees and site capability as required by SOPs for silviculture planning and operations.

- Areas chosen for pre-commercial thinning will have a silviculture operating plan prepared which includes species priorities based on FEC as required by SOPs for silviculture planning and operations.

Commercial Thinning

- Specifications for commercial thinning, including stand conditions where commercial thinning is appropriate and measures to be taken to ensure stability and long term value, are documented in SOPs for harvest planning and operations based on stand conditions determined through PTA.

- Contractors and their staff involved in commercial thinning receive training on treatment specifications

Improve Timber Quality

- SOPs for silviculture and harvesting include specifications for crop tree selection and measures to be taken improve timber quality attributes.

- Harvest systems, specifically designed to promote natural regeneration, include specifications for species and quality of trees to be left as a seed source.

- Silviculture and partial harvest prescriptions include specifications for crop tree selection and density to favour growth of high quality trees suitable for a wide range of potential uses.

- All contractors and their staff received training in SOPs relevant to their work.

Maximize Value

- Sustainable harvest levels are calculated using the Woodstock forest development model with the objective of maximizing production of forest products within restrictions required to protect non-timber values. The model looks at all possible combinations of defined harvest methods and silviculture treatments to determine the maximum harvest sustainable over a 100 year time horizon.

- Operating plans are developed that reflect the level of harvest by harvest method, silviculture treatments and forest types where they are to be applied as defined by the wood supply model to ensure forecasted maximum harvest levels are achieved.

- SOPs for harvest operation include specifications for utilization of forest products to ensure that no merchantable wood is left on the harvested area beyond what is required to meet requirements of Wildlife Habitat and Watercourse Protection Regulations.

Indicators

- Area treated with various silviculture prescriptions compared to what is required to support AAC.

- Actual harvest compared to AAC (averaged over 5 year period).

- Percent of area identified as having inadequate natural regeneration of preferred crop trees that have been planted.

- Percent of seedlings planted that are from tree improvement programs appropriate for Nova Scotia.

- Percent of planted area that has been assessed three years following planting.

- Percent of harvested areas that have received a 10-15 year stand assessment.

- Total area receiving pre-commercial thinning compared to area required to maintain AAC as defined by wood supply model.

- Percent of area pre-commercially thinned that meet treatment specifications.

- Area and volume harvested by method, during current five-year period, compared to what is required to ensure sustainable harvest as defined by the wood supply model.

- Actual silviculture treatment by area, during current five-year period compared to what is required to ensure sustainable harvest as defined by the wood supply model.

Monitoring

- Area by silviculture treatment will be tracked and reported quarterly, annually at Management Review and included in the Annual Report for Medway District.

- Compliance with requirement of SOPs to be verified through compliance checks of harvest and silviculture operations. Results of compliance checks are reported monthly, results of internal audit and summary of compliance checks reported annually at Management Review.

- Area of various stand types in operating plans to be updated in conjunction with the update of the Operating Plan.

- Average cost of silviculture treatments, harvesting, and road construction and maintenance to be reported annually at Management Review

- Regeneration surveys will be completed on all harvest openings within three years of harvest and reported annually at Management Review.

- Volume harvested by species and product is reported quarterly and annually at Management Review. Area harvested by method is tracked and reported annually at

Management Review. Volume harvested by species and product is included in the Annual Report for Medway District.

Objective 8: Forest management practices will incorporate the best available knowledge of local ecological conditions, including soil, climate, water, terrain, vegetation and wildlife habitat, in the planning process for roads, harvesting systems and silviculture activities.

Strategy:

Operations

- SOPs for harvesting, silviculture and road construction, are designed to protect soil, water and wildlife habitat will be implemented on all operations.

- Forest harvesting prescriptions are determined using the pre-treatment assessment process.

- SOPs for fuel, oil, and chemical handling are designed to ensure proper storage, handling and disposal of fuels, oils, lubricants and other hazardous material will be implemented on all forest operations.

- All contractors and their staff will be audited for compliance for fuel and oil handling and emergency response procedures.

- License / Agreement holders are required to remove all garbage from operating areas.

Roads

- SOPs for road construction include the requirement that:
  a) Roads are placed in locations that provide efficient access while minimizing road density and negative impacts on water quality, fragmentation of wildlife habitat, and other values.
  b) Roads and water crossings be planned, built, maintained and decommissioned to meet appropriate SOPs and all legislative requirements.
  c) The amount of forest converted to roads, landings, loading areas and other non-forest conditions will be minimized.

- A road closure strategy shall be adopted to reflect local soil and weather conditions.

Timber Harvest

- SOPs for harvesting include the requirement to assess the risk of rutting and schedule harvesting during period so as to minimize environmental damage and site degradation.

- Minimum retention levels for biomass harvest are included in SOPs for harvesting.

- Harvest prescriptions will prohibit the removal of whole trees from a forest site in order to maintain woody debris at these sites.

Silviculture

- SOPs for harvesting and silviculture operations include the requirement to leave all non-crop vegetation that does not interfere with crop tree growth.

- Herbicide use in Medway District will be reduced during the current five-year period to a maximum of 50% of the average amount used in 2004-2008.

Table 3

HERBICIDE USE IN MEDWAY DISTRICT

Five-year Period	Herbicide Use in Medway District (average litres of product per year)
2004-2008	2,320 (actual)
2009-2013	1,740 (maximum) 761 (actual)
2014-2018	1,160 (maximum) No herbicide application planned
2019 and beyond	No herbicide application planned

- Use of herbicide during the phase out period must meet conditions specified in the FSC Maritime Standard and only when deemed necessary to prevent crop tree mortality or growth loss.

- Public funds will not be directed to herbicide spraying for forestry. No herbicide applications are planned for Medway District.

Indicators

- Percent of harvest, silviculture and road construction operations in compliance with requirement of SOPs.

- Percent of harvest operations where excessive rutting occurred.

Monitoring and Reporting

- Compliance with SOPs is verified through a compliance checks on all operations and an annual internal audit. Results of compliance checks will be reported quarterly, results of internal audit will be reported annually.

- Volume of herbicide used will be reported annually at Management Review.

Objective 9: Forest management practices will be designed and conducted to maintain or restore the natural range and structure of forest communities to benefit the wildlife species in Nova Scotia.

Landscape Level Strategy

- Large forest patches have been created in Medway District through forest conservation reserves designated through the Western Crown Land planning process to create connectivity.

- The High Conservation Value Forest (HCVF) Assessment of Medway District lands includes identification of "forest areas containing globally, regionally or nationally significant large landscape level forests". The corridor of continuous forest cover, established by forest conservation reserves, has been designated as HCVF and restrictions on management activities have been established to ensure its conservation value is maintained.

- Habitat objectives for Medway District have been determined with consideration of interior forest species, old forest dependent species and keystone/ indicator species.. Indicator species; common nighthawk, golden-crowned kinglet and American marten were selected based on 1) Their affinity for distinct development stages, 2) federally and/or provincially listed status, 3) the breadth of forest structure and development stages encompassed.

- Habitat indices were developed by assigning low, medium or high values to forest cover types and development classes based on indicator species preferences for golden-crowned kinglet and American marten. Low and high habitat indices were determined for common nighthawk. Minimum levels of medium and high habitat suitability for indicator species resulting from interventions scheduled over the 100 planning horizon were used in determining the sustainable harvest from Medway District. Habitat suitability for common nighthawk, golden-crowned kinglet and American Marten over the 100 year planning horizon can be seen in Figures 13, 14 and 15 respectively.

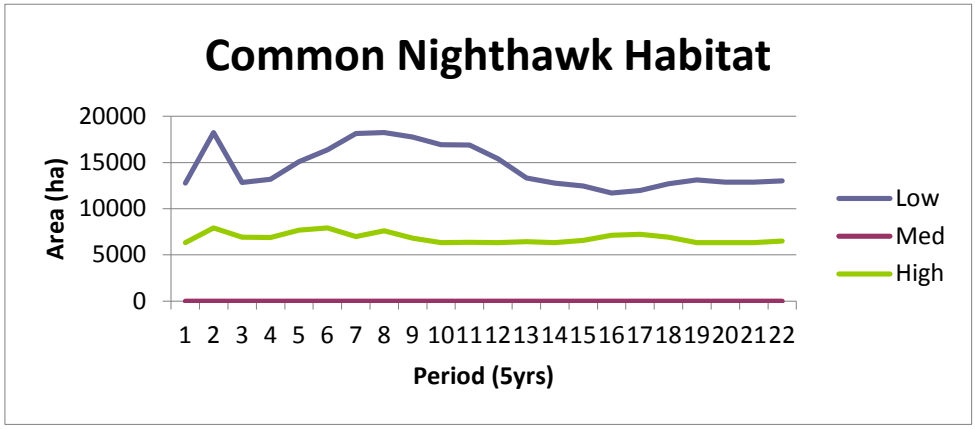


Figure 13. Habitat suitability for common nighthawk.

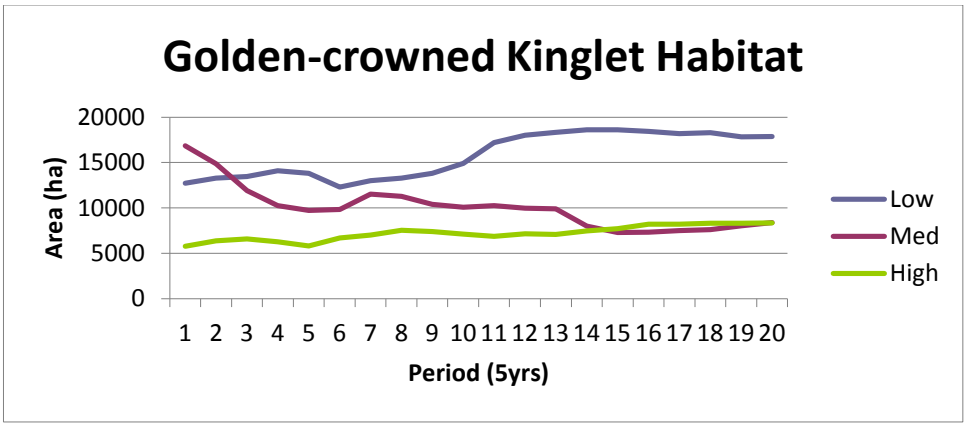


Figure 14. Habitat suitability for golden-crowned kinglet.

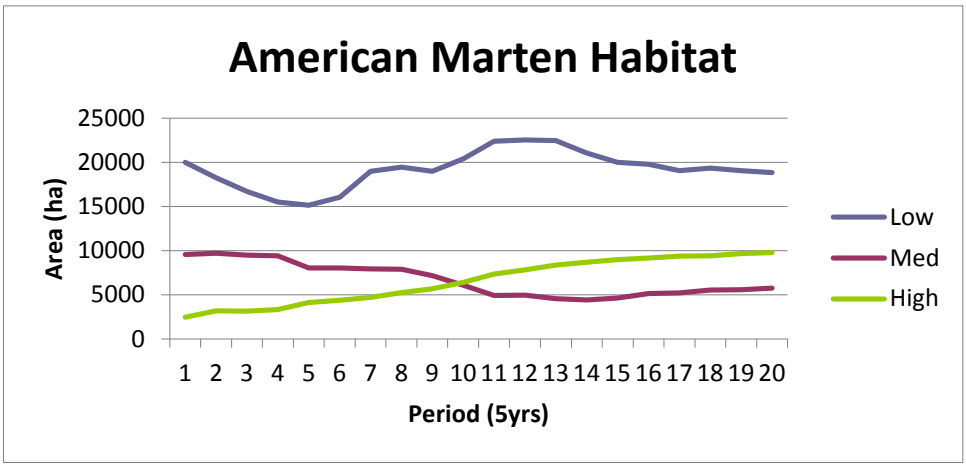


Figure 15. Habitat suitability for American marten.

Stand Level Strategy

- Harvest prescriptions will be determined using the PTA, which incorporates the forest ecosystem classification (FEC) will create abundances and distribution of canopy openings, legacy trees, dead trees, and cavity trees that are consistent with landscape management objectives.

- SOPs for harvest and silviculture operations include Wildlife Habitat Conservation Features to be maintained on harvest and silviculture operations including retention of coarse woody debris, wildlife clumps and snags. Wildlife Habitat Conservation Features meet or exceed requirements Wildlife Habitat and Watercourse Protection Regulations.

- No harvest operation will create an opening (clearcut) larger than 50 ha.

Indicators

- Number and area of “large forest patches” identified.

- Levels of medium and high habitat suitability for indicator species over a 100 year planning horizon

- Percent of harvest operations in compliance with requirements of treatment prescriptions.

- Number of openings larger than 50 ha and average size of openings.

Monitoring and Reporting

- Compliance with treatment prescriptions and Special Management Practices is verified through compliance checks and internal audit. Results of compliance checks reported monthly. Results of internal audit and summary of compliance checks reported at annual Management Review.

- The average clearcut size will be reported annually at Management Review.

Objective 10: Forest management practices will be planned and conducted to protect significant wildlife habitats in Nova Scotia Forests including habitat for species at risk.

Stand Level Strategy

- The Integrated Management Review (IRM) approval process includes a pre-screen for the presence of Species at Risk. The pre-screen refers to various datasets including the Atlantic Conservation Data Centre (ACCDC).

- The Bowater Mersey Unique Areas Program (furthermore referred to as the Unique Areas Program) identifies natural areas and features of significant value to wildlife and provides guidelines for their conservation. Several categories of Unique Areas have been identified including special management areas, conservation areas and conservation features. Areas on Mersey Woodlands meeting the requirements of the SFI Forests of Exceptional Conservation Value and areas of Medway District identified as High Conservation Value Forests are included in the Unique Areas Program. Measures established to protect the values associated with Unique Areas will continue to be requirements of SOPs for all forest management activities. High Conservation Value Forests include “forest areas containing regionally or nationally significant concentration of biodiversity values and forest areas that are in or contain rare, threatened or endangered ecosystems”. The Unique Areas Program is included in Appendix VI.

- The requirements of “DNR Special Management Practices for Species at Risk” will be implemented in areas where habitat for these species has been identified.

Indicators

- Percent of forestry operation in compliance with requirements of IRM approval.

Monitoring and Reporting

- Percent of forestry operation in compliance with requirements of IRM approval.

Objective 11: Forest management practices will be designed and conducted to balance the economic, cultural, social and environmental interests and values of all Nova Scotians.

Strategy

- Operating plans for harvest, silviculture and road construction will be guided by Integrated Resource Management (IRM) plans at the ecodistrict level and will incorporate forest practices for multiple use.

Indicators

- Percent of operating plans implemented that have had an IRM review.

Monitoring and Reporting

- Percent of operating plans having IRM review.

Objective 12: Forest management practices will be designed and conducted to consider structure and diversity elements required for the integration of public interests.

Tourism and Viewscape

- Operating plans for harvest silviculture and road construction will be guided by Integrated Resource Management (IRM) plans and will incorporate forest practices for multiple use.

- A High Conservation Value Forest Assessment of Medway District lands included identification of "forest areas fundamental to meeting basic needs of local communities". This assessment has resulted in the designation of scenic tourist routes; known canoe routes, portages and 10 and 100 series highways, as High Conservation Value Forest.

- Forest operations in the vicinity of 10 and 100 series highways, scenic tourist routes and along canoe routes will be designed to reduce visual impact of those operations. Portages, where they are known to exist, will be kept free of brush following forest operations.

- Standard Operating Procedures for Harvest Planning limit the maximum clearcut size to 50 ha.

Protected Areas

- Forest operations adjacent to the boundary of the protected area will be considered on a case-by-case basis with protected areas managers.

Recreation and Leisure

- Snowmobile and ATV user groups have been identified as stakeholders and participated in the Western Crown Land Planning Process and participate on the Mersey Woodlands Advisory Committee.

- When carrying out major operations within 30 m of a boundary line and/or within 100 m of a dwelling, the owner (s) of adjacent land(s) will be given a minimum of 30-days notice and their concerns considered prior to commencement of the activity.

- Public use of roads will be permitted subject to a road closure policy designed to provide for public safety and to prevent damage to roadways or road structures.

Education

- Medway District will be made available to education and extension institutions to provide learning opportunities associated with forest ecosystems and forest practices.

- The Mi'kmaq of Nova Scotia will be invited to share traditional ecological knowledge in forest management plan development and develop educational programs.

- Local naturalists and environmental groups have been identified as stakeholders in the Western Crown Land Planning Process. They have been invited to share ecological knowledge in development of West Crown Land Management Plan and will continue to be consulted through the development of the Management Plans for Medway District.

Biochemical

- Standard Operating Procedures, designed to enhance forest ecosystem condition required for the production of significant biochemical products, will be developed in consultation with groups and individuals with an interest in biochemical production.

Food and Forage

- Local groups, the Mi'kmaq of Nova Scotia and individuals, with interest in harvesting wild foods, will be invited to participate in the development of Standard Operating Procedures for forest operations designed to maintain specific forest sites used for harvesting wild foods.

Crafting

- Crafts people, the Mi'kmaq of Nova Scotia and businesses that use, or have an interest in using, timber or non-timber forest products will be invited to participate in development Standard Operating Procedures for forest operations to ensure sustainability of those products.

Hunting/Fishing/Trapping

- Fish and Game and Trapping Organizations have been identified as stakeholders through the Western Crown Land Planning Process. These organizations, the Mi'kmaq of Nova Scotia and individuals with an interest in hunting, fishing or trapping will be provided with opportunities to participate in the development of the Management Plan for Medway District.

Aesthetic and Spiritual Experience/ Culture and Heritage

- Areas on Medway District, identified as having significant cultural value, have been included in the former Bowater Mersey Unique Areas Program. These areas, and measures developed to ensure the unique values are not affected by forest operations, will be maintained.

- The High Conservation Value Forest (HCVF) Assessment, completed for Medway District, , includes forest areas "critical to local communities' traditional cultural identity (areas of cultural, ecological, economic and religious significance)". Measures have been developed to ensure their unique values are not affected by forest operations.

- The Western Crown Land Planning Process has identified areas of aesthetic, spiritual or cultural value to local communities through open house and stakeholder meetings held across western Nova Scotia. These areas, where they exist in Medway District, will be considered for addition to HCVF.

- Meetings will be held to provide opportunities for groups and individuals with knowledge of locations of areas of significant aesthetic, spiritual or cultural value to identify those areas to DNR staff.

Community Forest

- NSDNR has negotiated a three-year Crown Forest Agreement with the Medway Community Forest Cooperative for the management of 15,000 ha of forest land in Medway District. Lands under the Agreement will be managed by the Cooperative to provide economic, environmental and social benefits to local communities. The Agreement is established as a pilot project to be evaluated annually for governance, business administration, forestry practices, community engagement and other elements.

- The Medway Community Forest Cooperative will be responsible to ensure that forest management activities on lands managed under their Crown Forest Agreement are conducted in a manner that meets the requirements of Nova Scotia's Code of Forest Practices, and the SFI Standard for Sustainable Forest Management.

- Forest management planning and operations will align with the Medway District Forest Management Plan until the Medway Community Forest Cooperative develops a separate plan for lands managed under their Crown Forest Agreement.

Indicators

- Percent of operating plans implemented that have had an IRM review.

- Percent of forest operations in the vicinity of 10 and 100 series highways, designated tourist routes and along canoe routes that have taken into account visual impact in operating plan development.

- Percent of forest operations in locations where portages are known to exist where the portage was identified on the operating plan map and measures taken to ensure it was kept free of brush.

- Percent of operations within adjacent protected area that were planned in consultation with protected area managers.

- Modifications made to operating plans to ensure minimum impact on conservation value of protected areas.

- Percent of forest operations that have been planned in consultation with stakeholders.

- Percent of forest operations within the specified distances from dwellings and adjacent landowners where the owners were notified within minimum time limits.

- The number of educational and extension institutions that have made use of Mersey Woodlands to provide learning opportunities associated with forest ecosystems and forest practices.

- Opportunities provided for the Mi'kmaq of Nova Scotia to share traditional ecological knowledge.

- Documented Standard Operating Procedures designed for ecosystem maintenance or enhancements required for biochemical production.

- Opportunities for local groups, the Mi'kmaq of Nova Scotia and individuals with interest in harvesting wild foods to identify areas of importance and have input on SOPs.

- Opportunities provided for crafts people, the Mi'kmaq of Nova Scotia and businesses that use forest products to participate in development of SOPs.

- Opportunities provided for local groups, the Mi'kmaq of Nova Scotia and the public with an interest in hunting, fishing or trapping to participate in the development of SOPs.

- Percent of forest operations, in the vicinity of areas of significant cultural value, in compliance with measures developed to protect their unique features.

Monitoring and Reporting

- Compliance with requirements for modification of operations to reduce visual impact, consultation with protected area managers and notifications of adjacent landowners will be verified through compliance checklists for harvesting.

- Opportunities provided to stakeholders, the Mi'kmaq of Nova Scotia and members of the public to share ecological knowledge and participate will be recorded.

- List of areas of cultural significance and percent of operation in compliance with requirements to protect their unique value will be monitored.

Objective 13: Forest management plans will respect Aboriginal and Treaty Rights and ensure that the Mi'kmaq of Nova Scotia are provided with continued access for traditional activities (fishing, hunting, harvesting of wood for domestic purposes);

Strategy

- The Government of Nova Scotia, as represented by the Department of Natural Resources, will consult with the Mi'kmaq under the 2010 Consultation Terms of Reference for the development of the Forest Management Plans for Medway District.

- Mi'kmaq culturally important sites within the designated lands will be respected and the Mi'kmaq will be provided with continued access to those sites.

Indicators

- Number of culturally important site identified within the Medway District.

- Opportunities provided for Mi'kmaq to participate in the development of management plans for the Mersey Woodlands.

Monitoring and Reporting

- Opportunities to participate in management plan development and benefits provided will be recorded.

Objective 14: Forest management plans will respect Mi'kmaq culturally important sites within the designated lands and provide the Mi'kmaq with continued access to those sites.

Strategy

- Sites of cultural significance will be identified in consultation with the Mi'kmaw community and the Department of Community and Heritage.

- Sites in Medway District, known to be of cultural significance to the Mi'kmaq will be considered High Conservation Value forests. They will be mapped and measures, developed in consultation with the Mi'kmaq, will be implemented to ensure they are not disturbed by forest operations.

- The Mi'kmaq will have access to the Medway District for traditional activities (fishing, hunting, harvesting of wood for domestic purposes).

Indicators:

- Number of sites of cultural significance to the Mi'kmaq identified on Medway District.

- Percent of operation in the vicinity of site sites of cultural significance in compliance with measures designed to protect cultural value.

Monitoring and Reporting

- The number of sites of cultural significance identified on Mersey Woodlands will be recorded in the IRM approval documents.

- Compliance with SOPs designed to protect cultural value will be monitored through compliance checks on forest operations regularly.

Objective 15: Forestry operations will be designed and conducted to be in compliance with environmental legislation, policies, requirements of SFI certification standards and other commitments made by DNR relating to forestry activities.

Strategy

- All contractors and their staff will receive training on environmental awareness and Standard Operating Procedures associated with their work.

- DNR staff will verify compliance with Standard Operating Procedures and other requirements of the timber license/agreement through field inspections and completion of Compliance Checklists for all forest operations. Non-conformances will be tracked and followed up with corrective action.

- DNR will verify compliance with the requirements the SFI Standard for Sustainable Forest Management on all Mersey Woodlands, including Medway District Management Plan. through an internal audit. Non-conformances will be tracked and followed up with corrective action. A Monitoring Plan listing indicators and frequency of monitoring and reporting will be completed.

Indicators

- # of licensees, contractors and their staff who have received environmental awareness and BMP training.

- Percent of operations in compliance with requirements of timber license/ agreement and Standard Operating Procedures.

- Number of non-conformances found during internal and third party audits.

- Compliance with SFI Standards, regulations and Standard Operating Procedures.

Monitoring and Reporting

- Compliance will be monitored through compliance checks and internal audit. Results of compliance checks reported at monthly. Results of internal audit and summary of compliance checks reported at Management Review.

- Third party audit of SFI Requirements will be conducted annually with results reported upon completion and included in Management review.

3.0 Predictable Influence of Pests, Pathogens, and Non-commercial Species

Future forest development using the "Woodstock" forest development model is based on forest growth data measured from permanent sample plots (PSP's). PSP's have been re-measured at regular intervals since the early 1960s to determine growth and mortality of trees within the plot. Natural levels of pests, pathogens, and non-commercial species will influence the data collected from PSPs and therefore are incorporated in yield curves derived from this data.

In the event that pests, pathogens, and other disturbance agents increase beyond normal levels and abnormal losses occur, the wood supply forecast will be adjusted based on the extent of the disturbance.

4.0 Access and Harvest Schedules

There are varying degrees of access to the Medway District. More information see **http://novascotia.ca/natr/land/western-land/access.asp**

The four-year operating plans for the Medway District are taken from the Bowater Mersey Woodlands four-year operating plans that were developed under a previous Management Plan. Amendments to the original Bowater Mersey operating plan were made to reflect the new policies associated with the transition to Public land. The most significant changes include:

1. All areas proposed to be harvested in the Parks and Protected Areas were removed from the plan,
2. Harvest areas were reviewed by the Mi'kmaq of Nova Scotia,
3. PTA are completed on all harvest areas prior to harvest, and an Integrated Resource Management approval is completed on each harvest area.
4. Management prescriptions will reflect values identified in the Western Crown land planning process.

Together all of these changes contributed to the amendments of the pre-existing operating plan.

5.0 Monitoring Forest Changes and Assessing Environmental and Social Impact

5.1 Monitoring Forest Changes

Changes to the forest as a result of road construction, harvesting, and silviculture are recorded through regular updates of GIS data based on information from satellite imagery and annual updates.

Changes to forests as a result of stand succession, normal levels of insects, diseases, and wind are monitored by updating forest inventory data through aerial photograph interpretation every ten years. Detailed information on stand development including growth, mortality, ground vegetation, and coarse woody debris is monitored through establishment and re-measurement of PSPs.

GIS and forest inventory data are updated by DNR's Renewable Resources Branch, Forestry Division.

The impact of above-normal levels of insect and disease and effects of fire and abnormal weather events are monitored by DNR's Renewable Resources Branch, Forest Protection Division.

5.2 Assessing Environmental Impact

SOPs for developing Operational Plans for harvesting, silviculture and road construction require consideration of the potential impact on environmentally and culturally sensitive sites and measure prescribed to ensure sensitive features are protected. These plans are then subject to an Integrated Resource Management (IRM) review, a decision-making process whereby all resources are identified, assessed and compared before land use or resource management decisions are made.

To ensure that Operational Plans are implemented as prescribed, internal and external audits are conducted to monitor both employee and contractor performance. Audits involve employee interviews, field checks, and assessment of required documentation.

5.3 Assessing Social Impact

Forest management activities in Medway District contribute significantly to communities in western Nova Scotia particularly in Annapolis, Lunenburg, and Queens Counties. A socio-economic analysis of these three Counties based on 2006 census data can be found in Appendix VII.

DNR will assess the social impact of forest management activities by providing opportunities for employees, stakeholders and members of the public to participate in the forest management planning process through discussions with the Mersey Woodlands Forest Advisory Committee. Mi'kmaw communities, through the Assembly of Nova Scotia

Mi'kmaq chiefs, will be provided with opportunities to participate under the 2010 Consultation Terms of Reference.

Maps of planned harvest areas are being posted on the DNR website. The website also includes an email address for the public to provide feedback.

NSDNR is a member of the Nova Scotia SFI Implementation Committee which has a toll free number through which the public can call with a complaint or inquiry about forest operations in anywhere in Nova Scotia. DNR will be forwarded complaints and inquiries related to operations on Crown Lands and will follow up on all correspondence received.

6.0 Management Plan Revision

NSDNR staff, responsible for forest management in Medway District, will review progress toward management plan objectives annually in light of results of monitoring, research and other factors affecting forest operations.

The Medway District Forest Management Plan will be reviewed every five years.

7.0 Forest Worker Training

All NSDNR staff, License/ Agreement holders, contractors and their staff involved with forest operations on Medway District require to attend an annual information session to ensure they are knowledgeable on NSDNR policies and SOP's related to protecting the environment, preventing injuries and responding to emergencies.

Annual information sessions are offered to maintain awareness of requirements of operations in Medway District and review changes to policies and SOPs.

GLOSSARY OF TERMS AND ABBREVIATIONS

Age Class: Any interval into which the range of trees, forests, stands, or forest types is divided for classification (NS DNR).

AAC: Annual allowable cut. Harvest level determined to be sustainable over at least 100 years.

ACCDC: Atlantic Canada Conservation Data Centre. An organization with a mission to provide objective data and expertise about species and ecological communities of conservation concern, including species at risk, and undertakes field biological inventories to support conservation related to decision-making, research, and education in Atlantic Canada.

The Assembly of Nova Scotia Mi'kmaq Chiefs: The Assembly consists of the 13 elected Mi'kmaw chiefs and 2 ex officio members, supported by staff and advisors. Two chiefs serve as co-chairs of the Assembly, and most chiefs have responsibilities for specific portfolios (e.g., Fisheries, Mining, Lands, Wildlife, Forestry, etc.). The Assembly plays a significant role in collective decision making for the Mi'kmaq of Nova Scotia, particularly on issues pertaining to Mi'kmaw rights and governance. On behalf of 12 Mi'kmaw communities under the Consultation Terms of Reference (TOR), the Assembly leads negotiations with the provincial and federal governments, and oversees the consultation process. The Assembly meets regularly to deliberate on issues related to consultation with the federal and provincial governments. Sipeknetik First Nation is a member of the Assembly but has chosen to conduct its own consultation process on all matters affecting aboriginal and treaty rights.

Biodiversity: The diversity of plants, animals, and other living organisms, in all their forms and level of organization, including genes, species, ecosystems, and the evolutionary and functional process that links them (NS DNR).

Biomass Harvest: Removal of all material from a forested site including stems, tops, limbs and otherwise non-merchantable trees.

BMPC: Bowater Mersey Paper Company Ltd.

NSDNR: Nova Scotia Department of Natural Resources

Ecoregion: Representation of broad provincial climatic patterns as expressed by the macro-features of vegetation. The second of five levels in the DNR Ecological Land Classification System (NS DNR).

Ecosection: An ecological land unit with a repeating pattern of landform/topography, soils, and vegetation through an ecodistrict. The fourth of five levels in the DNR Ecological Land Classification System (NS DNR).

Ecosystem: A functional unit consisting of all living organisms (plant, animals, and microbes) in a given area and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow (NS DNR).

ELA: Ecological Landscape Analysis: The process of developing a comprehensive description and mapping of ecosystem conditions and functions across the full ecological landscape, including ownership

Even Aged: Stand(s) of trees consisting of one or two age classes. Even-aged stands are often the result of stand initiating disturbance such as fire or a harvest method such as clearcutting or shelterwood.

External Audit: Verification of compliance with the requirements of DNR policies, best management practices, certification standards, and regulations conducted by an accredited registrar.

FEC: Forest Ecosystem Classification

Forest Cover Type: A descriptive term used to group stands of similar characteristics and species composition (due to ecological factors) by which they may be differentiated from other groups of stands (NS DNR).

Forests with Exceptional Conservation Value: sites associated with viable occurrences of critically imperiled and imperiled species and communities

FSC: Forest Stewardship Council

GIS: Geographic Information System

HCVF (High Conservation Value Forest): Forests that possess one or more of the following attributes:

i. Forest areas containing globally, regionally, or nationally significant:
    a. Concentrations of biodiversity values (e.g., endemism, endangered species, refugia; and/or)
    b. Large landscape level forests, contained within or containing the management unit, where populations of most (if not all) naturally occurring species exist in the natural patterns of distribution and abundance.
ii. Forest areas that are in or contain rare, threatened, or endangered ecosystems.
iii. Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control).
iv. Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic, or religious significance identified in cooperation with such local communities (FSC Maritime Standard).

Internal Audit: Verification of compliance with the requirements of DNR policies, best management practices, certification standards, and regulations conducted under supervision of DNR staff.

IRM (Integrated Resource Management): a decision-making process whereby all resources are identified, assessed and compared before land use or resource management decisions are made.

Management Review: Annual review of progress toward Management Plan objectives.

Mersey Woodlands: Forest lands purchased by the Province of Nova Scotia from Bowater Mersey Paper Company Ltd. in 2012.

Mi'kmaq of Nova Scotia: The Indigenous rights-bearing population of Nova Scotia is a single collective, Mi'kmaq Nation of Nova Scotia. The Mi'kmaq of Nova Scotia and their organizations are represented by the Assembly of Nova Scotia Mi'kmaq Chiefs (Assembly).

Plantation: Forest areas lacking most of the principal characteristics and key elements of native ecosystems, as defined by FSC approved national and regional standards of forest stewardship, which result from the human activities of planting, sowing or intensive silvicultural treatments. As the term is used in this standard in the Maritimes, plantations exist when some or all of the following stand characteristics are maintained in a highly altered state or even eliminated:

a) tree species diversity (especially deciduous species and/or other noncommercial species);

b) stand diversity (e.g., patchiness, presence of small openings, variability in tree species diversity, density and/or canopy layers);

c) stand structures and associated habitats resulting from pathogens or physical damage (e.g., forked stems, hollow boles, dead tops);

d) early successional habitats (e.g., berry patches, areas dominated by brush and herbaceous species);

e) presence of mature and old trees; and

f) coarse woody debris.

PSP: Permanent Sample Plot

PTA: Pretreatment Assessment

Seral: Stage of stand succession

SFI: Sustainable Forestry Initiative

Shade-tolerant Species: Plant species that have evolved to grow well in shade. Typically these species grow in the understory, thus shade-tolerant species often dominate a climax forest type (e.g., hemlock, beech, sugar maple) (FSC Maritime Standard).

SOPs (Standard Operating Procedures): Method to be used in performing a specific task

Species at Risk: Legally recognized designation for species at federal and/or provincial levels that reflect varying levels of threats to wildlife populations. The four categories of risk are extirpated, endangered, threatened, and species of concern (NS DNR).

Third Party Audit: Verification of compliance with a forest certification standard conducted by an accredited registrar.

Uneven Aged: A stand(s) of trees consisting of more than two age classes. Uneven-aged stands are often the result of gap disturbance created by wind or selection harvesting.

Watercourse: the bed and shore of a river, stream, lake, creek, pond, marsh, estuary or salt-water body that contains water for at least part of each year**.**

Woodstock Forest Development Model: Computer software developed by Remsoft used to calculate and compare the result of forest management alternatives.

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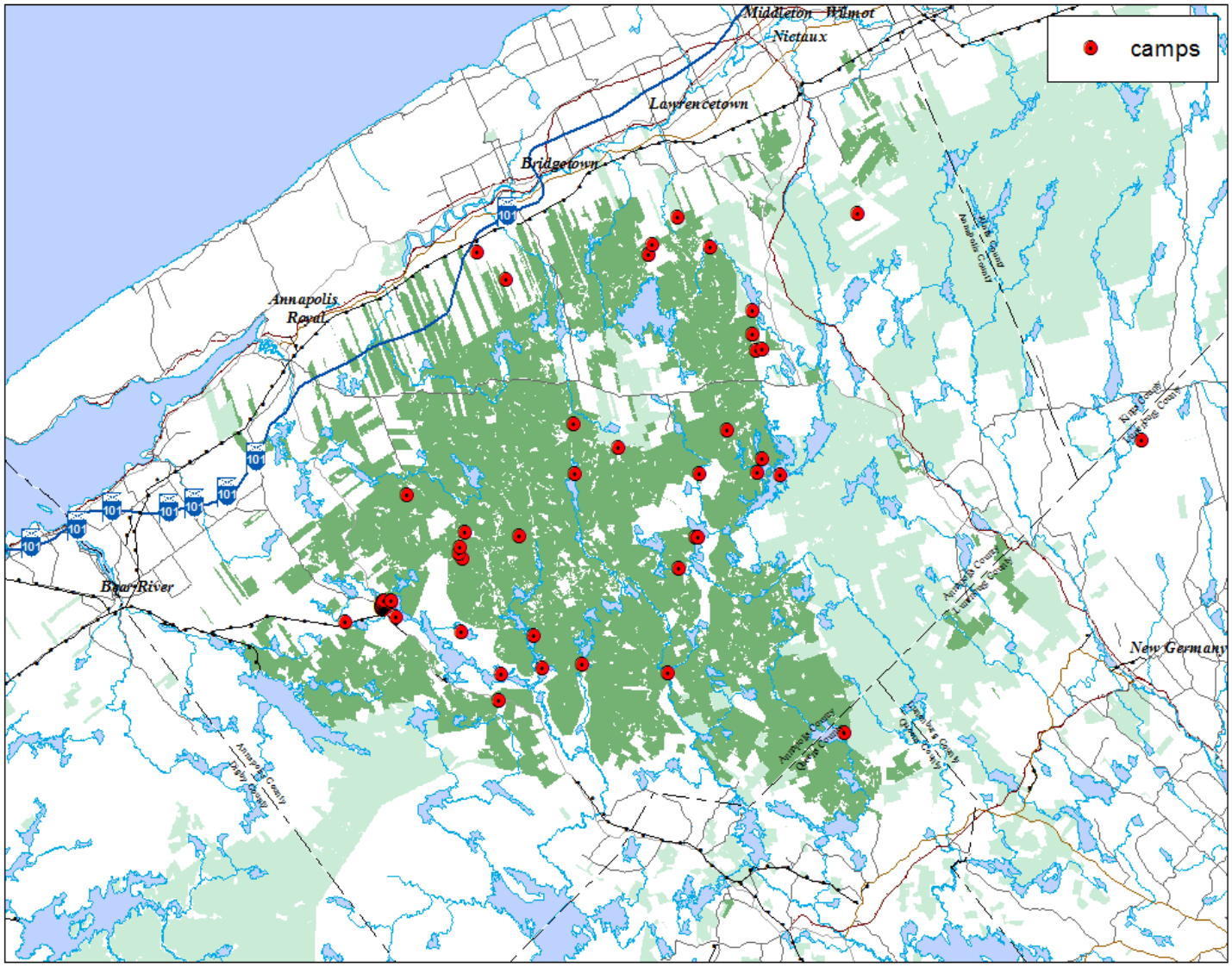
Terms of Reference for a Mi'kmaq Nova Scotia- Canada Consultation Process

Appendix I
Location of Camp Leases
(Medway District)



NOVA SCOTIA

MERSEY WOODLANDS FORESTRY POLICY

December 7, 2000, Last Revision: May 13, 2015

The Province of Nova Scotia conducts sustainable forest management on Crown land, including the Mersey Woodlands, under required acts, regulations and policies.

We will:

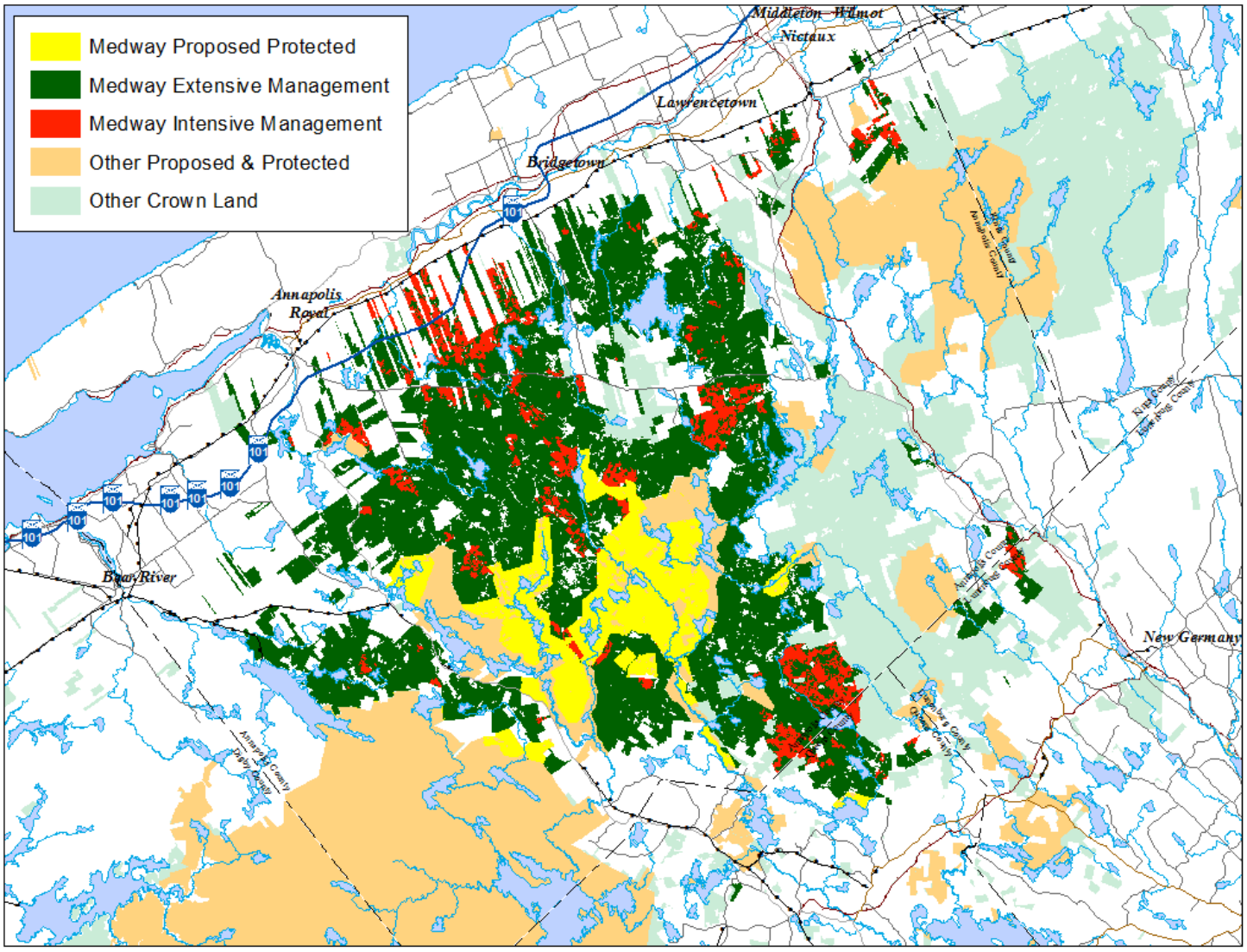
- Comply with environmental legislation, regulations, and associated policies including:
  - Forests Act
  - Crown Lands Act
  - Wildlife Act
  - Endangered Species Act
  - Environment Act
  - **Special Places Protection Act**
  - Natural Resources Strategy 2011-2020
  - Code of Forest Practice and ecosystem based management
  - and other relevant Federal legislation.
- Develop, or have developed by Crown land licensees under provincial approval requirements, forest-management plans that recognize timber and non-timber values, including the conservation of biodiversity, and ecological services.
- Forest management will seek a balance that recognizes and supports public access for recreational purposes such as fishing, hunting, hiking, and off-highway vehicle use
- Seek input and provide feedback for forest-management planning processes from employees, stakeholders and members of the local public.
- Consult and collaborate with Mi'kmaq of Nova Scotia.
- Commit to continuous improvement by directing and supporting research and by using key performance indicators to measure our progress.
- Develop and implement Special Management Practices and Recovery Plans to protect and maintain forest and soil productivity, water bodies and riparian zones, and species of conservation concern.
- Ensure appropriate training of employees and contractors to promote understanding of environmental impacts of their jobs, and to prevent and to respond to environmental emergencies.
- Promote appropriate training of private wood suppliers and encourage the use of qualified consultants and contractors.

Jonathan Porter

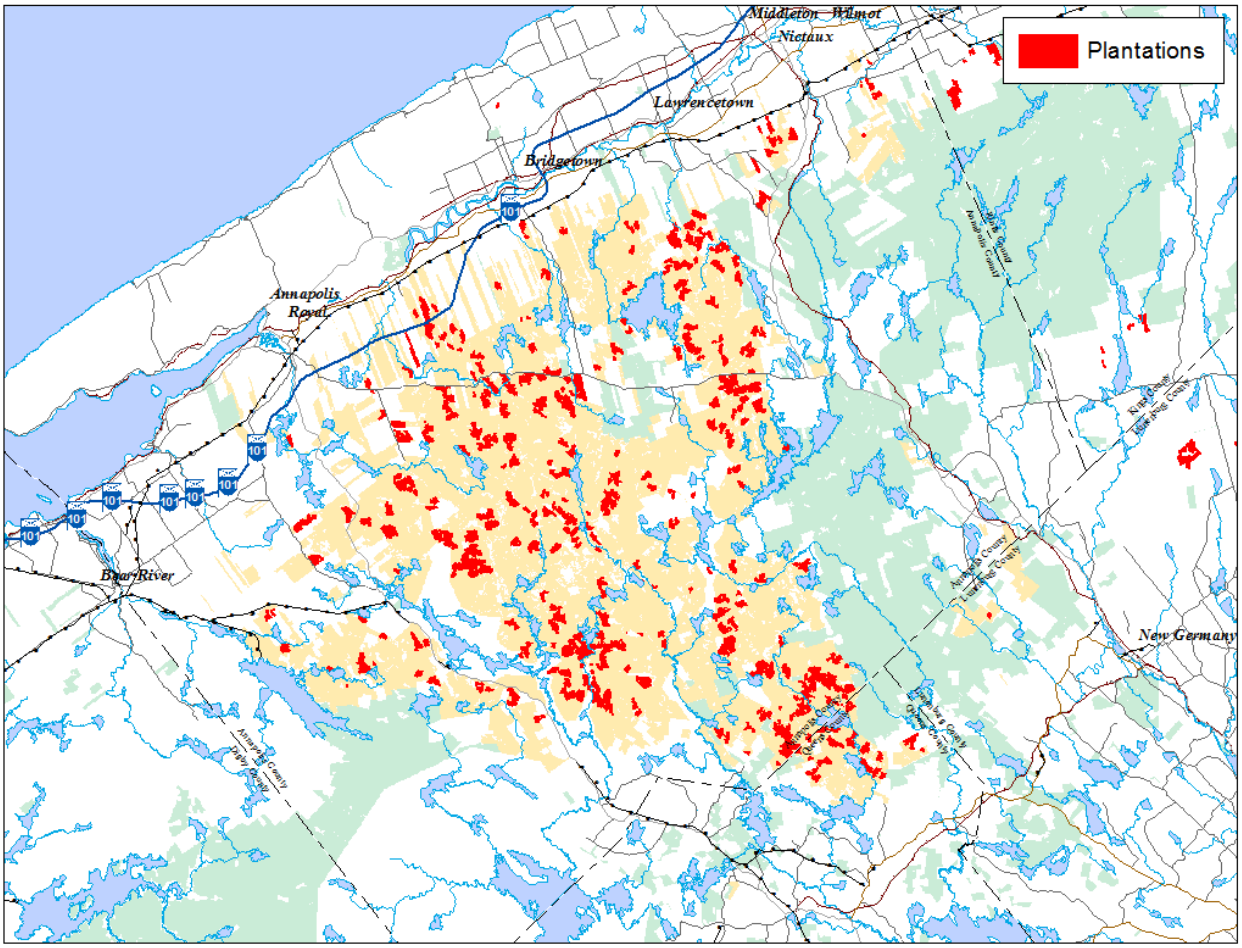
Jon Porter
Executive Director
Renewable Resources Branch
NS Dpt. of Natural Resources

Walter Fanning
Executive Director
Regional Services Branch
NS Dpt. of Natural Resources

Appendix III
Landscape Management Zones
(Medway District)



APPENDIX IV
PLANTATIONS AND NON-NATIVE SPECIES
(MEDWAY DISTRICT)



SIZE, LOCATION, SPECIES PLANTED, PRIOR FOREST COVER, ECOLOGICAL VALUES, AND PAST SILVICULTURE TREATMENT OF EXISTING PLANTATIONS

Plantation Reference Number	Location	Species	Area (ha)	Year Planted	Prior Cover Type	Ecological Value	Past Treatments
ME1760	Hoyt Lake	RS	2.53	1989	H	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1998 Planted 1989 Herbicide 1990 Herbicide 1996 Manual Weeding 2000
ME1127	Hicks Lake	RS	9.78	1990	H	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Planted 1990 Herbicide 2000
ME1148	Hicks Lake	RS	8.85	1990	H	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Planted 1990 Herbicide 2000
ME1150	Long Lake	RS	7.61	1988	M	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Manual Weeding 2000
ME1752	Lower Hoyt Lake	RS	3.64	1989	S	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1996 Manual Weeding 2000
ME 1813	Camp 10	RS	.63	1989	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1990 Herbicide 1996
ME2061	White Lake	RS	4.97	1989	M	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988
ME 1604	Long Lake	RS	5.95	1988	M	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Manual Weeding 2002
ME1612	Long Lake	RS	2.08	1988	H	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Spaced 2000
ME 1633	Long Lake	RS	10.86	1988	SP	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Spaced 2000
ME 1870	Hoyt Lake	RS	3.11	1989	SP	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1990 Herbicide 1996
ME 1870	Hoyt Lake	RS	2.82	1989	S	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1990 Herbicide 1996

Plantation Reference Number	Location	Species	Area (ha)	Year Planted	Prior Cover Type	Ecological Value	Past Treatments
ME 1818	Hoyt Lake	RS	5.31	1989	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1990 Herbicide 1996
ME 1886	Hoyt Lake	RS	12.14	1989	SP	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1990 Herbicide 1996
ME 1799	Hoyt Lake	RS	4.15	1989	SP	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1996 Manual Weeding 2000
ME 1827	Hoyt Lake	RS	12.28	1989	H	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1990 Herbicide 1996 Manual Weeding 2000
ME2056	White Lake	RS	2.03	1989	H	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1998 Manual Weeding 2002
ME 1662	Long Lake	RS	1.49	1988	S	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Manual Weeding 2002
ME 1669	Perotte	RS	7.94	1991	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1990 Herbicide 1992 Herbicide 1998 Manual Weeding 2002
ME1685	Perotte	RS	49.09	1991	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1990 Herbicide 1992 Herbicide 1998 Manual Weeding 2002
ME2227	Frog Lake	RS	2.57	1990	H	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Manual Weeding 2001
ME2234	George's Lake	RS	3.74	1990	Hem	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Manual Weeding 2001
ME1075	George's Lake	RS	5.91	1990	Hem	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Manual Weeding 2001
ME2238	Frog Lake	RS	8.85	1989	Hem	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Manual Weeding 2001
ME2284	Bear Lake	RS	4.78	1989	Hem	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1988 Herbicide 1990 Manual Weeding 2001

Plantation Reference Number	Location	Species	Area (ha)	Year Planted	Prior Cover Type	Ecological Value	Past Treatments
ME2511	Salmon Lake	RS	11.32	1986	Hem	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1985 Herbicide 1988 Manual Weeding 1996
ME1075	Blanket Hill	RS	8.35	1990	H	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Manual Weeding 2001
ME1754	Bog Lake	RS	7.35	1988	H	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Manual Weeding 2000
ME1755	Long Lake	RS	14.61	1988	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Manual Weeding 2000
ME1792	Long Lake	RS	10.33	1988	M	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1990 Manual Weeding 2000
ME2636	Salmon Lake	RS	2.39	1986	M	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1985 Manual Weeding 1996
ME2637	Salmon Lake	RS	3.49	1986	M	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1985 Herbicide 1988 Manual Weeding 1996
ME2652	Salmon Lake	RS	4.12	1986	S	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1985 Manual Weeding 1996
ME3470	Cranberry Lake	RS	3.48	1990	M	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Manual Weeding 2002
ME3358 & 3393	Cranberry Lake	RS	10.37	1990	H	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1998 Manual Weeding 2002
ME3377	Cranberry Lake	RS	20.27	1990	S	Riparian buffer, forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Herbicide 1990 Herbicide 1998 Manual Weeding 2002
FSCPLANT 37	Round Lake	RS	12.87	1988	M	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1987 Herbicide 1996 Manual Weeding 2000
ME3423, 50, 73 & 83	Round Lake	RS	15.70	1987	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988 Manual Weeding 2000
ME3414	Round Lake	RS	9.07	1987	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988
ME3416	Round Lake	RS	6.09	1987	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988 Manual Weeding 2000
ME0274	Round Lake	RS	5.51	1987	S	Forest cover of native species, habitat connectivity, and cover for wildlife	Herbicide 1996 Manual Weeding 2000
ME3390	Round Lake	RS	12.37	1987	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988 Manual Weeding 2000

ME3357	Round Lake	RP	14.79	1987	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988 Manual Weeding 1999
ME3324	Round Lake	RS	8.63	1987	S	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988 Manual Weeding 1997
ME3351	Round Lake	RS	3.61	1987	SP	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988 Manual Weeding 1997
ME3344	Round Lake	RS	4.28	1987	M	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988 Manual Weeding 1996
ME3352	South Mud Lake	RS	0.58	1987	M	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988
ME3356	South Mud Lake	RS	3.0	1987	M	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1986 Herbicide 1988
ME1674	Perotte	RS	4.27	1991	H	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1990 Herbicide 1992 Herbicide 1998 Manual Weeding 2002
ME1030 & ME1078	Blanket Hill	RS	6.52	1990	S	Forest cover of native species, habitat connectivity, and cover for wildlife	Site Prep. 1989 Planted 1990 Manual Weeding 2001
Tree Improv1	Blanket Hill	RS	1.02	1995	Unknown	Habitat connectivity and cover for wildlife	Tree Improvement Test Site
Tree Improv2	Blanket Hill	RS	0.52	1995	Unknown	Habitat connectivity and cover for wildlife	Tree Improvement Test Site
Tree Improv3	Blanket Hill	RS	1.00	1995	Unknown	Habitat connectivity and cover for wildlife	Tree Improvement Test Site
Tree Improv4	Blanket Hill	RS	0.13	1995	Unknown	Habitat connectivity and cover for wildlife	Tree Improvement Test Site
Tree Improv5	Blanket Hill	RS	1.43	1995	Unknown	Habitat connectivity and cover for wildlife	Tree Improvement Test Site
Tree Improve 5	Blanket Hill	RS	2.01	1995	Unknown	Habitat connectivity and cover for wildlife	Tree Improvement Test Site
Tree Improv6	Hoyt Lake	BS	3.97	1990	Unknown	Habitat connectivity and cover for wildlife	Tree Improvement Test Site

(There are no plantations larger than 50 ha)

LOCATION, SIZE, SPECIES PLANTED, PRIOR FOREST COVER, PAST SILVICULTURE TREATMENT, AND RESTORATION OBJECTIVES FOR AREAS PLANTED IN NON-NATIVE SPECIES

Reference Number	Location	Species	Area (ha)	Year Planted	Prior Cover Type	Past Silviculture Treatment	Restoration Objective
ME2713	Sundown Lake	Norway Spruce	2.40	1987	Sp	Herbicide 1988	Return to native species appropriate for the site
ME0528	Goldsmith Lake	Sitka/Norway Spruce	0.50	1966	Pasture	Site Prep. 1966	Return to native species appropriate for the site
ME0517	Corbett Lake	Sitka/Norway Spruce	0.60	1956	Pasture	N/A	Return to native species appropriate for the site
ME2792	Durland Lake	Sitka Spruce	1.90	1988	Unknown	Herbicide 1988	Return to native species appropriate for the site
ME2797	Durland Lake	Sitka Spruce	2.01	1988	Unknown	Herbicide 1988 PCT 1997	Return to native species appropriate for the site
ME2801	Durland Lake	Sitka Spruce	2.50	1988	Sp	PCT 1997	Return to native species appropriate for the site
ME2390	Springfield	Norway Spruce	6.60	1990	Pasture	N/A	Return to native species appropriate for the site
ME3274	Round Lake	Norway Spruce	7.60	1984	Unknown	Herbicide 1986	Return to native species appropriate for the site
ME3256	Round Lake	Norway Spruce	5.50	1984	Unknown	PCT 1997	Return to native species appropriate for the site

Appendix V

LIST OF SPECIES AT RISK THAT MAY OCCUR IN MEDWAY DISTRICT (Sources include the Species at Risk - Identification and Information Guide)

Species	Status	Management Strategies
American Marten *Martes americana*	COSEWIC – not listed NS – endangered	- LEMZ planning includes conservation zones that will be protected. - Habitat modelling to maintain habitat levels. - Training and awareness to encourage reporting of sightings.
Eastern Moose *Alces alces americana*	COSEWIC – not listed NS – endangered	- Participation with the Mainland Moose Recovery Team. - Training and awareness to encourage reporting of sightings. - Research and harvest design area in Rossignol District.
Chimney Swift *Chaetural pelagica*	COSEWIC – threatened NS – endangered	- Contractors are encouraged to leave wildlife clumps around snags.
Common Nighthawk *Chordeiles minor*	COSEWIC – threatened NS – threatened	- Habitat modelling to maintain habitat levels. - Training and awareness to encourage reporting of sightings.
Olive-sided Flycatcher *Contopus cooperi*	COSEWIC – threatened NS – not listed	- Comply with wetland and watercourse best management practices.
Peregrine Falcon *Falco peregrinus anatum*	COSEWIC – special concern NS –threatened	- Dwells in rock cliffs that are inoperable areas. - Training and awareness to encourage reporting of sightings.
Rusty Blackbird *Euphagus carolinus nigrans*	COSEWIC – special concern NS – not listed	- Comply with wetland and watercourse best management practices.
Short-eared Owl *Asio flammeus*	Not in HCVF COSEWIC – special concern NS – not listed	- Dwells in open fields and wetlands. - Comply with wetland and watercourse best management practices.
Harlequin Duck *Histrionicus histrionicus*	COSEWIC – special concern NS – endangered	- Dwells in coastal areas. - Inoperable.
Piping Plover *Charadrius melodus*	COSEWIC – endangered NS –endangered	- Dwells in coastal areas. - Inoperable.
Blanding's Turtle *Emydoidea blandingii*	COSEWIC – endangered NS – endangered	- Participation with the Blanding's Turtle Recovery Team. - Training and awareness to encourage reporting of sightings.
Eastern Ribbonsnake *Thamnophis sauritus*	COSEWIC – threatened NS – threatened	- Participation with the Eastern Ribbonsnake Recovery Team. - Training and awareness to encourage reporting of sightings.
Wood Turtle *Clyptemys inscultpa*	COSEWIC – threatened NS – vulnerable	- Training and awareness to encourage reporting of sightings.
Atlantic Salmon *Salmo alar*	COSEWIC – endangered NS – not listed	- Comply with wetland and watercourse best management practices.

Species	Status	Management Strategies
Boreal Felt Lichen *Erioderma pedicellatum*	COSEWIC – endangered NS – endangered	- Training and awareness to encourage reporting of sightings. - Field surveys completed by local experts if harvest opening is within 100m of predicted habitat.
Monarch Butterfly *Danaus plexippus*	COSEWIC – special concern NS – not listed	- Support MTRI, who promotes the development of butterfly gardens.
Eastern White Cedar *Thuja occidentalis*	COSEWIC – not listed NS – vulnerable	- Training and awareness to encourage reporting of sightings and to not harvest during precommercial thinning and harvest.
Rockrose *Helianthemen canadense*	COSEWIC – not listed NS – endangered	- Comply with wetland and watercourse best management practices.
Long's Bulrush *Scirpus longii*	COSEWIC – special concern NS – vulnerable	- Comply with wetland and watercourse best management practices.
Eastern Lilaeopsis *Lilaeopsis chinensis*	COSEWIC – special concern NS – vulnerable	- Comply with wetland and watercourse best management practices.
Water-Pennywort *Hydrocotyle umbellate*	COSEWIC – threatened NS – endangered	- Comply with wetland and watercourse best management practices.
Plymouth Gentian *Sabatia kennedyana*	COSEWIC – threatened NS – endangered	- Comply with wetland and watercourse best management practices.
Golden Crest *Lophiola aurea*	COSEWIC – threatened NS – threatened	- Comply with wetland and watercourse best management practices.
Redroot *Lachnanthes carolinana*	COSEWIC – threatened NS – threatened	- Comply with wetland and watercourse best management practices.
Sweet Pepperbush *Clethra anlifolia*	COSEWIC – special concern NS – vulnerable	- Comply with wetland and watercourse best management practices.
Canada Warbler *Wilsonia Canadensis*	COSEWIC – threatened Threatened Nationally	- Comply with wetland and watercourse best management practices. - LEMZ planning includes Old Growth Zones that will be protected.
Striped Bass *Morone saxatilis*	COSEWIC – threatened NS – critically imperiled	- Comply with wetland and watercourse best management practices.

* Golden-crowned kinglet has been chosen as an indicator species for forest dwelling birds. Their habitat will be modelled using a habitat suitability analysis.

APPENDIX VI

UNIQUE AREAS PROGRAM

The Unique Areas Program provides guidelines for the conservation of natural areas with unique botanical, zoological, geological, hydrological, cultural, or scenic characteristics.

Mersey Woodlands are managed for a range of timber and non-timber values including the conservation of biodiversity. In order to achieve our non-timber objectives we have identified specific areas and features that warrant special management consideration. The objective of the Unique Areas Program is to ensure the values associated with these areas and features are maintained.

The Unique Areas Program includes four classifications. Depending on the characteristics of an area and measures required to maintain its unique value it can be designated as a Special Management Area or Feature, Protection Area, Conservation Area, or Forest Recreation Area.

Areas on Mersey Woodlands meeting the requirements of the Sustainable Forestry Initiative (SFI) Forests of Exceptional Conservation Value are included in the Unique Areas Program. Areas of Medway District meeting the requirements of the Forest Stewardship Council's (FSC) High Conservation Value Forests are also included.

Special Management Areas

Special Management Areas are associated with attributes or locations that, because of their ecological, social, cultural or geological significance are sensitive to forestry operations and require measures be taken to ensure they are maintained. Examples of special management areas include:

- 1) Old growth forest: **A forest stand where 30% or more of the basal area is in trees 125 years or older, at least half of the basal area is composed of climax species, and total crown closure is a minimum of 30%** (**DNR Old Forest Policy 2012**). Old growth stands that score 80 or higher on the Nova Scotia Department of Natural Resources Old Growth Assessment will be considered for designation as primordial forest. All primordial forest will be managed as Conservation Areas under the Unique Areas Program.
- 3) Known locations of species at risk

Special Management areas are listed in Table 1.

Areas of Mersey Woodlands considered to be Forests of Exceptional Conservation Value as defined by the Requirements of the SFI 2015-2019 Program are considered Special Management Areas and included in Table 2.

Areas within Medway District identified as High Conservation Value Forests (HCVF) as defined by the Forest Stewardship Council's Certification Standards for Best Forestry Practices in the Maritimes Region are considered Special Management Areas.

See HCVF Summary.

Special Management Features

Special Management Features are forest attributes or structures that contribute to non-timber objectives. They are not area specific and include snag trees, wildlife clumps and coarse woody debris.

Special Management Areas and Features are part of the forest managed for timber values and have Best Management Practices developed to ensure they are maintained**.**

Conservation, Protection and Recreation Areas are found in Table 3.

Protection Areas

Special Management Areas of such exceptional geological or cultural significance that any forest management activity could jeopardize their unique characteristics may be designated as Protection Areas under Bowater Mersey's Unique Areas Program. They could include areas such as historical sites, archaeological finds, fossil sites, and caves. No forest management activities will be carried out in Protection Areas; however, efforts may be made to protect sites from insect infestation or forest fires.

Conservation Areas

Special management areas of such exceptional ecological value that any forest management activity could jeopardize their unique characteristics may be designated as Conservation Areas. Conservation Areas could include unusual forest types, special wildlife habitat and areas containing rare plants or plant communities. They are dynamic eco-systems that will change over time and will be assessed periodically to ensure that the features that made the areas unique still exist. They may change such that special status is no longer warranted. For example, if a Conservation Area was created to protect a certain species of plant that later becomes extinct on the site, then the status of the area will be reviewed to determine whether the Conservation Area status should be removed or maintained.
As with Protection Areas, no forest management activities, other than those to protect the forest, will be performed on a Conservation Area as long as the Conservation Area designation exists.

Forest Recreation Areas

Areas developed for the purpose of public access and recreation are designated as Forest Recreation Areas.

Identification, Investigation and Designation of Unique Areas

Information on the location of sites on Mersey Woodlands with attributes that may warrant special management consideration may be obtained from the general public, the Mersey Woodlands Forest Advisory Committee, research organizations, government agencies, DNR employees or contractors.

DNR staff and contractors receive training in identification of sites they could encounter that should be considered special management areas or features and the Best Management Practice to be followed to ensure they are maintained.

Table 1. Special Management Areas and Features

Special Management Area	Management Considerations
Riparian Zones	For commercial harvesting: Watercourse >50 cm average width Special management zone: • 20-30 m special management zone • No vehicles within 7 m unless on an approved crossing • To comply with the buffer zone extension required on slopes along watercourses (provincial regulation) a 1 m addition will be made for every 2 percent increase above 40 percent slope up to a maximum of 60 m Watercourse < 50 cm average width • Leave high stumps • No vehicles within 5 m unless on approved crossing • Do not conduct any activities within 20 m of the edge of a watercourse that would result in sediment being deposited in the watercourse

Land adjacent 100 series highways or designated tourist routes Lands adjacent canoe routes portages and campsites	• Leave variable width special management (no harvest) zones adjacent Highways 1,3, 8, 10, 12, 14 and 101 103 and certain canoe routes • Leave canoe portages and boat entry points brush free after forest operations • A minimum of 30 m buffer will be left along the highway to minimize the visual impact of the harvesting and road construction. • Viewscape will be considered when planning harvest and road construction activity to minimize the visual impact of harvest and road construction from canoe routes.
Old Growth Forests	• Stand with an age $\geq$125 years ($\geq$ 100 years in BRLs) will be scheduled for an old forest assessment. Results of the assessment will determine the management considerations
Nesting Sites	• The following buffers will be left in the area surrounding nesting sites: • Herons – 200 m • Osprey and Hawks – 100 m • Activities may be limited depending on the time of the year, consult DNR reference material for details • Bald Eagle : Follow DNR Special Management Practices
Wildlife Clumps	In harvest openings greater than 3 ha. • Leave 22 trees per hectare standing and clumped together at no less than 66 trees per clump and no more than 176 trees per clump • These trees need to be of merchantable size and represent the range of height and diameter of trees being cut • One clump – must be between 20-200 m from the edge of the opening • > One clump – cannot be more than 200 m apart and between 20 and 200 m from the edge of the opening • Trees left as a result of harvesting operations will not be disturbed by subsequent silviculture treatments • Clump trees shall not be removed before the next harvest
Snag Trees and Course Woody Debris	In harvest openings greater than 3 ha: • Leave at least 8 snags/potential snags per hectare distributed throughout the opening (Medway District only) • Snags and coarse woody debris must be left on all harvested sites in a manner similar to

	natural patterns to the fullest extent possible wherever it is safe to do so

Table 2. Special Management Areas "Forests of Exceptional Conservation Value"

G1 and G2 Ranked Species	Location
Long's Bull Rush	Upper Great Brook Ten Mile Lake (2 locations)
Boreal Felt Lichen	Whistler Lake, Wilkins Lake
Ghost Antler	Little Bon Mature Lake

Table 3. Conservation, Protection and Recreation Areas

Designation	Area Type	Unique Area	Year Established	Location	Area	Partnership Protection Agency/Program	Description of Special Features
Conservation Area	Wetland Habitat Enhancement	Armstrong Meadows	1982	Kings County	36 ha	Eastern Habitat Joint Venture Ducks Unlimited	A waterfowl habitat development project on a previously flooded meadow. A weir and fishway were installed to increase wildlife and waterfowl use.
Conservation Area		Walls Brook	1986	Shelburne County	42 ha	Eastern Habitat Joint Venture Ducks Unlimited	Development of a wetland with construction of a dam and fishway.
Conservation Area		Tidney River	2003	Shelburne County	948 ha	Nature Conservancy of Canada Province of Nova Scotia	Contained within the Tidney River Wilderness Area; it contains mixed woodlands and wetlands, which are home to a wide variety of waterfowl and rare Atlantic Coastal Plains Flora.
Conservation Area	Special Site	Head of St. Margaret's Bay	1997	Halifax County	1 ha	Nova Scotia Bird Society	A bank swallow nesting site in a discontinued sawdust pile.
Protection Area	Historical Site	Lohnes Lake	1997	Annapolis County	3 ha	Royal Canadian Legion	The location of a fatal crash site of a WWII mosquito fighter plane.
Forest Recreation	Hiking Trail	Old Annapolis Road Hiking Trail	1975	Halifax County	28 ha	NA	Two trails (2.1 and 2.7 km) following Island Lake and passing through old spruce stands and regenerating forests.

Appendix VII

Socio Economic Impact Data and Analysis

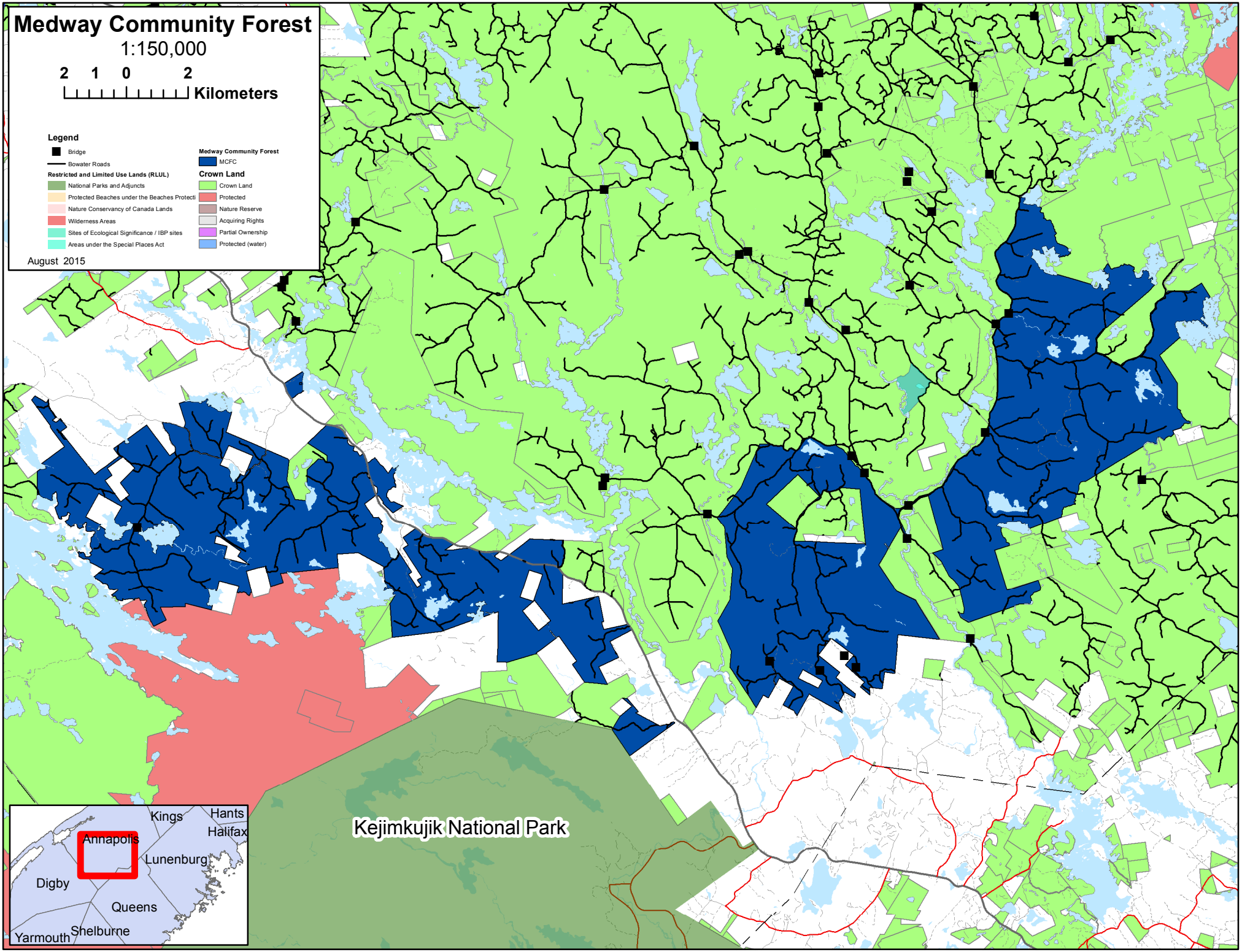
Monitoring Tool/Program/Indicator	Results
Socio Economic Impact Assessment	**Socio Economic Impact Assessment** Socioeconomic Data and analysis is based on 2006 Census Data. The purpose of this information is to serve as baseline data for the socioeconomic impact of forest management in Medway District. Although not specific to the forest industry it is a reflection of the communities most affected by our activities in Medway.

Indicator	Queens	Annapolis	Lunenburg	Nova Scotia
Total Population	11,177	21,438	47,150	913,462
Population Change 2001- 2006	-4.2%	-1.5%	-0.9%	+0.6%
Median Age	46.3	46.3	46	41.8
Median Family Income	45,453	45,468	50,584	55,412
Aboriginal Population	435	565	660	24,175
Education (people 15 years and older)	9,445	17,940	40,035	756,595
Less that high school equivalent	3,660	5,680	13,090	202,775
High School or equivalent	2,155	3,845	8,140	94,000
Trade School	1,135	2,490	5,075	34,615
University	770	1,835	4,460	68,085
Unemployment Rate	12.2%	11.4%	9.0%	9.1%
Occupations Total Experienced Workforce	4,805	9,840	23,330	468,590
Equipment Operators Trades/ Transport	840	1890	4235	69,965
Unique to Primary Industry	430	870	1,835	3,685
Unique to processing & Manufacturing	495	510	2120	7,170
Industry Agriculture &Resources	480	815	1,915	27,400
Manufacturing	925	830	3,920	41,700

Monitoring Tool/Program/Indicator	Results

Social Economic Impact Assessment (continued)	The population of all three counties declined between 2001 and 2006 while the provincial population grew by 0.6%. The most significant decline occurred in Queens county where there were 4.2 % fewer residents in 2006 that in 2001. The median age in all three counties is approximately forty-six, five years older than the provincial median age. Median family income in Queens and Annapolis counties was 18% lower that the median family income in Nova Scotia. Median family income in Lunenburg is 9% below the provincial median. Aboriginal people represented 2.1% of the total population of Queens, Annapolis and Lunenburg counties while provincially 2.6 % of the total population was aboriginal. The percentage of residence 15 years and older in Queens, Annapolis and Lunenburg counties that do not have high school or equivalent level of education is higher than the Province as a whole. Queens had the highest percent of residence 15 years and older without high school education with 40% compared to the province at 26%. Twelve to fourteen percent of Queens, Annapolis and Lunenburg county residents 15 and older have attended a trade school compared to 4.5 percent of Nova Scotia residents of that age category. Both the percent of Annapolis and Lunenburg counties residents with high school or equivalent and the percent with university education are similar to the Provincial level. Unemployment rate is higher in Queens and Annapolis County than in the province as a whole while slightly lowered unemployment rate occurred in Lunenburg county. The percent of experienced workforce employed as equipment operators, tradesman or in jobs unique to primary industry or manufacturing and utilities is significantly higher in Queens, Lunenburg and Annapolis counties where 33-35 % of the workforce are employed in these types of jobs compared to 17% provincially. A higher percentage of the workforce in Queens, Annapolis and Lunenburg counties work in agriculture, resource based industries, and manufacturing compared to the whole Province. Queens County had the highest percentage of jobs in those sector at 29% compared to 15% on a Provincial level. Annapolis and Lunenburg had 17% and 25% respectively.
Monitoring Tool/Program/Indicator	Results
Socio Economic Impact Assessment	**Socio Economic Impact Assessment** Socioeconomic Data and analysis is based on 2011 Census Data. Due to the limited availability of 2011 census data only the following data was summarized. Once the complete data set is available further social economic information will be available.

Indicator	Queens	Annapolis	Lunenburg	Nova Scotia
Total Population	10,960	20,756	47,313	921,727
Population Change 2006- 2011	-2.2%	-3.2%	0.3%	+0.9%


Medway Community Forest
1:150,000
2 1 0 2
Kilometers
Legend
Bridge
Bowater Roads
Restricted and Limited Use Lands (RLUL)
National Parks and Adjuncts
Protected Beaches under the Beaches Protecti
Nature Conservancy of Canada Lands
Wilderness Areas
Sites of Ecological Significance / IBP sites
Areas under the Special Places Act
Medway Community Forest
MCFC
Crown Land
Crown Land
Protected
Nature Reserve
Acquiring Rights
Partial Ownership
Protected (water)
August 2015
Kejimkujik National Park
Kings
Hants
Halifax
Annapolis
Lunenburg
Digby
Queens
Yarmouth
Shelburne