SX 83501R

MADGE ROTOCLEANER SITE PREPARATION

Working Plan
1983

N. Endacott
1. **Objectives:**

   The main objectives of the project is to reduce future brush competition on the block by tilling the vegetative material (removing stumps etc.) in with the mineral soil. Secondary objectives are to check establishment, survival, and performance of the stock planted (age, height, diameter and vigor); soil compaction; re-invasion of brush species and hazard abatement.

2. **Location:**

   Forestdale, approx 38 km. west of Burns Lake; Lakes T.S.A.; Prince Rupert Region. T.S.A.-09160, Opening # 93L-8b-017; on E.1/4 of S.W. 1/4 Lot 3386 C.R.5.

3. **Trial Stock:**

<table>
<thead>
<tr>
<th>Seedlot</th>
<th>Stock Type</th>
<th>Nursery</th>
</tr>
</thead>
<tbody>
<tr>
<td>4253</td>
<td>PSB 211</td>
<td>Red Rock</td>
</tr>
</tbody>
</table>

4. **Plot Design and Stocking Standards:** (See appendix 1)

   There will be one plot established, 27.9m x 49.6m (buffers inclusive). Fifteen lines of planting from a southerly to northerly direction, with 8 trees in each line. These lines will traverse 2 lines of madge prepared sites, 2 lines of brush blade prepared sites, and 4 lines of control or natural unprepared sites. Stocking standards to be used will be 3.1m x 3.1m (1200). Each line will be labelled at P.O.C. with a cedar stake and aluminum tag.

5. **Dates of Planting and Assessments:**

   Planting to take place spring 1984, assessments in Fall 1984; Fall 1985; Final Fall 1988.

6. **Summarize and Report:**


   Continued page #2.
7. **Report Distribution:**

Regional Research Officer .... Prince Rupert
Silviculture Officer .......... Prince Rupert
District Manager ............. Lakes T.S.A. Burns Lake
Doug Brewis ................. Silviculture Office ... Victoria
Library, Silviculture Branch, Victoria
Supplementary Information:

A description of methods of assessment for the above trial; (ie: how to assess performance, soil composition, brush re-invasion, etc.) will be carried out as per Section 4.0 "O" level SX trial guidelines as noted in the Silviculture Branch trials and procedures manual. It should be noted, however, the following points:

Section 4.1 Numbers of Trial Plots

There will be three (3) trial plots established, one madge roto-cleaner, one brush blade, one control. The Control is a representative untreated area between and adjacent to the treated plots. See appended diagram and lay-out.

Section 4.2 Replications

Replication of treatments in the same site is not mandatory; this area is homogeneous and the same trial will not be repeated in other locations at this time.

Section 4.3 Size of Trial Plots

Each trial plot is essentially an area 3.1 meters by 46.5 meters surrounded by a 3.1 meter buffer zone. There are two (2) trial plots of Madge roto-cleaner, two (2) trial plots of brush blade, and four (4) trial plots of untreated or control areas, each plot consisting of 15 planted seedlings. Total area is 49.6 meters x 27.9 meters (0.1384ha's) with 120 trees planted.

Section 4.4 Assessment Plots

There are 120 assessment plots established in the trial plot. Each assessment plot is an area screefed 15 cm x 15 cm square with a conifer seedling planted and flagged in the centre. The idea is to ensure that each assessment plot had no target weed species and competition prior to crop tree establishment.
Section 4.5 Target Weed Species

For the purpose of this trial, we will be breaking down target weed species into three (3) categories, based upon those major weed species found prior to trial installation. They are as follows:

(a) Shrubs -  
   (i) Salix spp. - Willows  
   (ii) Populus tremuloides - Trembling aspen  
   (iii) Alnus incana/viridis - Green speckled alder

(b) Herbs/Forbs -  
   (i) Epilobium angustifolium - Fireweed  
   (ii) Cornus sericea - Red-osier dogwood  
   (iii) Lathyrus nevadensis - Purple pea vine  
   (iv) Rosa aestivalis - Prickly Rose

(c) Grasses and Mosses -  
   (i) Phleum pratense - Timothy  
   (ii) Festuca occidentalis - Western fescue  
   (iii) Lycopodium annotinum - Stiff club moss

For further information in terms of assessment of weed species, see Sections 6.3.2 and 6.3.3.

Section 4.6 Crop Trees

As per Working Plan Section 3. Seedlot 4252 a Pine plug PSB211 from Red Rock nursery was planted on the site. Crop tree assessment will be as per Section 6.3.1 forthcoming later in report.

Section 4.7

All trees and plots are permanently tagged and marked sequentially throughout the whole trial area. See diagram in appendix I.

Section 4.8

In general, a T-test will be the minimum requirement for statistical analysis. The Prince Rupert Regional Research officer will assist in this regard.

Section 4.9 Lay-out of the Trial Plots

See diagram in appendix I. Note Section 4.3, size of trial plots and lay-out details.
Section 4.10 Assessment Plots and Methods of Assessment

Refer to Section 6.0.

Section 5 - N/A

Section 6.0 Assessment for "O" Level SX Trials

Section 6.1 Assessment Plots

(a) Within each trial plot there are fifteen (15) crop trees established within a screened assessment plot of 15 cm x 15 cm.

(b) Each trial plot and assessment plot are surrounded by a 3.1 metre free zone (ie: see diagram appendix I).

(c) Each assessment plot has a crop tree planted in the centre, thus establishing plot centre and it is permanently staked with an orange-coloured wire flag.

Section 6.2 Selection of Crop Trees

Section 6.2.1 Woody Plants (Crop trees)

The crop tree established in the centre of each assessment plot will be the selected representative of the plot. There will be thirty (30) individual trees selected for each treatment (trial plot), with the exception of the control which has sixty (60) sample trees. Shrubs within the plot will be recorded in a likewise manner.

Section 6.2.2 Herbaceous Species

Herbaceous vegetation will be assessed by recording the species, and the percent of the plot area covered by each target weed species. (See Section 6.3.3.1 below). Note: Other vegetation may be recorded for general information or examination later.
Section 6.3 Assessment (Pre- and Post-treatment)

The selected and identified crop trees (note no target weed species were selected as each plot started off with being screened), will be assessed as per Section 5 of the Working Plan (ie: Dates of Planting and Assessments).

The preferred period of post-assessment is at the end of the growing season. The latter is generally in August and before leaf colouration. Disturbance (ie: trampling) of vegetation will be avoided during assessments. The same selected crop trees and woody species or assessment plots (in the case of herbaceous vegetation) shall be used for all measurements.

Section 6.3.1 Crop Trees

For each selected crop tree the following measurements will be taken:

(a) Total Height (nearest 1/10 of a cm).
(b) Annual Height (leader) growth of each growing season. The current season's growth will be recorded for 1st measurement (ie: taken at time of planting). The 2nd and 3rd and 5th measurements will also be taken.
(c) Measurements of diameter (root collar diameter).
(d) It will be stated whether crop tree is healthy, unhealthy or dead (if unhealthy a cause will be specified).
(e) A visual estimate of the degree of brush encroachment on each crop tree using a 0 to 100 linear scale system shall be made (ie: "0" being free growing and "100" being total encroached by brush).

Section 6.3.2 Woody Weed Species

(a) A measurement of total height of vegetation to nearest 1/10 metre will be taken.
(b) An estimate of number of competing stems within assessment plot.
Section 6.3.3 Herbaceous Weed Species

(a) A measurement of total height of vegetation to nearest 1/10 cm.

(b) An estimation of reduction in ground area occupied by target vegetation (i.e: "0" being no reduction, "100" being complete take over of assessment plot).

Section 6.3.3.1 Procedure for Plant Cover Assessment

Each plot will be divided into quadrants, then:

(a) a visual estimation (%) of each quadrant occupied by all non-crop vegetation. The sum of all the quadrants will be totalled. (Vegetated plus non-vegetated areas will equal 100%).

(b) an estimate of the area covered by each of the selected target weed species will be made in percent (%). (Note: because of canopy overlaps, the sum of all the target weed species may exceed 100%).

Section 7.0 Appendixes

Section 7.1 Diagram of Trial Plot Lay-out and Assessment Plots

Section 7.2 Pre-treatment Information Sheet

Section 7.2.1 Map of General Location

Section 7.3 Treatment Record for Sx Trial
PLOT DESIGN & LAYOUT SX.83501.R

Outlined Area 19 hectares 
Forest Region Prince Rupert 02
District Lakes 01
Land District Coast Range 0

<table>
<thead>
<tr>
<th>MANAGEMENT UNIT</th>
<th>TIMBER SUPPLY AREA</th>
<th>Pulpmill Agreement</th>
<th>Cascades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>O2</td>
<td>Number</td>
<td>04 (Lakes)</td>
</tr>
<tr>
<td>Number</td>
<td>15</td>
<td>Block</td>
<td>D</td>
</tr>
<tr>
<td>Block</td>
<td>Sub-B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LEGEND

△ Blade prepared planted tree
O Lodge prepared planted tree
\ / Control (unprepared soil) planted tree
Spacing 3.1m x 3.1m (1200sph)
APPENDIX A
PRETREATMENT SITE INFORMATION FOR VEGETATION MANAGEMENT S x TRIALS
TSA-09160 - Opening #931-8b-017
LOCATION: Forestdale-38km West of Burns Lake (Attach map if possible)
U.T.M. 09 East 6856; North 6027; Elev. 808; Aspect Flat; Slope: 0

SOIL DESCRIPTION: Orthic Gray Luvisol to Gleyed & Brunisolic Gray Luvisols.

SITE INDEX: Medium - 80 yrs PLI (specify base age and species);
Annual Rainfall 48 cm; Annual temperature range -30°C to 30°C

ECOLOGICAL: Subzone SBS(d)
Association 01

SITE HISTORY:
Original Stand: Spl 731
Harvest: Year & Season 1979 - 80 Method Clearcut
Site Preparation: Year 1985 Type Hedge/Brush Blade
Reforestation: Type [ ] Natural [ ] Seeding [ ] Planting; Year 1984 Spring
Species and Stock type PLI PSR 211 Initial Stocking Level 1200 trees/ha

Other Silvicultural Activities

TRIAL OBJECTIVE(S): (1) Vegetation Control (2) Crop Tree Establishment and Survival and Performance.

SITE VEGETATION AT TIME OF TREATMENT

Vegetation type: [ ] Predominantly hardwood [ ] Predominantly conifer [ ]
Mixed conifer/hardwood [ ] Non-commercial brush [ ]
Young conifer plantation [ ] Other [ ]

Crop Tree(s): Name(s) PLI
Survival and Stocking Level: 100% Spring 1984 - 1200 SPH
Height: 11 cm Diameter 2 cm (DBH or Root collar diameter)
Physiological state: [ ] Budset; [ ] Flushing; [XX] Needle elongation [ ]

Other [ ]

Vigour: [XX] Healthy [ ] Unhealthy (specify)

Target Weed species: Names

Growth Form: [ ] Trees [ ] Saplings [ ] Sprout clumps [ ]
[XX] Individual shrubs [XX] Patches

** Density of competing vegetation: [ ] Ground cover %, and/or [ ] stems/ha
Height: [ ] m (herbaceous); [ ] m (shrubs); [ ] m (trees and saplings)
Diameter: [ ] cm (trees and saplings); [ ] cm (base of clumps or shrubs)
Physiological state: [ ] Dormant (winter); [ ] Bud swelling (early spring)
[XX] Active growth (spring/summer); [ ] Early dormant (late summer/fall)

[XX] Other: [ ] No vegetation as each assessment plot screened

Vigour: [ ] Healthy [XX] Unhealthy (specify)
## APPENDIX B

**TREATMENT RECORDS FOR VEGETATION MANAGEMENT 5% TRIALS**

### TREATMENT(S):

Date(s): July 1983  
Method(s):  
- Aerial Herbicide:  
- Ground Herbicide:  
  - [ ] Mechanical  
  - [ ] Biological  
  - [ ] Prescribed Burning  
  - [ ] Other:  
- [ ] Broadcast  
- [ ] Spot or clump  
- [ ] Tree injection  
- [ ] Stump  
- [ ] Girdling  
- [ ] Other Site Prepared  

Types and Model of Equipment (tool) used: Madge-Rotocleaner/ Brush blade-D7

### HERBICIDE TREATMENT (only)

Pesticide Use Permit No.  
Permit Period  
Contractor: Name  
Address  
Service License No.

<table>
<thead>
<tr>
<th>Treatment No.</th>
<th>Herbicide (Common Name)</th>
<th>Formulation</th>
<th>Additives (vol/vol unit)</th>
<th>Diluent or Carrier (vol/vol unit)</th>
<th>Application Rate (a.i.) : kg/ha/min.</th>
<th>Total Spray Volume (litres)</th>
<th>Hectares Treated</th>
</tr>
</thead>
</table>

Aerial Herbicide Spraying (and ground spraying where applicable)

Nozzles: Number  
Type and Size  
Orientation

Boom Type  
Application: Flying Height (m); Pressure (kPa); Speed (km/hr); Delivery Rate (output) (L/min.); Swath Width (m)