

**Timber Harvesting on Department of
National Defence Properties in
Ontario:
Replacement Class Screening Report**

**Natural Resources Canada
and the
Department of National Defence**

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Canada 

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Acronyms

AOC – Area of Concern

ANSI – Area of Natural and Scientific Interest

CFB – Canadian Forces Base

CFS – Canadian Forest Service

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

DFO – Department of Fisheries & Oceans Canada

DND – Department of National Defence

EA – Environmental Assessment

EC – Environment Canada

FA – Federal Authority

GIS – Geographic Information System

GLFC – Great Lakes Forestry Centre

GLSL – Great Lakes-St. Lawrence

LFCA TC – Land Force Central Area Training Centre

MAPS – Manoeuvre Area Planning System

NRCan – Natural Resources Canada

OMNR – Ontario Ministry of Natural Resources

RA – Responsible Authority

RCSR – Replacement Class Screening Report

SARA – *Species at Risk Act*

the Act – *Canadian Environmental Assessment Act*

the Agency – *Canadian Environmental Assessment Agency*

the Registry – *Canadian Environmental Assessment Registry*

TSA – Timber Sale Agreement

UXO – Unexploded Ordnance

VEC – Valued Ecosystem Component

Glossary of Terms and Definitions

- Area of Concern:* An area of value to users/uses which may be affected by forest management activities. These areas may require modifications to those operations usually prescribed. Areas of Concern include such features as wildlife habitats, rare vegetation, natural and cultural heritage features, aesthetics, recreational features, and experience.
- Clearcutting:* A timber harvesting method involving regenerating an even-aged forest stand in which new seedlings become established (either by natural or artificial means) in fully exposed microenvironments after removal of most or all of the existing trees.
- Collection:* The retrieval of timber that has been previously harvested and piled near a road; this is achieved using equipment such as a self-loading truck that is not suitable for off-road use.
- Critical habitat:* The habitat necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species (*definition extracted from SARA*).
- Harvesting:* A general term for the removal of timber from the forest for utilization; comprising cutting, sometimes further processing (topping and trimming), and extraction.
- Licence:* Any written authority or contract granted by the Minister of Natural Resources for the cutting of timber on federal forest lands in Canada.
- Manoeuvre Area Planning System (MAPS):* A Canadian-developed generic protocol developed with the goal of combining sustainable, realistic military training with responsible environmental stewardship within military training areas
- Row thinning:* A forest management technique occurring generally in plantations in which trees are cut out in lines or narrow strips at fixed intervals throughout the stand in order to accelerate growth and/or improve form of remaining trees.
- Selection method:* A timber harvesting method involving regenerating a forest stand and maintaining an uneven-aged structure by removing some trees in all size classes either singly or in small groups or strips.
- Shelterwood method:* A timber harvesting method involving harvesting in a more or less regular and mature forest crop, designed to establish a new crop

under the protection (overhead or side) of the old.

- Timber:* Trees that are standing, that have fallen or that have been cut.
- Timber permit:* A licence granted to an individual or enterprise for small-scale harvesting or timber removal activities on federal forest lands in Canada. This is also referred to simply as a 'permit'. Timber permits are typically issued for timber sales having an aggregate value (i.e., all timber fees paid by the applicant) less than \$2,500.
- Timber sale agreement (TSA):* A formal contract granted, normally through a competitive process, for the commercial removal of a designated timber resource situated on federal forest lands in Canada, and specifying the rules of conduct of the harvesting operation. TSAs are typically issued for timber sales having a value of \$2,500 or greater.

1. INTRODUCTION

Conducting timber harvesting on federal lands in an environmentally sound manner is of the utmost importance. Through the environmental assessment (EA) process under the *Canadian Environmental Assessment Act* (the Act), existing forestry knowledge can be used to ensure that timber harvesting on federal land is undertaken in a sustainable manner with minimal environmental effects. Within the EA process itself, the quality of assessments and efficiency of decision making can be improved with the implementation of a class screening report to replace individual screenings for specific timber harvesting operations on Department of National Defence (DND) lands.

A class screening is a process in which a responsible authority (RA) develops a report that can be used to assess future projects within a defined class. Natural Resources Canada (NRCan) through the Canadian Forest Service (CFS) Great Lakes Forestry Centre (GLFC), in conjunction with DND, has developed a replacement class screening report (RCSR) for timber harvesting on selected DND lands in Ontario. The objective of this particular RCSR is to provide a more efficient and consistent standard for EAs of timber harvesting projects on federal lands while improving the quality of the assessments undertaken. This RCSR will also allow for a more timely response to timber sale harvest requirements and will result in a more effective use of departmental time and resources by streamlining the assessment and approval process for routine projects that are not likely to cause significant adverse environmental effects.

The RCSR covers the following sites:

- Canadian Forces Base (CFB) Petawawa (excluding the Petawawa Research Forest);
- Canadian Forces Base (CFB) Borden; and
- Land Force Central Area Training Centre (LFCA TC) Meaford.

Although there may be other federal lands for which this RCSR could be applicable, the scope is limited to forested DND lands that exhibit the greatest commonalities. Also, while there may be multiple reasons why timber is cut or removed on DND lands, the Responsible Authorities (DND and NRCan) and the trigger(s) under the Act (i.e., proponent and issuance of a licence/permit), are the same.

1.1 Class Screening and the *Canadian Environmental Assessment Act*

The Act and its regulations set out the legislative basis for federal environmental assessments. The legislation ensures that the environmental effects of projects involving the federal government are carefully considered early in project planning. The Act applies to projects which require a federal authority (FA) to make a decision or take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or licence). The FA then becomes a responsible authority (RA) and is required to ensure that an EA of the project is carried out prior to making its decision or taking a course of action.

Most projects are assessed under a screening type of assessment. A screening systematically documents the anticipated environmental effects of a proposed project, and determines the need to modify the project plan or recommend further mitigation to eliminate adverse environmental effects or minimize the significance of these effects.

The screening of some repetitive projects may be streamlined through the use of a class screening report. This kind of report presents the accumulated knowledge of the environmental effects of a given type of project and identifies measures that are known to reduce or eliminate any significant adverse environmental effects. The Canadian Environmental Assessment Agency (the Agency) may declare such a report appropriate for use as a class screening after taking into account comments received during a period of public consultation.

A replacement class screening consists of a single report that defines a class of projects and describes the associated environmental effects, design standards and mitigation measures for projects assessed within the report. It includes a determination regarding significance of environmental effects for all projects assessed by the replacement class screening. Once the Agency declares an RCSR and where an RA is satisfied that a project falls within the class described in the RCSR, no further action is required under sections 18 or 20 of the Act with respect to the project, as long as the RA ensures that design standards and mitigation measures described in the RCSR are implemented.

1.2 Rationale for a Replacement Class Screening

The Agency has defined six criteria that must exist for a group of projects to be assessed under the class screening process. The following is an explanation of the applicability of this RCSR to the class screening criteria.

i. Well-Defined Class of Projects

The projects within the defined class occur at DND sites located within the Great Lakes-St. Lawrence forest region in Ontario, and share many similarities in their forested stands. Generally activities occur within a two-year timeframe.

Typically, the timber harvesting activities within the class of projects are small in size relative to the land base and include the following:

- harvesting wood from the forest;
- Firewood cutting (usually at landings following a timber operation);
- Salvage removal of freshly dead timber after an extreme weather event or pest invasion;
- Roadside clearing of timber to maintain road clearances; and
- Military exercises/activities that include the removal of timber.

The projects covered under this RCSR are regularly-conducted, routine timber harvesting activities. All use standardized best management practices to remove timber using a high level of decision support information. The activities are subject to the same timing restrictions, type of machinery to do the work, mitigation measures and process to prepare for the removal of wood. Section 4.3 of this RCSR provides a detailed description of the practices used.

ii. Well-Understood Environmental Setting

All three sites occur within the Great Lakes-St. Lawrence Forest Region. This Region is described as,

“...a forest of a very mixed nature, characterized by the eastern white and red pines, eastern hemlock and yellow birch. With these are associated certain dominant broadleaved species common to the Deciduous Forest Region, such as sugar maple, red maple, red oak, basswood, and white elm. Other wide ranging species are the eastern white cedar and largetooth aspen, and to a lesser extent, beech, white oak, butternut, and white ash. Boreal species, such as the white and the black spruces, balsam fir, jack pine, trembling aspen balsam poplar, and white birch are intermixed, and in certain central portions as well as in the east red spruce becomes abundant (Rowe, 1972)”.

Forest resource inventories have been conducted on all three sites and show that the above listed tree species are prevalent within their forested areas. Forest resource inventories catalogue the species age, height, and density of trees and delineate the forested stands using these criteria. The inventories are conducted either by in-house staff or hired contractors, and can take place at various times throughout a federally approved 20-year forest management plan period.

Environment-specific details are known for the class of projects and well understood in terms of valued ecosystem components (VEC) and the interactions among the components. There is a large information base at each of the sites, which aids in determining environmental characteristics and VECs. This information base includes previous EAs, the above-mentioned forest resource inventories, federal species at risk surveys, Geographic Information Systems (GIS), scientific research and monitoring, and trained staff in both the forestry and environmental fields at each site. The project-environment interactions are well understood and are very similar from project to project.

iii. Unlikely to Cause Significant Adverse Environmental Effects, Taking into Account Mitigation Measures

Environmental effects of timber harvesting are well known and conform to a common list of project-environment interactions. There is a large knowledge base from which environmental effects of harvesting have been studied and much research has been conducted to measure both the effects and mitigations of such an activity. The legacy of

past research, scientific knowledge and monitoring has also helped inform the provincial silvicultural guidelines (developed by Ontario Ministry of Natural Resources (OMNR) – see Section 2.4) that are employed by the three sites to mitigate potentially adverse environmental effects. These guidelines form the standard for timber harvesting across the three sites, and are employed by DND and NRCan throughout timber harvesting.

The projects evaluated in this RCSR are like dozens of other projects that have been previously assessed on the three DND sites as individual screenings. The application of best management practices that include standard designs and proven mitigation measures helps ensure that these projects are unlikely to cause adverse environmental effects. Training in tree marking, chainsaw operation, skidder operation, decision support models and other aspects of timber activities all have best management practices built into them. Sites for timber removal are chosen specifically because standard mitigation measures are known to be effective. Monitoring timber harvesting at the sites for at least the last fifty years (except at LFCA TC Meaford which has a shorter history) has shown that significant cumulative environmental effects are unlikely.

The Province of Ontario has undertaken a Class Environmental Assessment (EAB, 1994), which resulted in regionally developed acceptable guidelines related to timber harvesting to mitigate against harmful effects on wildlife populations and silvicultural activities and have been utilized in the development of this RCSR. The OMNR Guidelines are especially pertinent as they were revised for forest types within the entire Great Lakes-St. Lawrence forest region.

iv. Follow-Up Measures

Follow-up programs under the Act have not historically been required by NRCan and DND for timber harvesting activities; however, the establishment and monitoring of regeneration after a harvest is standard practice. As harvesting occurs, the areas are monitored by the proponent (DND) to ensure that the contractor implements mitigation measures and that best practices are followed.

After timber harvesting occurs, subsequent site preparation and tree tending often takes place to maintain or improve the quality of the forested stands. Site preparation is used to provide a suitable seedbed for falling tree seed or to give good planting sites for planted seedlings that are free from other vegetative competition. Tending occurs after desirable regeneration has been established, either natural or planted, with the goal of offering the regeneration optimum growth and survival.

v. Effective and Efficient Planning and Decision-Making Process

The number of screenings of timber harvesting on DND lands in Ontario typically ranges from 10 to 20 per year. Each individual screening requires considerable time and effort to complete. Given the similarities amongst forest conditions, harvesting techniques, and subsequent reforestation and monitoring, an RCSR will greatly enhance the efficiency of conducting EAs for such timber harvests. Furthermore, the EA screening conducted

under the class screening process will continue to be of a high quality. Each timber sale will be assessed against the eligible project criteria contained herein to ensure compliance.

Each area proposed within this RCSR has an approved 20 year Forest Management Plan to guide its harvesting operations and ensure only a sustainable volume of timber is removed on an annual basis. Any projects that fall outside these criteria, or which otherwise contravene the requirements of using the RCSR, will be subject to individual screening or another type of assessment, as required.

Staff at each site has shown a dedication to adhering to accepted sustainable forest management practices. Professionals in the forestry and environmental fields support forest management activities at each site. Section 2 of this RCSR clearly outlines the roles and responsibilities of all departments and individuals implicated, and ensures that the appropriate parties have been consulted in advance. Past experience ensures that planning and decision making processes for projects covered by this class are effective and efficient.

vi. Public Concerns Unlikely

Since the implementation of the Act in 1995, there have been dozens of individual screenings relating to timber harvesting across the three sites. Over that time, there has been only one isolated incidence of public concern, in which several homeowners had concerns regarding the night-time noise levels and aesthetic effects of harvesting near their homes. After consultation with the Forestry Officer, evening-hours harvesting was curtailed to address the noise complaint, and only a portion of the stand in question was harvested using oblique strip cutting to minimize the aesthetic concerns, thus satisfying the homeowners. The development of the Forest Management Plans of CFB Petawawa, CFB Borden, and LFCA TC Meaford all included at least one public open house where the public had an opportunity to voice concerns regarding timber management. No concerns were raised during any of these open houses.

1.3 Projects Subject to Class Screening

Most projects at CFB Petawawa (excluding the Petawawa Research Forest), CFB Borden, and LFCA TC Meaford relating to timber as defined by the *Timber Regulations, 1993* will be subject to this RCSR. This includes timber harvests where a timber permit or TSA is required, as well as any trees that would need to be cut or removed as part of road clearing operations, to create temporary encampments, or any other operation that would include the cutting or removal of timber on DND land subject to this RCSR. In most circumstances, the greatest volume of timber removed would result from an annually scheduled harvest, with the possible exception of large areas that would need to be cleared to accommodate activities such as military exercises. Extreme weather events may create a need to remove large volumes of wood (i.e. salvage harvests).

1.3.1 Projects Subject to the Replacement Class Screening Report

The projects covered by this RCSR encompass timber harvesting on the three applicable DND sites in Ontario. Projects are defined by four project sub-classes, including:

- timber sales that require the issuance of a timber sale agreement under subsection 7(3) of the *Timber Regulations, 1993* or a TSA under section 14 of those regulations (*Inclusion List Regulations* Schedule section 74);
- firewood sales that require the issuance of a permit under subsection 7(3) of the *Timber Regulations, 1993* or an agreement under section 14 of those regulations (*Inclusion List Regulations* Schedule section 74);
- salvage harvests after extreme events that require the issuance of a permit under subsection 7(3) of the *Timber Regulations, 1993* or an agreement under section 14 of those regulations (*Inclusion List Regulations* Schedule section 74); and
- cutting or removal of timber on land administered by the DND as described in section 31 of the Schedule of the *Inclusion List Regulations*.

Timber Sale Agreements (TSA)

Timber sales at the three sites are usually awarded through a bidding process, with the successful bidder being awarded a TSA to harvest the wood. An EA forms part of that TSA, and any mitigations and conditions must be adhered to while harvesting occurs. Currently, timber sales trigger the vast majority of timber related EAs on the three sites.

The issuance of a TSA allows for control and regulation as the timber is being removed. TSAs stipulate:

- the specific location where the timber can be removed, specified on maps and via ground markings;
- any temporal boundaries such as breeding times, wet seasons, etc.;
- the type of timber that can be removed (species, size and quality) and how the harvesting must be conducted;
- accident and malfunction protocols;
- mitigation measures;
- contact information; and
- fines and penalties for improper harvesting.

Marking of stands is controlled by trained and certified tree markers. Part of the training includes studying silvicultural guides issued by the Ontario Ministry of Natural Resources. These guides contain the most up-to-date information and procedures available and these are applied to forests covered by this RSCR.

Timber Permits

Timber permits are often issued for the sale of firewood or other small-scale timber sales. The timber is often located on landings created for the harvesting of standing timber. Normally, timber permits are issued for the collection of timber rather than its harvesting.

Salvage Harvests

Salvage harvests take place after extreme events such as a pest invasion or windstorm. In a salvage harvest, wood is harvested quickly after it has been damaged or killed in order to transport it to a mill so that its quality can be preserved. The area and amount of timber affected varies based upon the severity of the event. The permit process for salvage harvests can be accomplished through a sole source timber permit or TSA or a bidding process, depending on the quality and amount of wood being harvested.

Miscellaneous Cutting or Removal of Timber for Military Purposes

With respect to section 31 of the Schedule to the *Inclusion List Regulations*, this RCSR applies only to the removal of timber. Thus, it would include timber harvesting projects whose primary goal is not to generate revenue. The building of a bivouac site for military training purposes, road clearing, and the utilization of timber in any military exercise are examples that would invoke section 31.

1.3.2 Projects Not Subject to the Replacement Class Screening Report

The project or site conditions that would not be covered by this RCSR are as follows:

- any project that is not exclusively on one of the three sites of CFB Petawawa (excluding the Petawawa Research Forest), CFB Borden, or LFCA TC Meaford;
- any project where timber activities are only a component of a broader project that requires an EA as determined by the requirements of the Act (e.g., construction of a new range);
- any project that requires other RAs besides those mentioned in this RCSR to make decisions to allow the project to proceed either in whole or in part;
- any project that would exceed 500 ha¹; and
- any project occurring < 30 m from a water body.

Furthermore, projects that are not suitable for application of this RCSR include those that are likely to have an interaction with a species at risk, either directly or indirectly, such as

¹ The 500 ha refers to the total harvest area boundaries. In the case of partial harvesting, the most common technique used on the properties, only 1/4 to 1/3 of the timber would be removed during a given harvest. Such large harvests would only occur in the event of a large calamity such as a wind storm. A typical harvest area would not exceed 100 ha.

adversely affecting their habitat², and/or that would require a permit under the *Species at Risk Act* (SARA). For the purposes of this document, species at risk (SAR) include:

- species identified as Extirpated, Endangered and Threatened on the List of Wildlife Species at Risk set out in Schedule 1 of SARA, and their critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of SARA; and
- species that have been recognized as “at risk” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by provincial or territorial authorities.

Forest areas within 30 metres of a water body are excluded from timber harvesting activities, and thus from the RCSR, through the designation of appropriate uncut buffer strips and strict practices that respect the *Navigable Waters Protection Act* and the *Fisheries Act* when operating near water bodies.

1.3.3 Assessing projects subject to the Replacement Class Screening Report

A given project will be assessed as to its applicability to the RCSR through procedures developed at each DND property. DND Base Environmental Officers and/or Base Natural Resource Officers will ensure that each project is assessed and meets the eligibility criteria.

DND conducts ongoing surveys for SAR on the three properties covered by this RCSR, and develops species management plans for selected individual or groups of species. Surveys determine with reasonable confidence whether a SAR is present or is reasonably expected to occur within a stand to be harvested, as identified in 20-year forest management plans. Surveys are carried out by those having the capability to identify SAR and their habitat, such as biologists and ecologists. As stated in section 1.3.2, where species at risk are identified as likely being adversely affected by a project, the project would not be subject to this RCSR.

1.3.4 Referrals to other Departments for Species at Risk

Competent Minister for Species at Risk

Under section 79(1) of SARA, the RA must notify the competent Minister (or Ministers) if the project is likely to have an effect (beneficial or adverse) on a listed wildlife species or its critical habitat. The notification must be made in writing. Competent ministers under SARA are:

² If, after reviewing the project description using the class screening report, it becomes known or reasonably suspected that species at risk could be adversely affected by the proposed project, the replacement class screening report cannot be used. The project requires an individual environmental assessment under the Act. Note the contents of the replacement class screening report may be used in the preparation of the individual screening report to the extent appropriate.

- a) the Minister of Fisheries and Oceans with respect to aquatic species, other than individuals mentioned in paragraph (b); and
- b) the Minister of the Environment with respect to all other individuals, including individuals in or on federal lands that are administered by that Minister and that are national parks, national historic sites, national marine conservation areas, or other protected heritage areas as those expressions are defined in subsection 2(1) of the *Parks Canada Agency Act*

Depending on the species at risk, the RA must notify Environment Canada, Parks Canada Agency or Fisheries and Oceans Canada. Where there is more than one competent minister responsible for the species affected, notification must be sent to each department or agency with responsibility for the species. All three departments/agencies have determined that notification should be regional, through the usual EA channels for that department.

Subsection 79(2) of SARA requires that, where a federal EA is being carried out on a project that may affect a listed wildlife species or its critical habitat:

- potential adverse effects on the listed species must be identified and mitigated;
- the effects on the listed species must be monitored, if the project is implemented; and
- such mitigation measures must be consistent with recovery strategies and action plans.

1.4 Consultations

Within NRCan, ongoing advice and guidance with respect to meeting NRCan's requirements under the Act was provided by internal staff during the development of this RCSR. NRCan also liaised with the Agency on various aspects of the RCSR's development.

External to the department, and in advance of National Defence Headquarters DND review and acceptance of the RCSR, NRCan consulted with the Base Natural Resources Officers and/or the Base Environmental Officers who serve as contacts for forestry and EA activities on the proposed properties.

External to the RAs, the following departments and agencies were contacted and submitted comments during the development of this RCSR: Environment Canada (EC), the Department of Fisheries and Oceans (DFO), the OMNR, and Grey Sauble and Nottawasaga Valley Conservation Authorities. These agencies were also provided with notice of posting of the final version during the public comment period.

During the public consultation period, known concerned members of the public were personally advised of the posting of the report and invited to comment. This was in addition to the posting of public notice at the three federal land properties offices

(Petawawa, Meaford, and Borden), at the Great Lakes Forestry Centre in Sault Ste. Marie, and at the Natural Resources Canada office in Ottawa.

2. ROLES AND RESPONSIBILITIES

2.1 Responsible Authorities

DND and NRCan are the joint RAs for timber harvesting activities covered by this RCSR. DND Base Forestry or Natural Resources Officers are responsible for all timber harvesting activities, including reporting to NRCan on harvest operations, with the exception of LFCA TC Meaford where the Base Environmental Officer (BEnvO) fulfills this role. The Base Environmental Officer and the Base Forestry/Natural Resources Officer are primary agents responsible for adherence to requirements under the Act. Within NRCan, involved parties include the NRCan EA Group within Science Policy and Integration (EA-SPI), as well as members of CFS such as the Director General and forestry staff responsible for EA.

It should be noted that the RCSR can be applied, where appropriate, by DND and NRCan until such time as the Agency declares the RCSR not to be a class screening report or the declaration period expires.

Natural Resources Canada

NRCan will be the lead RA for all components of the RCSR related to timber harvesting leading to sales, in close consultation with DND Base Forestry or Natural Resources Officers.

NRCan's main responsibility is the issuance of the TSA through a tendering process since the federal properties covered by this RCSR are included in the *Policy for Forest Management of Department of National Defence Lands* (1987). In carrying out this responsibility, NRCan administers the *Timber Regulations* for which the issuance of a permit (under subsection 7(3) of the regulations) or an agreement (under section 14 of the regulations) is listed on the *Law List Regulations*, as well as under section 74 of the Schedule to the *Inclusion List Regulations*.

Because the issuance of a licence or permit is a trigger under paragraph 5(1)(d) of the Act, NRCan is an RA for the physical activities covered by this RCSR.

This RCSR will form part of the terms of TSAs issued by NRCan and enforced by both NRCan and DND as joint RAs; however, accountability for issuing the licence to allow the harvest to proceed rests with NRCan as the timber sale signing authority.

When both NRCan and DND are RAs, it will be the responsibility of NRCan to work with DND and act as the lead RA for the following activities:

- ensure that projects are properly identified as class-applicable;
- ensure that applicable mitigation is implemented;

- on the Registry Internet site, place a regular statement on the extent to which the RCSR has been used, as identified in section 2.2;
- maintain the Registry project file, ensure convenient public access, and respond to information requests in a timely manner; and
- provide an annual cumulative environmental effects assessment declaration to the Agency.

Department of National Defence

As per paragraph 5(1)(a) of the Act, DND is an RA because they are the proponent of the physical activities covered by this RCSR. More specifically, in the context of this RCSR, DND is an RA for:

- any activities that require a permit or licence under 7(3) of the Timber Regulations, (Canada Gazette 1993) or an agreement under section 14 of those regulations (section 74 of the Schedule to the *Inclusion List Regulations*) on lands administered by DND; and
- any activities that require cutting or removal of timber under section 31 of the Schedule to the *Inclusion List Regulations*.

It will be the responsibility of DND to work with NRCan, to ensure that projects are properly identified as class-applicable, as well as ensuring proper implementation of mitigation measures at the above mentioned sites. Appropriate DND staff at each property, as determined internally, will ensure that the planned timber harvest conforms to the terms of the RCSR, before the issuance of a TSA by NRCan.

Where DND is the sole RA, namely for projects related to section 31 of the Schedule to the *Inclusion List Regulations* that do not involve timber sales and are otherwise subject to the class, DND will use this replacement class screening to fulfill its EA requirements. In such cases, it will be the responsibility of DND to ensure that the lead RA responsibilities listed above are fulfilled. An example of such a project is the removal of a small number of trees for use in and/or to create conditions for training exercises.

As sole RA, DND would be responsible for:

- ensuring that projects are properly identified as class-applicable;
- ensuring that applicable mitigation is implemented;
- providing to NRCan for placement on the Registry Internet site a regular statement on the extent to which the RCSR has been used, as identified in section 2.2;
- providing to NRCan information required to maintain the Registry project file, ensure convenient public access, and respond to information requests in a timely manner; and
- providing an annual cumulative environmental effects assessment declaration which NRCan will submit to the Agency.

2.2 The Canadian Environmental Assessment Registry

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to EAs and to provide notice in a timely manner. The Registry consists of two components – an Internet site and a project file.

The Registry Internet site is administered by the Agency. The RAs and the Agency are required to post specific records to the Internet site in relation to the RCSR.

Upon declaration of the RCSR, the Act requires RAs to post on the Internet site of the Registry, at least every three months, statements of projects for which an RCSR was used. Each statement should be in the form of a list of projects, and should include:

- the title of each project for which the RCSR was used;
- the location of each project;
- RA contact information (name, phone number, address, email); and
- the date when it was determined that the project falls within the class of projects covered by the report.

Note: The schedule for posting statements is:

- no later than July 15 (for projects assessed from April 1 to June 30)
- no later than October 15 (for projects assessed from July 1 to September 30)
- no later than January 15 (for projects assessed from October 1 to December 31)
- no later than April 15 (for projects assessed from January 1 to March 31)

The Registry project file must include a copy of the RCSR. The RAs must maintain the file, ensure convenient public access, and respond to information requests in a timely manner.

On behalf of the RAs, NRCan will provide the Agency with a statement of projects for which the RCSR was used as defined by the above schedule. This information will be provided to the Agency once both RAs have agreed on the information to be submitted. The provision of this information will be coordinated between NRCan and DND.

2.3 Federal Authorities

Two expert federal authorities (FAs) have been requested to review and provide expertise to this RCSR including:

- Fisheries and Oceans Canada; and
- Environment Canada.

Comments received from these FAs will be addressed and incorporated as appropriate into the final version of this RCSR.

2.4 Provincial Coordination

Many provincial guidelines were used in the development of this RCSR. The provincial guidelines drew upon knowledge gained through studies at both the provincial and federal levels. The OMNR will be provided with an opportunity to review and provide comments on the RCSR.

The OMNR is the key provincial agency in the implementation of best practices in timber harvesting. The OMNR offers certification in tree marking and chainsaw cutting, which both play an important role in timber harvesting on federal lands by ensuring that the tree markers and contractors are knowledgeable regarding these best practices. OMNR's silvicultural guides, which are periodically reviewed and revised as required, are employed in the decision-making process, and are in themselves designed to be used to mitigate possible undesirable environmental effects. Information on appropriate Areas of Concern (AOC) found in the silvicultural guides and other OMNR forest management guides help inform the standards used to implement mitigations, especially those dealing with wildlife or sensitive areas.

The RCSR is not designed to compensate for provincial requirements nor does it eliminate the need for specific provincial approvals, where required. The RCSR does not exempt RAs from complying with relevant provincial legislation.

2.5 Other Parties

During the public consultation of this RCSR, other regional agencies were advised of the opportunity to comment, namely, Grey Sauble and Nottawasaga Valley Conservation Authorities, given their involvement with LFCA TC Meaford and CFB Borden respectively.

3. PROJECT CLASS DESCRIPTION

3.1 Project Locations

CFB Petawawa

CFB Petawawa occupies 30,770 ha in parts of the area from latitude 45 44'N to 46 03'N and from longitude 77 14'W and 77 37'W. CFB Petawawa is located within the Algonquin-Pontiac section of the Great Lakes-St. Lawrence Forest Region of Canada.

CFB Borden

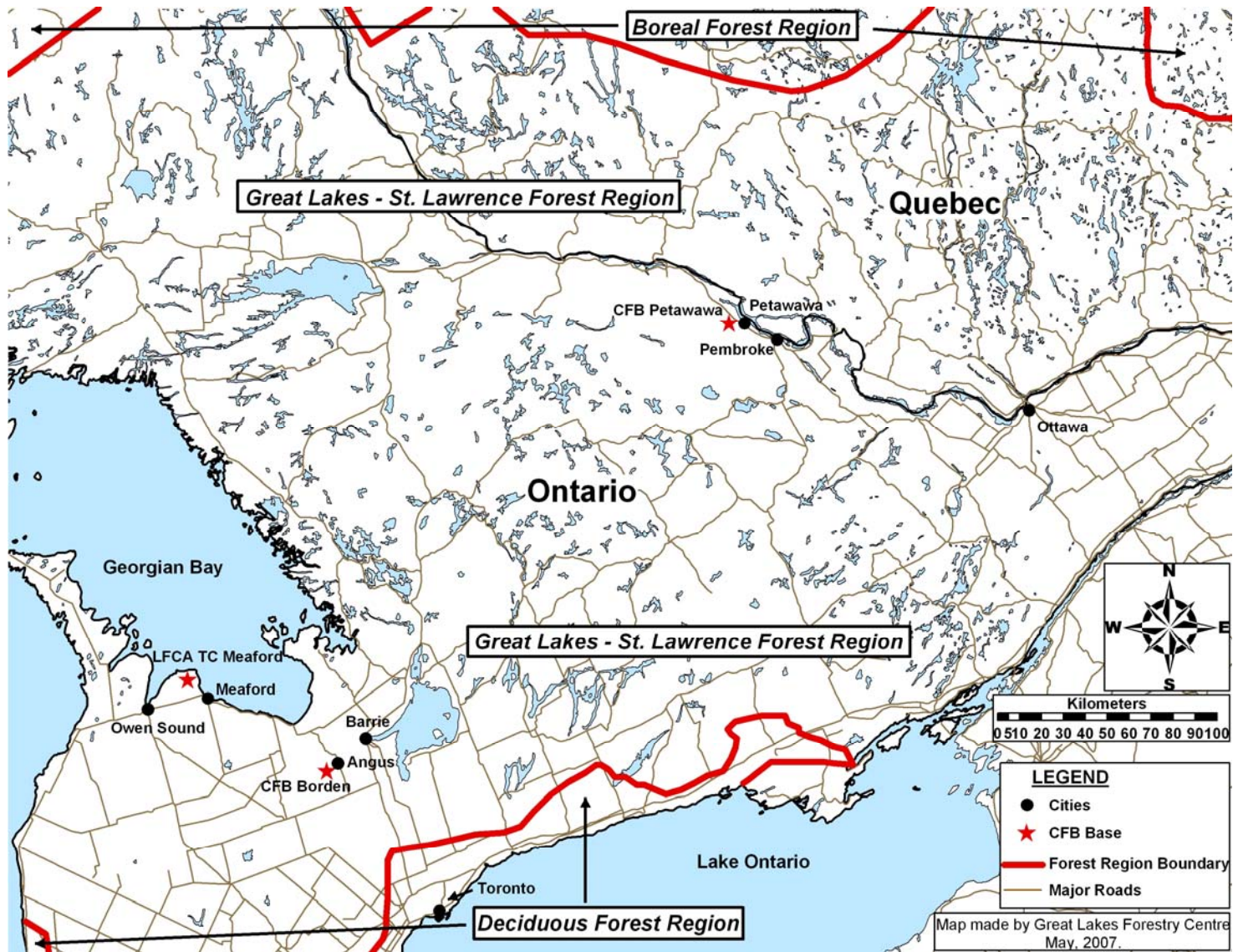
CFB Borden occupies 7,925 ha in parts of the area from latitude 44 13' to 44 20'N and from longitude 79 51'W to 80 00'W. CFB Borden is located slightly west of the center of the Huron-Ontario section of the Great Lakes-St. Lawrence Forest Region of Canada. The boundaries of CFB Borden are mostly straight lines following the lot and concession lines of the original land survey.

LFCA TC Meaford

LFCA TC Meaford encompasses 7,650 ha of land in Grey County on the south shore of Georgian Bay within the Huron-Ontario section of the Great Lakes-St Lawrence Forest Region. LFCA TC Meaford lies between latitudes 44 37'30" N and 44 44'00" N. and longitudes 80 37'30" W and 80 46'00" W.

The following map shows the three federal lands within the Great Lakes-St. Lawrence Forest Region.

Figure 1: Three DND Properties Overlain on Great Lakes-St. Lawrence Forest Region



3.2 Seasonal Scheduling and Duration of Projects

Typical Seasons

Generally, timber harvesting does not have a typical season. For instance, timber harvesting, although often done in the fall and winter, can occur year round depending on the type of harvest, site characteristics and accessibility due to military training. Firewood can be collected and removed at any time of the year. Other operations and military exercises that fall under section 31 of the Schedule to the *Inclusion List Regulations* could also happen at any time of the year.

The temporal characteristics of timber harvesting would best be described through a catalogue of timing restrictions that can mitigate potential environmental effects. These timing restrictions are described in the sub-sections below.

Breeding Times/Wildlife Restrictions

During typical timber harvesting, equipment noise and tree felling can disturb breeding wildlife if no timing restrictions are applied. As indications of certain species of wildlife are encountered in the stands to be harvested, an AOC is applied. AOC's have both a temporal and spatial component. Spatially, a reserve is placed around the AOC to ensure that there is a wildlife buffer. Temporally, a restriction is applied so that no activity occurs within the AOC during critical times for that species of wildlife.

Winter Access/Snow Restriction

All three sites have an extensive network of roads, not all of which are ploughed in the winter. This can restrict the transportation of harvesting machinery to the sites, as well as prevent logging trucks from accessing the wood after it has been harvested. It is possible that snow conditions within the harvest blocks will prohibit cutters from effectively removing the wood.

Freeze-up/Break-up and Wet Conditions

On sites where timber harvesting occurs, restrictions are placed during the times of year that are typically the wettest. For example, autumn rainfall and spring snow melt can cause the ground to become easily subject to rutting from machinery and makes wood hauling along gravel roads difficult. Depending on the pattern of precipitation throughout the year, there may also be other time periods where harvesting will have to be curtailed in order to prevent any effects to soil or water. Soils subject to rutting damage may have timber harvesting activities scheduled when the ground is frozen.

Logging Damage

A timing restriction may be applied during the active growing season if it is felt that the type of harvesting, site characteristics, or type of equipment used will cause a high level of logging damage. Equipment or falling trees easily damage the bark of trees during the growing season. Roots may also suffer excessive damage in the summer from soil compaction. Damaged bark and roots form areas where disease can enter the tree, as well as possibly lower their quality for future harvests. The active growing season timing restriction would apply to select harvests and shelterwood harvests where tree density is high and residual trees are of high quality. TSAs include penalty clauses to discourage logging damage, encouraging a certain level of self-monitoring by contractors.

Insect and Disease

Harvesting operations can lead to infestations of insects and diseases which enter the cut stumps and either breed or spread into the root systems of adjacent live trees. Winter harvesting can help minimize such infections and infestations.

Fire Restrictions

Mandatory fire restrictions may be imposed, thereby curtailing all timber harvesting activities.

Military Manoeuvres

Timber harvesting activities may be restricted during periods of active military training manoeuvres. Military training may supersede timber activities as training is a primary use of the sites covered by this RCSR.

Timeframes

Typically, the timeframes surrounding the timber sales that trigger an EA range from one to two years. The area harvested for each TSA can be easily completed by contractors within this timeframe. Salvage harvests would involve similar timelines.

Firewood permits would normally be issued with a timeframe of one year or less, as most firewood cutting and removal activities are kept small and can be accomplished by a single person or a small operation within a year.

Timber activities related to section 31 of the Schedule to the *Inclusion List Regulations* would normally be completed within one year or less. The operations that fall under section 31 would normally be completed in a matter of months or less, but may be initiated at any time of the year.

3.3 Effects of the Environment on the Project

Environmental effects of timber harvesting are well known and conform to a common list of project-environment interactions. There is a large knowledge base from which environmental effects of harvesting have been studied and much research has been conducted to measure both the effects and mitigations of timber harvesting. Listed below are the primary effects of the environment on timber harvesting.

- Adverse weather conditions (extreme drought, winds, precipitation or ice storms) can delay projects owing to unsafe working conditions, or the potential to exacerbate the environmental impact of timber harvesting activities. Extreme weather events can slow forest growth, damage or kill trees through uprooting or breakage, and can affect the ability of the forest to be regenerated successfully. Heavy machinery used to harvest or transport timber is particularly susceptible to becoming bogged down in wet soils, and can cause long-term environmental damage such as rutting and soil compaction.
- Normal weather-related events (spring thaws, mild spells in winter, snowstorms, high winds, and heavy rainfall) can delay projects due to rapidly changing soil conditions and the creation of an unsafe working environment.
- Outbreaks of forest insects and diseases can impact timber harvest plans by killing trees scheduled for harvest, or slowing the average growth rate of the forest, thus requiring an amendment to the planned harvest area and/or a recalculation of the sustainable annual allowable harvest.

The identified effects are considered mitigable through adherence to strict operating standards and following best forest management practices. Specific mitigations to address effects on the environment on timber harvesting projects are covered in Table 3 and section 4.6 of this RCSR.

3.4 Description of Operations

Equipment Used

A wide variety of equipment can be used for the cutting or removal of timber. Chain saws, skidders (both cable skidders and grapple skidders), feller-bunchers, forwarders, and hauling trucks are all utilized to harvest and transport the timber from the harvest site to the mill. Only equipment that results in minimal soil and tree damage and encourages natural regeneration is used.

Description of Cutting and Removal

The method of cutting and removal during the timber harvesting process will vary greatly depending on the type of activity, although the same decision support mechanisms are used to implement the operations. Activities and their associated methods of cutting and

removal such as selection, shelterwood, clearcutting and thinning are described for each sub-class below.

Harvests under a Timber Sale Agreement

TSAs govern the majority of timber harvests on federal lands. These harvests normally utilize a mix of methods such as, selection, shelterwood and clearcutting, and row thinning within plantations. Historically, the area harvested per federal site has not exceeded 120 hectares annually. Using the database of information about the forest including forest resource inventories, GIS mapping, and ground truthing, areas are chosen that have merchantable timber to harvest and will not be adversely affected using standard mitigation measures.

Areas to be partially harvested are required to be tree marked following the OMNR's Silvicultural and Tree Marking Guides (OMNR 1998a, OMNR 1998b, OMNR 2000, OMNR 2004). Individual trees are marked for retention or removal based on indicators of vigour, risk and quality, and to meet broader stand-level objectives such as biodiversity conservation. AOC, sensitive areas and other important features that have been historically identified through pre-harvest work often have their buffers or spatial restrictions applied through the tree marking process. Tree markers, who may be DND staff or hired contractors, are trained as a best practice to report back to DND any findings regarding sensitive areas, wildlife habitat trees, etc. As harvesting occurs, the areas are monitored by DND to ensure that the contractor implements mitigation measures and that best practices are followed. Contractors are provided with information through the TSA indicating the appropriate federal staff member that should be contacted regarding aspects of the harvest.

The natural resources officer at each base is responsible for reporting on species that are affected by timing of disturbance restrictions. Temporal restrictions on timber harvesting are dictated in provincial guides, and current forest management plans prepared for federal lands in Ontario adhere to these recommendations. The natural resources officer at each base is responsible for reporting on species that are affected by timing of disturbance restrictions and ensuring compliance with guidelines.

Salvage Harvests

Salvage harvests utilize much of the same machinery as harvests using a TSA. However, if trees are lying down or hung up in other trees, the harvest machinery must orient the cutting head horizontally or obliquely rather than vertically to process the logs. The application of one of the standard cutting systems described in the previous subsection is often not possible in that the amount of trees to be removed is largely dictated by the spatial distribution of the dead or damaged trees. Rather, the individual stems must be removed quickly before the wood deteriorates and so as to increase the safety of workers who must enter the stand to complete future forest management activities.

If there are sufficient trees still healthy and standing, there may be further removal of

standing trees depending on the future plans for the harvest site. In such a case, the additional trees would be marked. There is a possibility of extra risk to workers while working in blown down or insect/disease-killed stands due to a larger percentage of leaning and unstable trees.

Timber Permits

Timber harvesting under a permit, typically for firewood, is performed either in the forest or on the landing during an annual or salvage harvest, in which the permit holder cuts and collects wood not utilized by the holder of a TSA. The equipment used for timber at the landing normally consists of a vehicle for hauling (often a pick-up truck) and a chainsaw to cut the wood. These operations are usually small in both volume of wood and duration of activity.

Activities Under Section 31 of the Schedule to the Inclusion List Regulations

These activities would normally involve cutting of trees along roadways, or any other cutting or removal of trees on land administered by DND. This will usually be done by DND staff, normally the roads and grounds crew.

3.5 Accidents/Malfunctions

Possible accidents and malfunctions associated with timber related activities at the three DND locations are:

- leaks from harvesting equipment;
- spills from refuelling of harvesting equipment;
- forest fires;
- injuries from logging; and
- discovery of unexploded ordnance.

Each of these potential accidents and malfunctions is explained in full in section 4.4 of this report.

4. ENVIRONMENTAL REVIEW

This section examines the consistent methodology used to ensure that the environmental effects from project-environment interactions are identified, avoided where possible and mitigated where necessary. VECs have been identified based upon the degree to which they will be affected by the projects and their importance. A rating system has been established to determine the significance of residual environmental effects after mitigation measures have been applied. Potential and cumulative environmental effects on the VECs are also identified. Mitigation measures and the subsequent significance of cumulative environmental effects are examined.

Environmental review methods used in the creation of this report included the review of various literature and guidelines (listed in the References section), as well as internal and external expert consultation.

4.1 Environmental Assessment Boundaries

The projects covered under this RCSR are regularly-conducted, routine timber harvesting activities. Spatial boundaries of this RCSR are limited to the properties of CFB Petawawa (excluding the Petawawa Research Forest), CFB Borden, and LFCA TC Meaford. Latitudinal and longitudinal coordinates of the three federal lands are listed in section 3.1. Within these boundaries, most activities (with the exception of those covered under section 31 of the Schedule to the *Inclusion List Regulations*) will be held within the forested areas of the three sites. Planned timber harvesting is often spatially delineated by forest stand boundaries and the proximity of harvest areas to one another.

Temporal boundaries will vary depending upon the subclass of activity, and are linked closely to timing restrictions dictated by the environment. As discussed in section 3.2, timing restrictions created by environmental conditions are sometimes difficult to forecast and temporal boundaries may have to be set by the proponent in response to unpredicted events to prevent negative environmental effects.

Along with environmental timing considerations, many of the timber permits issued have timing specifications for the end of a TSA that are relative to the end of the fiscal year. The timelines ensure that revenue derived from timber sales can be processed in the same period. Environmental concerns will supersede any fiscal concerns.

4.2 Environmental Setting

As mentioned in section 1.0, all three federal lands are within the Great Lakes-St. Lawrence Forest Region. The following descriptive features of each region serve as the basis for making informed decisions related to forest management activities on the properties. Decisions related to harvest and site preparation methods, timing of operations on the land, and species selection for regeneration are all influenced by the

general environmental conditions.

With respect to federal species at risk, new information will be derived through ongoing survey work at each property. As this information arises, it will become supplemental to this RCSR and will continue to be used as a tool to determine whether projects are subject to the RCSR, on a project-by-project basis as outlined in Section 1.3.3.

CFB Petawawa

Geophysical Environment

CFB Petawawa lies within two physiographic regions (The Physiography of Southern Ontario, Chapman and Putnam, 1984); namely the Petawawa Sand Plain and the Algonquin Highlands.

The vast majority of CFB Petawawa forest estate is covered by the Petawawa Sand Plain which is defined by deep, flat to gently rolling, deltaic water-laden sands located adjacent to the Ottawa River.

The small area represented by the Algonquin Highlands can generally be found on the western side of the forest close to the Algonquin Park boundary line. The Algonquin Highlands is represented by rugged topography with a great variation in local relief. Rounded hills, ridges and bedrock outcrops are interspersed with swamps and bogs. Some areas possess shallow to deep glacial till soil cover while others exhibit exposed bedrock.

The surface deposits, including the portion that is described as soil, typically originate from the bedrock below, although some materials have been moved great distances by glaciation and water - particularly in regard to the CFB Petawawa. The bedrock of this forest area is that which underlies the majority of eastern Canada - the granitic Canadian Shield, a vast Precambrian (worn down) mountain range. The Canadian Shield has been subdivided into various Provinces of which the CFB Petawawa forest lies in the Central Gneissic Belt of the Grenville Province. This particular bedrock formation when ground down during the various glacial periods produced soils that are acidic and low in fertility.

The soils of the area are best found, classified and described in the Soils Survey of Renfrew County as contained in Report Number 37 of the Ontario Soil Survey, Gillespie and Wicklund, 1964. These deep Uplands sandy loams are derived from acidic Canadian Shield materials (pH 4.7-5.6) and are lacking in nutrients and have a very low capacity for water retention. White pine, red pine and jack pine are the conifer species best suited for growing under these conditions. In addition, these species through the decay of the humus material formed beneath them (needle cast, etc.), increase the acidic condition of the soils and thereby improve and perpetuate their growing habitat.

Aquatic Environment

CFB Petawawa is bordered on the northeast by the Ottawa River, which is fed by the Chalk, Petawawa and Barron Rivers, as well as Tucker Creek. The two rivers flowing through CFB Petawawa are the Barron River on the south boundary and the Petawawa River, which runs east-west through the centre of the property. There are many lakes and other wetlands on the property, the largest being Centre Lake, Montgomery Lake, Tucker Lake, and Jorgens Lake.

Terrestrial Environment

CFB Petawawa is characterized well by the Great Lakes-St. Lawrence Forest Region. Of the forested area of the base, the following tree species are dominant:

red pine (<i>Pinus resinosa</i>);	eastern white cedar (<i>Thuja occidentalis</i>);
white pine (<i>Pinus strobus</i>);	black ash (<i>Fraxinus nigra</i>);
jack pine (<i>Pinus banksiana</i>);	balsam fir (<i>Abies balsamea</i>);
trembling aspen (<i>Populus tremuloides</i>);	birch (white/yellow) (<i>Betula papyrifera/alleganiensis</i>); and
maple (sugar/black/red) (<i>Acer saccharum/nigrum/rubrum</i>);	spruce (black/white/Norway) (<i>Picea mariana/glauca/abies</i>).
red oak (<i>Quercus rubra</i>);	

Common fur-bearing wildlife species found on the property include (Jacques Whitford Environmental Ltd., 1994a):

Moose (<i>Alces alces</i>);	<i>cooperi</i>);
Black bear (<i>Ursus americanus</i>);	Northern short-tailed shrew (<i>Blarina brevicauda</i>);
Fisher (<i>Martes pennanti</i>);	Woodchuck (<i>Marmota monax</i>);
Marten (<i>Martes americana</i>);	White-tailed deer (<i>Odocoileus virginianus</i>);
River otter (<i>Lontra canadensis</i>);	Beaver (<i>Castor canadensis</i>);
Porcupine (<i>Erethizon dorsatum</i>);	Raccoon (<i>Procyon lotor</i>);
Flying squirrel (<i>Glaucomys sabrinus</i>);	Red fox (<i>Vulpes vulpes</i>);
Eastern chipmunk (<i>Tamias striatus</i>);	Muskrat (<i>Ondatra zibethicus</i>);
Deer mouse (<i>Peromyscus maniculatus</i>);	Mink (<i>Mustela vison</i>);
White-footed mouse (<i>Peromyscus leucopus</i>);	Weasel (<i>Mustela nivalis</i>);
Meadow vole (<i>Microtus pennsylvanicus</i>);	Skunk (<i>Mephitis mephitis</i>);
Southern red-backed vole (<i>Clethrionomys gapperi</i>);	red squirrel (<i>Tamiasciurus hudsonicus</i>);
Southern bog lemming (<i>Synaptomys</i>	grey squirrel (<i>Sciurus carolinensis</i>); and
	snowshoe hare (<i>Lepus americanus</i>).

Principle waterfowl include:

Common merganser (<i>Mergus merganser</i>);	Red-breasted merganser (<i>Mergus serrator</i>);
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Hooded merganser (*Lophodytes cucullatus*);
American wigeon (*Anas americana*);
American green-winged teal (*Anas crecca*);
Northern pintail (*Anas acuta*);
Greater scaup (*Aythya marila*);
Lesser scaup (*Aythya affinis*);
Ring-necked duck (*Aythya collaris*);
Common goldeneye (*Bucephala*

clangula);
Black scoter (*Melanitta nigra*);
White-winged scoter (*Melanitta fusca*);
Surf scoter (*Melanitta perspicillata*);
Canada goose (*Branta canadensis*);
Bufflehead (*Bucephala albeola*);
mallard duck (*Anas platyrhynchos*);
blue-winged teal (*Anas discors*);
wood duck (*Aix sponsa*); and
black duck (*Anas rubripes*).

A wide range of nesting and migrating songbirds have been observed, with the most common species being:

American redstart (*Setophaga ruticilla*);
black-and-white warbler (*Mniotilta varia*);
black-backed woodpecker (*Picoides arcticus*);
black-capped chickadee (*Poecile atricapilla*);
black-throated blue warbler (*Dendroica caerulescens*);
black-throated green warbler (*Dendroica virens*);
broad-winged hawk (*Buteo platypterus*);
Canada warbler (*Wilsonia canadensis*);
chestnut-sided warbler (*Dendroica pensylvanica*);
chipping sparrow (*Spizella passerina*);
common yellowthroat (*Geothlypis trichas*);
eastern wood-peewee (*Contopus virens*);
great crested flycatcher (*Myiarchus crinitus*);
hairy woodpecker (*Picoides villosus*);
dark-eyed junco (*Junco hyemalis*);
least flycatcher (*Empidonax minimus*);
mourning dove (*Zenaida macroura*);
Nashville warbler (*Vermivora ruficapilla*);

northern flicker (*Colaptes auratus*);
ovenbird (*Seiurus aurocapillus*);
red-breasted nuthatch (*Sitta canadensis*);
red-eyed vireo (*Vireo olivaceus*);
Tennessee warbler (*Vermivora peregrina*);
veery (*Catharus fuscescens*);
white-breasted nuthatch (*Sitta carolinensis*);
white-throated sparrow (*Zonotrichia albicollis*);
winter wren (*Troglodytes troglodytes*);
yellow-bellied sapsucker (*Sphyrapicus varius*);
hermit thrush (*Catharus guttatus*);
ruby-crowned kinglet (*Regulus calendula*);
American robin (*Turdus migratorius*);
magnolia warbler (*Dendroica magnolia*);
blackburnian warbler (*Dendroica fusca*);
mourning warbler (*Oporornis philadelphia*);
purple finch (*Carpodacus purpureus*);
ruby-throated hummingbird (*Archilochus colubris*); and
blue jay (*Cyanocitta cristata*).

Common fish species include:

silver redhorse (*Moxostoma anisurum*);
shorthead redhorse (*Moxostoma macrolepidotum*);

golden redhorse (*Moxostoma erythrurum*);
greater redhorse (*Moxostoma valenciennesi*);

blacknose dace (*Rhinichthys atratulus*);
bluntnose minnow (*Pimephales notatus*);
mudminnow (*Umbra limi*);
muskellunge (*Esox masquinongy*);
northern pike (*Esox lucius*);
Pumpkinseed (*Lepomis gibbosus*);
Rock bass (*Ambloplites rupestris*);
brown bullhead (*Ameiurus nebulosus*);
channel catfish (*Ictalurus punctatus*);
golden shiner (*Notemigonus crysoleucas*);
lake trout (*Salvelinus namaycush*);
lake whitefish (*Coregonus clupeaformis*);

lake sturgeon (*Acipenser fulvescens*);
largemouth bass (*Micropterus salmoides*);
longnose gar (*Lepisosteus osseus*);
walleye (*Stizostedion vitreum*);
smallmouth bass (*Micropterus dolomieu*);
yellow perch (*Perca flavescens*);
white sucker (*Catostomus commersoni*);
johnny darter (*Etheostoma nigrum*);
creek chub (*Semotilus atromaculatus*);
and
brook stickleback (*Culaea inconstans*).

Atmospheric Environment

The Petawawa Sand Plain of the CFB Petawawa forest is influenced most, climate-wise, by the Algonquin Highlands directly to the west, which is colder and has a shorter growing season than the Pembroke area to the south. Late spring or early fall frosts are a common occurrence. The mean average temperature is 4.3°C near Chalk River (Environment Canada - Petawawa National Forestry Institute) with a mean frost free period of 126 days. The mean growing season for the Chalk River area is 180 days and the mean total precipitation is approximately 830 mm. Generally, temperatures range from about -30°C to 30°C. January is the coldest month (mean -12.4°C) and July is the warmest (mean 19.1°C).

The prevailing winds are from the west and south-west in summer, often bringing in warm humid air from southern Ontario and up from the Gulf of Mexico. In winter, the prevailing winds are from the north and north-west, bringing dry, cold Arctic air masses from Canada's far north. Renfrew County is noted for the driest climate in south-central Ontario with less rain during the growing season and less snow during the winter.

Socio-Economic Environment

Besides the community of CFB Petawawa itself (pop. 5,000, with other military personnel commuting), other nearby towns are Chalk River (pop. 900), Deep River (pop. 4200), Petawawa (pop. 17000) and Pembroke (pop. 16000). Either directly or indirectly, forestry plays an important role in the local economy, both on the Ontario side and the Quebec side of the Ottawa River.

Sites of archaeological significance have been identified on the property, and are being protected through the designation of AOC's (Jacques Whitford Environmental Ltd., 1994b; Heritage Quest Inc., 1999). Their locations are not being made public to avoid drawing attention to them.

Federal Species at Risk at CFB Petawawa

Federal species at risk surveys were completed for/by CFB Petawawa in 2006 through 2008, revealing four federal species at risk (Personal communication. T. Richard, Dep. National Defence, CFB Petawawa, 9 Oct. 2008) on lands administered by CFB Petawawa, listed under SARA.

The SARA-listed species, including their status, are listed below:

- Kirtland's warbler (*Dendroica kirtlandii*) (endangered);
- Blanding's turtle (*Emydoidea blandingii*) (threatened);
- stinkpot turtle (*Sternotherus odoratus*) (threatened); and
- golden-winged warbler (*Vermivora chrysoptera*) (threatened).

CFB Borden

Geophysical Environment:

CFB Borden is underlain by Ordovician and Silurian rocks of the Paleozoic era. The major rock formation is the sedimentary Utica shale formation. Glacio-fluvial deposits of sand formed the moderately flat outwash plain during the breakup of the last ice age. The general slope of the base is from a high south-southwest to a low north-northeast. Elevations range from 186 m in the river valleys at the northeast corner to a high of 253 m situated on what is an imperfect moraine or drumlin in the southeast quadrant. The approximate mean elevation of Borden is 226 m above sea level. The flood plains of the rivers may be up to 25 m below the level of the greater outwash plain.

With the exception of the southeast quadrant of the base, where some stony till occurs, all of the soils are deep sands or, in the river valleys, sands overlain by muck. A more detailed soil survey of CFB Borden has not been undertaken. However, based on soil surveys taken outside of the Base in Simcoe County, some generalizations may be made. Perhaps up to 50 percent of CFB Borden's soils may belong to the Tioga soil type, 20 percent to the Grandby soil type, 17 percent to the Allison soil type with the remaining 13 percent containing various amounts of Bennington type, Bottomland type, Minesing type, Muck type, Sargent type and Simcoe type. The Tioga and Allison types belong to the podzol great soil group and the Grandby, Simcoe and Minesing types belong to the dark grey Gleisolic great soil group. The Brown Forest great soil group is represented by the Sargent type, the Grey-Brown Podzolic great soil group by the Bennington type and the Organic great soil group by Muck type.

With the exception of portions of the southeast quadrant of the base and some small, levied flood plains in the river valleys, drainage is excellent to excessive. Most of CFB Borden has a moisture regime within the dry to fresh range. Small areas may be classified as very dry or very moist to wet. The southwest quadrant contains several hectares that may be classified as fresh to wet. Given the drainage capability of the ground, there is regular recharge of the groundwater. In the sites where harvesting will be taking place,

there is no known contamination of the soils; thus, the quality of the groundwater is assumed to be good to very good, but there are no known studies to confirm this.

Aquatic Environment

The valley floors are largely covered in eastern white cedar (*Thuja occidentalis*), hardwoods and shrubs that provide habitat for many of the wildlife species found on the base. The Mad River and the Pine River are considered regionally moderately significant rivers. The Mad River incises the plain from west to east. The Pine River and a tributary, Bear Creek (in the southwest part of the Base) incise from south to north and then turn northeast. Minor tributaries form localized gullies dendritic to the main valleys. Both river systems are incised below the level of the land by several metres.

Terrestrial Environment

Within the stands to be harvested, the crown cover is sufficiently dense to shade out flora except along the edges. During the growing season, under a closed forest canopy, the local microclimate tends to be humid. Open, non-forested areas have a drier atmosphere.

A list of tree species found on the property is as follows:

red pine (<i>Pinus resinosa</i>);	eastern white cedar (<i>Thuja occidentalis</i>);
white pine (<i>Pinus strobus</i>);	ash (white/black) (<i>Fraxinus americana/nigra</i>);
Scots pine (<i>Pinus sylvestris</i>);	cherry (black/choke) (<i>Prunus serotina/virginiana</i>);
jack pine (<i>Pinus banksiana</i>);	balsam fir (<i>Abies balsamea</i>);
trembling aspen (<i>Populus tremuloides</i>);	birch (white/yellow) (<i>Betula papyrifera/alleganiensis</i>); and
balsam poplar (<i>Populus balsamifera</i>);	spruce (black/white/Norway) (<i>Picea mariana/glauca/abies</i>).
European larch (<i>Larix decidua</i>);	
maple (sugar/red) (<i>Acer saccharum /rubrum</i>);	
red oak (<i>Quercus rubra</i>);	

Common fur-bearing wildlife species found on the property include:

White-tailed deer (<i>Odocoileus virginianus</i>);	Weasel (<i>Mustela nivalis</i>);
Beaver (<i>Castor canadensis</i>);	Skunk (<i>Mephitis mephitis</i>);
Raccoon (<i>Procyon lotor</i>);	red squirrel (<i>Tamiasciurus hudsonicus</i>);
Red fox (<i>Vulpes vulpes</i>);	grey squirrel (<i>Sciurus carolinensis</i>);
Coyote (<i>Canis latrans</i>);	cottontail rabbit (<i>Sylvilagus floridanus</i>);
Muskrat (<i>Ondatra zibethicus</i>);	and
Mink (<i>Mustela vison</i>);	snowshoe hare (<i>Lepus americanus</i>).

Principle waterfowl include:

mallard duck (<i>Anas platyrhynchos</i>);	blue-winged teal (<i>Anas discors</i>);
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wood duck (*Aix sponsa*); and

black duck (*Anas rubripes*).

A wide range of nesting and migrating songbirds have been observed, with the most common species being:

Gray partridge (*Perdix perdix*);
American woodcock (*Scolopax minor*);
hermit thrush (*Catharus guttatus*);
golden-crowned kinglet (*Regulus satrapa*);
American robin (*Turdus migratorius*);
Northern parula warbler (*Parula Americana*);
magnolia warbler (*Dendroica magnolia*);
blackburnian warbler (*Dendroica fusca*);
mourning warbler (*Oporornis philadelphia*);
purple finch (*Carpodacus purpureus*);

ruby-throated hummingbird (*Archilochus colubris*);
red-headed woodpecker (*Melanerpes erythrocephalus*);
pileated woodpecker (*Dryocopus pileatus*);
red-winged blackbird (*Agelaius phoeniceus*);
European starling (*Sturnus vulgaris*);
blue jay (*Cyanocitta cristata*);
Canada jay (*Perisoreus canadensis*);
ring-billed gull (*Larus delawarensis*);
herring gull (*Larus argentatus*), and
several species of sparrow and hawk.

Common fish species include:

rainbow trout (*Oncorhynchus mykiss*);
brown trout (*Salmo trutta*);
brook trout (*Salvelinus fontinalis*);
Coho salmon (*Oncorhynchus kisutch*);

Chinook salmon (*Oncorhynchus tshawytscha*); and
northern pike (*Esox lucius*).

Atmospheric Environment

From a Canadian perspective, the climate of CFB Borden can be generally described as moderate. It is situated approximately 135km east of Lake Huron, 30km south of Georgian Bay, 110km north of Lake Ontario and 160km north of Lake Erie. Thus, the climate is tempered by the effect of these lakes. Precipitation is relatively uniform throughout the year with a mean monthly average of 57mm. Precipitation landing on the soils soaks in and does not run off except on slopes in incised valleys. The majority of snowfall occurs in the December to March period with snowstorms happening from October to April. The base is situated on a local area storm track from Lake Huron, so prolonged periods of drought are infrequent. The average frost free period is from mid-May to mid-September with the last spring frost as late as June 16 and the first fall frost as early as August 30. Daily mean temperatures normally are above 4° C from mid-April to late October. Maximum mean daily temperatures of 18° C to 20° C from mid-June to late August are the norm. Daily mean temperatures fall below freezing from mid to late November and rise to above freezing in late March to early April. The lowest mean daily temperatures approach -10° C in January. Extreme maximums and minimums are infrequent with approximate range of 40° C to -40° C. Prevailing winds are from the south/southwest. Air quality is generally good to excellent with occasional days of

higher pollution in the atmosphere, caused by external sources of pollution.

Socio-economic Conditions

The average population of the CFB Borden community is 3,000 with other military personnel commuting. In the community of Angus (just outside the base) the population is around 6,000. Essa Township, where CFB Borden lies, has a population of over 16,900 (Statistics Canada, 2006 Census). Regionally there are 377,050 people with the main concentration being in Barrie, approximately 25 km to the east. The land outside the base is generally agricultural, with some county and provincial forestland nearby. The timber on CFB Borden is considered desirable to the forest industries in the region and beyond owing to its location and the relative dearth of such timber in the area.

The primary land use at the base is military training. Secondary use includes police and cadet training and tertiary use is only allowed where it does not interfere with the primary use. Tertiary uses include all terrain vehicle, snowmobile and walking trail use, golf, hunting, fishing, model airplane flying, and paintball. The public is permitted limited access to the property for recreational purposes, but is not granted access to timber harvest areas.

Forest management is considered a tertiary use. Scheduling of forest management activities, especially in the buffer zones around ranges, is difficult and usually restricted to two-day periods each month for regular maintenance of the range and a three week period in each of May and December, when the ranges undergo major maintenance or are shut down for the Christmas break.

Federal Species at Risk at CFB Borden

To date, the only SARA-listed species at risk to be found on the base is:

- Blanding's turtle (*Emydoidea blandingii*) (threatened).

The SARA-listed species American ginseng (*Panax quinquefolius*) and American hart's-tongue fern (*Asplenium scolopendrium americanum*) both have ranges that cross the base but have not been sighted on the property; they both require neutral to slightly basic moist soils that do not exist in the slightly acid, sandy plains where the harvesting activities take place. An ongoing species at risk survey will report any new information again in 2008, and any relevant information will be incorporated into the RCSR once available.

LFCA TC Meaford

Geophysical Environment

LFCA TC Meaford consists of a complex geological formation. There are several formations underlying the property in layers- the Amabel, Manitoulin, Queenstown, and

Georgian Bay formations. Parts of the Lake Nipissing and Algonquin terraces are still visible. The rocks are generally dolostone in composition, containing the mineral dolomite or calcium magnesium carbonate. These sedimentary rocks are very hard and erosion resistant. Generally the soils over these formations are fairly thin, with the exception of the deeper sandy loam soils below the ancient glacial Lake Algonquin shoreline.

The elevations on the property range from a high of 390 metres (m) at the Bayview escarpment in the southwest (part of the Niagara Escarpment complex), to a relatively flat plain at an average of 320m in the central part of the property. Toward the north and east, near the Georgian Bay shore, the land drops sharply from 300m to 240m, then sloping to the water's edge between 170-180m. Sucker Creek and Mountain Lake are sharply incised into the central plain.

Soils at LFCA TC Meaford are derived from red shale, and are part of the Grey Brown Podzolic or Dark Grey Gleisolic Great Groups. There are small pockets of gravelly or sandy outwash, overlying limestone bedrock. The soils are predominantly well-structured fine-textured clays, loams or clay loams 25 to 60 centimetres deep over a calcareous clay or gravel base. The topography is moderately to gently sloping with bedrock and boulder outcrops. Drainage is considered good to variable.

Aquatic Environment

Mountain Lake and Sucker Creek are the primary aquatic systems on the property. Mountain Lake and most of Sucker Creek are within the Sucker Creek/Cape Rich Area of Natural and Scientific Interest (ANSI), a designation used in the province of Ontario for protection of local, regional or provincial areas of significance.

Terrestrial Environment

The previous activities of cattle grazing throughout the stands and the early training activities decimated seedlings and young growth, resulting in an absence of significant regeneration in the understorey of many stands. During the growing season, under a closed forest canopy, the local microclimate tends to be humid. Open, non-forested areas have a drier atmosphere.

A list of principal tree species found on the property is as follows:

maple (sugar, red) (*Acer saccharum* /*rubrum*);
American beech (*Fagus grandifolia*);
ash (white, red) (*Fraxinus americana/pennsylvanica*);
white elm (*Ulmus americana*);
black cherry (*Prunus serotina*);
trembling aspen (*Populus tremuloides*);

balsam poplar (*Populus balsamifera*);
white birch (*Betula papyrifera*);
basswood (*Tilia americana*);
red oak (*Quercus rubra*);
eastern hemlock (*Tsuga canadensis*);
butternut (*Juglans cinerea*); and
white cedar (*Thuja occidentalis*).

Common species of wildlife include:

white tail deer (*Odocoileus virginianus*);
least weasel (*Mustela nivalis*);
mink (*Mustela vison*);
red fox (*Vulpes vulpes*);
coyote (*Canis latrans*);
groundhog (*Marmota monax*);
raccoon (*Procyon lotor*);

red squirrel (*Tamiasciurus hudsonicus*);
eastern gray squirrel (*Sciurus carolinensis*);
porcupine (*Erethizon dorsatum*);
snowshoe hare (*Lepus americanus*); and
beaver (*Castor canadensis*).

Principle waterfowl include:

mallard duck (*Anas platyrhynchos*);
blue-winged teal (*Anas discors*);
wood duck (*Aix sponsa*);
common loon (*Gavia immer*);
Canada goose (*Branta canadensis*);
canvasback (*Aythya valisineria*);
lesser scaup (*Aythya affinis*);
bufflehead (*Bucephala albeola*);

common merganser (*Mergus merganser*);
hooded merganser (*Lophodytes cucullatus*);
red-breasted merganser (*Mergus serrator*); and
pied-billed grebe (*Podilymbus podiceps*).

A wide range of nesting and migrating songbirds have been observed over a number of surveys:

double.-crested cormorant
(*Phalacrocorax auritus*);
American bittern (*Botaurus lentiginosus*);
least bittern (*Ixobrychus exilis*);
great blue heron (*Ardea herodias*);
green-backed heron (*Butorides virescens*);
black-crowned night-heron (*Nycticorax nycticorax*);
turkey vulture (*Cathartes aura*);
osprey (*Pandion haliaetus*);
bald eagle (*Haliaeetus leucocephalus*);
northern harrier (*Circus cyaneus*);
red-shouldered hawk (*Buteo lineatus*);
broad-winged hawk (*Buteo platypterus*);
red-tailed hawk (*Buteo jamaicensis*);
American kestrel (*Falco sparverius*);
Merlin (*Falco columbarius*);
ruffed grouse (*Bonasa umbellus*);

wild turkey (*Meleagris gallopavo*);
virginia rail (*Rallus limicola*);
sora (*Porzana carolina*);
american coot (*Fulica ameri*);
sandhill crane (*Grus canadensis*);
killdeer (*Charadrius vociferous*);
spotted sandpiper (*Actitis macularia*);
upland sandpiper (*Bartramia longicauda*);
common snipe (*Gallinago gallinago*);
American woodcock (*Scolopax minor*);
ring-billed gull (*Larus delawarensis*);
herring gull (*Larus argentatus*);
caspien tern (*Sterna caspia*);
common tern (*Sterna hirundo*);
rock dove (*Columba livia*);
mourning dove (*Zenaida macroura*);
black-billed cuckoo (*Coccyzus erythrophthalmus*);
eastern screech owl (*Otus asio*);

great horned owl (*Bubo virginianus*);
barred owl (*Strix varia*);
northern saw-whet owl (*Aegolius
acadicus*);
common nighthawk (*Chordeiles minor*);
whip-poor-will (*Caprimulgus
vociferous*);
ruby-throated hummingbird
(*Archilochus colubris*);
belted kingfisher (*Ceryle alcyon*);
red-headed woodpecker (*Melanerpes
erythrocephalus*);
pileated woodpecker (*Dryocopus
pileatus*);
red-bellied woodpecker (*Melanerpes
carolinus*);
yellow-bellied sapsucker (*Sphyrapicus
varius*);
downy woodpecker (*Picoides
pubescens*);
hairy woodpecker (*Picoides villosus*);
northern flicker (*Colaptes auratus*);
eastern wood-peewee (*Contopus virens*);
yellow-bellied flycatcher (*Empidonax
flaviventris*);
alder flycatcher (*Empidonax alnorum*);
willow flycatcher (*Empidonax traillii*);
least flycatcher (*Empidonax minimus*);
great crested flycatcher (*Myiarchus
crinitus*);
eastern phoebe (*Sayornis phoebe*);
eastern kingbird (*Tyrannus tyrannus*);
horned lark (*Eremophila alpestris*);
tree swallow (*Tachycineta bicolor*);
northern rough-winged swallow
(*Stelgidopteryx serripennis*);
cliff swallow (*Petrochelidon
pyrrhonota*);
barn swallow (*Hirundo rustica*);
blue jay (*Cyanocitta cristata*);
American crow (*Corvus
brachyrhynchus*);
common raven (*Corvus corax*);
black-capped chickadee (*Poecile
atricapilla*);
red-breasted nuthatch (*Sitta canadensis*);

white-breasted nuthatch (*Sitta
carolinensis*);
brown creeper (*Certhia americana*);
house wren (*Troglodytes aedon*);
winter wren (*Troglodytes troglodytes*);
sedge wren (*Cistothorus platensis*);
marsh wren (*Cistothorus palustris*);
golden-crowned kinglet (*Regulus
satrapa*);
ruby-crowned kinglet (*Regulus
calendula*);
eastern bluebird (*Sialia sialis*);
veery (*Catharus fuscescens*);
Swainson's thrush (*Catharus ustulatus*);
hermit thrush (*Catharus guttatus*);
wood thrush (*Hylocichla mustelina*);
American robin (*Turdus migratorius*);
gray catbird (*Dumetella carolinensis*);
northern mockingbird (*Mimus
polyglottos*);
brown thrasher (*Toxostoma rufum*);
cedar waxwing (*Bombycilla cedrorum*);
European starling (*Sturnus vulgaris*);
solitary vireo (*Vireo solitarius*);
yellow-throated vireo (*Vireo flavifrons*);
warbling vireo (*Vireo gilvus*);
Philadelphia vireo (*Vireo
philadelphicus*);
red-eyed vireo (*Vireo olivaceus*);
golden-winged warbler (*Vermivora
chrysoptera*);
Tennessee warbler (*Vermivora
peregrina*);
Nashville warbler (*Vermivora
ruficapilla*);
yellow warbler (*Dendroica petechia*);
chestnut-sided warbler (*Dendroica
pensylvanica*);
Northern parula warbler (*Parula
Americana*);
magnolia warbler (*Dendroica
magnolia*);
cape may warbler (*Dendroica tigrina*);
black-throated blue warbler (*Dendroica
caerulescens*);
yellow-rumped warbler (*Dendroica*

coronata);
black-throated green warbler (*Dendroica virens*);
blackburnian warbler (*Dendroica fusca*);
mourning warbler (*Oporornis philadelphia*);
pine warbler (*Dendroica pinus*);
palm warbler (*Dendroica palmarum*);
bay-breasted warbler (*Dendroica castanea*);
blackpoll warbler (*Dendroica striata*);
black-and-white warbler (*Mniotilta varia*);
American redstart (*Setophaga ruticilla*);
ovenbird (*Seiurus aurocapillus*);
Northern waterthrush (*Seiurus noveboracensis*);
common yellowthroat (*Geothlypis trichas*);
Wilson's warbler (*Wilsonia pusilla*);
Canada warbler (*Wilsonia canadensis*);
scarlet tanager (*Piranga olivacea*);
Northern cardinal (*Cardinalis cardinalis*);
rose-breasted grosbeak (*Pheucticus ludovicianus*);
indigo bunting (*Passerina cyanea*);
rufous-sided towhee (*Pipilo erythrophthalmus*);
American tree sparrow (*Spizella*

arborea);
chipping sparrow (*Spizella passerina*);
clay-coloured sparrow (*Spizella pallida*);
field sparrow (*Spizella pusilla*);
vesper sparrow (*Pooecetes gramineus*);
savannah sparrow (*Passerculus sandwichensis*);
grasshopper sparrow (*Ammodramus savannarum*);
song sparrow (*Melospiza melodia*);
swamp sparrow (*Melospiza georgiana*);
white-throated sparrow (*Zonotrichia albicollis*);
white-crowned sparrow (*Zonotrichia leucophrys*);
dark-eyed junco (*Junco hyemalis*);
snow bunting (*Plectrophenax nivalis*);
bobolink (*Dolichonyx oryzivorus*);
red-winged blackbird (*Agelaius phoeniceus*);
eastern meadowlark (*Sturnella magna*);
rusty blackbird (*Euphagus carolinus*);
common grackle (*Quiscalus quiscula*);
brown-headed cowbird (*Molothrus ater*);
northern oriole (*Icterus galbula*);
purple finch (*Carpodacus purpureus*);
house finch (*Carpodacus mexicanus*);
pine siskin (*Carduelis pin*); and,
american goldfinch (*Carduelis tristis*).

Common fish species include:

walleye (*Stizostedion vitreum*);
smallmouth bass (*Micropterus dolomieu*);
yellow perch (*Perca flavescens*);
white sucker (*Catostomus commersoni*);
rainbow trout (*Oncorhynchus mykiss*);
common shiner (*Notropis cornutus*);

johnny darter (*Etheostoma nigrum*);
mottled sculpin (*Cottus bairdii hubbsi*);
longnose dace (*Rhinichthys cataractae*);
northern redbelly dace (*Phoxinus eos*);
creek chub (*Semotilus atromaculatus*);
and
brook stickleback (*Culaea inconstans*).

Atmospheric Environment

LFCA TC Meaford lies in the Lake Huron-Georgian Bay Climatic Region, a narrow band of land along Lake Huron and the south shore of Georgian Bay. Thus, these water bodies

moderate LFCA TC Meaford's climate. The mean summer and winter temperatures are slightly lower and higher, respectively, than those further inland, resulting in a generally longer growing season with more frost-free days. The mean annual length of the growing season is 205 days, and the average number of frost-free days is 143. The mean annual temperature is 6.4°C, with the lowest mean daily temperature of -7.3°C in February and the highest mean daily temperature of 19.3°C in July. The annual precipitation is 1,023 mm, with the majority coming as snow during December and January. May is the driest month. Wind conditions vary because of the geography and position of LFCA TC Meaford on the shore of the lakes. In general, the prevailing winds are south-southwest.

Socio-economic Conditions

LFCA TC Meaford is part of the northern portion of Grey County in southwestern Ontario. Within Grey County, there is a permanent population base of 89,075 (49 percent male, 51 percent female) of which 1,070 are listed as Aboriginal. Owen Sound is the largest community in the county, with a population of 31,583. LFCA TC Meaford lies in the Municipality of Meaford (also called Town of Georgian Highlands in Statistics Canada reports), and has a population of 10,381. To the east, the largest communities are Collingwood (population 17,290) and Blue Mountains (population 6,825) (Statistics Canada 2006). The region is a very popular year round recreation destination. The population has likely doubled or even tripled since the base was established in 1942, in part as a result of the increased tourism and recreation opportunities in the area. Members of the general public take advantage of the recreational opportunities on the property, although are not allowed access to timber stands. In addition, the local Rod and Gun Club produces maple syrup through an agreement with DND; timber harvest activities would avoid the syrup operation.

LFCA TC Meaford is a major training site for regular and reserve army personnel. The permanent staff at the Training Centre (including military, civilian and alternate service delivery contractors) is approximately 270. The Training Centre can also accommodate up to approximately 1,500 trainees at different times of the year. It is used primarily for basic infantry training, small arms training and area reserve courses. LFCA TC Meaford also plays host to local, provincial and international units for training in its unique environment. LFCA TC Meaford is a major employer in the area, adding significantly to the economy of the region.

The land outside the Training Centre is generally agricultural, with some county and provincial forests nearby. Existing noise levels are generally low. As noted above, the region along the Georgian Bay Coast and Owen Sound Bay is heavily used for recreation all year round. Nevertheless, most timber stands are located far from the heavily populated boundaries of the property and thus noise from or the aesthetic impact of timber harvest operations is not expected to be a cause for public concern.

On the property, land use is restricted to military training first, with secondary (police and other external agency training) and tertiary uses allowed where it does not interfere with the primary use. Forest management is considered a tertiary use. Scheduling of forest

management activities must be coordinated with LFCA TC Meaford Range Control, to ensure no military activities are in progress near the forest stands to be harvested.

Federal Species at Risk at LFCA TC Meaford

A number of federal species at risk have been either confirmed to be present, based on recent survey work, or potentially present on the LFCA TC Meaford property.

The SARA-listed species confirmed to be present along with their status are:

- American ginseng (*Panax quinquefolius*) (endangered);
- butternut (*Juglans cinerea*) (endangered); and
- least bittern (*Ixobrychus exilis*) (threatened).

Several comprehensive surveys of all federal species at risk were undertaken on the property between 2004 and 2007 (AMEC 2006; LGL Ltd. 2007; Wild Canada 2004; Wild Canada 2005; Wild Canada 2007). In advance of any timber harvest, standard practice is to resurvey stands to ensure that habitat of species at risk is not negatively impacted.

Breeding evidence for a total of 117 bird species has been found, according to a 1998 Manoeuvre Area Planning Study (LGL Ltd. 1998). Several vegetation communities were found to be the richest breeding areas in terms of species diversity. The majority of these communities are permanently protected in the Sucker Creek/Cape Rich ANSI or the Bayview Escarpment ANSI, with the one other wetland area located in the south central part of the property. No timber harvesting is proposed near this wetland for the immediate future; however, should it occur, impact on this sensitive habitat would be avoided. The study has indicated there were no significant mammal or herpetofaunal species noted on the property, other than deer and porcupine.

As the Training Centre is an active training ground, protecting the location of the American ginseng by not publicly disclosing its location is preferred. A pre-harvest site inspection will confirm the presence or absence of any species at risk and will ensure that habitat is protected in accordance with the SARA.

4.3 Issues Scoping and Valued Ecosystem Components Scoping Process

Issues scoping included an internal analysis of previous activities on the three federal properties. It focused on existing information and corporate knowledge.

Valued ecosystem components (VECs) were identified by taking into consideration the definition of environment and environmental effects under the Act. VEC's were chosen based on the potential interactions between project activities and the physical environment, social and cultural values, as well as economic values. Table 1 lists the specific VEC by category.

Table 1: Valued Ecosystem Components

Physical (direct effects)	<ul style="list-style-type: none"> ➤ Atmosphere (air flow dynamics, air temperature and air quality) ➤ Water (surface water and groundwater quality and quantity) ➤ Soil (quality and quantity)
Ecological (direct effects)	<ul style="list-style-type: none"> ➤ Wildlife habitat and communities ➤ Federal Species at Risk ➤ Vegetation – understory and overstorey
Social/Cultural (indirect effects)	<ul style="list-style-type: none"> ➤ Recreational and aesthetic values and quality of life (noise) ➤ Health and safety ➤ Military training ➤ Archaeological sites/other cultural values
Economic (indirect effects)	<ul style="list-style-type: none"> ➤ Revenue from harvesting ➤ Secondary benefits to communities

Past timber harvesting has shown specifically what ecological, socio-economic and anthropogenic components may be affected by these activities, as well as how to best mitigate such effects. VEC-project interactions are summarized in Table 2. Potential environmental effects and their mitigation measures are outlined in Table 3 for each VEC.

Table 2: VEC Justification and Project Activities Interaction

Valued Ecosystem Components	VEC Justification	Activity Sub-class*	VEC-Project Activities Interaction
<i>Physical</i>			
Atmosphere -Airflow Dynamics	Federal land forest buffers wind and prevents damage to nearby forests and other features such as homes, etc.	A,B,C,D	Removal of trees may allow for higher wind speeds which can damage adjacent areas.
Atmosphere - Air Temperature and Quality	Air temperature and quality within typical ranges is important to vegetation and wildlife	A,B,C,D	Removal of trees creates higher levels of light which may increase air temperature on the forest floor; tree harvesting equipment may produce an ephemeral increase in fossil fuel emissions; removal of trees may increase wind and decrease moisture levels in the forest; timber harvesting equipment may increase local dust levels.
Soil - Quality and Quantity	Soil is a medium for growth of plants, and important to water filtration	A,B,D	Improper harvesting techniques can cause soil compaction, contamination and erosion.
Surface Water and Groundwater Quality and Quantity	Water is necessary for growth of plants and is used by the region’s citizens and wildlife; wetlands are critical filters of water and providers of wildlife habitat	A,B,D	Improper harvesting can cause contamination of both surface and ground water, changes in drainage patterns, and sedimentation; Removal of trees and other vegetation during timber activities allows greater amounts of rain and snow onto the forest floor.

* Legend of Activity Subtypes: A=timber harvest, B=salvage harvest, C=firewood permit, D= Inclusion List Schedule section 31 timber harvesting.

Valued Ecosystem Components	VEC Justification	Activity Sub-class*	VEC-Project Activities Interaction
<i>Ecological</i>			
Federal Species at Risk	Valuable for maintaining biodiversity.	A,B,C,D	Improper timber harvesting can put these species, including their critical habitat at further risk.
Wildlife Habitat and Communities	Integral part of a healthy forest ecosystem, adding to species survival and biodiversity	A,B,C,D	Improper harvesting can remove valuable protection, dwelling and food sources, and can destroy wildlife particularly during breeding.
Vegetation - Understorey and Overstorey Composition	Vegetation serves to protect soil and shelter and feed wildlife; adds to biodiversity on the landscape	A,B,C,D	Excessive removal of timber can cause changes in species composition, adversely affecting certain species presence on the landscape. Inappropriate harvesting practices can result in the destruction of understorey vegetation.
<i>Social/Cultural</i>			
Recreational and Aesthetic Values/ quality of life	Contributes to health and well being of citizens.	A,B,D	Removal of trees can be aesthetically displeasing and may result in a short term increase in noise levels at the sites.

* Legend of Activity Subtypes: A=timber harvest, B=salvage harvest, C=firewood permit, D= Inclusion List Schedule section 31 timber harvesting.

Valued Ecosystem Components	VEC Justification	Activity Sub-class*	VEC-Project Activities Interaction
Health and Safety	Contributes directly to enhancing quality of life and builds strong families and communities	A,B,C,D	Potential accidents and malfunctions from physical dangers including machinery operation, traversing uneven terrain and tree felling.
Military Training	Gives military personnel the skills required to perform their jobs properly	A,B,C,D	Improper harvesting can limit the variation of environment required for training opportunities
Archaeological Sites/Other Cultural Values	Provide spiritual, physical and educational connection to our cultural heritage	A,B,C,D	Damage to the integrity of these sites can be caused by any disturbance related to timber harvesting
<i>Economic</i>			
Revenue from Harvesting	Contributes directly to enhancing quality of life through injections into local economy (providing employment to forestry contractors, and revenue generation by DND to support forestry activities), contributes to development of individuals, communities and sustainable practices	A,B,C,D	Direct employment created for the local community in forest management, harvesting and wood processing businesses.

* Legend of Activity Subtypes: A=timber harvest, B=salvage harvest, C=firewood permit, D= Inclusion List Schedule section 31 timber harvesting.

Secondary Benefits to Communities	Indirect benefits accrue to communities from the regional presence of increased economic activity	A,B,C,D	Between one and two indirect regional jobs are created for every direct job in the forest sector as a whole; this trend would be expected to apply at the three properties resulting in improved economic community health
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* *Legend of Activity Subtypes:* A=timber harvest, B=salvage harvest, C=firewood permit, D= Inclusion List Schedule section 31 timber harvesting.

Table 3: Potential Environmental Effects of VEC/Project Interaction

<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Surface Water and Groundwater Quality and Quantity	<ul style="list-style-type: none"> ➤ Groundwater and surface water quality and quantity can be negatively affected by harvesting too close to water, felling trees into water, and driving machinery through water. Potential effects may include contamination from spills, and in extreme cases, changes to water infiltration rates or drainage patterns when surface water drainage is blocked. ➤ The loss of root masses to slow water run-off after precipitation may cause soil erosion which may in turn contaminate surface water with excess soil and silt. ➤ Drought conditions can slow tree growth and make forest regeneration difficult ➤ Wetlands can be damaged by accidents or nearby operations 	<ul style="list-style-type: none"> ➤ Machinery known to cause damage to wet soils will not be permitted on the harvesting site during wet times of the year or when wet conditions persist. TSAs will allow the proponent to curtail harvesting if the harvesting area is too wet. ➤ Trees on slopes will be retained in order to give sufficient root mass on the slope, thus preventing soil erosion and possible sedimentation. ➤ Proper silvicultural cutting systems will be utilized that retain canopy cover where appropriate to decrease snow levels on the ground, avoiding excessive runoff in the spring. ➤ Planning of harvest sites will select sites that will not be adversely affected by increased precipitation. ➤ Under this RCSR no timber harvesting will occur within 30 m of a waterbody, including wetlands. ➤ In rare cases where machinery must traverse a waterbody, it will be done only after consultation with DFO staff and/or review of the Temporary Stream Crossing Ontario Operational Statement (DFO, 2008) to ensure adherence to the <i>Fisheries Act</i> and <i>Navigable Waters Protection Act</i>. ➤ AOC buffers conforming to provincial requirements will be applied around significant lakes and wet areas; harvesting will not be allowed in these specific areas. ➤ Operations in the areas to be harvested will be kept away from the edge of the valleys containing rivers to ensure no disturbance of the rivers and the associated watershed. ➤ As per the issuance of timber permits, contractors will be required to have a spill kit on site to prevent the contamination of water by machine fluids. ➤ Machinery working on the site will be required to be in good repair with no leaks.

		<ul style="list-style-type: none"> ➤ In-field repairs to machinery will not be permitted unless it is impossible to move equipment to a suitable location. Machinery will require drip pans to be placed underneath as in-field repairs are made. ➤ Refuelling of machinery will only be permitted in designated areas. ➤ The use of spill catchers and sediment fences will be employed to minimize damage. ➤ The issuance of TSAs will have a requirement for spill containment and a spill response protocol. ➤ No tree or tree parts will be permitted to land in any water body. ➤ Trees around any water body will be retained to prevent soil erosion and sedimentation into the water. The distance from the water to the beginning of the harvest site will vary depending on slope, with the buffer size increasing as the slope increases as indicated in the OMNR forest management guide. At a minimum a buffer of 30 metres will be applied. ➤ Blockage of drainage (streams, culverts, etc.) will not be allowed and will be regulated through monitoring by the proponent as harvesting occurs. ➤ Harvesting around fish-bearing streams and rivers will retain adequate slope-dependant buffer strips (at least 30 metres) as indicated in the OMNR forest management guide to prevent negative impacts on fish populations. AOC buffers conforming to provincial requirements will be applied around significant lakes and wet areas; harvesting will not be allowed in these specific areas. ➤ Intermittent streams will only be crossed if dry; otherwise, an alternative skidding route will be selected. ➤ Where drought is more prevalent or likely (e.g., coarse-textured soils), trees tolerant to drier conditions will be favoured in forest management activities.
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<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Atmosphere - Airflow Dynamics	<ul style="list-style-type: none"> ➤ Removal of trees can allow increased air speed throughout the harvested stands which may affect nearby areas and increase the possibility of residual trees blowing over. ➤ Extreme wind events can cause trees and/or stands or portions thereof to blow down. 	<ul style="list-style-type: none"> ➤ Harvest stands will normally be chosen such that adjacent areas will also be forested, preventing wind from gaining significant additional speeds. ➤ Harvest areas will be kept small and will favour partial harvesting methods over clearcutting; normally harvest areas will not exceed 100 ha, but occasionally may attain up to 500 ha where salvage harvesting is required. ➤ Where possible, edges of harvest areas will have an irregular shape in order to buffer winds and provide extra habitat for wildlife. ➤ Residual trees will be chosen for their wind firmness; their crown closure will become greater in response to harvesting which will buffer winds. ➤ Natural and planted regeneration will slow winds at the forest floor.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Atmosphere - Air Temperature and Quality	<ul style="list-style-type: none"> ➤ Air temperature in the understorey of thinned stands may increase. ➤ Air quality may be affected by an increase in fossil fuel emissions generated through the use of harvesting equipment. 	<ul style="list-style-type: none"> ➤ Increased air temperature will stimulate germination of seeds of plant species requiring a somewhat warmer microclimate as well as other seeds in the soil seed bank; as this is a beneficial effect, mitigation is not required. ➤ All harvesting equipment will be kept in good repair and will not be left idling unnecessarily.

<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Soil – Quality and Quantity	<ul style="list-style-type: none"> ➤ Soil can be adversely affected through compaction, contamination and erosion from machinery or change in the environment as a result of harvesting activities. ➤ Shallow soils can be readily damaged by heavy machinery 	<ul style="list-style-type: none"> ➤ Equipment that results in minimal soil and tree damage and encourages regeneration will be used, such as equipment with wide tires or tracks. Smaller harvesters and skidders also reduce soil and residual tree damage. In addition, where practical, harvesting will take place in the winter, when the ground is frozen. ➤ Machinery will be limited to a small number of skid trails to prevent excess rutting and soil compaction. The proponent in conjunction with the contractor will manage the number and locations of trails. ➤ A greater number of trees on slopes will be retained than on more level terrain in order to give sufficient root mass on the slope, thus preventing soil erosion. ➤ Timing restrictions will be applied to sites where compaction, rutting, or wildlife disturbance may occur. ➤ Machinery working on the site will be required to be in good repair with no leaks. ➤ In-field repairs to machinery will not be permitted unless it is impossible to move equipment to a suitable location. Machinery will require drip pans to be placed underneath if in-field repairs are required. ➤ Refuelling of machinery will only be permitted in designated areas. ➤ Spill kits will be present on site at all times. ➤ The issuance of TSAs will have a requirement for spill containment and a spill response protocol. ➤ Sites sensitive to erosion or compaction will not be chosen for harvest so as not to adversely affect soils. ➤ In cases where trees growing on shallow soils must be harvested (e.g., after a blow down) this will be done on frozen ground and in such a way as to minimize soil damage and prevent erosion.

		<ul style="list-style-type: none"> ➤ Landing sites will be selected as to minimize soil rutting and will be placed away from water (minimum 30 metre buffer). ➤ Landings will be kept small to limit soil compaction.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Federal Species at Risk	<ul style="list-style-type: none"> ➤ Timber harvesting can disturb species at risk through direct harm and habitat destruction 	<ul style="list-style-type: none"> ➤ The DND Base Environmental Officer would ensure adherence to section 79(1) of SARA, and an individual EA screening report would be required where wildlife SAR individuals or habitat are identified in an area planned for timber harvest. This would involve notification of EC in relation to terrestrial species, and DFO in relation to aquatic species, to seek advice regarding potential impacts on wildlife SAR. The RCSR would not be applicable.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Wildlife Habitat and Communities	<ul style="list-style-type: none"> ➤ Harvesting can disrupt wildlife during breeding times, and remove trees that are used for food, shelter and protection. ➤ Harvesting can impact negatively on plant communities, particularly species at risk. ➤ Increased access by public users to sensitive areas 	<ul style="list-style-type: none"> ➤ Timing restrictions will be imposed in harvest sites where wildlife is known to be present in order not to disrupt breeding times. ➤ Modern forest management planning includes the use of landscape level habitat availability studies to support habitat conservation. In the case of the three properties under this RSCR the total area of each property is relatively small and part of a larger forest area owned by the provincial government or private landowners. Where available landscape level studies inside and outside the properties under this RSCR are used to address many concerns, such as habitat availability. ➤ Preference will be given to the retention of mast (food) trees to ensure sufficient food for wildlife. ➤ Harvested areas will normally be surrounded by other forested stands which will supply food and shelter to wildlife. ➤ Trees known to have stick nests will be retained and will have appropriate buffers applied. ➤ Tree species known to be used by wildlife (e.g. deer yard trees) will be preferred for retention and harvesting in these areas

		<p>will be minimized.</p> <ul style="list-style-type: none"> ➤ The primary use of military bases is restricted to military operations. Public access is prohibited except to headquarters areas and accommodations, and to a sugar maple stand used by a not-for-profit group to produce syrup. Travel outside the headquarters area is strictly controlled by Range Control.
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<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Vegetation - Understorey and Overstorey Composition	<ul style="list-style-type: none"> ➤ Timber harvesting can negatively change the relative percentages of tree species on the landscape. ➤ Extreme weather events and insect/disease outbreaks can negatively affect forest growth and species distribution. 	<ul style="list-style-type: none"> ➤ Harvest areas will be kept small to ensure that relative percentages of tree species are maintained. ➤ Computer generated decision support tools will show percentages of stands by species so that educated decisions can be made as to what stands to harvest. Directional felling will be used to minimize damage to residual trees. ➤ Trees will be marked by trained staff or contractors prior to harvesting to meet forest management objectives for each stand. ➤ Efforts will be made to retain wind firm, healthy trees, as well as trees used by wildlife for food or dwelling. ➤ Trees able to produce significant quantity of desirable seed will be preferred for retention to aid in natural regeneration. ➤ Where necessary, an amendment to the planned harvest area and/or a recalculation of the sustainable annual allowable timber harvest will be made. ➤ Species of trees that are resistant to insects and disease normally found on the site, as well as trees that show good vigour and are able to fend off pathogens, will be favoured in forest management activities.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Recreational and Aesthetic Values/quality of life	<ul style="list-style-type: none"> ➤ Timber harvesting can diminish surrounding aesthetics and reduce the quality of recreation. ➤ Timber harvesting can result in 	<ul style="list-style-type: none"> ➤ On the three federal sites, almost all harvesting occurs away from areas that are used recreationally. ➤ Buffers and restrictions will be utilized in areas that may be used recreationally (see Section 4.3 for a list of potential

	<p>increased noise levels near the harvest sites.</p>	<p>recreational activities) so that the aesthetic beauty of the forest will be maintained.</p> <ul style="list-style-type: none"> ➤ If harvesting is required to occur adjacent to residential areas, trees will be harvested so that negative impact on aesthetics is minimized (e.g., use oblique strips to minimize visual impact of harvesting). ➤ Harvesting around fish-bearing streams and rivers will retain adequate buffer strips (a minimum of 30 metres) to prevent negative impacts on fish populations and negative effects on recreational fishing opportunities. ➤ To the extent possible, harvesting activities will be limited in duration and will occur during regular day time hours in order to reduce potential impacts resulting from increased noise levels.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Health and Safety	<ul style="list-style-type: none"> ➤ Timber harvesting can be hazardous to safety of those working in or traveling through the harvest area. ➤ Excessive equipment noise can cause distress to those living within earshot of the forest harvest operations. ➤ Risk of forest fires in timber harvest areas ➤ Risk of encountering unexploded ordnance in timber harvest areas ➤ Risk of spills or leaks during timber harvesting operation 	<ul style="list-style-type: none"> ➤ Contractors working on the harvest site will have certification to safely use harvesting machinery and chainsaws, including training for conducting salvage harvests where risk is elevated. ➤ Hazard trees will be marked to minimize risk to those working in the harvest stand. ➤ Increased vigilance will be used when working around blown down trees to prevent the risk of injury to workers. ➤ Contractors will be required to have a site specific Health and Safety plan and to ensure that all staff working under the contractor wear appropriate Personal Protective Equipment. The contractor must ensure that their work is conducted in accordance with the applicable requirements of the Canada Labour Code and any applicable provincial health and safety regulations. ➤ Proper signs will be placed around timber harvesting to ensure that everyone in the area is aware that harvesting and hauling are occurring. ➤ Workers will have on site proper fire fighting equipment and

		<p>be trained in its use, and operations may be shut down in the event of extreme fire hazard.</p> <ul style="list-style-type: none"> ➤ Timber-hauling vehicles will respect the speed limits of the federal land they are working on. ➤ Signs will be posted indicating that hauling is occurring. ➤ Equipment operation at night will be restricted to minimize noise disturbance where harvesting must occur near human habitation. ➤ TSAs will specify requirements for equipment in good operating condition, and that contractors carry spill response kits to use in the event of accidents or malfunctions. ➤ Refuelling will be done away from waterbodies and within designated refuelling areas using spill pans. ➤ Before going on site, contractors will be briefed on how to recognize and respond to Unexploded Ordnances (UXOs)
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Military Training	<ul style="list-style-type: none"> ➤ Timber harvesting can diminish training possibilities through destruction of training environment. 	<ul style="list-style-type: none"> ➤ Relative to the amount of forested area, harvest blocks will be kept small (typically < 100 ha). ➤ Forest of all available cover types, densities and maturity will be maintained. ➤ The forest management plans clearly describe military training as a primary use of the facility. Potential impacts are given full consideration when planning harvesting operations so as to minimize the impacts on military operations.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Archaeological Sites/Other Cultural Values	<ul style="list-style-type: none"> ➤ Timber harvesting can affect the educational and cultural opportunity of these values. 	<ul style="list-style-type: none"> ➤ All known archaeological and cultural values will be avoided when choosing areas to harvest. Currently CFB Petawawa is the only site that has identified cultural values, and these have been protected from any disturbance through the creation of restricted (no access) zones (AOC's). ➤ Buffers will be placed around any sites discovered in the future to ensure their integrity is not compromised; forest harvesting will be restricted in such areas as outlined in the forest

		<p>management plan.</p> <ul style="list-style-type: none"> ➤ To protect any cultural values associated with discovered archaeological or culturally significant sites their locations would not be publicly revealed. ➤ During timber harvesting activities, care shall be taken to observe for archaeological deposits not previously identified. Work shall be stopped if evidence shows a potential archaeological artifact or deposit.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Revenue from Harvesting	<ul style="list-style-type: none"> ➤ Revenue generated from harvesting is a benefit to local forestry workers, DND and the regional economy. ➤ Improper harvesting practices could lead to forest degradation and loss of economic benefits. 	<ul style="list-style-type: none"> ➤ Close adherence to acceptable harvesting practices would mitigate any negative economic impacts.
<i>VEC</i>	<i>Potential Environmental Effects</i>	<i>Mitigation Measures</i>
Secondary Benefits to Communities	<ul style="list-style-type: none"> ➤ Secondary industries and related support services result in positive regional social and economic benefits. 	<ul style="list-style-type: none"> ➤ No mitigation measure is required as this is a positive effect.

4.4 Accidents and Malfunctions

The likelihood of accidents or malfunctions occurring and causing adverse environmental effects due to project activities is minimal. Below is a list of potential accidents and malfunctions that may occur during timber harvesting. Each property maintains Range Standing Orders containing details on emergency response and accident and malfunction procedures.

Spills from Leaking Equipment and Refuelling of Equipment

As harvesting can be demanding on equipment, there is a potential for equipment leaks during timber operations and spills to occur during refuelling of equipment. All three federal sites have spill prevention and response procedures. If a TSA is issued to a contractor, the agreement will specify the terms and conditions that a contractor must follow to avoid, minimize and respond to spills during their operations, including that the contractor's equipment be in good operating condition, that refuelling occur away from water bodies and within designated refuelling areas using spill pans. Any equipment that is leaking or causing any environmental harm will not be permitted to operate until the problem is rectified. In case of a sudden leak, the agreement will specify that the contractor will have spill kits on site to minimize any potential harmful impacts. Should soil become contaminated through accidents or malfunctions and need to be removed it will be transported to a licensed facility that is designed to handle the contaminated waste. It is against TSA terms that the contractor will use defective equipment.

Forest Fires

If a contractor is cutting during the active forest fire season, or is burning landings to reduce fuels on the cut site, there is a small possibility of forest fire. In order to mitigate the possibility of fire occurring and or spreading, the TSA will specify the equipment that the contractor must have to prevent fires from spreading on the work site. This equipment will include:

- back pack pumps and cans;
- red painted fire shovels;
- grub hoes; and
- gas powered fire pump, fuel tank, hose and attachments.

As stated in the terms of the TSA, it will be the prerogative of the Base Forestry Officer on behalf of the proponent to curtail operations during high or extreme fire conditions. All three sites have staff trained in forest fire fighting, so response time will be at a minimum.

Unexploded Ordnance

Harvesting locations on the three federal lands may contain Unexploded Ordnances (UXOs). All contractors needing to access the site must attend DND briefings about how to respond when UXOs are encountered before the contractors can be permitted to go on site. During these briefings the contractors receive instructions and contact information for notifying DND of UXOs. The DND sites have developed access and use tables, which indicate the type of activities that are allowed to occur on any given area of the properties, which helps to inform the selection of areas for harvesting.

Personal Injury

Timber cutting and extraction are known to have high rates of injury to workers. The probability of accidents is high, but can be mitigated through proper training and preventative measures. The province of Ontario requires chainsaw and heavy equipment operators to hold certificates of competency in the operation of their equipment. The TSA holder will be required to engage only those contractors holding these certificates.

Contractors will be required to have a site specific Health and Safety plan and ensure that all staff members working under the contractor wear appropriate Personal Protective Equipment. The contractor must ensure that their work is conducted in accordance with the applicable requirements of the Canada Labour Code and any applicable provincial health and safety regulations.

4.5 Mitigation

Mitigation measures to minimize the environmental effects of timber harvesting are based upon current knowledge of best practices. These practices are derived from knowledge at the federal and provincial level, as well as best industry procedures. The mitigation measures listed in this RCSR form a synthesis of these best practices. The information contained in the guides listed below is supplemented by the extensive experience gained at the sites over decades of forestry management.

Additional OMNR forest management guides also provide direction on mitigating the effects of forest operations; a complete list of these guides and the documents themselves are available on the following OMNR Internet website:

http://www.mnr.gov.on.ca/en/Business/Forests/2ColumnSubPage/STEL02_164533.html

These guides serve as a catalogue of current best practices, and contain recommended strategies, silvicultural treatments and best management practices to achieve ecological sustainability. The Forest Management Plans, Forest Information System, and other decision support materials also help in the determination of proper VECs and mitigation measures.

The forest management plans dictate that no more than the average annual volume of tree

growth is harvested in a given year. If a natural disaster destroys some of the forest, the annual harvest volume is adjusted accordingly so as to not exceed the maximum allowable annual harvest. The maximum annual allowable harvest is calculated separately for each property based on the average growth rates of trees within the harvestable portions to assure sustainable management of the forest.

Time frames for timber harvesting usually relate to the annual work schedule, which is a one-year plan developed for proposed areas of harvest. Although TSAs occasionally have time frames longer than one year, it is unlikely that any permit or license would exceed two years. Within the timeframe of a TSA there are further timing restrictions in order to minimize damage to the site, avoid damage to residual trees, and allow proper breeding times for wildlife. Table 3 outlines mitigation measures by project component/activity.

4.6 Analysis and Prediction of Significance of Residual Environmental Effects

Definition of Criteria in Determining Significance of Residual Environmental Effects

Criteria for evaluating the significance of potential negative environmental effects have been identified. Generally, a determination of significance is based on the six following criteria: magnitude, geographic extent, duration, frequency, reversibility and ecological context (Table 4). The criteria were assessed using past experience and professional judgment and are combined to determine the significance of the likely environmental effects resulting from project activities on the environment. Criteria ratings are presented in Table 5.

Table 4: Criteria Rating to Determine Significance of Residual Environmental Effects

Criterion	Criteria Rating		
	Negligible (1)	Minor (2)	Major (3)
Magnitude	Minute levels of disturbance or damage, no change to natural conditions	Low levels of disturbance or damage, slight change to natural conditions	High levels of disturbance or damage, major change to natural conditions
Geographic Extent	Within project site (i.e. limited to harvest area)	Extends beyond project site, but within property boundaries	Extends beyond property boundaries
Duration	Less than one week	Weeks to months	A year or longer
Frequency	Occurs on or greater than a monthly basis	Occurs on a weekly basis	Occurs on a daily basis
Reversibility	Effects reversible over short term without active management	Effects reversible over short term with active management	Effects reversible over extended term with active management or effects are not reversible
Ecological Context	Results in no disruption or alteration of ecological processes	Results in minor disruption or alteration of ecological processes that can be rectified with active management	Results in disruption or alteration of ecological processes that cannot be rectified with active management

The above criteria rating system was used to determine the significance of residual environmental effects. Significance is based on the following definitions:

Significant

Residual effects are found to be significant when they present high levels of disturbance or damage that result in a major change to natural conditions, last longer than one year, occur frequently, extend beyond property boundaries, are difficult or impossible to reverse with active management, and disrupt or alter ecological processes in a way that cannot be rectified with active management.

Not Significant

Residual effects are found to be not significant when they present minor or negligible disturbance or damage that results in minimal or no change in natural conditions, have a

duration of weeks to months, are within the project site or property boundaries, occur infrequently, have reversible effects with or without active management, and do not disrupt or alter ecological processes.

The following table utilizes the criteria ratings in order to determine whether there is a significant residual environmental effect through project-VEC interaction after mitigation has been applied. Timber harvesting projects, if implemented properly and monitored over their course to ensure adherence to best practices and mitigation measures, are unlikely to have any significant residual environmental effects.

Table 5: Significance of Residual Environmental Effects

<i>VEC</i>	<i>Activity Elements</i>	<i>Residual Environmental Effects</i>	<i>Criteria Ratings</i>						<i>Significance</i>
			<i>Magnitude</i>	<i>Geographic Extent</i>	<i>Duration of Effect</i>	<i>Frequency of Effect</i>	<i>Reversibility</i>	<i>Ecological Context</i>	
Surface Water and Groundwater Quantity	Removal of trees	Increase in precipitation on ground, increased snow levels	1	1	2	1	1	1	Not Significant
Atmosphere - Airflow Dynamics	Removal of trees	Increase in airflow through harvested stands	1	1	2	1	1	1	Not Significant
Atmosphere - Air Temperature and Quality	Removal of trees	Increase in localized air temperature on harvested stands	1	1	2	1	1	1	Not Significant
Soil – Quality and Quantity	Machinery operation and spills, removal of trees	Slight compaction on skid trails in harvested stands	1	1	2	2	1	1	Not Significant
Surface Water and Groundwater Quality	Removal of trees, machinery operation	Minor change in surface water dynamics	1	2	1	1	1	1	Not Significant
Federal Species at Risk	Removal of trees, machinery operation	Temporary noise level increase which may affect Federal Species at Risk	1	1	1	1	1	1	Not Significant
Wildlife Habitat and Communities	Removal of trees	Temporary noise in harvested stands outside of breeding times	1	1	2	1	1	1	Not Significant

Vegetation – Understorey and Overstorey Composition	Removal of trees	Negligible change in proportion of tree species	1	2	1	1	1	1	Not Significant
Recreational and Aesthetic Values/Quality of Life	Removal of trees, noise of machinery	Aesthetic effect	1	2	2	1	1	1	Not Significant
Health and Safety	Machinery and tools, tree felling and hauling	Possible injury	1	1	1	1	2	1	Not Significant
Military Training	Removal of trees	Effect on training areas potential	2	1	1	1	1	1	Not Significant
Archaeological Sites/Other Cultural Values	All aspects of timber harvesting	None as avoidance will be mitigation measure	1	1	1	1	1	1	Not Significant
Revenue from Harvesting	Removal of trees	Revenue for economy	1	2	1	1	1	1	Not Significant
Secondary Benefits to Communities	All aspects of timber harvesting	Revenue for economy	1	2	1	1	1	1	Not Significant

Legend: 1=Negligible, 2=Minor, 3=Major

4.7 Cumulative Environmental Effects

The Act requires the consideration of potential cumulative environmental effects, that is, any environmental effects that are likely to result from the project after mitigation measures are applied in combination with other projects or activities that have been or will be carried out. Cumulative environmental effects can occur when environmental effects take place frequently over time or intensively over space and cannot be actively managed or properly mitigated. They can also occur when the effects of one activity combine with those of a past, current, or foreseeable future projects or activities on or off the project sites.

Interactions between timber harvesting activities

Examples of potential cumulative environmental effects could include improper multiple timber harvesting activities over a relative short timeframe that cumulatively lead to similar effects such as soil erosion, species at risk habitat destruction and/or fragmentation, and/or impaired water quality or quantity.

Such cumulative environmental effects will be minimized through adherence to the 20-year forest management plans in place at each property. Such plans require the rapid regeneration of the harvest areas and outline other practices that are focused on the long-term sustainability of the forest, including all of its components. The preferred harvest method is selection cutting, which leaves at least half the forest standing following the harvest of a given stand. Equipment use is carefully monitored to ensure that damage to soils, waterways and residual trees is avoided. Such practices are an example of how cumulative environmental effects over the long term are minimized.

Environmental effects associated with timber harvesting are expected to be short in duration and limited to the area where the activities take place. As forests and trees are a renewable resource and harvesting is conducted in a sustainable manner, it is unlikely that any long term cumulative environmental effects will take place. There is a large repository of knowledge and best practices that has been implemented in federal land forests in order to sustain healthy forests and avoid any cumulative environmental effects.

It is difficult to anticipate the number of projects covered by this RCSR per year although it is likely that 10 to 20 projects could be covered by the RCSR on an annual basis on all three properties combined.

Interactions between timber harvesting activities and other projects/activities inside the site boundaries

Cumulative environmental effects can also result from separate project activities, such as timber harvesting and military training occurring in the same area or impacting the same VEC at different times. Military training is the most common other activity that would occur in timber harvested areas. Military activities in former harvest areas are typically

the construction of temporary bivouac sites, which are relatively benign in terms of environmental effects.

Therefore, cumulative effects between military and timber harvest operations are highly unlikely.

Interactions between timber harvesting activities and other projects/activities outside the site boundaries

Added to projects within the boundaries of the three DND properties subject to this RCSR, projects and activities outside site boundaries are not expected to result in cumulative environmental effects. The properties are bordered by private and/or public forest and small private agricultural lands, as well as recreational properties. Activities on these lands are typically small in scale and related to agricultural or forestry use, and would typically be of a localized nature.

The potential for large scale, invasive land use activities outside the DND lands occurring concurrent with adjacent timber harvest activities inside the boundaries that would lead to cumulative environmental effects is highly unlikely.

Summary of Cumulative Effects on VECS

Taking the mitigation measures from section 4.5 of this RCSR into account, potential adverse environmental effects would be limited to each individual timber harvest site. Consequently, potential adverse cumulative environmental effects are unlikely to occur either inside or outside the project boundaries.

Proper planning and design will take into account surrounding infrastructure and other activities inside and outside of project boundaries which could have the potential to act in a cumulative manner on affected VECs. Consequently, the potential for any cumulative effects to occur as a result of project/activity interactions with other timber harvest activities or other projects or activities inside or outside the sites' boundaries is unlikely.

The RAs will ensure that an assessment for cumulative environmental effects is completed on an annual basis to confirm the abovementioned predictions. The RAs are committed to ensuring the continuing validity of the cumulative effects assessment in this RCSR. The RAs will report on whether the cumulative environmental effects assessments described in this RCSR continue to be accurate on a yearly basis.

5. PROCEDURES FOR REVISING THE REPLACEMENT CLASS SCREENING REPORT

Upon mutual agreement, NRCan on behalf of the RAs will notify the Agency in writing of its interest to revise the RCSR as per the terms and conditions of the declaration. The RAs will discuss the proposed revisions with the Agency and affected federal government departments and may invite comment from stakeholders on the proposed changes. For a re-declaration of the RCSR, a public consultation period will be required. The RAs will then submit the proposed revisions to the Agency, along with a statement providing a rationale for each revision proposed as well as a request that the Agency amend or re-declare the RCSR.

5.1 Amendments

The purpose of an amendment is to allow for minor modifications to the RCSR after experience has been gained with its operation. Amendments do not require public consultation and do not allow for changes to the term of application. In general, amendments to the RCSR can be made if the Agency is satisfied that changes:

- represent editorial changes intended to clarify or improve the document and procedures screening process;
- streamline or modify the planning process and/or
- do not materially alter either the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects.

5.2 Re-declaration

The purpose of a re-declaration is to allow substantial changes to the RCSR after experience has been gained with its operation. Re-declarations require a public consultation period. A re-declaration of an RCSR may be undertaken for the remaining balance of the original declaration period or for a new declaration period if the changes:

- extend the application of the RCSR to projects or environmental settings that were not previously included, but are similar or related to projects included in the class definition;
- represent modifications to the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects;
- reflect new or changed regulatory requirements, policies or standards;
- introduce new design standards and mitigation measures;
- modify the federal coordination notification procedures;
- extend the application of the RCSR to RA(s) who were not previously declared users of the report;
- remove projects that are no longer suitable for the class; and/or
- extend the term of application of the RCSR.

5.3 Term of Application

This RCSR will be in effect for five years from its date of declaration. Near the end of the RCSR declaration period, and at other times as necessary, the RAs will review content and usage to allow for the report to be updated and to prepare for potential re-declaration.

6. REFERENCES

AMEC Earth and Environmental. 2006. Species-at-risk follow-up avian field surveys, spring 2006, Land Forces Central Area Training Centre, Meaford, Ontario. 36 p. + app. *Description: Comprehensive follow-up to 2004 and 2005 survey of avian species conducted by Wild Canada. Unlike previous surveys, this was completed in the spring during the nesting period.*

Canada Gazette. 1993. *Forestry Act Timber Regulations, 1993*. Canada Gazette Part II, Vol. 128, No. 3 (dated 9/2/94). Registration SOR/94-118. 7 p. *Description: The published federal law outlining the regulations respecting the cutting and removal of timber in a forest area on federal Crown lands.*

Canadian Forestry Service 1987. Policy for Forest Management of Department of National Defence Lands. Federal Lands Forestry Branch, Canadian Forestry Service. Internal document. 5 p. + app. *Description: Establishes the guiding principles for the CFS regarding forest management on lands owned by DND. Includes the agreement signed by DND and CFS defining the responsibilities of DND and CFS with respect to forest management on federal Crown-owned lands administered and controlled by the Department of National Defence. Includes a list of DND bases and sites that fall under the umbrella of these guidelines.*

Department of Fisheries and Oceans. 2008. Temporary Stream Crossing Operational Statement. Downloaded Sept. 9, 2008 from <http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/provinces-territoires-territoires/on/os-eo23-eng.htm>. 3 p. *Description: Provides conditions under which temporary stream crossings are permitted under the Fisheries Act, and considerations for their construction so as to protect fish and fish habitat.*

Environment Canada. 2004. Environmental assessment best practice guide for wildlife at risk in Canada. First edition: 27 February 2004. 63 p. Downloaded Nov. 10, 2008 from http://www.cws-scf.ec.gc.ca/publications/eval/guide/EA_Best_Practices_2004_e.pdf. 63 p. *Description: Outlines a national approach on how to gather and assess information necessary for understanding the consequences of proposed actions on wildlife at risk and for making sound decisions that contribute, in the long run, to sustainable development.*

Environment Canada. Past data for the Petawawa National Forestry Institute (part of CFB Petawawa). Website: <http://www.climate.weatheroffice.ec.gc.ca> *Description: Past weather data online for weather stations across Canada. PNFI's climate data ended in 1996.*

Environment Canada. Federal Species at Risk listings and current COSEWIC status. Website: <http://sararegistry.gc.ca/>

Description: searchable website listing federal Species at Risk across Canada.

Environmental Assessment Board (EAB). 1994. Reasons for Decision and Decision. Class environmental assessment by the Ministry of Natural Resources for timber management on Crown lands in Ontario. Environmental Assessment Board Report EA-87-02. 561 p.

Description: The decision of the EA Board and a summary of the hearing on a Class EA application, intended to determine if forest management activities pass the test of approval under the Ontario Environmental Assessment Act. The process of gathering public evidence lasted from 1988 to 1992. A number of legally binding terms and conditions were part of the EA Board approval.

Foreman, F.F., 1988, CFB Borden Forest Management Plan 1987-2007, 51, Report, Paper copy only

Description: The 20 year Forest Management Plan written by Foreman while working at the Great Lakes Forestry Centre, Canadian Forestry Service. Contents include uses of the Borden property, administrative structure, social structure, costs of forest management, forest inventory, forest management objectives and planning.

Gillespie, J.E. and R.E. Wicklund. 1964. Soils Survey of Renfrew County as contained in Report Number 37 of the Ontario Soil Survey. 57 p.

Description: Survey conducted by the Ontario Department of Agriculture and the Canada Department of Agriculture. Soil series done across Renfrew County, classifying the county through 26 different soil profiles. Document also contains maps.

Grey Sauble Conservation Authority and GWS Ecological and Forestry Services Inc., 2005. LFCA TC Meaford 20-year forest management plan and 5-year operating plan, 80 p. + app.

Description: The Forest Management Plan includes site description, summary of forest inventory, GIS applications, management goals and objectives, silvicultural guidelines, forest protection and five-year operating plan.

Heritage Quest Inc. 1999. Archaeological inventory and management guidelines for CFB Petawawa.

Description: Outlines the procedures by which archaeological sites will be inventoried and managed at CFB Petawawa.

Jacques Whitford Environmental Ltd., 1994a. Natural resource inventory Canadian Forces Base Petawawa, Petawawa, Ontario. Ottawa. 178 pp.

Description: Detailed report of flora and fauna.

Jacques Whitford Environmental Ltd. 1994b. Archaeological overview and background study of CFB Petawawa.

Description: Provides the results of a preliminary study of archaeological sites at CFB Petawawa.

LGL Limited. 2007. LFCA TC Meaford species at risk survey – 2006, Internal Report. 19 p. + app.

Description: Follow-up to the 2004 and 2005 plant surveys conducted by Wild Canada. This was completed in the fall, and served to confirm and update earlier findings.

LGL Limited. 1999. CFB Borden MAPS (Manoeuvre Area Planning System), Internal Report.

Description: Provides consideration of environmental effects and their significance, promotion of environmentally sustainable military training, reduction of environmental effects off-base and due consideration of the public's concerns and comments.

LGL Limited. 1998. LFCA TC Meaford MAPS (Manoeuvre Area Planning System), Internal Report. 327 p.

Description: The objectives of MAPS include due consideration of environmental effects and their significance, promotion of environmentally sustainable military training, reduction of environmental effects off-base and due consideration of the public's concerns and comments.

LGL Limited, 2002. Interim herpetological study report, LFCA TC Meaford, Internal Report, 9 p. + app.

Description: Report created from two surveys during August 2002. Eleven habitat sites were surveyed over the two days. Charts and graphs are included which list presence and abundance of reptiles.

Macnaughton, R.L. and T. Keunecke. Timber harvesting LFCA TC Meaford environmental assessment report, 27 p. + app.

Description: an individual screening report created by Richard Macnaughton at the Great Lakes Forestry Centre and Ted Keunecke at LFCA TC Meaford. The document contains good information on VECs and has a good description of the site.

Natural Resources Canada and Department of National Defence. 1998. Memorandum of Understanding Between NRCan and DND Concerning the Management of Forest Lands at Canadian Forces Base Petawawa, DND Identification Number 98021963. 1998. 5 p.

Description: a document outlining how forest lands are managed between NRCan and DND at CFB Petawawa.

Ontario Ministry of Natural Resources (OMNR). 1998a. A Silvicultural Guide for the Great Lakes-St. Lawrence Conifer Forest in Ontario. Ontario Ministry of Natural Resources. Queen's Printer for Ontario. Toronto. 424 p.

Description: A comprehensive guide to assist forest managers in the task of implementing ecologically sustainable silvicultural practices with conifer tree species as the working group. The guide includes discussion on the importance of the GLSL conifer forest to people with respect to ecology, culture, economics, aesthetic and recreational values, and spirituality. Characteristics of the GLSL conifer forest are described in terms of ecosite and site type. Silvics for the major conifer species are given. Sections are devoted

to developing quality trees, stand growth and yield, damaging agents (insects, disease, and abiotic agents), maintenance of tree genetics, silvicultural systems and standards for applying them, site preparation, forest renewal, tending, wildlife habitat management, and harvesting considerations.

OMNR. 1998b. A Silvicultural Guide for the Tolerant Hardwood Forest in Ontario. Ontario Ministry of Natural Resources. Queen's Printer for Ontario. Toronto. 500 p.
Description: Similar to the guide for the GLSL Conifer working groups, the tolerant hardwood silvicultural guide provides assistance in management of shade tolerant deciduous trees. See the description of the silvicultural guide for the GLSL Conifer Forest for list of topics covered.

OMNR. 2000. A Silvicultural Guide to Managing Southern Ontario Forests. Ontario Ministry of Natural Resources. Queen's Printer for Ontario. Toronto. 648 p.
Description: Similar to the guide for the GLSL Conifer working groups, this silvicultural guide provides assistance in management of southern Ontario trees. See the description of the silvicultural guide for the GLSL Conifer Forest for list of topics covered.

OMNR. 2004. Ontario Tree Marking Guide, Version 1.1 Ontario Ministry of Natural Resources. Queen's Printer for Ontario. Toronto. 252 p.
Description: A guide to the application of ecosystem-based forest management through proper tree marking. Chapters include advice on tree marking to emulate natural disturbances, selection of retention trees and removal trees, considerations for maintenance of wildlife habitat and biodiversity, the development and interpretation of silvicultural prescriptions, and the implementation of tree marking prescriptions.

Ontario Resource Management Group Inc. 2006 Species at Risk Environmental Study CFB Petawawa (Draft). 2006. PDF File.
Description: Draft results from Species at Risk surveys conducted at CFB Petawawa in 2006. Fifteen species were surveyed for based on their COSEWIC listing and status as well as the probability of occurrence in the area.

Rowe, J.S. Forest Regions of Canada, 1972. Department of the Environment, Canadian Forestry Service, Publication 1300. 172 p.
Description: divides Canada into eight separate forest regions which are again divided into forest sections. Each forest section is described in terms of soils and topography. Maps and photographs are used to show trees indicative of each forest section.

Statistics Canada. 2008. 2006 Census of Canada. Posted at:
<http://www12.statcan.ca/start.html>
Description: Results of the 2006 Canadian census including community population data.

Szuba, Kandyd and Brian Naylor. 1998. Forest Raptors and Their Nests in Central Ontario: A Guide to Stick Nests and Their Users. Queen's Printer for Ontario. Field Guide FG-03. 78 p.
Description: an identification guide for raptors and their stick nests. The book explains

how to fill out raptor nest report forms and has a particularly helpful chart indicating timing restriction guidelines and Area of Concern buffers.

Wild Canada- Native Plant Nursery Ecological Consulting. 2007. Species at risk bird surveys for LFCA TC Meaford. Internal report. 21p. + app.

Description: This is an extension and update of the 2006 survey completed by AMEC and the 2005 survey completed by Wild Canada. Many previous sightings were confirmed in this report, but no new species were identified.

Wild Canada- Native Plant Nursery Ecological Consulting. 2004. Species at Risk Survey for LFCA TC Meaford. Internal report. 50 p.

Description: a late September survey focused on ten species of birds, six species of reptiles, one species of insect and eight species of plants that were included on the May 2004 COSEWIC status reports. Recommendations were given in terms of future monitoring techniques that could be employed by LFCA TC Meaford.

Wild Canada-Native Plant Nursery Ecological Consulting. 2005. Species at Risk Bird Surveys for LFCA TC Meaford. Internal report. 28 p.

Description: A 2005 continuation of the 2004 survey, focusing on birds.

APPENDIX 1: Cumulative Environmental Effects Declaration Form Letter Template

Date

Class Screening Advisor
Canadian Environmental Assessment Agency
Place Bell Canada
160 Elgin Street, 22nd Floor
Ottawa, ON K1A 0H3

Dear *(insert name)*:

Pursuant to the provisions of declaration, NRCan on behalf of the RAs (*NRCan and DND*) is hereby providing its annual confirmation of cumulative environmental effects assessment conditions on the Replacement Class Screening Report entitled *Name of report*. The report was declared on *date*.

(If there are no changes to predictions of cumulative environmental effects)

NRCan and DND confirm that there were no changes to the predictions of cumulative effects conditions over the course of the last year with the addition of new projects and/or activities.

(Changes to predictions of cumulative environmental effects ≠ changes to mitigation measures)

NRCan and DND declare that there were changes to the predictions of cumulative effects conditions over the course of the last year as a result of additional projects and/or activities. The RA has determined that the following changes do not necessitate a change in the standard mitigation measures as outlined in the report. Consequently, no further action on the part of the *RA* would be required.

List of changes to the cumulative environmental effects conditions:

(Changes to predictions of cumulative environmental effects = changes to mitigation measures)

NRCan and DND declare that there were changes to the predictions of cumulative effects conditions over the course of the last year as a result of the additional projects and/or activities. The RA has determined that the following changes do necessitate a change in the standard mitigation measures as outlined in the report. As a consequence, the RAs would need to undergo an additional round of consultation with other federal authorities, other levels of government and the public. The changes will require an official modification of the Report and will be subject to a new declaration.

Yours sincerely,

EA Officer and position
Natural Resources Canada