

E8 Forest Management Plan



Alberta Sustainable Resource Development in cooperation with Foothills Forest Products
Forestry Division
Foothills Forest Area
Hinton, Alberta



TABLE OF CONTENTS

1.0 Introduction.....	11
<i>Above – Overview picture of Foothills Forest Products facility and site.....</i>	12
1.2 Purpose and Scope of the FMP	13
1.3 Sustainable Forest Management and Guiding Documents	15
1.4 Planning Team	16
1.5 Stakeholder Identification.....	16
1.5 Stakeholder Identification.....	17
1.6 Planning Stages and Milestones.....	19
1.7 Forest Management Planning Process	20
1.8 Integration with the Caribou Recovery Planning in E8	22
1.9 Preferred Forest Management Scenario.....	25
<i>Table 1: E8 Annual Allowable Cut Levels (adapted from the E8 TSA).....</i>	26
1.10 Forest Management Planning History	27
1.11 Natural and Anthropogenic Disturbance in E8	29
 2.0 Landscape Assessment.....	 33
2.0.1 Administrative Boundaries	35
<i>Figure 1: Forest Management Agreements Areas surrounding E8.....</i>	36
<i>Figure 2: Municipal District of Greenview No. 16.....</i>	37
<i>Figure 3: Location of Cooperatives in E8</i>	38
2.0.2 Compartments	39
2.0.3 Parks and Protected Areas	40
<i>Figure 4: Foothills Forest Products Compartment Areas.....</i>	41
2.0.4 Wildfire Management Areas.....	42
2.0.5 Topography	42
2.0.6 Watersheds.....	42
2.0.7 Climate	42
<i>Figure 5: Wildfire Management Units in E8.....</i>	43
<i>Figure 6: Surface Topography in E8.....</i>	44
<i>Figure 7: Watersheds in E8.....</i>	45
<i>Figure 8: Climatic Regions in E8</i>	46
2.0.8 Soils.....	47
2.0.9 Glacial History	47
<i>Figure 10: Glacial Deposits in E8.....</i>	49
2.1 Natural Sub-Regions.....	50
<i>Graph 1: The Natural Subregions in hectares found in E8</i>	50
<i>Figure 11: Natural Subregions in E8</i>	53
2.2 Forest Landscape Patterns and Structure	54
<i>Graph 2: Area of Conifer, Deciduous and Non-forested Area in E8 (ha).....</i>	54
2.2.1 Forest Species (Amount and Distribution)	54
<i>Graph 3: Percentage of Species Types in E8.....</i>	55
2.2.2 Forest Cover Types	55
<i>Table 1: Area of Species Type in E8.....</i>	56
2.2.3 Forest Age Class (Amount and Distribution)	56
<i>Figure 12: Forest Leading Tree Species in E8.....</i>	57

<i>Figure 13: Cover group Distribution in E8.....</i>	59
<i>Figure 14: Forest Age Class Distribution in E8.....</i>	59
2.2.4 Seral Stages.....	60
<i>Table 2: Seral stages in E8.....</i>	60
<i>Figure 15: Seral Stages in E8.....</i>	61
<i>Graph 6: Seral Stage Distribution in E8 (hectares).....</i>	62
2.2.5 Forest Patches	63
<i>Graph 8: Patch Size Distribution in E8.....</i>	63
<i>Figure 16: Interior Forest Polygons using the Vector Model.....</i>	64
<i>Figure 17: Interior Forest using the Raster Model.....</i>	65
<i>Figure 18: Patches Greater than 100 Hectares in E8.....</i>	66
2.2.6 Inherent Disturbance Regime	67
<i>Figure 19: Historical Fires in E8</i>	68
<i>Table 3: Forest health agents in the E8 FMU</i>	69
<i>Figure 20: Mountain Pine Beetle Stand Susceptibility Index for E8 (with Climate Factor).....</i>	72
<i>Figure 21: Mountain Pine Beetle Stand Susceptibility Index for E8 (with Climate Factor).....</i>	73
<i>Figure 22: Historical Cutblocks in E8.....</i>	75
<i>Figure 23: Road density in E8.....</i>	76
<i>Figure 24: Cutline Density in E8.....</i>	77
<i>Figure 24: Location of well sites, pipelines roads and grazing disposition in E8.</i>	79
<i>Figure 25: Location of PNTs, CNTs and CNCs in E8.....</i>	80
<i>Figure 27: FRD, RDS, RRD, & ROE Dispositions in E8.....</i>	82
2.2.7 Monitoring Sites.....	83
2.2.8 Integrated Resource Planning	83
<i>Figure 28: Alberta Biodiversity Monitoring Program sites in E8.....</i>	84
<i>Figure 29: Monitoring Sites in E8.....</i>	85
<i>Figure 30: Eastern Slopes Policy Area in E8.....</i>	87
2.2.10 Recreation	88
2.2.11 Hiking Trail Inventory	89
<i>Figure 31: Canadian Death Race Trail.....</i>	91
2.2.12 Fish and Wildlife Resources	92
<i>Figure 32: Caribou Habitat using the Resource Selection Function.</i>	94
2.2.13 Wildlife Management Units.....	95
<i>Table 4: Wildlife Management Units in E8</i>	96
<i>Figure 33: Fish Distribution in E8</i>	97
<i>Figure 34: Probability of Fish Capture.....</i>	98
<i>Figure 35: Wildlife Management Units in E8.....</i>	99
2.2.14 Fur Management Zones	100
2.2.15 Historical Resources	100
2.2.16 Protected Areas	100
<i>Figure 36: Fur Management Zones.....</i>	101
<i>Figure 37: Historical Resources in E8.....</i>	102
<i>Figure 38: Protected Areas in E8.....</i>	103
2.2.17 Rare Plants and Animals Inventory	104

<i>Figure 39 Rare Plant Inventory in E8</i>	105
<i>Table 5: Rare Plant and Animal Communities found within E8</i>	106
3.0 Landscape Wildfire Threat Analysis	107
<i>Table 1. Distribution and Characteristics of Fuel Types</i>	109
3.2 Values at Risk	110
3.3 Suppression Capability	110
3.4 Fire Occurrence.....	110
3.5 Fire Behaviour Potential	110
<i>Graph 1. Comparison of Fire Behaviour Potential classes by season.</i>	111
3.6 Wildfire Threat Assessment.....	111
3.7 Interactions with Mountain Pine Beetle.....	111
3.8 Fire Management Strategies	111
<i>Figure 1. Regional fuel assessment based on 100m fuel grid resolution derived from AVI and updates for recent harvesting and disturbance.....</i>	113
<i>Figure 2. Values at risk assessment: Top left “Values at Risk Overall” is a weighted rollup of all discrete values shown in the remaining panels.</i>	114
<i>Figure 3. Suppression Capability based on visibility from one or more lookout towers.....</i>	115
<i>Figure 4. Fire Occurrence and Ignition Locations</i>	116
<i>Figure 5. Fall Fire Behaviour Potential.....</i>	117
<i>Figure 6. Wildfire Threat Assessment.....</i>	118
<i>Figure 7. Identification of High and Extreme Ranked Mountain Pine Beetle and Fire Behaviour Potential Stands.....</i>	119
<i>Figure 8. Community Zone locations within and adjacent to the E8 FMU. Clockwise from west to east: Grande Cache, Wanyandie Flats East Settlement, Muskeg-Seepee Settlement</i>	120
4.0 Values, Objectives, Indicators, and Targets for the Desired Future Forest.....	121
Detailed Indicator Sheets	123
Detailed Indicator Sheets	124
Element 1.1	124
<i>Indicator 1.1.1.....</i>	124
<i>Figure 1: Seral Stages used in the E8 FMP</i>	125
<i>Figure 2: Age class distribution at year 0 (figure taken from the TSA)</i>	125
<i>Figure 3: Age class distribution at year 20 (figure taken from the TSA)</i>	126
<i>Figure 4: Seral Stage distribution in E8 at year 0.....</i>	126
<i>Table 1: Gross area and percentage of seral stages over a 200 year planning horizon</i>	128
<i>Indicator 1.1.1.2 (a).....</i>	130
<i>Figure 5: Patch size distribution – area by patch size class</i>	131
<i>Figure 6: Patch size distribution – number of patches by patch size class</i>	132
<i>Table 3: Patch size distribution over time</i>	132
<i>Indicator 1.1.1.2 (b).....</i>	134
<i>Indicator 1.1.1.2 (b).....</i>	134
<i>Figure 7: Area of interior forest in E8.....</i>	135

<i>Indicator 1.1.1.3</i>	136
<i>Figure 8: Map of the Smoky/Berland plan area (adapted from SRD's Information Letter 2008-05)</i>	136
<i>Indicator 1.1.1.4</i>	138
<i>Figure 9: Rare Plant Communities in E8</i>	138
<i>Table 4: Rare Plant and Animal Communities found within E8</i>	139
<i>Indicator 1.1.1.5</i>	141
<i>Indicator 1.1.1.6</i>	143
<i>Indicator 1.1.2.1 (a)</i>	144
<i>Indicator 1.1.2.1 (b)</i>	146
<i>Indicator 1.1.2.2</i>	147
<i>Indicator 1.1.2.3</i>	148
Element 1.2	149
<i>Indicator 1.2.1.1 (a)</i>	149
<i>Figure 10: High value intactness areas and period 1 SHS in E8.</i>	150
<i>Figure 11: Woodland caribou range boundaries and areas of occurrence in Alberta (map taken from the Alberta Woodland Caribou Recovery Plan 2005)</i>	151
<i>Indicator 1.2.1.1 (b)</i>	153
<i>Indicator 1.2.1.1 (c)</i>	154
<i>Table 5: FMU E8 - Mortality Risk, RSF, Open Road Density and Safe Harbour Summary (taken from Section 13 of the FMP)</i>	155
Element 1.3	157
<i>Indicator 1.3.1.1</i>	157
<i>Indicator 1.4.1.1</i>	158
Element 2.1: Ecosystem resilience	159
<i>Indicator 2.1.1.1 (a)</i>	159
<i>Indicator 2.1.1.1 (b)</i>	160
<i>Indicator 2.1.2.1</i>	161
<i>Indicator 2.1.2.2 (a)</i>	162
<i>Table 6: Forest health agents in the E8 FMU</i>	162
<i>Indicator 2.1.2.2 (b)</i>	165
<i>Figure 13: Mountain Pine Beetle Stand Susceptibility Index for E8 (without Climate Factor)</i>	166
<i>Indicator 2.1.3.1</i>	167
Element 3.1: Soil quantity and quality	168
<i>Indicator 3.1.1.1</i>	168
<i>Indicator 3.1.1.2</i>	169
Element 3.2: Water quantity and quality	170
<i>Indicator 3.2.1.1</i>	170
<i>Figure 12: Hydrologic land base for planned spatial harvest in FMU E8 showing sub-basins within major drainages (From Section 14 of the FMP)</i>	170
<i>Indicator 3.2.2.1</i>	172
Element 4.1: Timber and non-timber benefits	173
<i>Indicator 4.1.1.1 (a)</i>	173
<i>Table 6: E8 AAC levels (taken from the TSA)</i>	173
<i>Indicator 4.1.1.1 (b)</i>	174

Element 4.2: Timber and non-timber benefits	175
<i>Indicator 4.2.1.1</i>	175
<i>Indicator 4.2.2.1</i>	177
<i>Indicator 4.2.3.1</i>	178
<i>Table 7: LRSYA vs. AAC for years 1-20 and 21-70</i>	178
<i>Table 8: E8 AAC levels (taken from the TSA)</i>	179
Element 5.1: Aboriginal and treaty rights and aboriginal forest values	180
<i>Indicator 5.1.1.1</i>	180
Element 5.2: Public participation and information for decision-making.....	181
<i>Indicator 5.2.1.1</i>	181
5.0 Foothills Forest Products Monitoring Program.....	183
5.1 Road Reclamation and Monitoring.....	185
5.2 Reclaimed Block Road Reforestation Success	186
5.3 Surveys.....	186
5.4 Permanent Road Monitoring.....	186
5.5 Temporary Road Monitoring	186
5.6 Erosion Control.....	187
<i>Soil Erosion Potential</i>	188
5.7 Actual Road Disturbance	189
<i>Road Inspection Report Sheet</i>	190
5.8 Watercourse Crossings.....	191
5.8.1 Monitoring and Maintenance.....	191
5.8.2 Maintenance of cross-drain culverts:	191
5.8.3 Maintenance of Watercourse Crossings:	192
<i>Culvert Inspection Sheet</i>	193
<i>Bridge Inspection Sheet</i>	194
5.9 Structure Retention	195
5.9.1 Targets.....	195
5.9.2 Retention Composition	195
5.10 Coarse Woody Debris Monitoring.....	198
5.10.1 Monitoring and Tracking	198
5.11 Crossing Volume Tracking System	199
<i>Harvest Block Plan Sheet</i>	200
5.12 Variance Tracking (SHS).....	202
5.13 Reporting.....	203
6.0 Silviculture.....	205
Government Reporting.....	207
Silviculture Reporting	207
The Foothills Forest Products Approach to Reforestation.....	207
Pre-Harvest Assessment (PHA)	208
Historical Silviculture Guide	208
Timber Supply Analysis and the Regeneration Strategy	209
Site Preparation	209
Drag Scarification (Shark-fin barrels and chains) Explained	210

Planting	210
Planting Window	211
Planting Stock	211
Planting Microsite Selection.....	211
Planting Roads and Seismic Lines.....	211
C, CD, DC, and D Strata.....	212
Reforestation of Wildfires.....	212
Seed collection	212
Seedling Supply	213
Natural Sub Region Map (Seedzones).....	213
Regeneration Surveys	213
Regeneration Survey Quality Assurance Program	214
Plot location and establishment:	214
Number of plots required	215
Height measurements.....	215
Species identification	216
Seedling Density counts.....	216
Competition measurements (for performance surveys only).....	216
Demerits scoring for regeneration surveys	216
Rejection of a survey and resurveying a block:	216
Paperwork (submission level audit).....	217
<i>The accuracy and any follow up action of paper audits will be recorded on FFP</i>	
Form 1.....	217
Training.....	217
Audit Compilation	218
7.0 Communications Strategy for FMU E8	219
7.1 Overview	220
7.2 Goal.....	221
7.3 Objectives	221
7.4 Messaging	221
7.5 Tools	222
7.6 Audiences.....	222
7.7 Cost/Budget.....	223
7.8 Implementation	223
7.9 Stakeholders.....	225

APPENDICES

Appendix 1: Timber Supply Analysis.....	227
Appendix 2: Timber Supply Analysis Data	285
Appendix 3: Yield Curve Documentation for the E8 FMU 13/07 Merchantability	289
Appendix 4: Landbase Determination	323
Appendix 5: Caribou Habitat Assessment	367
Appendix 6: Analysis of Forest Management Activities on Grizzly Bear Habitat in FMU E8	371
Appendix 7: Hydrologic Assessment of Spatial Harvest Plan for Forest Management Unit E8, Near Grande Cache Alberta	389
Appendix 8: Interior Forest Analysis for FMU E8	497

