MARSHALL CREEK

Silviculture Treatment Plan

July 13, 2020

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Executive summary

If a harvest area is found to be underperforming and is not likely to reach the established reforestation goals, a silviculture treatment plan with remedial activities can be implemented. A silviculture treatment plan outlines the reason for the treatment, where and what activities will be undertaken and the anticipated outcomes, in addition to providing First Nations and public an opportunity for review and comments on proposed treatments, as required under the *Forest Resources Regulation*.

The planned treatments are located within the Marshall Creek area Forestry Reserve, approximately 10 kilometres northeast of Haines Junction along the Alaska Highway. The area has been impacted by a historic large scale spruce beetle outbreak (starting in the early '90s and spanning approximately two decades), with salvage harvesting occurring in the region. The treatment area requires site preparation and fill planting.

First Nations Final Agreements and higher-level plans guide this silviculture treatment plan, including; the Champagne and Aishihik First Nations Final Agreement, the Strategic Forest Management Plan for the Champagne and Aishihik Traditional Territory, the Integrated Landscape Plan for the Champagne and Aishihik Traditional Territory, the Pine/Canyon Timber Harvest Plan, and site plans.

The objectives of this silviculture treatment plan are to:

1. increase natural regeneration and artificial regeneration survival through site preparation techniques, and
2. implement site preparation treatments in combination with planting and leave for natural prescriptions as a part of the adaptive management process within the Traditional Territory of Champagne and Aishihik First Nations.

The reforestation treatment will consist of fill planting 57,000 white spruce (*Picea glauca*) trees, covering an area of up to 88.1 hectares. There will be a silviculture trial covering an area of up to 36 hectares, consisting of site preparation for disc trenching to create suitable microsites for reforestation. In addition, there will be a research trial that consists of burning coarse woody debris, disc trenching, and planting 5000 white spruce trees, covering an area of 8.73 hectares. These treatments are planned for 2020–23, with additional surveys to track success in the years following.

Background

Disturbance history

- The Pine Lake/Marshall Creek area has a history of extensive spruce bark beetle infestations at epidemic levels (starting in the early'90s), and has currently only endemic levels of active spruce bark beetles in the area. Surveys show up to 99 percent of merchantable trees have been attacked.
- Reconnaissance surveys show a large component of blowdown in this area.

Previous silviculture prescriptions

- Salvage harvest with variable retention was used within PC-13B and PC-14. All deciduous and non-beetle attacked spruce trees were used as dispersed retention and minimal greenwood harvesting occurred.
- Clearcutting was used in a portion of PC-17, in preparation for the Pine/Canyon silviculture trial. This area is designated as PC-17-01.

Treatment location

The treatments will take place at the PC-13B, PC-14, and PC-17 openings within the Pine/Canyon Timber Harvest Plan Area (Figure 1). Access to this area is located at kilometre 1562 of the Alaska Highway, 13 kilometres northeast of Haines Junction. For a detailed plan map see Appendix 1.

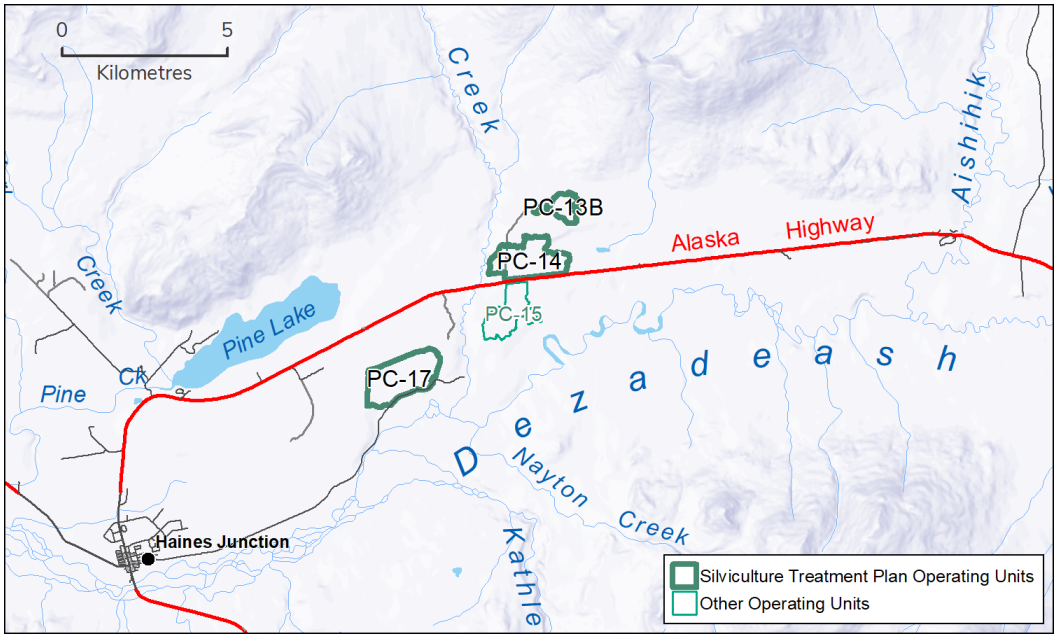

FIGURE 1: PINE CANYON OPERATING UNIT 13B, 14, AND 17 LOCATIONS

Site conditions

PC-13B opening

Elev. (m)	Slope %	Aspect	Terrain	Slope position	Moisture regime	Soil drainage	LFH depth (cm)	Soil texture
735 - 775	6	NW	Rolling	Mid	Fresh	Well	8	S4/SiL

- Plantable spot surveys were completed in 2018 and indicated the potential for fill planting to be a viable option to increase stocking levels. An average of 720 plantable spots per hectare are available in this opening.
- Site class in the PC-13B opening is poor.

FIGURE 2: AERIAL PHOTOS OF PC-13B OPENING (2012)

PC-14 opening

Elev. (m)	Slope %	Aspect	Terrain	Slope position	Moisture regime	Soil drainage	LFH depth (cm)	Soil texture
685 - 735	0-5	S	Even	Level	Very Fresh – Very Moist	Well – Imperfect	8	S3-S6 / Si - SiS - SiC

- Plantable spot surveys were completed in 2018 and indicated the potential for fill planting to be a viable option to increase stocking levels. An average of 900 plantable spots per hectare are available in this opening.
- Site class in the PC-14 opening is poor.

FIGURE 3: SITE CONDITION OF PC-14 OPENING (2020)

PC-17-01 opening

Elev. (m)	Slope %	Aspect	Terrain	Slope Position	Moisture Regime	Soil Drainage	LFH Depth (cm)	Soil Texture
625 - 690	0-30 Ave 8%	S	Rolling	Level	Fresh	Well-Mod. Well	9	Silt Loam/ Silt Clay

- Trees were harvested in winter and the site was clear-cut harvested.
- Site class in the opening is poor.

FIGURE 4 PC 17-01 HARVEST AREA IN JULY 2019, PRIOR TO HARVEST

Planning considerations

This treatment plan followed the principles set out in higher levels plans and agreements, including:

- Champagne and Aishihik First Nations Final Agreement;
- Strategic Forest Management Plan for the Champagne and Aishihik Traditional Territory (2004);
- Integrated Landscape Plan for the Champagne and Aishihik Traditional Territory (2007);
- Pine/Canyon Timber Harvest Plan (2008); and
- any associated site plans.

Forest Resources Act

- As per section 57(3)(a) of the *Forest Resources Act*, copies of this treatment plan will be made available to any First Nation whose traditional territory overlaps wholly or partially with the area to which the plan will apply and are invited to make representations during a period of not less than 30 days.
- As per section 57(3)(b) of the *Forest Resources Act*, copies of this plan will be made available to the public and are invited to make representations during a period of not less than 30 days.
- All comments received will be taken into consideration for the approved plan, as per section 57(3)(c).

Stocking standards

PC-13B and PC-14 Operating Units

To ensure forest mosaic complexes while also meeting landscape-level fuel abatement goals, the stocking standard for this site will be the coniferous leading mixed wood stand:

- Target stocking – 1400 stems per hectare;
- Primary minimum stocking – 1100 stems per hectare;
- All deciduous trees will be retained.

PC-17-01 – Harvest Block

To ensure consistency with the scarification trial planned for this opening, the stocking standard for this site will be the pure spruce wood stand:

- Target stocking – 1200 stems per hectare;
- Primary minimum stocking – 950 stems per hectare;

Post-harvest assessment

Initial silviculture survey assessments conducted in PC-13B & PC-14 (2018) showed low regeneration levels with a high abundance of grasses and shrub competitors, leaving a low probability of future regeneration due to low seedbed availability. PC-17-01 will be treated immediately after harvest as per the planned silviculture site preparation trial.

Treatment objectives

This treatment is aimed to complete the following objectives:

1. increase natural regeneration and artificial regeneration survival through site preparation techniques, and
2. implement site preparation treatments in combination with planting and leave for natural prescriptions as a part of the adaptive management process within the Champagne and Aishihik First Nations Traditional Territory.

Planned treatments and schedule

The total area to be reforested is 96.8 hectares. Site preparation trials of up to 36 hectares within the total 88.1 hectares are planned within the PC-14 opening to increase seedbed availability, combined with fill planting to increase forest regeneration within the whole opening. Site preparation trials and planting are planned covering the entire PC-17-01 opening of 8.73 hectares.

Opening Number	Planned treatment	Target schedule
PC-13B	Fill planting	Spring 2021
PC-14	Site preparation and fill planting	Fall 2020 to spring 2021
PC-17-01	Site preparation and planting	Fall 2020 to spring 2023

As a contingency, if planned treatments do not occur in fall of 2020 on PC-14, the treatment area will be fill planted with any overflow moved to the PC-15 opening.

Trial monitoring

Monitoring of initial seedling establishment, survival, and growth will occur throughout all areas of the treatment. Surveys on site preparation and planting treatment trials will be conducted. The results will be used to guide future treatments.

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Lisa Walker, Director **Forest Management Branch**	**Date**

Appendix 1 – Treatment area map