BCTS
BC Timber Sales
Chinook

BCTS Chinook Business Area

Forest Stewardship Plan

#643 Replacement

Chilliwack Natural Resource District

Supporting Information

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1. Introduction

The British Columbia government put into effect the Forest and Range Practices Act (FRPA) and the associated regulations, which is a results-based framework that maintains high environmental standards that are expected by the public. It encourages innovation by skilled resource professionals and holds forest tenure holders responsible for the outcomes that result from forest management and primary forest activities. The regulations require some forest tenure holders to prepare a Forest Stewardship Plan (FSP) that is consistent with resource management objectives that have been established by government.

The FSP is a landscape level plan, which is focused on establishing results, strategies and measures for conserving and/or protecting timber and non-timber resource values associated with forest management activities. The FSP states measurable, verifiable, and enforceable results, strategies and / or measures that must be consistent with objectives set by government for a variety of forest values (e.g. fisheries, wildlife, water, biodiversity, cultural values, visuals, recreation, etc.). Forest tenure licensees work in collaboration with government agencies, First Nations, various stakeholders and the general public to ensure that the provincial government's objectives for the management, protection and conservation of forest resources are achieved.

The purpose of the FSP Supporting Document is to provide interpretive information and background documentation to the statutory decision maker reviewing the FSP, First Nations and the general public. As such, this document accompanies and is consistent with the FSP, but is not part of the Forest Stewardship Plan.

1.1 Definitions:

ADM: Assistant Deputy Minister

BCTS: British Columbia Timber Sales, Chinook Business Area

BMP: Best Management Practices

CHIA: Sto:lo Cultural Heritage Impact Assessment

CHOA: Sto:lo Cultural Heritage Overview Assessment

FLNR: Ministry of Forests, Lands, Natural Resource Operations, and Rural Development

FPB: Forest Practices Board

FPPR: Forest Planning and Practices Regulation

FRPA: Forest and Range Practices Act

FSP: Forest Stewardship Plan

LOE: Natural resource district manager's Letter of Expectations

SFI: Sustainable Forestry Initiative (3rd party Forest Certification)

2. Summary of Changes to the FSP

- Review of all results, strategies, and/or measures to ensure they are measurable and verifiable.
- Consideration and incorporation of issues noted in Forest Practices Board's report (FPB report), Chief Forester's Guidance and District Manager's Letter of Expectation (LOE).
- Incorporation of new legislation into results, strategies, and measures.
- Consideration of draft legislation.
- Increased detail in the First Nations information sharing process within the Cultural Heritage Resources Results and Strategy.

- Removed Bowen & Silver Daisy from FDU.
- Updated the list of signatories.
- Updated Stocking Standard.

2.1 Public Information Sharing

The Forest Practices Board (FPB) audit and the Letter Of Expectation (LOE) indicate concern with the lack of public review afforded by the current system of FSPs and a need to ensure that the public is more engaged and able to review plans on a regular basis.

The plan holder(s) has a robust information sharing process with stakeholders. In our planning stages, the plan holder(s) prepares and sends out an operating plan (OP). This OP includes: block name, location, age, area (ha), estimated volume, species composition, planned assessments, harvest method and any other relative comments. The intent is to provide as much information as possible.

We considers the information brought forward during the OP referral stage and develops mitigation strategies, if required, prior to layout beginning.

Examples of how the plan holder(s) has addressed concerns raised by stakeholders include:

1. required timing restrictions regarding harvest operations and hauling;
2. cut block boundary changes;
3. additional clauses within the timber sale licence to require
    a. Signage, trail closures, trail rehab, notification of stakeholders;
4. additional clauses within the road permit;
5. recommendations for additional clauses for the road use permit issued by district;
6. notification of stakeholders prior to harvest commencement;
7. invitation to attend pre-work with the licensee prior to harvest commencement; and
8. trails and features are often considered despite the fact that they are not legally established.

Throughout the information sharing process, the plan holder(s) focuses on relationship building. The plan holder(s) understands the importance of building and maintaining social licence with the public. The plan holder(s) has increased the frequency of information sharing, and protocols are in place to guide that process. We have also tried to educate stakeholders about our mandate and our process.

The range of stakeholders includes:

1. recreation groups;
2. regional district government;
3. municipal governments;
4. water licence holders;
5. tenure holders; and
6. private landowners other forest licensees.

2.2 Public Safety

The plan holder(s) works hard to maintain safety at all times in all our practices, the BCTS safety page can be located at: https://gww.for.gov.bc.ca/bcts/ba/safety/tch/.

As recreational use increases within the working forest, the public will find themselves in closer proximity to our operations. The following list is a variety of methods we routinely employs to improve safety for all parties:

1. Environmental field procedures:
    a. EMS program provides guidance on how to behave in operational conditions (e.g. Hazard assessment, hazard reporting, etc.);
2. Checklist reports and guidance:
    a. helps to ensure that all hazards and risks are identified and addressed, and
    b. formalizes documentation;
3. Timber sale licenses now include a highlights sheet:
    a. increases awareness of licensee responsibilities (e.g. signage, timing, etc.),
    b. highlights special circumstances (e.g. Trail closures, steep slopes, etc.), and
    c. reinforces requirements (e.g. Communication plan with stakeholders);
4. Licensee pre-works:
    a. These pre-works help highlight any safety concerns with regard to the activity and includes risk rating matrices and other measures to ensure that all parties are aware of the hazards that may be present,
    b. For licenses where conditions exist to protect/preserve site features, the affected stakeholder is invited to be in attendance at the pre-work to facilitate communication, and
    c. We uses tools like timing restrictions, trail closures and signage to ensure that any public users are well informed of safety information.

3. Response to Chief Forester's Guidance Letter, March 2016

3.1 Fire Management Stocking Standards

Designing cutblocks with fire/fuel management as the main objective is currently out of scope for us in the Chilliwack Natural Resource District. Cutblocks and permits are designed with the goal of supplying fiber to the market so that the timber pricing mandate can be achieved.

Stocking standards for fire management would be used mainly in response to a legacy or unique situation, we feels the best approach is to prescribe those on a case by case basis to ensure that the prescription takes into account all of the site specific factors. Modified and/or fire management stocking standards should be applied with the intent of improving stand sustainability, with an emphasis on stand density and forest health.

3.2 Non-Legal Guidance

We considers draft guidance when planning operations and incorporates the recommendations where it is operationally practicable. Recommendations are viewed in the context of fibre supply, operational issues and environmental management.

3.3 Monitoring Trends – Forest Resource Evaluation Program (FREP)

The results and recommendations of the FREP reports are considered and incorporated when operationally practicable. In addition, BCTS staff attend various training opportunities, and continuous improvement (CI) principles are applied to forest operations. FREP reports and extension notes are reviewed from the FREP website. BCTS holds monthly meetings with contractors and staff, where CI principles are applied to review and integrate new information into ongoing work processes.

3.4 Draft Orders for Species at Risk

Any draft orders that are in place are considered in the context of fibre supply, operational issues and environmental management. BCTS has developed BMPs that include practices to manage for SAR, including seeking advice from a qualified professional when encountered. The presence of SAR is evaluated at all five phases of block development, to ensure all known species are addressed in

plans.

4. Information Sharing Process

4.1 Who BCTS Engages

The primary criterion for engaging First Nations and public stakeholders is the geographic location of the planned activity. Using iMapBC as the primary mechanism to identify First Nation and stakeholders, the Plan Holder(s) shares information regarding the proposed forest development (e.g. timber harvest and road construction) with parties who have a vested interest in the land.

We identifies First Nations and stakeholders, from the range listed below:

1. First Nations;
2. BC government agencies;
3. municipalities and regional districts;
4. land and water tenure holders;
5. private land owners;
6. stakeholders and interest groups (e.g. recreation groups);
7. trap line holders; and
8. additional groups that self-identify

In addition to information sharing package mail-outs, we make all information sharing information available on the web. This provides the opportunity for stakeholders to self-identify and become involved in the process.

4.2 How BCTS Engages: Information Sharing Process

The process outlined in the next section of this document details the information sharing process for planning and operational activities.

The process is divided into two categories. The first is specific to First Nations information sharing, while the second is the protocol for stakeholders. While the processes vary slightly, the intention is the same – share information and seek feedback through a meaningful engagement process.

4.2.1 First Nations Information Sharing Process

The First Nations information sharing processes are outlined below:

1. OP:
    1. Ops are sent, at least once per year (or more often as new projects progress). These Ops contain proposed cut blocks and roads that have not yet been engineered in the field.
    2. Details such as, block name, location, landscape unit, stand age, estimated area, volume, planned assessments, species composition, harvest method, comments, maps, shape files, and road information are included when possible.
    3. Follows the timeframes and consultation levels defined in First Nation Forestry Consultation and Revenue Sharing Agreements (FCRSAs). When requested we tries to accommodate requests for timelines extensions.
    4. If more than three years has passed, a previously referred cutblock will be shared again with First Nations to ensure they have no new concerns.
2. Changes to the Proposed Development:
    1. When a cutblock undergoes significant changes such as the size (i.e. >25%), shape or location, the Plan Holder(s) will re-share with First Nations to ensure they have no new concerns.

3. No Reponses Received:
    1. If no responses are received, the Plan Holder(s) will send follow up letters / phone calls requesting input.
4. Responses Received:
    1. All comments and concerns are considered by the Plan Holder(s). A meeting with a First Nation may be required to better understand concerns and how to effectively address them. First Nations' concerns may be incorporated into forest development planning in order to minimize or mitigate the impact of timber harvest activities on a First Nation's Aboriginal interest(s).
    2. If the Plan Holder(s) cannot address a First Nation's concern then a written response will be provided with a rationale.

5. Assessments:
    1. If the cutblock(s) require a visual impact assessment, a terrain stability assessment and/or a hydrological assessment, the Plan Holder(s) will ensure they are completed and provided to First Nations, if requested. A qualified professional will review the assessments and make recommendations that will be specified in a plan.
    2. Additional assessments may also be requested by a First Nation such as:
        i. Preliminary Field Reconnaissance
        ii. Archeological Impact Assessment
        iii. Traditional Use Study
        iv. Heritage Field Reconnaissance
        v. Botanical Resource Surveys
        vi. Cultural Heritage Impact Assessment
        vii. Cultural Heritage Overview Assessment
    3. Recommendations from these assessments are considered by the Plan Holder(s), additional meetings with a First Nation may be required develop mitigation strategies, if required. We will provide a written response indicating which recommendations can be implemented and a rationale if recommendations cannot be implemented.

4.2.2 Stakeholders Information Sharing Process

This process is similar to the information sharing process used for First Nations with minor exceptions including consultation time frames and that BCTS does not complete assessments related to Aboriginal interests.

1. OP:
    a. OPs are sent, at least once per year (or more often as new projects progress). These OPs contain proposed cut blocks and roads that have not yet been engineered in the field. BCTS attempts to provide a package which accurately represents the planned activities.
    b. Details such as, block name, location, landscape unit, stand age, estimated area, volume, planned assessments, species composition, harvest method, comments, maps, shape files, and road information are included when possible.
    c. These plans are sent with a request for a response within a specified time frame. This varies with stakeholders, but it is never less than 30 days.
    d. If more than three years have passed, a previously referred cutblock will be shared again with stakeholders to ensure they have no new concerns.
2. Changes to the Proposed Development
    a. When a cutblock undergoes significant changes such as the size (i.e. >25%), shape or location, BCTS will re-share with stakeholders to ensure they have no new concerns.

3. Responses Received
    a. Comments and concerns are considered by BCTS. A meeting with the stakeholder may be required to better understand their concerns, and plans may change in order to minimize or mitigate the impact of timber harvest activities on the stakeholder value.
4. Assessments
    a. If the cutblock(s) require visual impact assessment, terrain stability assessment and or a hydrological assessment, BCTS will ensure they are completed. A qualified professional will review the assessments and make recommendations that will be specified in a plan.
5. Due Diligence Report (DDR)
    a. A DDR summarizing the information sharing process and any accommodations that were made is prepared and approved by the timber sales manager.

5. Protection of Cutblocks and Roads

We are not declaring any cutblocks at the time of submission of this FSP.

Road Permits and Timber Sales Licences will be listed in the appendices (Table B3 and Table B4) of the FSP.

6. Results or Strategies

6.1 Soils

The objective set by government for soils in the FPPR is "without unduly reducing the supply of timber from British Columbia's forests, to conserve the productivity and the hydrologic function of soils". BCTS will default to the Soils Practice Requirements detailed in sections 35 and 36 of the FPPR.

Performance measures are in place on a block specific basis to help ensure that soils are protected. For example:

1. Site Plan and Harvest Plan documents align with sections 35 and 36 of the FPPR and are signed by a qualified professional.
2. Soil disturbance limits and permanent access structures (PAS) limits are calculated and specified in a plan.
3. Harvest operations are inspected to ensure the plan is followed and the soil resources are protected. Compliance and Enforcement Branch staff will be notified if limits are exceeded.
4. Detailed road construction and deactivation/rehabilitation require a sign off by a qualified professional to ensure the activity meets design/plan specifications, and soils are protected.
5. Bridge installations require a sign off by a qualified professional, to ensure construction meets design specifications, and soils are protected.

BCTS implements the following BMPs for soil conservation:

1. Machine Free Zones
2. Wet Weather Shutdown guidelines
3. Soil disturbance limits and PAS limits

6.2 Wildlife

The presence of SAR is evaluated at five different stages in block development, to ensure the latest information is used.

- Stage 1: Block Planning and Development
- Stage 2: Block/Engineering layout Pre-Work

- Stage 3: Field Work Quality Assurance
- Stage 4: Site Plan/ Road Site Quality Assurance
- Stage 5: TSL/Contract Package Preparation

BCTS' FSP plan holder(s) commits to seeking advice from qualified professionals, as required, and will also provide updates the BC Conservation Data Center (CDC) with any relevant field information thatpertains to SAR.

The following provides a description of the Survival of Species at Risk in the Chilliwack Natural Resource District.

6.2.1 Pacific (Coastal) Giant Salamander

With respect to the Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Chilliwack Forest District for the Pacific Giant Salamander, the plan holder(s) will manage the applicable approved Wildlife Habitat Areas according to the General Wildlife Measures described in the order.

Wildlife Habitat Areas	FDU	**Date Takes Effect** (original or amendment)
Coastal Giant Salamander (20 WHAs) • WHA # 2-120 to 2-128, 2-130 to 2-138, • WHA # 2-148 & 2-149 Order	Applicable FDU	October 23, 2007 January 24, 2008
Pacific Giant Salamander (24 WHAs) • WHA # 2-580 to 2-587, 2-589 to 2-592, 2-594 to 2-595, 2-656 to 2-661, & 2-663 to 2-666.	Applicable FDU	September 27, 2017

6.2.2 Grizzly Bear

With respect to the Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Chilliwack Forest District for the Grizzly Bear, the plan holder(s) will manage the applicable approved Wildlife Habitat Areas according to the General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	**Date Takes Effect** (original or amendment)
Grizzly Bear (63 WHAs) • WHA # 2-099, 2-100, 2-101, 2-102 & 2-194 Order # 1. • WHA # 2-109, 2-112, 2-114, 2-118, 2-119, 2-195, 2-196, 2-197,2-198, 2-199, 2-201, 2-202 & 2-203 Order # 2. • WHA 2-097, 2-098, 2-105 to 2-107, 2-111, 2-113, 2-116 & 2-372 to 2-380 Order # 3. • WHA # 2-407 to 2-434 Order # 4.	Applicable FDU	• April 14, 2005 • April 14, 2005 • October 6, 2010 • March 10, 2011

The order states that, 'pursuant to Section 7(3) of the Forest Planning and Practices Regulation, the person(s) required to prepare a Forest Stewardship Plan are hereby exempted from the obligation to prepare results or strategies in relation to the objective set out in Section 7(1) of the Forest Planning andPractices Regulation for Grizzly Bear in the Chilliwack Forest District'. Therefore, the Notice requirements have been met and are considered to no longer be in effect.

6.2.3 Pacific Water Shrew

With respect to the Notice – Indicators of the Amount, Distribution and Attributes of Wildlife

Habitat Required for the Survival of Species at Risk in the Chilliwack Forest District (August 3, 2007) for the Pacific Water Shrew, the plan holder(s) will manage the applicable approved Wildlife Habitat Areas according to the General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	**Date Takes Effect** (original or amendment)
Pacific Water Shrew (5 WHAs) • WHA # 2-514, 2-515 2-667 2-668 & 2-669.	Applicable FDU	September 27, 2017

The original order established three (3) WHAs and in 2017 established five (5) WHAs for the recovery of this species. During the latest update, Wildlife Habitat Areas #2-140, #2-144 and #2-147 Pacific Water Shrew – Chilliwack Forest District (August 24, 2007) have been re-numbered and now part of the currentfive (5) WHAs.

The order states that, 'pursuant to Section 7(3) of the Forest Planning and Practices Regulation, the person(s) required to prepare a Forest Stewardship Plan are hereby exempted from the obligation to prepare results or strategies in relation to the objective set out in Section 7(1) of the Forest Planning andPractices Regulation for Pacific Water Shrew in the Chilliwack Forest District'. Therefore, the Notice requirements have been met and are considered to no longer be in effect.

6.2.4 Tall Bugbane

With respect to the 'Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Chilliwack Forest District' for the Tall Bugbane, the plan holder(s) will manage the applicable approved Wildlife Habitat Areas according to the General Wildlife Measures described Order.

Wildlife Habitat Areas	FDU	**Date Takes Effect** (original or amendment)
Tall Bugbane (18 WHAs) • WHA # 2-129, 2-142 to 2-143, & 2-145 Order # 1. • WHA # 2-567 to 2-579, & 2-670	Applicable FDU	• October 23, 2007 • September 27, 2017

The original order established four (4) WHAs and in 2017 established fourteen (14) additional WHAs for the recovery of this species.

Additionally, the Order states that, 'pursuant to Section 7(3) of the Forest Planning and PracticesRegulation, the person(s) required to prepare a Forest Stewardship Plan are hereby exempted from the obligation to prepare results or strategies in relation to the objective set out in Section 7(1) of the ForestPlanning and Practices Regulation for Tall Bugbane in the Notice for the Chilliwack Forest District'. Therefore, the Notice requirements have been met and are considered to no longer be in effect.

6.2.5 Pacific (Coastal) Tailed Frog

With respect to the 'Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Chilliwack Forest District' for the Pacific Tailed Frog, the plan holder(s) will manage the approved Wildlife Habitat Areas according to General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	Date Takes Effect (original or amendment)
Pacific (Coastal) Tailed Frog (3 WHAs) • WHA # 2-511, 2-512 & 2-513 Order	Applicable FDU	April 24, 2014

Additionally, the Order states that, 'pursuant to Section 7(3) of the Forest Planning and PracticesRegulation, a person required to prepare a Forest Stewardship Plan is exempt from the obligation to prepare results or strategies in relation to the objective set out in Section 7(1) of the Forest Planning and Practices Regulation for Pacific Tailed Frog in the Chilliwack Natural Resource District'. Therefore, the Notice requirements have been met and are considered to no longer be in effect.

Where an occurrence of Pacific Tailed Frog is observed that is not located within an approved Wildlife Habitat Area, the plan holder(s) will manage the wildlife habitat by referencing the Accounts andMeasures for Managing Identified Wildlife – Coast Forest Region for the Pacific Tailed Frog. Complete document can be found at:

http://www.env.gov.bc.ca/wld/frpa/iwms/documents/Accounts_and_Measures_Coast.pdf.

6.2.6 Mountain Goat

With respect to the Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Winter Survival of Ungulate Species in the Fraser Timber Supply Area for the Mountain Goat, the plan holder(s) will manage the applicable Ungulate Winter Ranges according to the General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	Date Takes Effect (original or amendment)
Mountain Goat • WHA Order # U-2-001	Applicable FDU	August 2, 2017

Additionally, the Order states that, 'pursuant to Section 7(3) of the Forest Planning and PracticesRegulation, a person required to prepare a Forest Stewardship Plan is exempt from the obligation to prepare results or strategies in relation to the objective set out in Section 7(1) of the Forest Planning andPractices Regulation for winter survival of mountain goat in the Fraser TSA'. Therefore, the Notice requirements have been met and are considered to no longer be in effect.

6.2.7 Spotted Owl

With respect to the Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Chilliwack Forest District for the Spotted Owl, the plan holder(s) will manage the applicable approved Wildlife Habitat Areas according to the General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	Date Takes Effect (original or amendment)
Spotted Owl (17 WHAs) • WHA # 2-494 to 2-510 Order # 1.	Applicable FDU	March 10, 2011

Additionally, the Order states that, 'pursuant to Section 7(3) of the Forest Planning and PracticesRegulation, a person required to prepare a Forest Stewardship Plan is exempt from the obligation to prepare results or strategies in relation to the objective set out in Section 7(1) of the Forest Planning andPractices Regulation for Spotted Owl in the Chilliwack Forest

District'. Therefore, the Notice requirements have been met and are considered to no longer be in effect.

6.2.8 Black-tailed Deer and Mule Deer

With respect to the Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Winter Survival of Ungulate Species in the Fraser Timber Supply Area for the Black-tailed and Mule Deer, the plan holder(s) will manage the applicable Ungulate Winter Ranges according to the General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	**Date Takes Effect** (original or amendment)
Mule Deer & Columbian Black-tailed Deer • WHA Order # U-2-006	Applicable FDU	May 19, 2011

Additionally, the Order states that, 'pursuant to Section 7(3) of the Forest Planning and PracticesRegulation, a person required to prepare a Forest Stewardship Plan is exempt from the obligation to prepare results or strategies in relation to the objective set out in Section 7(1) of the Forest Planning andPractices Regulation for deer winter range in the Fraser TSA'. Therefore, the Notice requirements have been met and are considered to no longer be in effect.

6.2.9 Marbled Murrelet

With respect to the Ministerial Order for the Recovery of Marblen Murrelet – Indicators of the Amount, Distribution and Attributes of Habitat required for the survival of Marbled Murrelet. The plan holder(s) will manage the applicable habitat area according to the Results and Strategy under the CHC-3001 of this FSP.

6.2.10 Northern Goshawk

The District Manager issued a letter on February 13, 2019 to all forest tenure holders in the Chilliwack Natural Resource District regarding the management and protection of breeding ana nesting habitat for the Northern Goshawk. The plan holder(s) will refer to the habitat suitability maps to determine the suitability class of the habitat proposed for timber harvesting, conduct field inspection to confirm the stand attributes are in keeping with the suitability class mapping during field engineering. Conduct field inspection during field engineering and engage the service of a qualified professional if presence, activity, sign or nests are observed.

With respect to the Order – Wildlife Habitat Area #2-671 (May 22, 2020), the plan holder(s) will manage the applicable approved WHA according to the General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	**Date Takes Effect** (original or amendment)
Northern Goshawk • WHA # 2-671 Order	Applicable FDU	May 22, 2020

6.2.11 Mountain Beaver

Although not described as an identified wildlife species, a Wildlife Habitat Area has been established to address an area known to contain Mountain Beaver habitat. The plan holder(s) will manage the applicable Wildlife Habitat Area according to the General Wildlife Measures described in the Order.

Wildlife Habitat Areas	FDU	Date Takes Effect (original or amendment)
Mountain Beaver • WHA # 2-012 Order	Applicable FDU	September 13, 2001

6.2.12 Other Species at Risk and Managed Species

Other Species at Risk or Managed Species may occur with the FDU's outlined in the FSP. When encountered, the first step a forestry professional takes is to understand the biology and the ecological characteristics of any Species at Risk or Managed Species in a specific geographic location and then determine if any legislative direction exists that may be applicable to the particular species. For example, a review of the Species at Risk Public Registry, the Committee on the Status of Endangered Wildlife in Canada and the British Columbia Conservation Data Center would be conducted. If a Species at Risk is an Identified Wildlife Management Species and an 'Accounts and Measures' or a 'Recovery Strategy' document is available, the plan holder(s) would reference those documents in order to assist indeveloping an appropriate management strategy in conjunction with a qualified professional.

BCTS address SAR species that are not currently subject to a section 7 notice (e.g. SAR Notices FPPR section 7 and WLPPR section 9) by requiring professionals working in the field to be guided by the BCTS Species at Risk SOP (refer to Appendix 9.3). Examples of some steps are shown below.

- BCTS Chinook's SFI certification requires that BCTS Chinook manage for red listed species asdefined by the provincial and federal governments, and, must also manage for species that are classified as critically imperilled or imperilled by Nature Serve.
- BCTS ensures that any forest resource development activities protect and manage for boththe species and its critical habitat.
  BCTS Chinook ensures that any plant, animal, or ecological community that meets the SFI criteria is managed for on a block by block basis, and, that all staff, contractors, and licensees are made aware of the presence of any of these species that may exist in the areas ofoperation.
- If previously unidentified species are located that have not been managed for, that under ourEnvironmental Management System, operations must cease until such time as a qualified professional has been consulted and a decision on how to proceed is made.
- BCTS also has a comprehensive Invasive Plant management program that ensures that invasive plant species are not spread by operations. Special attention is paid when there areinvasive plant species that could negatively impact habitat of an endangered species in areasof proposed operations.
- All strategies applied in these cases will be documented and included in site plans and madeavailable when requested.

6.3 Water

The plan holder(s) is adopting the default riparian classifications for streams, wetlands, lake and the restrictions in riparian management areas as outlined in the FPPR sections 47-51, 52(2) and 53 (for temperature sensitive streams).

Hydrologic reviews will consider the potential impacts of timber harvest activities on water quality, water quantity, timing of water flows, and to assess the risk to public health. Inside community watersheds, the TSM will ensure that any forest activities undertaken are consistent with the

recommendations of the qualified professional who prepares the plan. The qualified professional will use the Coastal Watershed Assessment Procedure (CWAP) guidebook as reference as well as Integrated Watershed Management Plans (IWMP) for the Stawamus/ Mashiter and Pemberton watersheds (as they apply) and will ensure this information is considered in any hydrologic review.

A copy of the professional report (hydrologic assessment) will be made available for review to stakeholders and First Nations.

Performance Measure

- Site plans (SP) identify watercourses to the default riparian classifications and indicate any offsets and management/reserve zones,
- Watershed documents are referenced in the SPs where they apply, Water assessments are performed, results are assessed and any required mitigation is specified in a plan (SP document).

6.4 Fish

Consistency with the objectives for fish within riparian areas is achieved through results and strategies that are provided in section CHC3006 of the FSP.

- Any streams with a gradient of less than 20% are considered fish bearing and treated as such, unless a known barrier exists or a fish inventory has indicated that fish are not present.
- Appropriate retention levels/ buffer are prescribed by a qualified professional as required and specified in a plan.
- Riparian classification is determined by section 47 of FPPR.

6.5 Biodiversity

Consistency with the objectives for biodiversity is achieved through results and strategies that are provided in sections 3.6.2 of the FSP.

The following strategies are in place to help address biodiversity:

- Deciduous species have been added as an acceptable species in some stocking standards to allow for a deciduous component in regenerated stands. Deciduous species can improve nitrogen fixation, and provide increased habitat features for wildlife.
- Stocking standards were designed to include as many suitable species as possible to increase plantation diversity.
- It is noted that the deciduous component may not exceed 10% of the well spaced and/or free to grow of the stand, as measured by surveys and reportable data.

6.6 Cultural Heritage Resources

Consistency with the objectives for cultural heritage resources is achieved through results and strategies that are provided in sections 3.7.2 of the FSP.

Cultural Heritage Resources (CHR) Performance Measures:

- Annual (at minimum) information sharing with First Nations to determine if any CHR exist in proposed areas
- Complete assessments as requested (eg. AOA, AIA, etc.)
- Completed information sharing summary for each OP shared
- Completed assessments as agreed with identified by First Nations (eg.TUS, HFR, Botanical Resources, CHIA, CHOA etc.)

- A clause has been included in the TSL that indicates “If previously unidentified features are located, that have not been managed for, under our Environmental Management System, operations must cease until such time as a decision on how to proceed is made by a qualified professional.”
- The TSM will ensure that Due Diligence has been exercised

6.7 Recreation Resources

For recreation sites and trails that are legally established and/or authorized, as per sections 56 and 57 of FPRA or under GAR, we will follow the same protocol used in our information sharing process with all stakeholders.

For recreation sites and trails that are not legally established and/or authorized we will follow the same protocol with regard to information sharing and work with stakeholders to mitigate impact to the resource where practicable.

6.8 Visual Quality

The plan holder(s) will complete VIAs in areas covered by an established VQO, as well as in other areas where visuals are a concern for stakeholders.

With our operating area being in such close proximity to Chilliwack and other communities, stakeholders often request a VIA to ensure that their concerns are being addressed. The Visual Landscape Design Training Manual is referenced when designing and completing the assessments.

We will ensure that the plan for primary forest activities is consistent with the established VQO, and that it will be *Well met* or *Met* using the FREP evaluation process.

7. Additional Information

7.1 Climate Change

There is increasing evidence to support the occurrence of climate change in the Fraser Timber Supply Area; however, given the time scale at which climate change evolves and expresses itself, it is the opinion of the plan holder(s) that it is the responsibility of government agencies to study and provide recommendations to forest tenure holders.

The plan holder(s) will continue to engage and stay current on the continuing discussions related to climate change in the Fraser Timber Supply Area and will amend the FSP should new and actionable information be made available. In addition plan holder(s) will participate in provincial initiatives that attempt to address these challenges such as the Silviculture Strategy for the Fraser TSA.

BCTS recognizes that climate change is an important issue. Therefore, some stocking standards have been modified to incorporate climate change information (e.g. inclusion of Larch as a trial species). At this time we are awaiting more guidance from provincial experts on climate change stocking standards including where and when to put them into effect.

We will continue to implement Seed Transfer guidelines to move species in a more targeted fashion and look at hardwood management (deciduous management stocking standards have been proposed) as a means to mitigate climate change and species amplitude.

Monitoring will also continue for invasive plant spread as risk will continue to increase given their ecological amplitudes.

7.2 Forest Health

The plan holder(s) commit to reviewing strategies, and surveys to determine forest health trends in the area covered by this FSP. Using this information, qualified professionals will assess forest health, prescribe and document appropriate strategies, as required. The following list is an example of species that would be considered when assessing forest health:

- Western Spruce Budworm
- Hemlock dwarf mistletoe (Arceuthobium spp.)
- Phellinus weirii
- Armillaria
- Spruce Bark Beetle
- Douglas fir beetle
- Spruce Weevil (*Chilliwack is experiencing higher than endemic levels of this concern)

7.3 Fire/Fuel Management

There is information around fire and fuel management, but currently, there are no district policies in place. Qualified professionals take the information into account when they create site plans with the long term objective of timber production. Stocking standards specifically geared at fire/fuel management may be developed using documents like the “Fire Management Stocking Standards Guidance” (dated Feb 2016).

In the case of BCTS, hazard abatement is included in TSLs documents, and requires that a qualifiedprofessional sign off indicating the hazard has been abated. If there is a disagreement about the assessment the assessment will be forwarded to Wildfire Management Branch (WMB) for their guidance. WMB has the ability to issue an abatement order as required.

8. Stocking Standards

8.1 How Climate Change, Fire Management and Forest Health have been addressed.

BCTS has reviewed climate change reports and guidance and have incorporated trial species into the stocking standards, increased the number of acceptable species to promote an increase in biodiversity and have allowed for a small component of deciduous in some standards.

Fire management stocking standards will be prescribed on a block/ site specific basis, as required, to ensure the best result.

An increased variety of species, including deciduous, are included as acceptable to help address species specific forest health concerns, and promote more diverse stands. It has been indicated that the deciduous component of a cutblock may not exceed 10% of the free growing or well spaced conifer component of the stand.

Deciduous stocking standards have been proposed in the FSP to provide flexibility to prescribing forester. Any decision to implement these standards must be supported by a rationale, which must clearly outline management objectives and discuss any implications to timber supply. The memo from the ADM and Chief Forester, titled "Incorporation of mixedwood and broadleaves into Forest Stewardship Plan stocking standards, SP amendments and TSR regeneration assumptions" (May 1, 2008) will be used to guide decisions. Deciduous sawlogs have recently been harvested in BCTS licences, and are marketable.

1. Secondary objectives for Hardwood management are to:
    a. diversify timber yields to address changing market conditions,
    b. respond to climate change (science based reports and/or direction),
    c. maximize land base utilization,
    d. manage for root disease centers as a short rotation interim crop

2. When selecting a deciduous stocking standard, the primary objective must not be to:
    a. specifically manage biodiversity,
    b. promote nutrient cycling,
    c. provide a nurse crop to grow other species.

3. Site selection for the application of deciduous stocking standards will:
    a. target lower slopes and toe slopes, especially seepage zones (even on mid slopes),
    b. avoid shedding slopes (ie ridges and upper slopes) and areas where cold air ponds, which have the potential to damage deciduous crops,
    c. give preference to ground based harvesting sites,
    d. target north or east facing aspects and avoid hot, sunny south and south-west facing aspects especially on steep slopes,
    e. target 350-600m as a guide for upper elevations, with slope position and moisture flows remaining the most important factors,
    f. target fine textured soils, such as alluvial silts and fine sands. avoid coarser sands, coarse cobble soil types, and organic soils. The exception will be organic soils that are well decomposed (black) and have mineral soil mixed in.

4. Surveys/Assessments
    a. BCTS will prescribe a secondary coniferous stocking standards selected to implement, so that if for any reason the deciduous standard is deemed not suitable, an alternative has been identified.
    b. due to higher density requirements and product objectives, alder managed stands will have additional monitoring to ensure that the crop is performing as expected

and that no intervention is required prior to the free growing assessment due to unpredictable ice storm damage, frost damage, drought, density issues or other factors.

c. BCTS will monitor stands on a biannual basis, in addition to a survival assessment (yr 1) and a regen assessment (yr 2), until they have been declared free to grow.
d. survey assessments will be reported to RESULTS with any necessary support documentation.

5. Unless otherwise stated in regulation or an approved FSP stocking standard, an acceptable broadleaf crop tree must:
    a. not have tree pith that is laterally displaced more than 30 cm from the location of the root-crown pith,
    b. not originate from a cut stump,
    c. have one dominant live leader,
    d. not have a wound that is greater than 10% of the stem circumference nor is greater than 10% of the total length of the stem,
    e. not have any fungal infections or insect infestations affecting tissues below the bark surface, visible without destructive sampling,
    f. not be browsed so as to limit its ability to become a crop tree.

6. Pre-harvest site conditions will use the following criteria for prescribing Red alder natural regeneration.
    a. Regeneration densities of more than 1000sph in establishing (2-4 year old) blocks.
    b. Pre- FG densities with a minimum of 600 sph in blocks 5-8 years old, with the majority plots indicating ~1000sph.

Single Entry Dispersed Retention Stocking Standards (SEDRSS) have replaced the multi-story stocking standards. BCTS does not currently have plans to utilize this harvest method. However, if a specific situation calls for the development of a SEDRSS , the Single Entry Dispersed Retention Stocking Standard Framework Implementation Guide (Coastal)from the Silviculture Working Group, Coast Region, FRPA Implementation Team, Version 2.0 (Feb. 14, 2014), will be used to guide decisions, pre-harvest and appropriate stocking standards can be designed and submitted for approval.

The allowed reduction of inter tree spacing ensures that enough crop trees are planted to ensure timber supply and the best microsites are selected, giving seedlings the best chance to establish and survive. Reduced inter tree spacing is a widely used and accepted method and is included in previously approved stocking standards approved under other FSPs (such as FSP#179).

APPENDICES

Appendix 9.1

Sustainable Forest Management:

https://www.for.gov.bc.ca/ftp/HBT/external/!publish/Web/EMS2/BCTS-Provincial-SFM-Plan.pdf

Appendix 9.2 Chinook Invasive Plant BMP

Index

BCTS Chinook Invasive Plant Best Management Practice (BMP)

Update(s): BMP revised May 6, 2011 to reflect ministry name change and a rewording of sections to enhance clarity of understanding.

Operating areas covered by the Chinook Invasive Plant BMP

1. BCTS Operations in the Chilliwack, Squamish, and Haida Gwaii Forest Districts
2. BCTS Operations in TFL's within the 3 districts noted above
3. Any other land tenure in which BCTS operates as a forest land management partner with 3rd party entities; e.g., community forests

Reference sources for BMP development

This BMP reflects the best science and information to date related to controlling the spread and/or introduction of invasive plants. Knowledge used to guide the development of this BMP is based upon information obtained from the Invasive Plant Council of BC (IPCBC) and from the Ministry of Forests, Lands and Natural Resource Operation's Invasive Plant program (MFLNRO).

Legislative and policy requirements concerning Invasive Plants

BCTS Chinook's requirement to manage for invasive plants is driven by two impetuses:

1. Forest and Ranges Practices Act and related Invasive Plant Regulation
2. 3rd party certifications via the Sustainable Forestry Initiative and the Forest Stewardship Council

Primary Objective of Invasive Plant BMP

1. To stop the spread and introduction of Invasive Plants to meet our legal and 3rd party certification obligations
2. To educate the staff and Licensees, Permittees, and Contractor about how to stop the introduction and/or spread of invasive plants

Limitations to the control of the introduction and/or spread of Invasive Plants

Due to the extent of existing populations of invasive plants within BCTS' operating areas it is not possible or prudent to attempt to manage for the introduction and spread of all invasive plants on a species by species basis. Though the guidance of expert advice available on the IPCBC web site and through consultation with invasive plant experts in MFLNRO, BCTS Chinook is taking a 2 pronged approach:

1. That the control of the introduction and spread of invasive pants is best managed though the occupation of newly disturbed soils; i.e., potential seed beds, that could be used by invasive plants to become established or used to spread, with agronomical suitable grass seed '*sodgrass*' mixture(s)

2. That as experience with invasive plants and their autecology continues to increase, that grass seeding efforts will focus solely on protecting Sensitive Sites[1]. These Sensitive Sites equate to:
    - Riparian areas, lake, wetlands, bogs
    - Wildlife habitat areas (WHAs)
    - Endangered ecosystems; e.g., Garry oak complexes
    - Ungulate winter ranges
    - Areas of FN spiritual use/plant collection
    - Culturally significant areas; parks and ecological reserves
    - Other areas as defined by 'experts' and/or stakeholders

[1]Sensitive Sites equates to sites classified as '*Extremely High Risk to invasive plants*' in the Chinook Chilliwack FSP

Foundation of the Chinook BA's Invasive Plant BMP

Noting the extensive range and diversity of invasive plants in Chinook's operating areas the Chinook BA is focusing on eliminating the potential for IP spread via grass seeding disturbed soils to manage the introduction and/or spread of invasive plants. Legally the Chinook BA is only required to manage for invasive plants as identified in the Forest and Range Practices Act (FRPA) Invasive Plant Regulation but, through the removal of potential seed bed via grass seeding it is felt that this method will limit the introduction and/or spread all invasive plants that could threaten Sensitive Sites.

It is also understood that very few invasive plants can thrive under a closed canopy situation where light is limited therefore there is no need to grass seed any portions of a forest operations that will see a closed canopy established either naturally or artificially post disturbance unless there is an adjacent IP that can thrive in closed canopy conditions.

Where to grass seed

Grass seeding should occur under the following conditions:

1. Invasive plants are within the vicinity of proposed operations and when these operations will **create new disturbed soil**. The target areas for grass seeding in this case relates to new construction activities:
    a. building new roads into the forested land.
    b. Building new structures; bridges, etc.,
2. When invasive plants are present and, based upon their autecology, they pose a risk to a sensitive site. In this situation road activities; construction or maintenance, will create seed bed(s) that can act as a vector for the spread of invasive plants by:
    a. Creating a new seed bed (disturbed soil) that can act as a vector for the spread of invasive plants along the newly disturbed soil, or
    b. Moving reproductive material from an existing location to a new location **that will pose a risk to a Sensitive Site**.
3. When undertaking activities immediately adjacent to any Sensitive Site

Where grass seeding is not required

BCTS and/or its Licensees, Permittees and Contractors do not have to grass seed when operational activities are occurring an area where invasive plants are well established and activities will not spread invasive plants into new areas.;

Example grass seeding scenarios

1. A TSL Holder **is building a new road** into a proposed block location off of an existing mainline with established invasive plants along the mainline network and his tenure requires that he maintain the existing road:
    a. The Licensee **must grass seed** where the new construction has occurred
    b. The Licensee **does not have to grass seed** along the mainline if none of the existing invasive plants pose a risk to a Sensitive Site based upon their autecology. In this case, even though grading, etc can create new disturbed soil (seed beds) because the invasive plants have already been established along the mainline in essence the activities are not introducing or spreading the invasive plants, rather, there may simple be a redistribution of existing IPs along an already infested corridor.
2. A TSL Holder is using an existing mainline to access his timber. Under his permit/road tenure he is required to maintain the road including grading, culvert maintenance, etc, **but there will be no new construction activities**. There are established invasive plants along the mainline but none that pose a risk to a Sensitive Site based upon their autecology. In this case, even though grading, etc can create new disturbed soil (seed beds) because the invasive plants have already been established along the mainline in essence the activities are not introducing or spreading the invasive plants rather, there may simple be a redistribution of existing IPs along an already infested corridor.
3. A Contractor is replacing a bridge along a mainline and the mainline has established invasive plants along it. One of the invasive plants that has already become established along a portion of the mainline **poses a threat to riparian habitat** based upon its autecology. The contractor **must grass seed the new disturbed soil related to the bridge replacement project**. The reason for the need to grass seed is because the bridge construction activities are creating new disturbed soil immediately adjacent to a Sensitive Site. The prudent step is to grass seed the construction site to ensure that the problematic invasive plant will not be given an opportunity to move down the road through the new bridge related construction and enter into the riparian habitat.

Future direction of grass seeding

As individuals responsible for developing operational plans become more comfortable with the identification and related autecology of invasive plants, and with the identification of Sensitive Sites, grass seeding will only be required when there is the possibility that an activity will create a situation where invasive plants can spread into the Sensitive Site. Until such time, grass seeding will be required to be done as per the direction and clarifications above.

This BMP will be updated to reflect this future direction at such time as it is felt that the understanding of plant identification and autecology, and Sensitive Site identification, are sufficient to ensure that there is a minimal risk to the Sensitive Sites.

Timing of grass seed application

- Grass seeding should occur at a time that is conducive to grass seed establishment. The spring and fall seasons are the best times when there is the least likely risk of moisture deficit but spring seeding is preferred
    - Grass seeding should occur prior to seed development by invasive plants in the vicinity of operations

General rules concerning the type of grass seed mix to use

- Minimum grass seed standard in the Chinook BA is a seed that will meet or exceed '*Canada Common Number 1 Forage*' mixture specifications as defined by the Canada Seeds Acts; sodgrass mixtures are mandatory in the Chinook BA
    - When ordering seed be sure to specify if you are seeking a coastal seed mix or an interior seed mix
        - Example interior operating areas include:
            - Squamish Forest District: Pemberton and points north and east
            - Chilliwack Forest District: Spuzzum and points north and east
- use *sodgrasses* for erosion control, restoration works, or to occupy disturbed soils (seed beds) within close proximity to established invasive plant populations.
- for erosion control & restoration planned in areas free of invasive plants then agronomic *bunchgrasses* allow for native vegetation to in-fill (between the bunches).
- The section below "Appropriate Seed Mix" lists the latest recommendation for seed mixes based upon biogeoclimatic zones (BEC). These mixtures can be more expensive and harder to come by but will provide an overall better ecological result and should be used where practicable.
- Below is also a listing of banned seed **that must be adhered to** due to their invasive qualities or other environmental risks they pose.
- Suggested seeding rate: 50 kg/ha
- Suggested fertilization rates: 250 kg/ha

Licensees Permittees and Contractors obligations

1. Always grass seed as per examples above if creating disturbed soil unless otherwise directed in Site Plans or by ministry staff
2. Ensure that you are fully appraised of invasive plants within your proposed area of operations by your ministry representative during pre-works
3. Ensure that you are fully appraised of your grass seeding requirements by your ministry representative during pre-works

4. Follow the scenarios above to understand where grass seeding should occur if not discussed at your pre-work(s) and/or documented with Site Plans; harvesting and/or road construction, prepared for your activity.
5. Ensure that your staff are fully aware of problematic invasive plants and any grass seeding requirements
6. Review T.I.P.S. on the Invasive Plant Council of BC web site prior to undertaking any operations.
    a. http://www.invasiveplantcouncilbc.ca/publications/TIPS/Forestry_Oper_TIPS.pdf

General Steps for Managing Invasive Plants

1. For a specific area, prior to development activities occurring, use the IAPP map display program to note the last known location for IPs.

2. Survey the area to determine if the IPs have spread further and/or if there are additional species that have not been identified that extend beyond the last known location of IP occurrence. If the IP has spread or if there are new IPs beyond this 'known' location, record their location, population size, etc and then report back to the IAPP application (the 22 priority plants listed on the carabineers are the ones that must be reported to the IAPP database using the "Report-A-Weed" tool). This sets the baseline for BCTS to ensure that plants do not spread further. This is also sets the point beyond which our legal obligations commence.

3. For the IPs that are found consider their form of spread; see Appendix C, which provides the mechanism of spread by plant, as well as, a link to learn more about the plant's autecology. Once you understand the form of spread then consider, if possible, aligning operations to occur in a time or way that is less likely to spread the plant.

Consider the plant survival triangle; form of spread, suitable seed bed, nutrients and light. Target activities that will eliminate one or more sides of the triangle and the plant will not spread; e.g. eliminate seed bed(s) by grass seeding and monitoring, or, out competing the IP plant for water and nutrients by using suitable sodgrass seed mix(s).

4. Where grass seeding has taken place ensure that there is a suitable monitoring strategy/plan in place for the next growing season(s) to ensure that the grass seed has established.

5. For more detailed information concerning Invasive Plant management review the Chinook Invasive Plant Process map and related SOP

- Internal staff: https://www.for.gov.bc.ca/bcts/areas/TCH/TCH_ems-internal.htm
- External contractors and LPC's: http://www.for.gov.bc.ca/ftp/TCH/external/!publish/EMS2/Supplements/

Chinook BA IP BMP effectiveness monitoring

Roads: Integral to the road maintenance activities is the requirement to monitor to ensure that any grass-seeding that has occurred has been successful. Where grass seeding has failed additional grass seeding will take place. Any additional spread of IP's will be noted and reported through the "Report-A-Weed" tool on the IAPP web site. The requirement to monitor grass seeding or follow-up treatments is scheduled in Cengea.

Silviculture:

Silviculture activities play a limited role in stopping the spread of IPs. The primary objective is to ensure that plantations reach "free-growing" status within legislated timelines and as the plantation grows IPs are outcompeted for sunlight and nutrients and their spread is halted. During surveys any new locations of IPs are recorded and reported through the "Report-A Weed" tool of the IAPP web site.

Where to go for additional information

1. The Invasive Plant Council of BC has great resources on their web site and it should be referred to on an ongoing basis. Below is a link to the Invasive Plant Council of BC T.I.P.S. (Targeted Invasive Plant Solutions) for Invasive plants and forestry operations. You may want to give this link to contractors during pre-works.
   http://www.invasiveplantcouncilbc.ca/publications/TIPS/Forestry_Oper_TIPS.pdf

2. The *Global Invasive Species* database is a new database that was created with the aim of increasing awareness about invasive alien species and to facilitate effective prevention and management activities. It is managed by the Invasive Species Specialist Group of the Species Survival Commission of the IUCN – World Conservation Union.
   http://www.issg.org/database/welcome/

Appendix A: Appropriate Seed Mixes by BEC

BEC Zone	Recommended Native Seed Mixture Constituents	Recommended Agronomic Seed Mixture Constituents
IDFww	➢ **Junegrass**[B] ***Koelaria macrantha*** ➢ **Rocky Mountain fescue**[B] ***Festuca saximontana*** ➢ **Idaho fescue**[B] ***Festuca idahoensis ssp. idahoensis***	➢ **Annual rye**[B] ***Lolium multiflorum*** ➢ **Perennial rye**[B] ***Lolium perenne*** ➢ **Hard fescue**[B] ***Festuca trachyphylla*** ➢ Red fescue[S] *Festuca rubra*
CDFmm *(Garry Oak Ecosystems only)*	➢ **Roemer's fescue**[B] ***Festuca idahoensis ssp. roemeri*** ➢ **California oatgrass**[B] ***Danthonia californica*** ➢ **California brome**[B] ***Bromus carinatus*** ➢ **Blue wildrye**[B] ***Elymus glaucus*** - No legumes to be included	N/A
CDFmm *(excluding Garry Oak Ecosystems)*	➢ **California brome**[B] ***Bromus carinatus*** ➢ **Blue wildrye**[B] ***Elymus glaucus*** ➢ **Native red fescue**[S] ***Festuca rubra ssp. arenicola*** ➢ Canada bluegrass[S] *Poa compressa* ➢ Spike bentgrass[S] *Agrostis exarata* ➢ Hair bentgrass[B] *Agrostis scabra* ➢ Slimstem reedgrass[B] *Calamagrostis stricta* ➢ Tufted hairgrass[B] *Deschampsia cespitosa* ➢ Slender hairgrass[B] *Deschampsia elongate*	➢ **Red fescue**[S] ***Festuca rubra*** ➢ **Red top**[S] ***Agrostis gigantea*** ➢ **Perennial rye**[B] ***Lolium perenne*** ➢ **Annual rye**[B] ***Lolium multiflorum*** ➢ Alsike clover[L] *Trifolium hybridum* ➢ Red clover[L] *Trifolium pratense* ➢ White clover[L] *Trifolium repens*
CWH "dry" (subzones: xm, ds, dm, ms, mm, ws)	➢ Same as immediately above, except: **1.** Replace **California brome** ***Bromus carinatus***[B] with **Alaska brome**[B] ***Bromus sitchensis*** 2. On wet sites, **Alaska brome**[B] ***Bromus sitchensis*** is reduced to 25% by weight and Tufted hairgrass[B] *Deschampsia cespitosa* is increased to 10% by weight.	➢ **Red fescue**[S] ***Festuca rubra*** ➢ **Red top**[S] ***Agrostis gigantea*** ➢ **Perennial rye**[B] ***Lolium perenne*** ➢ **Annual rye**[B] ***Lolium multiflorum*** ➢ Alsike clover[L] *Trifolium hybridum* ➢ Red clover[L] *Trifolium pratense* ➢ White clover[L] *Trifolium repens*
CWH "wet" (subzones: wm, vm, wh, vh)	➢ Same as immediately above, except: 1. Replace **Native red fescue** ***Festuca rubra***[S] ***ssp. arenicola*** (e.g. 20%) with **Native red fescue** ***Festuca rubra***[S] ***ssp. pruinosa*** (e.g. 20%)	➢ **Red fescue**[S] ***Festuca rubra*** ➢ **Red top**[S] ***Agrostis gigantea*** ➢ Alsike clover[L] *Trifolium hybridum* ➢ Red clover[L] *Trifolium pratense* ➢ White clover[L] *Trifolium repens*
MH (subzones: mm, wh)	➢ **Native red fescue**[S] ***Festuca rubra ssp. pruinosa*** ➢ **Alaska brome**[B] ***Bromus sitchensis*** ➢ **Blue wildrye**[B] ***Elymus glaucus*** ➢ **Tufted hairgrass**[B] ***Deschampsia cespitosa***	➢ **Red fescue**[S] ***Festuca rubra*** ➢ **Red top**[S] ***Agrostis gigantea*** ➢ Alsike clover[L] *Trifolium hybridum* ➢ Red clover[L] *Trifolium pratense* ➢ White clover[L] *Trifolium repens*

[S] = sodgrass [B] = bunchgrass [L] = Legume

Appendix B: Grass seed species that should not be included in seed mixtures

- Alfalfa *(Medicago sativa)*
- Annual bluegrass (*Poa annua)*
- Barnyardgrass (*Echinochloa crusgalli)*
- Bermuda grass *(Cynodon dactylon)*
- Birdsfoot trefoil (*Lotus corniculatus)*
- California poppy (*Eschscholzia californica*)
- Cheatgrass or Downy brome (*Bromus tectorum*)
- Colonial bentgrass or Brown top *(Agrostis capillaris)*
- Couchgrass *(Elymus repens)*
- Creeping bentgrass *(Agrostis stolonifera)*
- Crested wheatgrass *(Agropyron cristatum)*
- Dames rocket *(Hesperis matronalis)*
- Dandelion *(Taraxacum officinale)*
- Fall rye *(Secale cereale)*
- False brome *(Brachypodium sylvaticum)*
- Flat pea *(Lathyrus sylvestris)*
- Foxglove (*Digitalis purpurea)*
- Foxtail barley *(Hordium jubatum)*
- Golden clover *(Trifolium aureum)*
- Green bristle grass *(Setaria viridis)*
- Green foxtail (*Setaria viridis*)
- Hairy vetch *(Vicia villosa)*
- Hedgehog dogtail (*Cynosurus echinatus)*
- Johnsongrass *(Sorghum halpense)*
- Jointed goatgrass *(Aegilops cylindrical)*
- Kentucky bluegrass *(Poa pratensis)*
- Lovegrass (*Eragrostis minor)*
- Meadow foxtail *(Alopecurus pratensis)*
- Perennial peavine *(Lathyrus latifolius)*
- Purple nutsedge *(Cyperus rotundus)*
- Quack grass (*Elymus repens)*
- Queen Annes Lace *(Daucus carota)*
- Reed canary grass (*Phalaris arundinacea*)
- Scentless chamomile (*Matricaria maritima*)
- Shasta daisy *(Leucanthemum x superbum)*
- Silver hairgrass (*Aira caryophyllea)*
- Smooth brome (*Bromus inermis*)
- Soft brome (*Bromus hordeaceus)*
- Subterraneum Clover *(Trifolium subterraneum)*
- Sweet vernalgrass (*Anthoxanthum odoratum)*
- Timothy (*Phleum pratense)*
- Velvetgrass (*Holcus latatus*)
- White sweetclover (*Melilotus alba)*
- Wild oats (*Avena fatua*)
- Wild proso millet (*Panicum miliaceum*)
- Yellow hairgrass *(Aira praecox)*
- Yellow nutsedge *(Cyperus esculentus)*
- Yellow sweetclover *(M elilotus officinalis)*

**species listed above are either invasive, too persistent, attract wildlife (forage), a wildfire hazard or have been proven to provide minimal cover*

Appendix C: Road and road management activities

The spread of invasive plants and noxious weeds is a significant issue in projects that involve soil disturbance. Earth moving activities contribute to the spread of weeds through movement of seeds and propagules contained in transitory soils. Prevention is the least expensive and most effective way to halt the spread of such plants. The three pillars of prevention for earth moving projects include:

1. Education of workers about the importance of managing weeds on an ongoing basis.

- Properly identify priority plants - training, brochures etc.
- Ensure that they know where the high risk sites are (i.e. sites that that you aim to protect)
- Ensure that they understand that storage areas, equipment yards and gravel pits are staging areas for IPs
- Actively use IAPP Application to record and monitor priority plants - it can be as simple as entering the species code, the area of the infestation (ha), location (UTM easting/northing and zone), density and distribution codes.
- Encourage staff to forward their ideas about measures that can be incorporated into future projects and strategic plans that prevent seeds or propagules from spreading and establishing new or bigger populations.

2. Prevention practices - minimizing the spread by controlling seed and/or plant part dispersal vectors:

- Where possible, avoid moving weed-infested gravel, rock and other fill materials to relatively weed free locations.
- Inspect and clean equipment of plant seed or propagules from clothing and/or equipment by dislodging and containing associated water, mud and dirt at designated cleaning stations or in the field (e.g. excavator operators can get most of the dirt from undercarriages, if they have been working among infestations, by spinning the machine 90 degrees, dropping a blade to elevate one track. He can then spin his track to remove the bulk of the material and use a narrow trenching shovel to remove the remainder. Repeat the process for the other track. Localize accumulations for ease of future treatment.)
- Keep roadside infestations away from road surfaces so that seeds and plant parts are not inadvertently transported by vehicles and equipment.
- Maintain soil, subgrade or surfacing material that is being moved during road construction as free of weeds as possible.
- Promptly re-vegetate disturbed areas adjacent to, or known to be at risk from priority IP establishment using an appropriate combination of scarification, grass seeding (native seed or a coastal agronomic seed that is a grade of Common #1 Forage Mixture or better), fertilizer, and/or mulch.

Appendix D

Chinook 22 priority plants for reporting to IAPP database are indicated with highlighted text; e.g., Common tansy

Invasive Plant Species	***Scientific name***	**Spread mechanism**	**Habitat at Risk**	**Control: (Seed disturbed areas at all times excluding plantations.)**	**Web Link**
Anchusa	*Anchusa officinalis*	seed	dry open areas incl. fields and range areas	pull before seed set; competitive perennial seed	http://www.agf.gov.bc.ca/cropprot/weedguid/bugloss.htm
Baby's breath	*Gypsophila paniculata*	seed	dry open areas incl. fields and range areas	pull before seed set; competitive perennial seed	http://www.agf.gov.bc.ca/cropprot/weedguid/babysbreath2.htm
Black knapweed	*Centaurea nigra*	Primary - seeds; occasionally from root shoots	wide array of disturbed sites including riparian areas, range/pastures and cut blocks	small pops - pull/ large pops - mow and herbicide emerging seedlings; competitive perennial seed	http://www.weedsbc.ca/demo/pdf/black_knapweed.pdf
Blueweed	*Echium vulgare*	seeds	pastures/rangelands	small pops - pull/ large pops - herbicide; competitive perennial seed	http://www.weedsbc.ca/pdf/blueweed.pdf
Brown knapweed	*Centaurea jacea*	seeds and woody root crown	range and open areas incl open forests	small pops - pull/ large pops - herbicide; competitive perennial seed	http://www.nwcb.wa.gov/weed_info/Written_findings/Centaurea_jacea.html
Bull thistle	*Cirsium vulgare*	seeds	open disturbed areas	cutting and mowing prior to 'bolting'/competitive perennial seed.	http://www.weedsbc.ca/weed_desc/bull_thistle.html#
Canada thistle	*Cirsium arvense*	seeds/roots	open disturbed areas and riparian areas	herbicide, competitive perennial seed	http://www.weedsbc.ca/weed_desc/canada.html

Invasive Plant Species	***Scientific name***	**Spread mechanism**	**Habitat at Risk**	**Control: (Seed disturbed areas at all times excluding plantations.)**	**Web Link**
Common burdock	*Arctium minus*	seeds	disturbed areas incl roadsides and riparian areas also range	mow after 'bolting' but prior to seed set. Eliminate seed bed. Can use herbicide.	http://www.weedsbc.ca/pdf/common_burdock.pdf
Common tansy	*Tanacetum vulgare*	seed/root	disturbed areas incl roadsides and riparian areas also range	Cutting and mowing in conjunction with other techniques as also spreads by roots	http://www.weedsbc.ca/pdf/common_tansy.pdf
Dalmatian toadflax	*Linaria dalmatica*	seed/root	disturbed areas incl roadsides and range/pasture	small pop - hand pull before seed set. Use competitive perennial seeding	http://www.weedsbc.ca/pdf/dalmation_toadflax.pdf
Diffuse knapweed	*Centaurea diffusa*	seed	disturbed areas incl roadsides and range/pasture	hand pulling/herbicides	http://www.weedsbc.ca/pdf/diffuse_knapweed.pdf
Field scabious	*Knautia arvensis*	seed	ditch lines and disturbed areas impacting range/pasture	small pop - hand pull before seed set. Larger pop - cut/mow before seed set	http://www.weedsbc.ca/pdf/field_scabious.pdf
Giant knotweed	*Polygonum sachalinense*	rhizomes and root fragments/seed	riparian areas and road sides, R/W	do not create opportunity to spread.	http://dnr.metrokc.gov/wlr/lands/weeds/pdf/Knotweed-Control.pdf
Gorse	*Ulex europaeus*	seed	disturbed areas incl. roadsides and plantations	burning/mowing then herbicide	http://www.weedsbc.ca/pdf/gorse.pdf
Hoary alyssum	*Berteroa incana*		disturbed sites impacts range pasture	hand pull before seed set. Herbicide	http://www.weedsbc.ca/pdf/hoary_alyssum.pdf
Hoary cress	*Cardaria draba*	seed/root	disturbed sites incl. roadsides also pasture/range	herbicide/competitive perennial seed seeding	http://www.weedsbc.ca/pdf/hoary_cress.pdf

Invasive Plant Species	***Scientific name***	**Spread mechanism**	**Habitat at Risk**	**Control: (Seed disturbed areas at all times excluding plantations.)**	**Web Link**
Hound's-tongue	*Cynoglossum officinale*	seed	disturbed soils especially pastures, cut blocks; prefers alkaline soils	hand pull small pops; mow before bolts, herbicide	http://www.weedsbc.ca/pdf/hounds_tongue.pdf
Japanese knotweed	*Polygonum cuspidatum*	Primarily reproduction is vegetative through long creeping rhizomes or by root fragments,	wetland/riparian and wet moist low lying areas	herbicide	http://www.agf.gov.bc.ca/cropprot/weedguid/jknotweed2.htm
Leafy spurge	*Euphorbia esula*	seed but primarily roots	rangeland	herbicide/ competitive perennial seeding	http://www.weedsbc.ca/pdf/leafy_spurge.pdf
Marsh (plume) thistle	*Cirsium palustre*	seed	pasturelands, plantations/moist to wet areas, riparian areas	hand pull small pops; mow before flowering/competitive perennial seeding	http://www.weedsbc.ca/weed_desc/marsh.html
Meadow hawkweed	*Hieracium pilosella*	seed, stolons, rhizomes	riparian areas, pastures, plantations	herbicides, grazing, competitive perennial seeding	http://mtwow.org/meadow-hawkweed-complex.html
Meadow knapweed	*Centaurea pratensis*	seed	rangeland/pastures	hand pull small pops; mow then herbicide new growth	http://www.weedsbc.ca/weed_desc/meadow.html
Nodding thistle	*Carduus nutans*	seed	rangeland/pastures/plantations	herbicide/ hand pull small pops.	http://www.weedsbc.ca/pdf/nodding_thistle.pdf
Orange hawkweed	*Hieracium aurantiacum*	vegetatively via stolons	pastures/rangelands	herbicide/competitive perennial seed, minimize disturbed soil.	http://www.weedsbc.ca/pdf/orange_hawkweed.pdf

Invasive Plant Species	***Scientific name***	**Spread mechanism**	**Habitat at Risk**	**Control: (Seed disturbed areas at all times excluding plantations.)**	**Web Link**
Oxeye daisy	*Chrysanthemum leucanthemem*	seeds and vegetatively via roots	pastures/rangelands	herbicide/fertilizer/competitive perennial seed	http://www.weedsbc.ca/pdf/oxeye_daisy.pdf
Perennial pepperweed	*Lepidium latifolium*	seeds and vegetatively via roots	riparian areas, marshy floodplains, seasonally wet areas; pastures/meadows	mowing/burning/hand pull before seed set.	http://www.weedsbc.ca/pdf/perennial_pepperweed.pdf
Plumeless thistle	*Carduus acanthoides*	seed	pastures	herbicide; mow to eliminate seed production	http://www.weedsbc.ca/pdf/plumeless_thistle.pdf
Puncture vine	*Tribulus terrestris*	seed (burrs)	pasture/recreation areas	herbicide/competitive perennial seed	http://www.weedsbc.ca/pdf/puncturevine.pdf
Purple loosestrife	*Lythrum salicaria*	seeds, vegetatively by roots; also root and stem fragments	riparian areas, wetlands, streams, ponds	hand pull small pops but must get all of root/herbicide	http://www.weedsbc.ca/pdf/purple_loosestrife.pdf
Rush skeletonweed	*Chondrilla juncea*	seeds, vegetatively by roots	pastures, rangeland, meadows	hand pulling, cutting to prevent seed-set and herbicides	http://www.weedsbc.ca/pdf/rush_skeletonweed.pdf
Russian knapweed	*Acroptilon repens*	primarily vegetatively; possibly by seed	pastures, rangeland, meadows, plantations	mowing/cutting and herbicide	http://www.weedsbc.ca/pdf/russian_knapweed.pdf
Scentless chamomile	*Matricaria maritima*	seed	range, pastures; riparian and wetland areas and areas subject to seasonal flooding	hand pulling; early and frequent mowing; herbicide, competitive perennial seed.	http://www.weedsbc.ca/pdf/scentless_chamomile.pdf

Invasive Plant Species	***Scientific name***	**Spread mechanism**	**Habitat at Risk**	**Control: (Seed disturbed areas at all times excluding plantations.)**	**Web Link**
Scotch broom	*Cytisus scoparius*	seed	plantations, pastures. range	hand pull but must get all of stump and roots/ mow while flowering; minimize disturbed soils; competitive perennial seed	http://www.evergreen.ca/en/cg/pdf/invasive/scotchbroom_factSheet.pdf
Scotch thistle	*Onopordum acanthium*	seed	range/pastures/crop land	herbicide before bolting or in fall on rosettes	http://www.weedsbc.ca/pdf/scotch_thistle.pdf
Spotted knapweed	*Centaurea biebersteinii*	seed	range/pastures	hand pull small pops but get all of root; herbicide; competitive perennial seed	http://www.weedsbc.ca/pdf/spotted_knapweed.pdf
St. John's wort	*Hypericum perforatum*	seed and via vegetatively from roots	range, pastures and meadows.	herbicide; seed with perennial grasses and forbs	http://www.weedsbc.ca/pdf/st_johns_wort.pdf
Invasive Plant Species	***Scientific name***	**Spread mechanism**	**Habitat at Risk**	**Control: (Seed disturbed areas at all times excluding plantations.)**	**Web Link**
Sulphur cinquefoil	*Potentilla recta*	seed and via vegetatively from roots	range, pasture, grassland	herbicide; seed with perennial grasses and forbs; also cultivation	http://www.weedsbc.ca/pdf/sulphur_cinquefoil.pdf
Tansy ragwort	*Senecio jacobaea*	seed	pasture, hayfields, clear cuts	mowing, herbicides and competitive perennial seed	http://www.weedsbc.ca/pdf/tansy_ragwort.pdf
Teasel	*Dipsacus fullonum*	seed	disturbed sites	cutting/digging/burning; herbicide	http://dnr.wi.gov/invasives/fact/teasel_com.htm

Invasive Plant Species	***Scientific name***	**Spread mechanism**	**Habitat at Risk**	**Control: (Seed disturbed areas at all times excluding plantations.)**	**Web Link**
Yellow iris	*Iris pseudacorus*	underground rhizomes; seed	streams, wetlands, riparian areas, wet ditches	v. difficult due to location and source of spread. Multiple weedings over number of seasons required.	http://www.evergreen.ca/en/cg/pdf/invasive/yellow%20flag_factSheet.pdf
Yellow starthistle	*Centaurea solstitialis*	seed	rangeland, pastures	mowing, burning, herbicides	http://tncweeds.ucdavis.edu/esadocs/documnts/centsol.pdf
Yellow toadflax	*Linaria vulgaris*	seeds and vegetatively from roots	rangeland, pastures, plantations	competitive perennial seed, mowing, herbicide	http://www.weedsbc.ca/pdf/yellow_toadflax.pdf

Note: Where seed is the mode or spread then control measures should focus on activities that eliminate seed production, eliminate a seed bed, and/or create competition

Vegetative reproduction: a type of reproduction that occurs when a "parent" plant grows new plants from its roots, stems, or leaves

Species At Risk Management Process
Standard Operating Procedure

February 24, 2011

PURPOSE

To define the various steps that are required to occur at different operational stages and identify the individuals who are responsible to undertake these steps to effectively manage and protect Species At Risk (SAR).

SCOPE

This Standard Operating Procedure (SOP) covers all aspects of forestry planning and block/road development, the signing and sealing of the applicable Site Plan, and implementation. It includes relevant business area staff, licensees, and contractors working for BCTS.

Important Information Sites

Conservation Data Centre: This site's Internet Mapping Service (IMap) will be utilized to identify known occurrences of Species At Risk: http://www.env.gov.bc.ca/cdc/access.html

BC Species and Ecosystems Explorer: Species and Ecosystems Search: utilize this site to confirm various Species At Risk and to access reports concerning specific species at risk. This site can also be used to see mapped locations of a specific species: http://www.env.gov.bc.ca/atrisk/toolintro.html

UBC Herbarium: This site contains a database that details the location of known SAR. It only provides written descriptions of locations and latitude and longitudinal information: http://www.beatymuseum.ubc.ca/herbarium/index.html

Recent Changes (Feb. 24, 2011): This SAR SOP has been updated to include reference to using the UBC Herbarium layer in Cengea Resources rather than having to go to the Herbarium website as an additional source for locating known information of rare and endangered plants. References to District SAR listings have been removed.

Note: this SOP is linked to the SAR Process Design Map.

PROCEDURE	RESPONSIBILITY
Stage 1: Block Planning SAR Management	
• Ensure blocks have passed initial economic viability test; i.e. ensure it meets *PP Done* test.	*Planning Forester* *Practices Forester*
• Confirm location of potential cut block and associated road networks	*Practices Forester*

• Check CDC website utilizing *IMap* function to determine if any SAR have been mapped within area of proposed activity
  ○ Record any findings of relevant SAR
  ▪ If necessary complete and submit CDC *Custom Data Request*
	Practices Forester

• Check UBC Herbarium map layer in Resources to determine if any SAR have been mapped within area of proposed activity.
  ○ Record any findings of relevant SAR
  ▪ If necessary complete contact expert in plant ID
	Practices Forester

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Species At Risk Management Process Standard Operating Procedure

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PROCEDURE	RESPONSIBILITY

• Determine management options for each SAR discovered on CDC IMap website or on UBC Herbarium map layer:
  ○ Discuss with Planning Officer/Forester, Area Forester/Woodlands Supervisor and/or Woodlands Manager to see if there are any previous commitments related to species management; e.g., Phantom orchid, tailed frog, etc., or recommendations provided by Qualified Professional
  ○ If no management recommendations available consult with Qualified Professional
  ▪ discuss Qualified Professional's recommendations with Area Forester/Woodlands Supervisor and Woodlands Manager
	Practices Forester
	Multiphase Forester
	Planning Forester
	Qualified Professional

• Review BA SAR plant, animal, and ecological community listing to determine potential SAR species in area of proposed activity.
  ○ Make list of potential SAR species that could be encountered
  ▪ If uncertain about potential of SAR in area of proposed activity have the area field reviewed by a Qualified Professional.
	Practices Forester
	Multiphase Forester
	Qualified Professional

• Review Chinook plans and policies to determine if there are any pre-existing SFI/EMS SAR commitments in relation to SAR management; e.g., percent Deer Winter Range available for harvest.	*Practices Forester* *Multiphase Forester*
• Update and/or review SAR tracking form and attach to SAR Block Activity in Cengea Resources with other relevant documents and comments	*Practices Forester* *Multiphase Forester*
• Determine if block planning should proceed based upon management recommendations	*Practices Forester* *Multiphase Forester* *Planning Officer*

• During field review collect basic coarse ecological information necessary to assist with use of MOE Species Explorer/TCH SAR database
  ○ BEC, subzone, variant
  ○ Primary forest cover/landscape attributes
• If uncertain about potential SAR prior to field visit engage Qualified Professional during field visit
• Detail any SAR located in field and discuss management options with Area Forester/Woodlands Supervisor, Woodlands Manager and/or a Qualified Professional
• Determine if proposed activity should occur based upon SAR recommendations
	Practices Forester
	Multiphase Forester
	Qualified Professional

Stage 2: Block/Engineering Layout Pre-work (Multiphase)	
• Confirm location of proposed block or road	*Practices Forester* *Multiphase Forester* *Operations*

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PROCEDURE	RESPONSIBILITY
• Summarize findings from block planning stage if applicable for handover to multiphase staff/contractor(s)	*Operations Technician*
• Prior to pre-work meeting, check CDC website utilizing *IMap* function to determine if any new SAR have been mapped within area of proposed activity prior to pre-work meeting ○ Record any findings of relevant SAR • If necessary complete and submit CDC *Custom Data Request*	*Multiphase Forester* *Operations Technician*

• Check UBC Herbarium map layer in Resources to determine if any SAR have been mapped within area of proposed activity.
  ○ Record any findings of relevant SAR
  ▪ If necessary complete contact expert in plant ID
	Multiphase Forester
	Operations Technician

• Update SAR tracking form and attach to SAR Block Activity in Cengea Resources with other relevant documents and comments	*Operations Technician* *Multiphase Forester*
• Provide SAR summary to contractor with any SAR management recommendations including those from Qualified Professionals where available	*Operations Technician*

• Discuss how contractors SAR field investigations should be documented
  ○ In site plan under relevant R/S
  ○ As supporting document to Site Plan
  ○ In the SP declaration letter
  ○ Private filing with documentation available upon request
	Practices Forester

• Review capabilities of CDC and MOE "Species Explorer" websites, and UBC Herbarium map layer with contractor; reports, maps, reference material, etc.	*Operations Technician*
• Operations Tech to communicate with multiphase contractor during monthly progress meetings Re: any new SAR found	*Operations Technician*
Stage 3: Field Work Quality Assurance (Inspection)	
• Select blocks for review based on EMS and SAR risks	*Practices Forester*
• Review pre-work (Multiphase) notes and material, including SAR management strategies	*Operations Technician* *Practices Forester*
• Check CDC website utilizing *IMap* function to determine if any new SAR have been mapped within area of proposed activity prior to pre-work meeting ○ Record any findings of relevant SAR • If necessary complete and submit CDC *Custom Data Request*	*Operations Technician* *Practices Forester*

• Check UBC Herbarium map layer in Resources to determine if any SAR have been mapped within area of proposed activity.
  ○ Record any findings of relevant SAR
  ▪ If necessary complete contact expert in plant ID
	Operations Technician
	Practices Forester

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PROCEDURE	RESPONSIBILITY
• Check field ecological classification for accuracy to aid in proper identification of potential SAR species/communities	*Operations Technician* *Practices Forester*
• Where uncertain about potential for SAR in proposed area of activity engage Qualified Professional to jointly conduct field review.	*Operations Technician* *Practices Forester* *Qualified Professional*
• Ensure previously identified SAR are adequately managed • Record any new SAR found in field and discuss management recommendations with multiphase Forester/Practices Forester • If uncertain about management recommendations seek input from Qualified Professional	*Operations Technician* *Practices Forester* *Qualified Professional*
• Update SAR tracking form and attach to SAR Block Activity in Cengea Resources with other relevant documents and comments	*Operations Technician* *Practices Forester* *Multiphase Forester*
Stage 4: Site Plan/Road Site Plan Quality Assurance	

• Site Plan prepared by multiphase or in-house
• Site Plans peer reviewed:
  • Review CDC website and UBC Herbarium map layer to check for any new SAR occurrences
  o If new SAR found determine management requirements with QP input as deemed necessary
  o Refine SP/field work to incorporate new SAR finding(s) if block still economically viable
  • BA staff should review Site Plan to ensure SAR has been considered and management options are suitable for species habitat needs.
  • Review SAR management options detailed in SP to ensure consistency with previous BA commitments
  • Review any submissions by qualified professional(s) to ensure that they have been properly incorporated into the Site Plan and block/road engineering
  • Seek corrections if inconsistencies or errors/omissions discovered
  • Confirm documentation is present, if required, in relation to SAR and associated reports and recommendations.
	Practices Forester
	Multiphase Forester

• Update SAR tracking form and attach to SAR Block Activity in Cengea Resources with other relevant documents and comments	*Practices Forester* *Multiphase Forester*

• Annual, detailed BA risk-based review of Site Plan population
  • Focus on any high risk EMS/SAR areas that may have been previously identified by BA Planning section
  • Confirm documentation is present, if required, in relation to SAR and associated reports and recommendations.
	Practices Forester
	Operations Technician

Species At Risk Management Process
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PROCEDURE	RESPONSIBILITY
Stage 5: TSL/Contract Package Preparation	

• During preparation of TSL package, review CDC website and UBC Herbarium map layer in Resources to determine if any new SAR occurrences have been mapped in proposed area of activity
  • If new SAR found determine management requirements with QP input as deemed necessary
  • Refine SP, etc to incorporate new SAR finding(s) if block still economically viable
	Operations Technician
	Multiphase Forester

• Update SAR tracking form and attach to SAR Block Activity in Cengea Resources with other relevant documents and comments	*Operations Technician* *Multiphase Forester*
• Review any SAR specific details that must be addressed in TSL or contract documents to ensure they are adequately incorporated into plan	*Operations Technician* *Multiphase Forester*
Stage 6: TSL/Contract Pre-work	
• Review any SAR specific details in Site Plan with Licensee including discussions around how SAR management options were integrated into the block/road engineering and related Site Plans	*Forest Technician* *Operations Technician*

• Provide summary of species characteristics to TSL Licensee to enable additional identification of new occurrences in the field
  ○ SAR name; Latin, common
  ○ Pictures
  ○ Reports
	Forest Technician

Stage 7: Conformance Quality Assurance (Inspection)	
• Review relevant plans and SAR descriptions/information to familiarize self with potential species	*Forest Technician*
• Review relevant plans to ensure thorough understanding of how SAR species habitat needs were to be addressed in the field.	*Forest Technician*
• Check operations to ensure consistency with legal plans.	*Forest Technician*
• Where deviations from the plan have occurred that impact SAR follow standard conformance process. ○ Ensure appropriate agencies have been notified.	*Forest Technician*
• Ensure non-conformances and/or potential non-compliances have been entered into the EMS Issue Tracking System and Action Plan has been developed.	*Forest Technician*
• Return to field for follow-up inspection(s) to ensure any Action Plans/mitigation strategies have been implemented	*Forest Technician*

Wet Weather Safety Shutdown Guidelines (WWSSG) (Rainfall &Snowmelt)

CHINOOK BUSINESS AREA

Important : These shutdown guidelines **are focused on safety;** but may also contribute, in part, to maintaining water quality as these guidelines can reduce the likelihood of worker caused landslide initiation during operations. In most cases operations may have ceased prior to reaching these shutdown guideline limits due to the requirements of other operational controls.

The primary control mechanism to protect water quality is through the operational controls of the EMS. The EMS plays a significant role in water quality as it requires the licensees and contractors to manage erosion and sediment delivery into water bodies appropriately and as required; if the operational controls cannot adequately maintain water quality, operations would be required to cease.

The Chinook BA has been divided into 3 broad precipitation zones each with its maximum water inputs (operational limits) for fixed time periods; "Shift end", 24, 48, and 72 hours. The Chinook BA Staff will indicate which zone you are operating in and the applicable shutdown limits.

The licensee or contractor may use their operational procedures in conjunction with the Chinook BA precipitation zone maps which sets the operational limits for the zone they are working in. If the licensee or contractor does not have their own WWSSG they may consider using the guidelines developed for the Chinook BA. The Business Area Staff representative can review the Chinook BA guidelines with the licensee or contractor at their request.

Excavation Caveat

WorksafeBC Section 20.78 (Excavations) requires written instructions by a qualified professional that specifies the influence of changing weather conditions on the stability of the excavation. This procedure does not waive or take precedence over the requirements of WorksafeBC Section 20.78

A. Environmental signs that require immediate work shutdown and evacuation of the work site

A. Shutdown when these conditions exist.
   a. Sudden muddy water in creek (especially in gullies)
   b. Sudden lack of flow in streams during wet weather
   c. Cracks appearing in the soil
   d. Small (anything ≥1m x 1m) sloughs of soil occurring
   e. Anchor stumps pulling out in wet soil
   f. Landslides occurring in the general area, or sounds of landslides occurring
   g. Sloughs in road cuts, especially during road construction or deactivation.

B. Operational Conditions where Wet Weather Shutdown Guidelines Should Be Utilized

   a. Worksite on or below landslide–prone terrain
      i. Definition of "landslide-prone terrain": Areas mapped **U** or **P** on reconnaissance terrain mapping, or mapped Class **V**, Class **IV**, or Class **III** on detailed terrain mapping, or, if no terrain mapping available, any area with slopes **>60%** (**>50%** in Haida Gwaii District), or areas that show signs of instability, or any areas that are defined as having a high or moderate failure potential in Tables A1 or A2 of the Gully Assessment Procedure Guidebook (GAP).

ii. Definition of areas "below landslide-prone terrain": Areas with smooth open slopes or flat ground (no gullies, incised streams, or draws) are considered to be below landslide-prone terrain unless there is **>300 m** of terrain with a slope gradient **<30%** between the landslide prone terrain and the work site or travel route. Any confined area in a gully, or incised stream or draw area, or alluvial fan below a gully, is below landslide prone terrain if there is any upslope landslide prone terrain.

b. Use the "Unstable upslope road conditions" operational limits in Table 1 if there is a road(s) upslope of worksite that is on, or above, landslide-prone terrain and the road(s) has any of the following conditions.
   i. Uncontrolled drainage
   ii. Blocked culverts
   iii. Tension cracks
   iv. Other signs of instability

c. **Note:** Under sunny conditions resulting in snow melt if there is snow on or upslope of work site and road networks exist upslope that have not been assessed for factors listed in Sec. B subsection b. above, do not work unless measurements of snowmelt, and subsequent conversion to water equivalents (mm), are taken and compared to Table C below.

C. **Chinook Precipitation Zones:** *Operational Limits*

Table #1: Operational Limits for this worksite are shaded in gray:

(Ops Tech to highlight the appropriate precipitation zone and operational limits for the specific worksite i.e. licence or contract)

Zone	Shift end	24 hour	48 hour	72 hour
Very Wet Zone	50mm	100mm	150mm	200mm
Wet Zone	45mm	80mm	130mm	170mm
Drier Zone	30mm	50mm	80mm	110mm
Unstable upslope road conditions	10mm	20mm	30mm	40mm

D. Recommencement of Operations

If any of the water input operational limits for the work site are exceeded via addition of precipitation as measured in a rain gauge added to input levels from snowmelt for tables #2 and/or #3 or #4 (where applicable) then shut down operations as soon as possible

Shutdown for a minimum of one day, and stay shutdown if water inputs continue to exceed any of the operational limits. Maintaining a base station for measuring rainfall and snow melt, and using weather forecasts will help avoid travelling to the work site during shutdown conditions. Restart operations when all of the water inputs are below the operations limits

Wet Weather Safety Shutdown Guidelines (WWSSG) (Rainfall &Snowmelt)

CHINOOK BUSINESS AREA

Snow Melt Soil Moisture Input

Snow melt is an important factor in determining the total soil moisture input. The following tables provide guidance as to the amount of snow melt **that must be added** to the precipitation recorded in a rain gauge at the worksite in applicable situations. Snow melt must be considered at or above the worksite; i.e., where the melt event is occurring.

Table #2: 24 Hour Snowmelt additions during rain-on-snow events

Average Temperature[1]	Open Area			Forested Area		
	WIND[2]			WIND[2]		
	Low	***Moderate***	***High***	***Low***	***Moderate***	***High***
0.5-2.0˚C	3mm	10mm	25mm	1mm	5mm	11mm
2.1 – 5.0˚C	15mm	35mm	75mm	5mm	10mm	25mm
5.1-10.0˚C	25mm	70mm	120mm	10mm	28mm	40mm
10.1-15˚C	35mm	95mm	160mm	15mm	40mm	60mm

Table #3: Hourly snow melt during rain-on-snow events[3]

Average Temperature[1]	Open Area			Forested Area		
	WIND[2]			WIND[2]		
	Low	***Moderate***	***High***	***Low***	***Moderate***	***High***
0.5-2.0˚C	0.15mm	0.45mm	1.05mm	0.04mm	0.2mm	0.5mm
2.1 – 5.0˚C	0.65mm	1.5mm	3.15mm	0.2mm	0.4mm	1.2mm
5.1-10.0˚C	1.05mm	3.0mm	5.0mm	0.4mm	1.2mm	1.7mm
10.1-15˚C	1.5mm	4.0mm	6.7mm	0.65mm	1.7mm	2.50mm

Table #4: Snow melt during sunny conditions

Average Temperature[1]	24 hr Melt		Hourly Melt[3]	
	Open	**Forested**	**Open**	**Forested**
0.5-2.0˚C	8mm	2mm	0.3mm	0.1mm
2.1 – 5.0˚C	24mm	4mm	1.0mm	0.17mm
5.1-10.0˚C	43mm	17mm	1.8mm	0.7mm
10.1-15˚C	53mm	21mm	2.2mm	0.9mm
>15˚C	65mm	25mm	2.7mm	1.1mm

[1] **Average Temperature** is calculated by adding the maximum and minimum temperature for the time period and dividing by 2. OPTIONAL: Temperature decreases at ***0.5^{0}C*** for every *100m* increase in elevation for **rain-on-snow** and ***1.0^{o}C*** for **sunny conditions**. [2]***Low*** (<10 km/hr): Leaves and small twigs in constant motion speed; wind extends light flag

Moderate (10-20km/hr, gusts >30km/hr)**:** Small trees sway, maps/paper difficult to hold still.

High (>20km/hr, gusts >40km/hr)**:** Whole trees in motion, clouds moving rapidly, rain blowing sideways.

[3] Using hourly melt rates to calculate 24 hr melt rates will not equal values in Table 2 and Table 4 because numbers were rounded for ease of calculation.

IF WIND SPEED INDICATORS OVER UNSTABLE TERRAIN CANNOT BE SEEN, ASSUME WIND SPEED IS *HIGH*. WINDSPEED *ALWAYS* INCREASES WITH ELEVATION (MOUNTAIN TOP WINDS ARE HIGHER THAN VALLEY BOTTOM). IT IS RECOMMENDED THAT IF UNCERTAIN ABOUT ANY PARAMETER USE THE MOST CONSERVATIVE VALUES TO ENSURE WORKER SAFETY

File: 18045-02

May 10, 2021

BY EMAIL

To All FSP Holders

Dear Sir or Madam:

The Chief Forester's provincial guidance letter (March 2016) and the District Manager's (DM) expectations letter (June 27, 2016) were released in 2016 to provide guidance for all replacement Forest Stewardship Plans (FSP). These were sent as follow up to the Minister's letter (March 8, 2016) and the Forest Practices Board's report and follow-up on FSPs[1]. We are now beginning another round of FSP replacements and this letter is an update regarding my expectations on FSP replacements.

The district manager's FSP expectations are not legally binding and constitute policy guidance under FRPA's non-legal realm. As such, the information contained in this letter is intended to provide practitioners further clarity around the principles and process that will be used to decide whether a proposed FSP meets the legal tests in the *Forest and Range Practices Act* (FRPA) and the *Forest Planning and Practices Regulation* (FPPR) (e.g. consistent with government objectives). As stated in the previous DM expectation letter, there have been substantive changes to the following considerations since FPRA was introduced: land base, operating environment, best available information, First Nations interests, stakeholder interests and public expectations regarding forest stewardship and planning. Since changes are continuing to occur, FSPs warrant full replacements rather than extensions of the previous plans.

By submitting a replacement FSP, the legal requirement for First Nation and public consultation is triggered which enables communities, stakeholders, the general public and other affected parties to have a formal opportunity to review and present their perspectives

[1] FPB/SIR/44, "Forest Stewardship Plans: Are They Meeting Expectations?", August 2015: https://www.bcfpb.ca/sites/default/files/reports/SIR44-FSP-Are-They-Meeting-Expectations.pdf; SR 57, Follow-up Report on Forest Stewardship Plans: Are They Meeting Expectations? May 2019: https://www.bcfpb.ca/wp-content/uploads/2019/05/SR57-FSPs-Follow-Up.pdf

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and input on the plan. In special circumstances, however, it may be necessary to request a short-term extension without public review if supported by a rationale.

As you are aware, the Province is legally obligated to consult and accommodate First Nations, where required, on land and resource decisions that could impact their Indigenous Interests, including FSP's. Furthermore, the Province is committed to furthering reconciliation with First Nation communities as outlined in the United Nations Declaration on the Rights of Indigenous People and the Declaration of the Rights of Indigenous Peoples Act. While the Province is responsible for ensuring adequate and appropriate consultation and accommodation, it may involve Licensees in the procedural aspects of consultation through information sharing. The District encourages Licensees to share information with First Nations following engagement process set out in any agreements that are in place between the First Nation and the Provincial government.

The Association of British Columbia Forest Professionals' (ABCFP) guidance recommends that professionally prepared documentation in support of proposed FSPs include rationales stating how relevant information (e.g. district manager expectations, best available information, and non-legal guidance) has been considered in the preparation of FSPs. In reviewing proposed FSPs, there may be a need to request information from an FSP holder, such as approaches, strategies, metrics, or rationales to support my review of the FSP content against legal approval tests.

Within the context of the above comments, my expectations are categorized into three subheadings: "Opportunities for Improvement"; "Information Considerations"; and "Next Steps" in the process leading up to FSP submissions.

Opportunities for Improvement:

Although there are many examples of licensees and BCTS demonstrating diligence and being proactive in engaging and addressing public, stakeholder, and First Nation concerns and interests, there remains room for improvement to build from these efforts and learn from the past, given the changing environment across the land base.

Some of the changing interests include but are not limited to, people's desire for greater input on proposed forest development; increased environmental concerns; cumulative effects of increasing natural resource activity; water quality or increasing requirements for species at risk.

Given the above, FSP holders need to factor in the following:

- *Results, strategies, and measures, and general refinements*- ensure the FSP commitments are consistent with Government objectives; results and strategies are measurable and verifiable; and commitments are clearly written.

- *Stocking standards* - climate change, drought conditions, forest health issues, fire management concerns, and significant wildlife impacts may trigger the need for revised or new stocking standards.

- *Collaborative planning* – forest licence holders should explore a more collaborated and coordinated forest stewardship planning approach to address cumulative hydrological effects, manage strategic cultural values (e.g. cultural landscape feature, sanctuary, etc.), invasive plant management, wildlife habitat management, and enhance stocking standards.

- *Social licence* – there are options to improve engagement with interested or affected parties during the review and throughout the lifetime of FSPs to minimize and address specific and landscape level concerns. There are new options with technology to share and capture development planning to help the public and or stakeholders understand proposed activities and solicit timely feedback, especially at the early engagement and or post-harvest stage. Development planning should consider how harvesting is integrated into recreation values and various other stakeholder's rights on the landbase. Early engagement is one tool to help achieve this.

- *Public safety* – public use of roads and recreation activities are increasing in the district. FSP holders should consider the impact of their operations on access and public safety both during and after harvest activities as well as any longer term resource management risks (e.g. terrain stability).

Information Considerations:

There is a significant amount of existing and new information available since the last round of FSP approvals. Although not an exhaustive list, key information and guidance at a provincial, regional, and local level is cited below for your consideration in preparing FSPs.

#	**Direction, guidance, information**	**Examples**
1	Government objectives	• Land Act and FRPA orders and notices
2	Chief Forester standards	• Chief Forester's Standards for Seed Use • Climate-based seed transfer interim policy measures
3	Non-legal guidance - Provincial	• Landscape fire management planning • Climate change stocking standards • Fire management stocking standards • Forest health and species selection • Provincial Timber Mgmt Goals and Objectives • Watershed Assessment and Management of Hydrologic and Geomorphic Risk in the Forest sector
4	Non-legal guidance – Regional and local	• Integrated silviculture strategies • Timber supply analyses and AAC determinations • TSA forest health strategies • Regional climate action plans • Strategic First Nation Cultural Information (Stó:lō Connect) • Invasive Plant Information for FSP Preparers & Reviewers within the Coast Forest Region

#	Direction, guidance, information	Examples
		• Appendix A - FRPA Regulation Species Recommended for FSP Inclusion by Former Coastal Forest District & BEC Zone
5	Monitoring trends and guidance	• Forest and Range Evaluation Program (FREP) • Multi resource value assessments (MRVAs)
6	Best available information	• Regional extension notes: adapting to climate change • Research (e.g., hydrology, wildlife, riparian, timber, forest health, natural disturbance, invasive species) • Federal Critical Habitat for Species at Risk Recovery Planning documents[2] • Provincial[3] Recovery Planning documents • Species at Risk, CDC iMap • BC Species and Ecosystems Explorer • Drought risk assessment tool • Cumulative Effects Framework • Water Sustainability Act

In relation to the above items, take into consideration the following:

Item 4 – non legal guidance – regional and local

- *Fraser Timber Supply Area (TSA) Rationale for Allowable Annual Cut (AAC), February 2016* - consideration of latest Chief Forester's recommendations especially with young forest stand harvesting and low harvest performance in older hemlock balsam stands.

- *Forest health* – annual reports continue to show impacts from several pests or forest health issues. These factors and others should be given consideration for FSP preparation.

- *First Nations* – consideration for site and landscape level First Nation cultural information is important as early as possible in the planning process.

Item 5 – Monitoring trends and guidance

- *FREP/MRVA* – consider the importance of retention around small streams which may be critical for water quality impacts from logging practices of the past few years. Specifically, minimize soil disturbance near streams; retain understory vegetation and non-merchantable trees for cut bank stability wherever operationally feasible; and avoid leaving introduced woody debris on small streams that could create stream blockages post harvesting.

[2] http://www.sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1
[3] Recovery Planning Documents Table - Ecosystems Branch

Item 6 – Best available information

- *Wildlife* – results and strategies are not required for wildlife species that have Orders which fulfill the FPPR Section 7 or *Woodlot Licence Planning and Practices Regulation* (WLPPR) Section 9 Wildlife Notices (grizzly bear, coastal giant salamander, tall bugbane, pacific tailed frog, spotted owl, pacific water shrew, mountain goat, black-tailed and mule deer). Results or strategies will likely be required for the proposed Marbled Murrelet FPPR Section 7 and WLPPR Section 9 notices and order when they are established. Similar requirements may be necessary for Northern Goshawk *laingi* subspecies or other species at risk should notices or orders be established in future.

- *Other species and recovery plans* - available on the Federal Species at Risk Public Registry and Provincial web sites as noted above (e.g. Northern Red Legged Frog, Oregon Spotted Frog, etc.). It is important for professionals to consider all aspects of the FSP and associated forest development planning that may influence habitat for other species not listed in FPPR Section 7 or WLPPR Section 9 Wildlife Notices.

- *Forest Planning and Practices Regulations* (FPPR) *Sections 21 and 22* - public comments must be considered, and the actions taken to address them must be included as part of the FSP submission to the District Manager. To expedite the FSP review process, the review and comment summary package should be submitted in a consistent format. The district has a communication summary template that is available, upon request.

- *Stakeholders/persons with rights who may be affected by the proposed FSP* – these groups must have an opportunity to review and comment on the plan. The district has updated information about stakeholder contacts which is available upon request. Stakeholders to consider include other forest licensees, BC Timber Sales Manager, land and water rights holders, guide outfitters, commercial recreation groups, trappers, adjacent private land holders, recreation groups and community/rate payer groups. Where a specific forest stewardship related concern does not fit within a result or strategy framework, the response to the above referenced stakeholder's concern or interest will be important in assessing the effectiveness and completeness of stakeholder engagement.

This information may not form part of the legal commitments of the FSP but may accompany the FSP submission as supporting information or be available upon request at the FSP review process.

Next steps:

Along with this expectation letter, the planning process should include an opportunity to have information sharing meetings with licensee(s) to further discuss the district manager's expectations. A licensee or forest professional initiated meeting to develop a common understanding of areas of focus for a replacement FSP will be beneficial in supporting a streamlined and informed process. Additional topics can include the FSP holder's perspective

on these expectations, their plans and timelines, and the district's process for reviewing FSPs. The district will make available any district review checklists or stakeholders lists that may be helpful to those preparing FSPs.

I trust that a high degree of effort and communication will continue to occur when FSP replacements are developed. If you have any questions on the above, please contact Sally Asu: phone 778-704-7196 , email Sally.Asu@gov.bc.ca or Lucy Stad: phone 778-704-0034, email Lucy.Stad@gov.bc.ca.

Sincerely,

Mike Peters
District Manager
Chilliwack Natural Resource District