

MOUNTAIN QUOTA HOLDERS ASSOCIATION
2022-2024
OPERATING PLAN

For Forest Management Units 12 and 14



Prepared By

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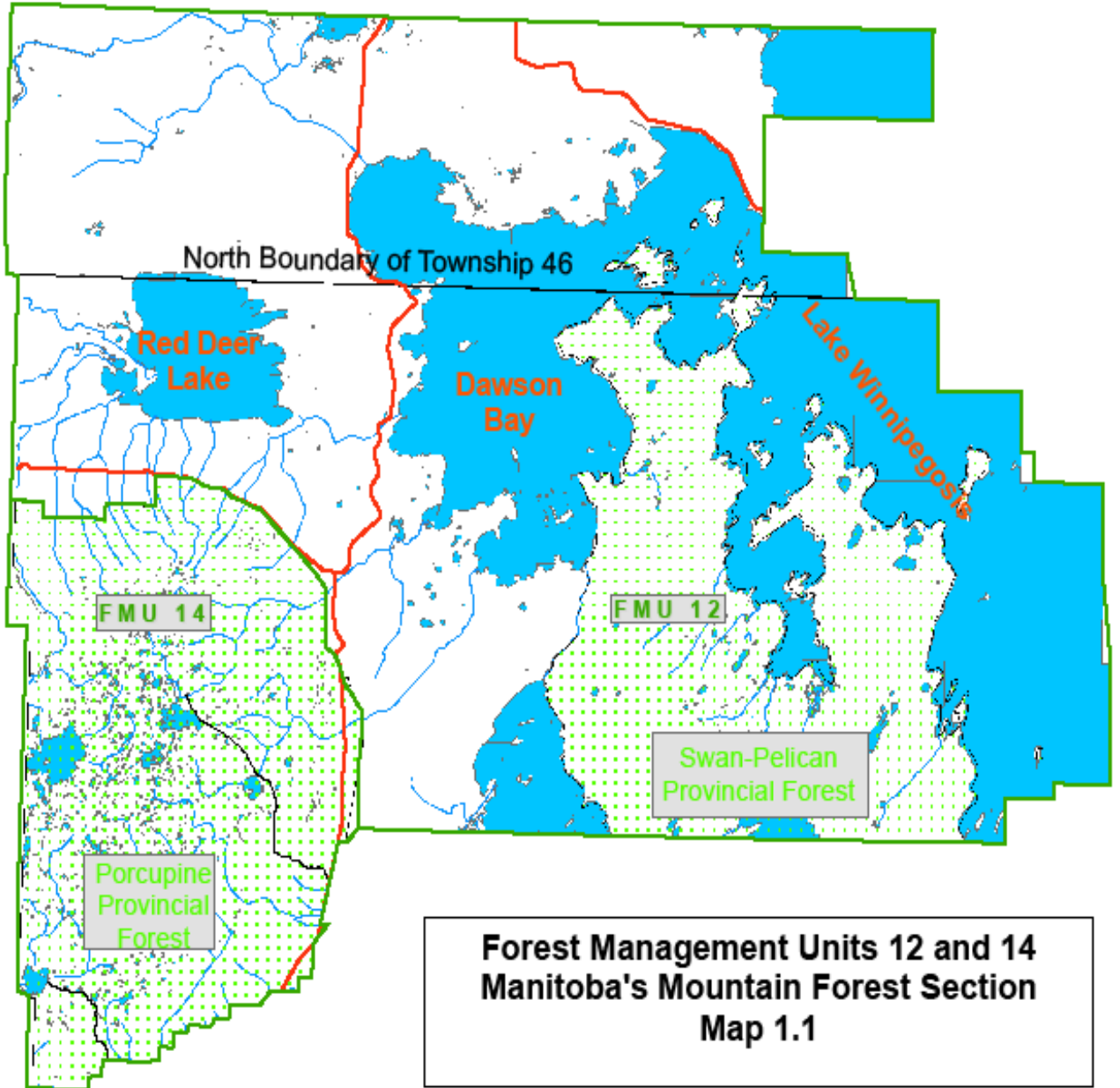
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1.0 Introduction

Members of the Mountain Quota Holders Association (MQHA) and Louisiana Pacific Canada Ltd., Swan Valley Forest Resources Division (LP), are proposing to maintain the harvest of hardwood and softwood timber resources in Forest Management Units (FMUs) 12 and 14 of the Mountain Forest Section to provide the fibre requirements for Spruce Products Ltd. softwood sawmill and chip operations, LP's Oriented Strand Board production facility and other quota holder requirements in the region. Map 1.1 illustrates the area encompassed by FMU 12 south of Twp. 47 and FMU 14 of the Mountain Forest Section.

Under *The Forest Act* (Chapter F150, CCSM) and Regulations, forest management activities to be undertaken on Crown lands in Manitoba are to be covered under an appropriate forest management plan. In preparing this Operating Plan (OP), discussions with Manitoba Agriculture and Resource Development (MARD) Forestry Branch, MARD Regional and other staff has occurred to assist in meeting the guidelines for plan preparation. This has included review and discussions with the local Integrated Resource Management Team (IRMT) to incorporate timber and non-timber considerations into the OP through an integrated joint mitigation development process.



Forest Industry Stakeholders

This OP has been prepared by the MQHA with operations in FMUs 12 and 14. The operations of LP Canada Ltd. in terms of their allocation within these FMUs are also presented in this OP. Table 1.1 provides a listing of the members of the MQHA operating in FMUs 12 and 14 for which plans are included in this OP, as well as those of LP Canada Ltd. The respective allocations for these operators are also indicated. Members of the MQHA hold timber allocations under a Timber Sale Agreement with the Province of Manitoba granting certain rights and restrictions as described in *The Forest Act and Regulations*. Under their FML Agreement with the Province of Manitoba, LP Canada Ltd. has been assigned specified timber rights to hardwood in the Mountain Forest Section, including the uncommitted volume of hardwood in FMUs 12 and 14. The facilities and products of the MQHA members that utilize the timber resources proposed in this OP are summarized in Table 1.2.

Table 1.1: MQHA Members and LP Canada Ltd. Listing and Volume Entitlements

Quota Holder	Quota Number	Timber Sale Number	FMU	Volume Entitlement	
				Softwood (m3)	Hardwood (m3)
Adams, Dave	151	6407	14	756.76	-
Kotyk Lumber Ltd	152	6408	14	2,037.65	500.00
Luce, Lon	180	Permit	12	172.70	
Louisiana Pacific Canada Ltd.	FML Agreement		12	-	37,729.00
			14	-	150,243.00
Marvin Capital Corp.	275	6411	14	-	500.00
Intermountain Contracting Ltd.	279	6412	14	-	7,000.00
Stella-Jones	192	6409	14	2,577.15	-
Stella-Jones		SA 6442	14	12,500.00	-
Barker, Kevin	283	6414	14	-	2,000.00
Schwanke, Gary	266	6406	12	-	2,000.00
Spruce Products Ltd	206	6405	12	16,186.13	-
		6410	14	63,738.83	-
Spruce Products Ltd.		SA 4424	14	-	-
Mykula, Chad	280	6413	14	-	1,000.00
Williamson, Harley	37	Permit	12	62.50	-
Wozny, Ernie	255	Permit	14	157.50	-
Total MQHA & LP Canada Ltd. Volume Entitlements				98,189.22	200,972.00

Table 1.2: MQHA Members and LP Canada Ltd. Facilities and Products**(FMU's 12 & 14)**

Operator	Species Utilized	Facilities	Products
Adams, D.	Softwood	N/A	Roundwood
Kotyk Lumber	Softwood/ Hardwood	Sawmill	Roundwood/Lumber/Chips
Luce, L.	Softwood	N/A	Roundwood
LP Canada Ltd.	Hardwood	OSB Mill	Oriented Strand Board
Marvin Capital Corporation	Hardwood	N/A	Roundwood
Intermountain Contracting Ltd.	Hardwood	N/A	Firewood/Roundwood
Stella-Jones	Softwood	Post Mill	Fence Posts/Poles/Rails
Barker, K.	Hardwood	N/A	Roundwood
Schwanke, G.	Hardwood	N/A	Roundwood
Spruce Products Limited	Softwood	Sawmill Mobile Chipper	Lumber/Chips/Shavings
Mykula, C.	Hardwood	N/A	Roundwood
Williamson, H.	Softwood	N/A	Roundwood
Wozny, E.	Softwood	Sawmill	Lumber/Roundwood

1.1 Plan Format

This Operating Plan provides details on proposed forest management activities for the operating period May 1, 2022 to April 30, 2024 as well as an additional three year harvest projection for the following operating years (2023/24 – 2024/25 – 2025/26).

The 2022-24 OP includes Volume I and Volume II.

Volume I Forest Management Plan objectives in relation to:

- Quota holder and LP Canada Ltd. proposed harvest volumes;
- Proposed access development and watercourse crossing information;
- Forest renewal plan as identified by the Mountain Forest Section Renewal Company who has responsibility for forest renewal in FMU's 12 and 14;
- **Appendix 1** - Standard Operating Procedures (SOPs) developed by the MQHA that document the processes and procedures to be followed by the members of the MQHA in planning, operations and mitigation of potential impacts.
- **Appendix II** – SPL Primary Access Plan for FMU 14 – Developed by Spruce Products Limited to identify current and future access requirements for the north portion of FMU 14. (Virgin Lake, National Mills and Rice Creek Roads)
- **Appendix III** – Steeprock Forest Road Development Plan
- **Appendix IV** – Fisheries and Oceans Canada (DFO) Manitoba Operational Statement – Clear Span Bridges
Manitoba In-Water Construction Timing Windows
- **Appendix V** – Wetland Crossing Designs 2011

Volume II Integrated operations by Operating Area:

- Mitigation summaries for operating areas
- Pre-harvest cutblock prescriptions by FMU and operating area;
- Forest road development information;
- Stream crossing information and photos;
- Operating area orthophotography maps which detail proposed roads, watercourse crossings, harvest blocks and renewal activities.

1.2 Plan Review and Approval Process

The development of this OP has included several steps for review and input to plan development and approval. The following outlines the steps undertaken during the review and approval process:

Preparation and submission of draft mitigation packages (access and harvest plans for each cutblock) to the Western Region Integrated Resource Management Team (IRMT) for review and input to mitigation development and conditions of approval;

Mitigation Planning package sent to the Western Region IRMT for discussion and re-drafting of the OP proposals if required.

Preparation of watercourse crossing information package for review by the MARD.

Public review/consultation was not held prior to submission of this Operating Plan due to covid 19 restrictions and the comfort level of those who would be hosting the open houses. IE. Barrows Community Hall and the SPL Swan River office. Manitoba Agriculture and Resource Development and MQHA normally have consultation with Aboriginal communities that may be affected by forest management activities in FMU's 12 & 14.

Submission of the Mountain Quota Holders Association Operating Plan to Manitoba Agriculture and Resource Development for final review and approval.
Subsequent submission of work permits to the Western Region IRMT for any final review and approval necessary on a site-specific basis.

1.3 Integrated Resource Management

As described in the MQHA Environmental Impact Statement for FMU's 12 and 14, a number of non-timber resource values are recognized in this area of the Mountain Forest Section including wildlife and non-timber commercial and, recreational uses of the forests.

Through the planning process and on-going public consultation program the MQHA work to incorporate non-timber resource values into forest management planning and operations in FMU's 12 and 14. A number of guidelines have been developed by the Province of Manitoba to assist the forest industry to incorporate non-timber resource values in planning and operations. These guidelines provide important information to assist in integration of these other values. Further to these guidelines the MQHA have developed a set of Standard Operating Procedures (SOPs) to provide additional direction in preparation of plans and implementation of activities. These SOPs, provided as Appendix 1 to this OP, document the commitment of the MQHA to integrating non-timber resource values in the planning and operating processes for FMU's 12 and 14.

As with the preparation of past Operating Plans for FMU's 12 and 14, the MQHA have utilized a joint approach with the Western Region IRMT to develop mitigation for all planned operations to incorporate non-timber values. This process includes consideration of site-specific detailed information collected for each cutblock through the PHS program that has been implemented for all cutblocks prior to inclusion as a planned harvest block. A draft submission to the IRMT provides staff, representing the range of non-timber values, the opportunity to review proposals with a follow-up joint planning session to arrive at mitigation for each proposed cutblock.

The public consultation program implemented by the MQHA normally includes both open house meetings to review planned proposals and provide input to the planning process as well as on-going discussions with other resource users in the area.

2.0 Consultation Program

Operating Plan Open Houses

Public review/consultation was not held prior to submission of this Operating Plan due to covid 19 restrictions and the comfort level of those venues that would be hosting the open houses. IE. Barrows Community Hall and the SPL Swan River office.

2.1 Resource User Consultations

Planning and field staff of the MQHA are readily accessible and available to meet informally to discuss specific issues related to other resource user interests (eg. Trappers/North Mountain Riders Snowmobile Club). These staff are generally in the field on a daily basis and available to interact with users to address their concerns right in the field.

3.0 Objectives and Procedures

3.1 Plan Objectives

The overall goal of the MQHA is to plan and conduct forest management activities to meet the fibre supply requirements of member's mill facilities and customer needs in a manner that respects the other timber and non-timber values of FMU's 12 and 14. In this light two broad objectives are set out to address this goal:

Sustainable Timber Supply

Plan and operate to promote the sustainable use of the timber supply in FMU's 12 and 14:

- Harvest plans will be guided by Manitoba's commitment with quota holders and the AAC levels;
- Timber utilization will correspond to standards prescribed by MARD and all operations will be conducted to minimize waste of the timber resource and to maximize utilization to the extent practical and cost effective; and,
- Assist the Mountain Forest Section Renewal Company in planning and provide advice where possible for the promotion of forest renewal and protection of the forest resource.

Integrated Resource Management

Plan and operate in a manner that recognizes non-timber resource values in FMU's 12 and 14:

- Utilize public consultation processes to incorporate resource user and other public values into planning of operations;
- Development and implementation of MQHA Standard Operating Procedures (SOPs) to build mitigation strategies into planning and operations;
- Further to guidance provided by the SOPs, plan and operate within all federal and provincial legislative and regulatory requirements and reference all applicable MARD guidelines in development of mitigation;
- Utilize a joint planning process with the Western Region IRMT to develop mitigation for proposed operations at the OP planning stage; and,
- Conduct Pre-harvest Surveys (PHS) on all cutblocks and stream crossing assessments where required prior to their inclusion in the OP to provide input to mitigation development.

3.2 Standard Operating Procedures

To assist in meeting the objectives and goals set out for this plan, the MQHA has developed a set of Standard Operating Procedures (SOPs) to be followed by quota and allocation holders in development and implementation of forest management activities in FMU's 12 and 14. These SOPs are included as Appendix I in this OP document. In documenting the processes and procedures to be followed by the MQHA these SOPs provide the basis for the development and implementation of mitigation of potential impacts associated with forest management activities for these operations.

These SOPs have been developed to be consistent with the intent of the SOPs of LP Canada Ltd. which will be the basis for mitigation development for LP operated cutblocks within this OP. The focus in preparing these SOPs has been to address the issues that would be anticipated to arise in undertaking the operations proposed for the period covered by this OP. As referenced in the SOPs themselves, the MQHA is committed to the incorporation of all MARD guidelines regarding forest management as well as all other required guidelines and permitting processes including those under the Federal Navigable Waters Protection Act and those of the Federal Department of Fisheries and Oceans.

The SOPs provide an essential component of the overall process by which the MQHA will meet its objectives and, in particular, will address the range of timber and non-timber values present across FMU's 12 and 14. These SOPs, in conjunction with federal and provincial guidelines provide the basis for development of mitigation as presented in this Operating Plan.

Review and updating of these SOPs will occur consistent with the process of adaptive management.

4.0 Harvesting

4.1 Timber Supply and the AAC

The annual timber quota volumes for those quota holders operating in FMU's 12 and 14 are outlined in Table 4.1. A total of four quotas are currently held in FMU 12 and another ten in FMU 14. The annual quota volume entitlements and totals for each FMU are listed in this table. In addition, the hardwood volumes of LP Canada Ltd. are also indicated.

Total annual proposed volumes for harvest as compared to the AAC levels established for these FMU's by MARD Forestry Branch are indicated in Table 4.2 for this plan. The Forestry Branch monitors utilization of the AAC for all FMU's in the province. Through this process the regulation of harvest levels for FMU 12, which includes operations of the MQHA, as well as operations of Canadian Kraft Paper Industries (CKPI) within FML 2 (north of Twp. 46), are monitored and managed to remain within the overall AAC for the FMU.

Table 4.1: MQHA and LP Canada Ltd. Timber Supply Requirements

FMU	Quota holder	Annual Volume (m ³)	
		Softwood	Hardwood
12	Louisiana Pacific Canada Ltd.		37,729.00
	Luce, L.	172.70	
	Schwanke, G.		2,000.00
	Spruce Products Limited Williamson, H.	16,186.13 62.50	
Sub-total for FMU 12		16,421.33	39,729.00
14	Adams, D.	756.76	
	Marvin Capital Corporation		500.00
	Kotyk Lumber	2,037.65	500.00
	Louisiana Pacific Canada Ltd.		150,243.00
	Stella-Jones	2,577.15	
	Stella-Jones SA 12,500.00		
	Intermountain Contracting Ltd.		7,000.00
	Kevin Barker Trucking Ltd.		2,000.00
	Spruce Products Limited	63,738.83	
	Spruce Products Limited SA 20,000.00		
Mykula, C.		1,000.00	
Wozny, E.	157.50		
Sub-total for FMU 14		101,767.89	161,243.00
Overall Total		118,189.22	200,972.00

NOTE: The volumes listed in Table 4.1 above are annual quota and special allocation volume entitlements only. The SA volumes identified require annual approval. The LP Canada Ltd. volume is the actual planned volume for 2022-23. LP is not a quota holder in the Mountain Forest Section. The Manitoba Timber Quota Policy for the 2021-2025 quota period allows for

harvest of the total five year quota volume in one year with approval from MARD. This may result in planned harvest volumes exceeding AAC levels for the year.

Table 4.2: Total Annual Planned Volumes Related to MSD AAC

FMU	Softwood (m3)		Hardwood (m3)		Total (m3)	
	Planned	AAC	Planned	AAC	Planned	AAC
12	4,206	36,312	37,729	50,170	41,945	86,482
14	87,849	116,657	150,243	*135,166	238,092	251,823
Total	92,055	152,969	187,972	185,336	280,037	338,305

Note: Contingency volumes (Table 4.4) are not included in the above figures.

***NOTE: REVISED HARDWOOD AAC AND TOTAL AAC FOR FMU 14 AS PER MANITOBA FORESTRY BR INVENTORY AND ANALYSIS SECTION UPDATE**

4.2 Operating Areas

Operating areas have been established based upon logical features including major access routes and topography. These operating areas are then utilized to assist in organizing and tracking harvest cutblock proposals and road access development. The operating areas applicable to this OP are identified in Volume II of this document and are utilized to organize the presentation of the detailed plan information presented there.

4.3 Harvest Plan

Detailed harvest plan information, including pre-harvest prescriptions for each 2022-23 proposed cutblock, is provided in Volume II of this document. The 2022-23 pre-harvest survey data and prescriptions will be provided at the work permit stage. The blocks will be mitigated with the IRMT prior to work permit approval. The information provided for each proposed cutblock includes:

Cutblock Classification:

- Name;
- Operating Area;
- General locator – FMU – Township – Range;
- Land class ownership; and,
- Cutblock size.

Pre-harvest Survey Data:

- Volumes;
- Species;
- Ages;
- Soils;
- Forest Ecosystem Classification (FEC); and,
- Understorey presence.

Harvest Prescription Information:

Timber allocation and volumes;
Sequence of harvest – year and season;
Status as plan or contingency area;
Silviculture system and understorey protection; and,
Mitigation measures to be applied:

 Buffers;
 Wildlife; and,
 Specified additional requirements and other comments.

Table 4.3 summarizes the cutblocks proposed for harvest to meet the 2022/24 plan requirements. Some additional areas are identified for contingency purposes to allow flexibility in light of potential needs to mitigate concerns related to weather conditions or other operating circumstances. Those cutblocks being identified as contingency areas for the 2022/24 operating years are indicated in Table 4.4. Contingency cutblocks are identified in yellow on the 1:30,000 operating area orthophotography maps with associated pre-harvest prescriptions also provided in Volume II. Cutblocks proposed for the 2023/24 and 2024/25 operating years are shown as general forecast boundaries on the Operating Area Maps in Volume II of this OP. Final block boundaries for these forecasted harvest areas are provided at subsequent OP planning stages once the associated Pre-harvest Surveys and mitigation development process is complete.

Table 4.3: Harvest Blocks for 2022/24 Plan Year

FMU 12						
Operating Area	Block Name	Area (ha)	Hardwood m ³	Softwood m ³	Total	Year
Barrows	BRW-002	35.18	7,350	0	7,350	2022
Barrows	BRW-009	108.06	12,809	2,036	14,845	2022
National Mills	NLM-005	53.15	4,383	854	5,237	2022
National Mills	NLM-006	48.38	2,188	1,425	3,613	2022
National Mills	NLM-007	47.38	2,651	159	2,810	2022
National Mills	NLM-008	24.22	2,084	94	2,178	2022
National Mills	NLM-143	6.73	967	102	1,069	2022
National Mills	NLM-144	26.52	3,952	0	3,952	2022
National Mills	NLM-204	25.51	3,692	184	3,876	2022
	Total	375.13	40,076	4,854	44,930	
Barrows	BRW-001	59.11	10,064	0	10,064	2023
Barrows	BRW-004	15.36	3,001	179	3,180	2023
Barrows	BRW-006	28.54	3,752	30	3,782	2023
National Mills	NLM-002	24.04				2023
National Mills	NLM-003	28.75	3,632	121	3,753	2023
National Mills	NLM-004	60.11				2023
National Mills	NLM-131	12.81	2,867	84	2,951	2023
National Mills	NLM-148	23.77	7,986	477	8,463	2023
	Total	252.49	31,302	891	32,193	
	Overall Total	627.62	71,378	5,745	77,123	

Table 4.3: Harvest Blocks for 2022/24 Plan Year

Operating Area	Block Name	FMU 14			Total	Year
		Area (ha)	Hardwood m ³	Softwood m ³		
Armit	AR-46	74.26	11,341	17,057	28,398	2022
Armit	AR-93	46.72	1,425	3,216	4,641	2022
Armit	FB-17	70.57				2022
Armit	FB-19	17.93				2022
Armit	FB-20	127.50				2022
Armit	FB-21	36.31				2022
Armit	FB-22	18.40				2022
Armit	FB-23	40.65				2022
Armit	FB-24	9.07				2022
Armit	FB-25	74.06				2022
Armit	FB-26	31.65				2022
Armit	FB-27	13.05				2022
Armit	FB-29	39.07				2022
Armit	FB-30	17.11				2022
Armit	FB-31	28.57				2022
Armit	FB-32	4.84				2022
Armit	LW-16	31.89	1,912	4,073	5,985	2022
Armit	SL-78	80.22	375	6,952	7,327	2022
Armit	SL-82	49.74	124	3,785	3,909	2022
Armit	AMT-201	24.26	3,778	172	24	2022
Bowsman River	BSR-258	36.82	5,241	0	24	2022
Bowsman River	BSR-305	14.90	3,417	0	3,417	2022
Bowsman River	BSR-306	18.70	2,712	29	2,741	2022
Bowsman River	BSR-307	36.40	9,408	133	9,541	2022
Bowsman River	BSR-308	116.10	24,677	1,413	26,090	2022
Bowsman River	BSR-309	17.30	3,641	0	3,641	2022
Homestead Creek	HSC-004	30.20	5,301	379	3,655	2022
Homestead Creek	HSC-005	23.04	4,596	251	4,847	2022
Homestead Creek	HSC-045	17.40	3,183	101	3,284	2022
Homestead Creek	HSC-046	103.06	22,698	7,220	29,918	2022
Steeprock Road	SRR-211	12.97	2,389	67	2,456	2022
Steeprock Road	SRR-212	35.90	6,262	41	6,303	2022
Steeprock Road	SRR-213	12.59	2,193	0	2,193	2022
Steeprock Road	SRR-214	7.29	1,164	0	1,164	2022
Steeprock Road	SRR-311	65.91	7,043	843	7,886	2022
Steeprock Road	SRR-306	44.00	13,219	568	13,787	2022
Steeprock Road	SR-102	109.00	3,197	16,682	19,879	2022
Steeprock Road	SR-103	24.30	142	1,981	2,123	2022
Steeprock Road	SR-123	22.30	0	2,111	2,111	2022
Steeprock Road	SR-133	24.40	3,093	762	3,855	2022
Steeprock Road	SR-52	33.02	780	5,096	5,876	2022
Steeprock Road	SR-99	125.60	6,932	11,894	18,826	2022
National Mills	NM-23	10.54				2023
Novra	NV-03	38.95	0	3,023	3,023	2022
Virgin Lake	FB-13	49.12				2022
Virgin Lake	FB-14	41.22				2022
Virgin Lake	FB-28	4.69				2022
	Sub total	1,911.59	150,243	87,849	226,925	

Table 4.3: Harvest Blocks for 2022/24 Plan Year (Con't)

		FMU 14					
Operating Area	Block Name	Area (ha)	Hardwood m ³	Softwood m ³	Total	Year	
Virgin Lake	FB-29	39.07				2022	
Virgin Lake	FB-30	17.11				2022	
Virgin Lake	FB-31	28.57				2022	
Virgin Lake	FB-32	4.84				2022	
		89.59	0.00	0.00	0.00		
	Totals	2,001.18	150,243	87,849	238,092		
Armit	AMT-002	41.67	4,158	653	4,811	2023	
Cross Lake	CRL-061	41.71	8,034	0	8,034	2023	
Homestead Creek	HSC-006	51.31	8,676	1,513	10,189	2023	
Homestead Creek	HSC-007	47.82	4,014	2,700	6,714	2023	
Homestead Creek	HSC-008	31.09	2,157	1,074	3,231	2023	
Homestead Creek	HSC-046	103.06	22,698	7,220	29,918	2023	
Homestead Creek	HSC-047	102.50	13,694	7,667	21,361	2023	
Rice Creek	SL-201	13.20				2023	
Rice Creek	SL-202	8.10				2023	
Rice Creek	SL-203	35.40				2023	
Rice Creek	SL-204	20.00				2023	
Rice Creek	SL-205	44.10				2023	
Rice Creek	RCK-004	35.13	5,357	795	6,152	2023	
Steeprock Road	SR-141	63.57	917	9,022	9,939	2023	
Steeprock Road	SR-61	12.59	581	1,511	2,092	2023	
Steeprock Road	SR-66	76.17	4,550	8,967	13,517	2023	
Steeprock Road	SR-67	35.19	1,352	4,994	6,346	2023	
Steeprock Road	SR-97	77.65	3,573	5,833	9,406	2023	
Steeprock Road	SR-98	54.92	1,046	5,548	6,594	2023	
Steeprock Road	SRR-313	75.16	15,198	0	15,198	2023	
Steeprock Road	SRR-315	73.57	7,570	1,041	8,611	2023	
	Totals	1,043.91	103,575	58,538	162,113		
	Two Year Totals	3,045.09	253,818	146,387	400,205		

Table 4.4: Contingency Blocks for 2022/24 Plan Year

FMU 14						
Operating Area	Block Name	Area (ha)	Hardwood m ³	Softwood m ³	Total	Year
Antler Corner	ANT-010	27.40	4,328	218	4,546	2022
Antler Corner	ANT-011	39.00	6,160	312	6,472	2022
Antler Corner	ANT-012	80.30	11,384	576	11,960	2022
Antler Corner	ANT-055	160.60	15,000	40	15,040	2022
Antler Corner	ANT-101	76.90	12,352	625	12,977	2022
Antler Corner	ANT-102	51.60	8,346	423	8,769	2022
Antler Corner	ANT-103	37.00	6,799	344	7,143	2022
Antler Corner	ANT-104	45.20	7,134	361	7,495	2022
Antler Corner	ANT-133	50.20	6,730	82	6,812	2022
Armit	FB-35	61.74				2022
Armit	FB-36	32.56				2022
Armit	FB-38	111.10				2022
Armit	FB-39	53.96				2022
Armit	FB-40	53.45				2022
Armit	FB-41	6.05				2022
Armit	FB-42	10.78				2022
Armit	FG-13	66.96				2022
Armit	LW-08	16.19	655	1,713	2,368	2022
Armit	LW-09	9.88	755	784	1,539	2022
Armit	LW-10	3.81	344	29	373	2022
Armit	LW-12	11.16	197	2,064	2,261	2022
Armit	LW-14	15.86				2022
Armit	LW-15	5.03				2022
Armit	NM-01B	41.93	1,000	7,412	8,412	2022
Baden	BDN-800	27.00	2,678	81	2,759	2022
Big Rock	MF-103	16.65	728	2,911	3,639	2022
Cross Lake	CRL-029	11.20	2,240	280	2,520	2022
Cross Lake	CRL-036	41.39	12,083	194	12,277	2022
Cross Lake	CRL-038	8.70	1,306	87	1,393	2022
Cross Lake	CRL-039	7.48	1,593	151	1,744	2022
Cross Lake	CRL-040	38.50	9,847	462	10,309	2022
Cross Lake	CRL-041	33.95	6,636	1,913	8,549	2022
Cross Lake	CRL-042	23.30	4,660	583	5,243	2022
Cross Lake	CRL-043	47.40	9,480	1,185	10,665	2022
Homestead Creek	HSC-023	25.90	5,180	1,036	6,216	2022
Homestead Creek	HSC-025	12.00	2,400	480	2,880	2022
Homestead Creek	HSC-026	31.20	6,240	1,248	7,488	2022
Homestead Creek	HSC-047	102.50	13,694	7,667	21,361	2022
Mafeking East	BJ-13	10.50	0	1,055	1,055	2022
Mafeking West	MFW-025	89.50	15,663	2,238	17,901	2022
Mafeking West	MFW-026	17.80	3,115	445	3,560	2022
Mafeking West	MFW-027	32.20	5,639	806	6,445	2022
Mafeking West	MFW-028	153.80	26,915	3,845	30,760	2022
Mafeking West	MFW-029	16.10	2,818	403	3,221	2022
Mafeking West	MFW-050	33.10	5,793	828	6,621	2022
Novra	NV-03	32.40	0	3,023	3,023	2022
Steeprock Road	SR-139	5.10	37	302	339	2022
Steeprock Road	SR-142	38.90				2022
	Subtotal	1,925.23	219,929	46,206	266,135	

Table 4.4: Contingency Blocks for 2022/24 Plan Year (Con't)

FMU 14						
Operating Area	Block Name	Area (ha)	Hardwood m ³	Softwood m ³	Total	Year
Steeprock Road	SR-23	1.71	0	201	201	2022
Steeprock Road	SR-24	2.80	0	227	227	2022
Steeprock Road	SR-25	6.40	0	1,194	1,194	2022
Steeprock Road	SR-26	32.00	0	4,854	4,854	2022
Steeprock Road	SR-27	3.14	0	257	257	2022
Steeprock Road	SR-28	3.51	26	329	355	2022
Steeprock Road	SR-29	6.10	0	972	972	2022
Steeprock Road	SR-30	4.70	0	1,067	1,067	2022
Steeprock Road	SR-31	6.24	90	825	915	2022
Steeprock Road	SR-87	19.91				2022
Steeprock Road	SR-89	44.42				2022
Steeprock Road	SR-93	12.88				2022
Steeprock Road	SRR-005	29.75	5,676	0	5,676	2022
Steeprock Road	SRR-308	91.58	25,825	2,766	28,591	2022
Virgin Lake	FB-33	54.67				2022
Virgin Lake	FB-34	7.58				2022
Virgin Lake	FB-37	68.49				2022
	Subtotal	395.88	31,617	12,692	44,309	
	Totals	2,321.11	251,546	58,898	310,444	
Armit	AR-100	20.38				2023
Armit	AR-101	23.02				2023
Armit	AR-102	12.31				2023
Armit	AR-103	35.60				2023
Armit	AR-104	36.79				2023
Armit	AR-105	11.73				2023
Armit	AR-61	98.30				2023
Armit	AR-62	31.00				2023
Armit	AR-63	21.50				2023
Armit	AR-71	5.67				2023
Armit	AR-72	15.83				2023
Armit	AR-73	4.17				2023
Armit	AR-74	14.64				2023
Armit	AR-75	11.83				2023
Armit	SL-100	31.80				2023
Armit	SL-101	9.50				2023
Armit	SL-102	30.10				2023
Armit	SL-103	30.21				2023
Armit	SL-104	37.99				2023
Armit	SL-105	11.25				2023
Armit	SL-106	4.40				2023
Armit	SL-107	13.30				2023
Armit	SL-108	41.15				2023
	Subtotal	552.47	0	0	0	

Table 4.4: Contingency Blocks for 2022/24 Plan Year (Con't)

FMU 14						
Operating Area	Block Name	Area (ha)	Hardwood m ³	Softwood m ³	Total	Year
Armit	SL-109	24.26				2023
Armit	SL-110	29.00				2023
Armit	SL-79	72.52				2023
Armit	SL-81	13.62				2023
Rice Creek	RC-32	82.00				2023
Rice Creek	RC-33	32.98				2023
Rice Creek	RC-34	51.65				2023
Rice Creek	RC-35	66.75				2023
Steeprock	SR-01	13.79	0	2,833	2,833	2023
Steeprock	SR-04	23.20	0	4,618	4,618	2023
Steeprock	SR-101	175.90	14,044	16,404	30,448	2023
Steeprock	SR-75	35.52	1,689	8,547	10,236	2023
Steeprock	SR-76	65.60	3,573	8,795	12,368	2023
Steeprock	SR-79	76.80	2,907	10,950	13,857	2023
Steeprock	SR-86	6.89				2023
Steeprock	SR-88	56.73				2023
White Fish	WFL-104	14.20	2,468	71	2,539	2023
White Fish	WFL-105	42.20	7,385	211	7,596	2023
White Fish	WFL-209	14.70	2,567	73	2,640	2023
	Subtotal	898.31	34,633	52,502	87,135	
	Total	1,450.78	34,633	52,502	87,135	
	Two Year Totals	3,771.89	286,179	111,400	397,579	

Table 4.4: Contingency Blocks for 2022/24 Plan Year (Con't)

FMU 12						
Operating Area	Block Name	Area (ha)	Hardwood m ³	Softwood m ³	Total	Year
Baden	BDN-003	13.9	1,737	70	1,807	2022
Baden	BDN-005	24.5	3,062	123	3,185	2022
Baden	BDN-008	26.98	2,678	81	2,759	2022
Barrows	BRW-008	29.09	4,869	114	4,983	2022
Big Rock	MF-103	16.65	728	2,911	3,639	2022
Big Rock	RD-02	64.00	0	7,174	7,174	2022
Big Rock	RD-08	49.59				2022
Big Rock	RD-09	22.80				2022
Mafeking East	BJ-13	10.5	0	1,055	1,055	2022
Mafeking East	MFE-050	44.44	4,905	1,879	6,784	2022
National Mills	NLM-142	68.6	8,209	684	8,893	2022
National Mills	NLM-145	165.4	19,852	1,654	21,506	2022
National Mills	NLM-146	78.6	9,432	786	10,218	2022
National Mills	NLM-147	74.6	8,950	746	9,696	2022
National Mills	NLM-230	23.01	3,348	524	3,872	2022
National Mills	NLM-231	33.93	5,475	221	5,696	2022
National Mills	NLM-232	42.34	7,268	546	7,814	2022
National Mills	NLM-233	34.78	3,103	1,567	4,670	2022
Novra	NV-01	56.18	2,970	0	2,970	2022
The Bluff	RD-01 Q	59.48	698	7,062	7,760	2022
The Bluff	RD-01T	98.60	3,388	8,177	11,565	2022
The Bluff	RD-01U	29.06	2,882	2,131	5,013	2022
The Bluff	RD-01V	162.00	6,163	13,099	19,262	2022
The Bluff	RD-01W	142.80				2023
The Bluff	RD-01X	110.00				2023
	Total	1,481.83	99,717	50,604	150,321	
	Overall Total	5,374.52	385,896	162,004	547,900	

4.4 Wood Storage Sites

In most cases sawlogs are delivered directly to the mill following harvest to minimize costs incurred in handling the wood. When necessary, tree length wood may be forwarded to a storage location for further processing (slashing into sawlogs) for later delivery to the mill.

Chipper wood is preferably processed in bush wherever possible to minimize handling and forwarding costs. When this is not possible, chipper wood is moved to storage locations adjacent to roads that will enable future hauling of chips during all weather conditions without delays to deliveries.

Chipper wood/log storage sites for the time period encompassed by this operating plan may be located at:

Private Land:

Wozny – SE 26 Twp. 40 Rge. 26 wpm

Kryzanowski – E ½ Sec. 26 Twp. 43 Rge. 26 wpm

Crown Land:

Rice Creek Road – Twp. 43 Rge. 26 wpm – FMU 14

Hart Mtn. Jctn. – Sec. 30 Twp. 40 Rge. 26 wpm – FMU 14

National Mills Road – Part LS 9,10,11,12 in N 1/2 Sec. 15-44-29 wpm – FMU 12

5.0 Access Development and Management

5.1 Access Development

As described in the SOPs (Appendix 1), access to operating areas and cutblocks is provided principally through the use of existing road and trail networks already in place in FMU's 12 and 14.

In 2004 Spruce Products Limited prepared a Primary Access Plan (FMU 14) for re-establishment of the Virgin Lake/National Mills Roads as a primary access and haul route from the top of the Porcupine Hills to PTH #10. The intent of use for this access route is primarily winter. However, if summer volumes are required from the Armit/Virgin Lake operating areas, further improvements to return this road to a Class 3 level can be expected. The SPL Primary Access Plan (FMU 14) is located in Appendix II.

The MQHA has included in this OP the Steeprock Forest Road Development Plan. The purpose of the Steeprock Forest Road Plan is to show future access development into the area east of Steeprock Lake. This area will be an important long term source of summer/winter wood for the quota holders in Forest Management 14. The Steeprock Forest Road Development Plan is located in Appendix IV.

Roads and trails to be utilized by the MQHA for access to cutblocks are illustrated on the orthophotography maps provided in Volume II of this plan. The timing for construction and use of these roads and trails corresponds to the timing of the related cutblocks to which the roads/trails provide access.

The MQHA has developed a road and trail classification system and processes for planning and development of roads, including mitigation procedures. These are described in the SOPs included in Appendix 1 of this plan. The road and trail classification system is also highlighted in Table 5.1.

Table 5.2 indicates a listing of the roads and trails being developed and maintained for access to 2022/23 plan year cutblocks. The table indicates the status of each road as either an existing road/trail or a newly proposed route to be developed for this plan as well as timeframes for construction/maintenance and use and scheduled decommissioning timing and strategy. In addition to this detail, road access corridors for forecasted roads for 2022/23 are illustrated on the operating area maps provided in Volume II. The timing of utilization of these roads will generally be associated with that of the respective cutblock to which access is being identified. Detailed information for proposed road development is provided on the Road Development Plan Forms in Volume II of this plan.

Table 5.1: Road Classification System

Class	Descriptor	ROW Width	Surface Width	Criteria
1	Primary All-weather Road	45 m	8.5 m	Life span of 20 years or more Design speed up to 80 Km/hr Gravelled
2	Secondary All-weather Road	30 m	8 m	Life span up to 20 years Decreased design speeds Gravelled
3	Low-grade Road	20 m	8 m	Life span generally 1 – 2 years Longer for inter-block access Dry weather access. Gravelled if extended wet periods. May include ditching and/or minor grade work
4	Unimproved High Ground Trail	20 m	6 m	Life span generally 1 – 2 years Longer for inter-block access Dry weather access. Gravelled if extended wet periods. Development limited to clearing and stumping
5	Unimproved Seasonal Trail	20 m	6 m	Life span varies considerably dependent on the nature of the operation (generally 1 – 10 years) Longer for inter-block access Development limited to clearing and stumping Routing includes occasional crossings of lowland meadows/swamps Used only under frost conditions
6	Unimproved Winter Trail	15 m	6 m	Life span ranges from a single season to 5 years or more Longer for inter-block access Routing primarily through lowland meadows/swamps and water bodies All crossings are ice crossings Intermittent high-ground areas may be cleared and stumped Used only under frozen conditions

Table 5.2: Development and Maintenance of Roads for 2022/24

Road Name	Class	Length (km)	Proposed or		Season of use	Access Management & Decommissioning
			Existing (P/E)	Life (Years)		
AR-13 Rd	3	7.32	E	1	Frozen	Crossing Removal/Thaw
AR-63 Rd	4	7.13	E	2	Frozen	Slash/Cros Rem/Thaw
AR-65 Rd	4	7.13	E	2	Frozen	Crossing Removal/Thaw
AR-93 Rd	4	1.97	E	1	Frozen	Crossing Removal/Thaw
AR-103 Rd	4	3.31	E	5	Frozen	Slash/Cros Rem/Thaw
FB-20 Rd	4	2.14	P	1	Winter	Slash/Cros Rem/Thaw
FB-21 Rd	4	1.53	P	1	Winter	Slash/Cros Rem/Thaw
FB-22 Rd	4	1.00	P	1	Winter	Slash/Cros Rem/Thaw
FB-23 Rd	4	2.86	P	2-5	Winter	Slash/Cros Rem/Thaw
FB-26 Rd	4	0.66	P	2	Winter	Slash/Cros Rem/Thaw
FB-27 Rd	4	0.66	P	2	Winter	Slash/Cros Rem/Thaw
FB-29 Rd	4	1.07	P	1	Winter	Slash/Crossing Removal
FB-31 Rd	4	2.32	P	2	Winter	Slash/Crossing Removal
FB-31 Alt Rd	4	1.04	P	2	Winter	Slash/Crossing Removal
FB-36 Rd	4	0.95	P	1	Winter	Slash/Crossing Removal
FB-38 Rd	4	4.19	P	2	All Season	Slash/Crossing Removal
FB-39 Rd	4	1.45	P	2	All Season	Slash/Crossing Removal
FG-13 Rd	4	1.43	P	1	Winter	Slash/Crossing Removal
Hoodoo Rd	4	3.29	E	4	All Season	Slash/Crossing Removal
Lost Lake Rd	4	11.42	E	4	All Season	Slash/Crossing Removal
Nick Lake Rd	4	5.75	P	4	All Season	Slash/Crossing Removal
BJ-13A	3	0.90	E	10	Frozen	Spring Thaw
BS Rd	2	16.22	E	20	All Season	Crossing Removal
LW-08 Rd	4	0.30	P	1	Frozen	Slash/Crossing Removal
LW-09 Rd	4	0.11	P	1	Frozen	Slash/Crossing Removal
LW-10 Rd	4	0.34	P	1	Frozen	Slash/Cros Rem/Thaw
LW-14 Rd	4	0.89	P	1	Winter	Slash/Cros Rem/Thaw
LW-15 Rd	4	0.45	P	1	Winter	Slash/Cros Rem/Thaw
NM-01A Rd	4	1.58	P	1	Frozen	Slash/Cros Rem/Thaw
NM-01B Rd	4	3.83	E	2	Winter	Slash/Cros Rem/Thaw
NV-03 Rd	3	0.90	E	1	All Season	None
Red Deer Rd	5	17.70	E	2-4	Frozen	Spring Thaw
Red Deer A Rd	5	11.30	P	4	Frozen	Spring Thaw
RD-01 V Rd	5	6.39	P	2-4	Frozen	Spring Thaw
RD-02	2	3.70	E	1	All Season	None
SL-RC Rd	4	6.25	E	3	Frozen	Slash/Cros Rem/Thaw
SL-79 Rd	4	5.18	P	3	Frozen	Slash/Cros Rem/Thaw
SL-104	4	1.85	P	1	All Season	Slash/Cros Rem/Thaw
SL-205	4	1.85	E	1	All Season	Slash/Cros Rem/Thaw
SR-23 Rd	4	0.21	P	1	Frozen	Slash/Cros Rem/Thaw
SR-24 Rd	4	0.22	P	1	All Season	Slash/Crossing Removal
SR-29 Rd	4	0.95	P	1	Frozen	Slash/Cros Rem/Thaw
SR-30 Rd	4	0.49	E	10	All Season	Slash/Crossing Removal
SR-59 Main Rd	3	3.81	E	10	All Season	Slash/Crossing Removal
SR-62 Rd	3	1.11	E	1	All Season	Slash/Crossing Removal
SR-65 Rd	3	1.37	E	3	All Season	Slash/Crossing Removal
SR-66 Rd	3	1.51	P	5	All Season	Slash/Crossing Removal

Table 5.2: Development and Maintenance of Roads for 2022/24 (con't)

Road Name	Class	Length (km)	Proposed or		Season of use	Access Management & Decommissioning
			Existing (P/E)	Life (Years)		
SR-66 Rd ALT	3	0.36	P	3	All Season	Slash/Crossing Removal
SR-67 Rd	3	0.78	P	3	All Season	Slash/Crossing Removal
SR-71 Rd	3	1.64	E	10	All Season	Slash/Crossing Removal
SR-75 Rd	3	0.35	P	3	All Season	Slash/Crossing Removal
SR-76 Rd	4	0.36	P	5	Frozen	Slash/Crossing Removal
SR-78 Rd	3	1.71	E	1	All Season	Slash/Crossing Removal
SR-79 S access Rd	3	2.61	P	5	All Season	Slash/Crossing Removal
SR-79 Alt Rd	3	1.08	P	3	All Season	Slash/Crossing Removal
SR-81 Rd	3	1.26	P	10	All Season	Slash/Crossing Removal
SR-87 Rd	3	1.43	P	5	All Season	Slash/Crossing Removal
SR-97 Rd	4	2.35	P	3	All Season	Slash/Crossing Removal
SR-97 Alt Rd	3	0.75	P	2	All Season	Slash/Crossing Removal
SR-99 Rd	3	0.23	P	1	All Season	Slash/Crossing Removal
SR-102 Rd	4	0.45	P	1	All Season	Slash/Crossing Removal
SR-103 Rd	4	1.49	P	3	All Season	Slash/Crossing Removal
SR-135 Rd	3	0.43	E	2	All Season	Slash/Crossing Removal
SR-139 Rd	3	2.22	P	2	All Season	Slash/Crossing Removal
ST-07 Rd	3	1.85	E	1	All Season	Slash/Crossing Removal
ANT-1A and 1B	3	5.40	E	50	All Season	Slash and Debris
ANT-1A-2A	4	4.40	E	1	Dry Frozen	Slash/Crossing Removal
ANT-1A-2B	4	0.90	P	1	Dry Frozen	Slash and Debris
ANT-1B-2A	4	2.00	E	1	Dry Frozen	Slash/Crossing Removal
ANT-1B-2B	4	1.2	E	1	Dry Frozen	Slash/Crossing Removal
ANT-1B-2B-1A	4	0.3	P	1	Dry Frozen	Slash and Debris
AMT-2A, 2B	3	3.9	E	50	Dry Frozen	None
BDN-1A	4	0.10	E	1	Dry Frozen	Slash and Debris
BDN-1B	4	0.60	P	1	Dry Frozen	Slash and Debris
BDN-2A and 2A-1A	4	0.70	E	1	Dry Frozen	Berm/slash and debris
BDN-3A	4	0.80	E	5	Dry Frozen	None
BDN-3A-1A	4	0.3	P	1	Dry Frozen	Slash and Debris
BRW-1A	5	0.40	E	50	Frozen	None
BRW-1B	5	0.40	P	1	Frozen	Slash/Crossing Removal
BRW-1B-1A	5	0.10	P	1	Frozen	Slash and Debris
BRW-1C	5	1.10	P	1	Frozen	Slash/Crossing Removal
BRW-5A	5	0.10	P	1	Frozen	Slash and Debris
BSR-2A	4	2.80	E	15	Dry Frozen	Slash and Debris
BSR-2A-2A	4		P	1	Dry Frozen	Slash and Debris
BSR-2B	4	1.20	P	1	Dry Frozen	Slash and Debris
BSR-2B-1A	4	0.30	P	1	Dry Frozen	Slash and Debris
BSR-7A	4	1.40	E	1	Dry Frozen	Slash/Crossing Removal
BSR-7B	4	2.10	E	1	Dry Frozen	Slash/Crossing Removal
BSR-7B-1A	4	0.60	E	1	Dry Frozen	Slash and Debris
BSR-7C	4	0.70	E	1	Dry Frozen	Slash and Debris
BSR-7C-1A	4	2.30	P	1	Dry Frozen	Slash/Crossing Removal
BSR-8A	4	0.70	P	1	Dry Frozen	Berm/Debris/crossing
CRL-1A and 1B	4	4.00	E	5	Dry Frozen	Berm/Crossing Removal

Table 5.2: Development and Maintenance of Roads for 2022/24 (con't)

Road Name	Class	Length (km)	Proposed or		Season of use	Access Management & Decommissioning
			Existing (P/E)	Life (Years)		
CRL-1B-3A and 3B	4	1.10	E	1	Dry Frozen	Slash/Crossing Removal
CRL-1B-3C	4	1.50	P	1	Dry Frozen	Slash/Crossing Removal
CRL-1B-3D	4	0.60	P	1	Dry Frozen	Slash and Debris
CRL-1B-3E	4	1.40	P	1	Dry Frozen	Slash and Debris
CRL-1B-3F	4	1.40	P	1	Dry Frozen	Slash and Debris
CRL-1B-5A to 5C	4	2.30	E	1	Dry Frozen	Crossing removal
CRL-1B-5C-1A	4	0.20	E	1	Dry Frozen	Slash and Debris
CRL-1B-5C-1B	4	1.00	P	1	Dry Frozen	Slash/Crossing Removal
CRL-1B-5D and 5E	4	0.90	P	1	Dry Frozen	Crossing removal
CRL-1B-8A	4	0.50	P	1	Dry Frozen	Slash and Debris
CRL-1C	4	0.80	E	1	Dry Frozen	Crossing removal
HSC-1A	4	1.90	E	1	Dry Frozen	Slash and Debris
HSC-1A-1A	4	1.50	E	1	Dry Frozen	Slash and Debris
HSC-4A	4	1.00	E	1	Dry Frozen	Slash/Crossing Removal
HSC-4A-1A	4	0.70	E	1	Dry Frozen	None
HSC-4A-1B	4	1.80	E	1	Dry Frozen	Slash/Crossing Removal
HSC-4B to 4C	4	1.10	P	1	Dry Frozen	Slash and Debris
HSC-4C-1A	4	1.10	P	1	Dry Frozen	Slash and Debris
HSC-6A-1A	4	0.80	E	1	Dry Frozen	Berm
HSC-6B-1A	4	2.60	P	1	Dry Frozen	Slash and Debris
HSC-6A and 6B	5	2.90	E	50	Frozen	None
HSC-6C and 6D	5	0.80	P	1	Frozen	Slash and Debris
MFE-1A	5	0.90	E	50	Frozen	None
MFE-1A-1A	5	1.00	E	1	Frozen	Slash and Debris
MFE-1B	5	0.40	P	1	Frozen	Slash and Debris
MFW-1A and 1B	4	6.40	E	50	Dry Frozen	None/Crossing removal
MFW-1A-1A-1A	4	2.70	P	100	Dry Frozen	None
MFW-1C	4	2.00	E	20	Dry Frozen	None/Crossing removal
MFW-1C-1A	4	0.70	P	1	Dry Frozen	Slash/crossing removal
MFW-3A	4	0.70	P	1	Dry Frozen	Berm/slash and debris
NLM-11A	4	1.80	P	1	Dry Frozen	Slash and Debris
NLM-11A-1A	4	1.20	P	1	Dry Frozen	Slash and Debris
NLM-12A	4	1.40	P	1	Dry Frozen	Slash and Debris
NLM-13A	4	1.10	P	5	Dry Frozen	
NLM-13A and 13B	5	2.20	E	50	Frozen	Crossing removal
NLM-13A-1A	4	0.90	E	50	Frozen	None
NLM-13A-1B	4	3.20	P	1	Frozen	Slash and Debris
NLM-14A	4	1.10	P	1	Dry Frozen	Slash/crossing removal
NLM-4A	5	1.40	E	50	Frozen	None
NLM-4B	5	1.40	E	1	Frozen	Berm/Debris/crossing
NLM-6A	5	0.30	E	1	Frozen	Berm/slash and debris
NLM-6B	5	2.20	P	1	Frozen	Slash and Debris
NLM-6B-1A	5	1.70	P	1	Frozen	Slash and Debris
NLM-6C	5	2.20	P	1	Frozen	Slash and Debris
NLM-8A and 8B	4	3.70	E	50	Dry Frozen	None
NLM-8B-1A	5	0.80	E	1	Frozen	Slash and Debris

Table 5.2: Development and Maintenance of Roads for 2022/24 (con't)

Road Name	Class	Length (km)	Proposed or		Season of use	Access Management & Decommissioning
			Existing (P/E)	Life (Years)		
NLM-8B-1B	5	1.50	E	1	Frozen	Slash/crossing removal
NLM-8B-1B-1A	5	0.80	P	1	Frozen	Slash and Debris
NLM-8C and 8D	4	2.10	E	50	Dry Frozen	Slash and Debris
NLM-8D-1A	4	2.40	P	1	Dry Frozen	Slash/crossing removal
NLM-8E	4	0.90	P	1	Dry Frozen	Slash and Debris
NLM-8F	4	1.60	P	1	Dry Frozen	Slash and Debris
NLM-8F-1A	4	0.50	P	1	Dry Frozen	Slash and Debris
NLM-8G	4	1.10	P	1	Dry Frozen	Slash and Debris
NLM-8H	4	0.50	P	2	Frozen	Slash and Debris
NVE-1A	5	2.80	P	1	Frozen	None
RCK-2A	4	1.70	P	1	Dry Frozen	Slash and Debris
SRR-13A	4	0.2	P	1	Dry Frozen	Slash and Debris
SRR-13A-1A	4	0.1	P	1	Dry Frozen	Slash and Debris
SRR-26A	4	1.7	P	10	Dry Frozen	Gate
SRR-26B	4	2	P	2	Dry Frozen	Slash and Debris
SRR-26C	4	2.1	P	2	Dry Frozen	Slash/crossing removal
SRR-26C-1A	4	1.3	P	3	Dry Frozen	Slash/crossing removal
SRR-26D	4	2.1	P	3	Dry Frozen	Slash and Debris
SRR-26D-1A	4	0.3	P	3	Dry Frozen	Slash and Debris
SRR-26E	4	1.2	P	3	Dry Frozen	Slash/crossing removal
SRR-5A	4	0.8	P	10	Dry Frozen	Gate
SRR-5A-1A	4	1.6	P	1	Dry Frozen	Slash and Debris
SRR-5A-1A-1B	4	0.6	P	1	Dry Frozen	Slash and Debris
SRR-5A-1B	4	0.2	P	1	Dry Frozen	Slash and Debris
WFL-8A	3	1.5	E	50	Dry Frozen	None
WFL-8A-2A	3	0.2	P	15	Dry Frozen	Slash and Debris

5.2 Watercourse Crossings

As described in the SOPs a variety of crossing types can be employed for crossing watercourses dependent upon the duration of the proposed crossing, the nature of the watercourse and site conditions, and the season(s) for which access to the area is required. The SOPs outline the types of crossings, planning processes and mitigation methods that are utilized for crossing development. The MQHA is committed to meeting the requirements of the *Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat* (MNR/DFO, 1996).

In the case of a navigable waterway, separate review and approval is required through the Canadian Environmental Assessment Agency (CEAA) and Transport Canada - Navigable Waters who are responsible for administering the Navigable Waters Protection Act.

Fisheries and Oceans Canada (DFO) is responsible for conserving and protecting fish habitat in each province and territory across Canada through the administration of the Fisheries Act. To help with fulfilling this responsibility, Operational Statements were released in 2005 for a number of common development activities that occur within or adjacent to areas of fish habitat. These Operational Statements were designed to strategically place greater emphasis on the review of projects posing higher risks to fish and fish habitat and streamline the reviews of routine, low risk to fish and fish habitat projects that are not likely to result in the harmful alteration, disruption or destruction (HADD) of fish habitat. Each Operational Statement provides the public and industry with guidance on how to carry out a work or undertaking in order to avoid negative effects to fish habitat and therefore, meet the requirements of the Fisheries Act. Following consultation with provincial, territorial and federal agencies, non-government organizations and stakeholders, the Operational Statements were specifically tailored to correspond to provincial and territorial legislation, as well as other constraining circumstances. Operational Statements provide the industry with advice such that, when followed, DFO review is not required. However, individual crossing review and mitigation is still undertaken with the local MARD Biologist as part of the overall plan review process.

Detailed watercourse crossing reports and site photographs prepared from watercourse site investigations are provided for each proposed crossing in Volume II of this OP.

The (DFO) Manitoba Operational Statements titled “Clear Span Bridges” and “Timing Windows” is located in Appendix IV of the OP.

Table 5.3 identifies the watercourse crossings proposed for 2022-23.

Table 5.3: Watercourse Crossings Proposed for 2018/20

Crossing Name	Structure Type		Watercourse Name
	Proposed	Alternate	
AR-87	Geo-Log W pipe	Ice Bridge	Un-named
AR-90 Xing 1	Geo-Log W pipe		Un-named
BSR-A	Portable Bridge		Un-named
SR-24 Xing	Snow and Ice	Geo-Log W pipe	Un-named
SR-25 Xing	Snow and Ice	Geo-Log W pipe	Un-named
SR-26 Xing	Snow and Ice	Geo-Log W pipe	Un-named
SR-27 Xing	Snow and Ice	Geo-Log W pipe	Un-named
SR-28 Xing	Snow and Ice	Geo-Log W pipe	Un-named
SR-30 Xing	Snow and Ice	Geo-Log W pipe	Un-named
SR-31 Xing	Snow and Ice	Geo-Log W pipe	Un-named
SR-78 RD Xing	Geo-Log W pipe		Un-named
SR-81 Bridge	Portable Bridge		Un-named
SR-87 Rd Xing 1	Geo-Log W pipe		Un-named
SR-87 Rd Xing 2	Geo-Log W pipe		Un-named
AR-97 ALT Xing	Geo-Log W pipe		Un-named
SR-139 Xing	Snow and Ice	Geo-Log W pipe	Un-named
ST-05 A Xing			
ST-06 A Xing			
ST-07 A Xing			
ST-A Xing	Round Culvert		Un-named
ST-B Xing	Round Culvert		Un-named
ST-C Xing	Round Culvert		Un-named
ST-D Xing	Round Culvert		Un-named
ST-E Xing	Round Culvert		Un-named
ST-F Xing	Round Culvert		Un-named
SR-69 Xing	Geo-Log W pipe		Un-named
AMT-C07	Snow and Ice		Un-named
AMT-C08	Snow and Ice		Un-named
AMT-C09	Snow and Ice		Un-named
BLR-C01	Round Culvert		Un-named
BLR-C02	Portable Bridge		Un-named
BLR-C03	Round Culvert		Un-named
BLR-C04	Round Culvert		Un-named
BLR-C05	Round Culvert		Un-named
BLR-C06	Round Culvert		Un-named
BLR-C07	Round Culvert		Un-named
BLR-C08	Round Culvert		Un-named
BLR-C09	Round Culvert		Un-named
BLR-C16	Round Culvert		Un-named
BLR-C17	Round Culvert		Un-named
BRW-C01	Portable Bridge		Un-named
BRW-C02	Snow and Ice		Un-named
BSR-C04	Round Culvert		Un-named
BSR-C05	Portable Bridge	Snow and Ice	Un-named
BSR-C11	Round Culvert		Un-named
CRL-C12	Portable Bridge		Un-named
CRL-C14	Round Culvert	Snow and Ice	Un-named
CRL-C15	Round Culvert	Snow and Ice	Un-named
CRL-C16	Round Culvert	Snow and Ice	Un-named
CRL-C17	Round Culvert	Snow and Ice	Un-named

Table 5.3: Watercourse Crossings Proposed for 2018/20 (con't)

Crossing Name	Structure Type		Watercourse Name
	Proposed	Alternate	
CRL-C18	Round Culvert	Snow and Ice	Un-named
CRL-C19	Round Culvert	Snow and Ice	Un-named
CRL-C20	Round Culvert	Snow and Ice	Un-named
CRL-C21	Round Culvert	Snow and Ice	Un-named
CRL-C22	Round Culvert	Snow and Ice	Un-named
CRL-C23	Round Culvert	Snow and Ice	Un-named
HSC-C03	Round Culvert	Snow and Ice	Un-named
HSC-C04	Portable Bridge	Snow and Ice	Un-named
HSC-C10	Portable Bridge		Un-named
MFE-C01	Snow and Ice		Un-named
MFW-14432602-C1	Portable Bridge		Un-named
MFW-C01	Portable Bridge		Un-named
MFW-C02	Round Culvert		Un-named
NLM-C01	Portable Bridge	Snow and Ice	Un-named
NLM-C02	Snow and Ice		Un-named
NLM-C03	Snow and Ice		Un-named
NLM-C10	Portable Bridge		Un-named
SRR-C06	Round Culvert		Un-named
SRR-C10	Portable Bridge		Un-named
SRR-C11	Round Culvert		Un-named
SRR-C15	Portable Bridge		Un-named
SRR-C16	Portable Bridge		Un-named
SRR-C17	Round Culvert		Un-named
SRR-C18	Round Culvert		Un-named
SRR-C19	Round Culvert		Un-named
WFL-C01	Snow and Ice		Un-named
WFL-C03	Snow and Ice		Un-named
WFL-C04	Snow and Ice		Un-named

5.3 Road Management

As described in the SOPs the road development program of the MQHA includes access management and decommissioning activities. These measures are part of the overall mitigation process developed through joint prescription development with the Western Region IRMT. A summary of measures to be utilized in conjunction with the roads planned for use for 2022-23 has been indicated above in Table 5.2.

As a result of the existing access infrastructure present throughout much of the operating areas of FMUs 12 and 14, and in consideration of the cost of major road construction and the seasonal nature of many of the quota and allocation holder operations, road construction requirements are relatively minimal. With a focus on winter operations, most roads are low-grade and unimproved trails with predominantly winter trails in use for many areas. Much of the access development in FMUs 12 and 14 consists of upgrading existing roads and trails for temporary use with the intent of returning the road to the original access level when operations are complete.

6.0 Forest Renewal

6.1 Renewal Responsibility

Softwood

In Forest Management Units (FMU's) 12 and 14, the Mountain Forest Section Renewal Company Ltd (MFSRC) became responsible for all softwood renewal activities on January 1st, 2007. MFSRC performs all reforestation activities within FMU's 12 & 14, financed by a Forest Renewal Charge (FRC), which is a fee per cubic metre of softwood harvested. MFSRC uses the FRC money to ensure reforestation of harvested forest ecosystems. MARD assists in setting the FRC rate.

To ensure the softwood land base is maintained, MFSRC promptly reforests all harvested areas containing significant softwood. Details of softwood renewal for 2022/23 are in the following sections and tables of this document.

Hardwood

Louisiana Pacific Canada is responsible for hardwood renewal in FMUs 12 and 14.

6.2 Renewal Objective and Strategy

The renewal objective of MFSRC is to renew each harvested site to their original tree species composition and forest cover class as identified in the Pre Harvest Survey (PHS). This can be achieved at the landscape level, through silviculture systems and treatments, which balance the ecology of the forest and the silvics of the tree species.

6.3 Renewal Prescriptions and Planning

Renewal prescriptions are made up of the following components:

- Management intent / target forest renewal standard
- Species selection and initial planting density suitable for the site type and management intent
- Site preparation method and date
- Planting date
- Anticipated follow up treatments to manage specie density and vegetative competition

The following aspects are given consideration when determining renewal prescriptions:

- Pre-harvest specie composition
- soil type, both parent and surface
- vegetation type
- duff depth

- level of understorey specie and protection strategy
- moisture regime and drainage patterns, both soil and landscape
- season of harvest, harvest schedule and access management plans
- pest and disease management requirements

The components listed above are looked at individually as well as a unit of how they fit together. Scheduling of activities often requires adjustment based on availability of stock types, preparation equipment and harvesting schedule (summer, winter, multi or single year of harvest operation) as well as access management plans. While developing prescriptions, adjustments are often made to specie selection and stock types and intent in order to manage for forest health concerns, i.e. planting white spruce instead of black spruce and the promotion of mixedwoods due to Armillaria root rot. Additional adjustments may be required due to environmental and economical changes.

6.4 Renewal Assessments

A number of surveys are required to monitor renewal success and ensure standards are being met.

Planting quality assessments are completed during planting activities. Assessments ensure planting prescriptions are being followed for specie density, site and microsite selection, correct care and placement of seedling stock. Plantation assessments are performed the following year after planting. Plantation assessments identify seedling survival, health, natural regeneration densities and competition levels. A Forest Assessment survey is performed on Softwood dominated stands at year 8 to 14 and on hardwood dominated stands at year 3 to 7 after harvest. The Forest Assessment survey measures the success of the renewal activities in harvested areas.

6.5 Follow Up Treatments

MFSRC have developed vegetation management prescription guidelines as a decision tool for determining follow up treatments based on plantation assessment and regeneration survey information. MFSRC believes that early initial silviculture treatments (planting) and early intervention on vegetation control and density management of predominantly softwood sites (S and M forest cover type classes) is key to ensuring renewal success. This can be achieved through careful selection and timing of site preparation methods (with or without herbicide), and broadcast herbicide treatments on select areas within a site the first seven years following planting. Early broadcast treatments are much more cost effective than spot treatments later on when sites are at higher risk of significant negative impact from broadcast.

The objective of an early intervention strategy on softwood sites is to maximize softwood seedling survival and growth while minimizing shrub, grass, herbaceous and hardwood competition without removing these from the site to the extent that there is significant negative

impact to biodiversity. Broadcast or spot treatments may be applied on mixedwood sites to ensure softwood seedling survival by controlling competition and manage hardwood density.

Older, more established sites requiring vegetation management will be prescribed for spot treatments to remove a minimum amount of target vegetation required to ensure renewal standards are met. Low impact spot treatments are costly and time consuming to plan and supervise. Careful consideration will be given to the selection of sites for this prescription.

Potential vegetation management blocks have been identified in Table 6.4 for planning purposes. The fully-detailed plan is not available in February, when the OP is submitted to the provincial government. Any vegetation management prescriptions requiring the use of herbicides are identified in a comprehensive vegetation management plan (i.e. treatment type/block level details) which is submitted to the Forestry Branch for review and approval at a later date. MFSRC also submits plans to the Environmental Approvals branch for a 'pesticide use permit'.

6.6 Silviculture Strategies

MFSRC silviculture management prescriptions are based on field data collected from Pre-harvest surveys, which indicate vegetation and soil types. This information is used to best prescribe the renewal of the site. Some of the details that are considered are:

- Site type and vegetation conditions
- Soil conditions and landform
- Access conditions and concerns
- Description of activities that have taken place on site prior to proposed treatment (harvest, salvage, fire)
- Treatment objectives and protective measures

Strategies used for planning

Site preparation, planting and vegetation management prescriptions are selected that are best suited for site, soil and vegetation conditions in order to meet renewal objectives while minimizing impacts to the landscape.

Planting

- Planting similar species that were harvested from the block.
- Putting an appropriate number of stem per hectare to have the block return to the initial stocking it was before harvest.
- Selecting good planting stock for the site conditions.

Site Preparation

- Protect in-block drains and wet areas; maintain existing vegetation along drains, 3-10 meter set back depending on site and topography conditions and equipment used.
- Follow contours on slopes with continuous furrow prescriptions.
- Protect snags, residual timber and advanced regeneration.
- Suitable equipment to be selected for site conditions and shut down during unfavorable wet periods to avoid rutting and soil compaction.
- Flag in-block drains for protection where clear identification is necessary.
- Set back of up to 20 meters where blocks are adjacent to canyon edges.
- Site prepare all landings no longer required for harvest or renewal.
- Site prepare inblock roads no longer required for harvest or renewal.

Vegetation Management

- Protect in-block drains, wet areas and water bodies with 10-50 meter set back depending on site and topography conditions and application method (aerial, ground).
- No treatment in standing water or ephemeral drains with selective treatment.
- Protect snags, residual timber and advanced regeneration.
- Low ground pressure tires or tracked carriers used to protect crop trees and access wet areas.
- Treatment boundaries, buffers and travel lines in difficult terrain flagged or navigation by GPS.
- Target specific areas meeting treatment criteria rather than general area/whole block.
- Application to follow conditions of Pesticide Use Permit.
- Protect non target vegetation including residual and advanced regeneration. Some incidental residuals and advanced regeneration may be treated during aerial broadcast applications.
- Suitable equipment to be selected for site conditions and shut down during unfavorable wet periods to avoid rutting or run off of chemical.

Access

- Use existing access and crossing locations.
- Use mats, temporary bridges or corduroy for stream crossings or wet areas.
- Maintain or restore access closure at beginning of main haul road.

Table 6.1

MFSRC SITE PREPARATION ESTIMATES FOR 2022-24

Operating Area	Block	Area Ha	SIP Method	SIP Area	Access	Covertime	Year
Steepprock	SR-49	11.6	B & C	11	ATV	S	2022
Steepprock	SR-50	9.2	B & C	9	ATV	S	2022
Steepprock	SR-78	119.6	B & C	100	ATV	S	2022
Steepprock	SR-135	7.3	B & C	7	ATV	S	2022

Total Area Site Prepared 127.0

Table 6.2

MFSRC TREE PLANTING ESTIMATES FOR 2022

Operating Area	Block	Management Intent	SIP ha	Area Ha	Plant Area	Planted			Density	Tree Delivery	Access
						WS	BS	Type			
Armit	AR-10	M		99.0	70.0	55,800	55,440	410	1,800	Heli	Heli/ATV
Armit	FB-17	S		70.6	50.0	10,080	79,920	410	1,800	Heli	Heli
Armit	FB-18	S		84.5	30.0	19,800	88,200	410	2,000	Heli	Heli
Armit	FB-25	S		74.1	60.0	10,080	97,920	410	2,000	Heli	Heli
Armit	FB-28	S		4.7	2.0	3,600		410	1,800	Heli	Heli
Armit	ST-02	S		12.7	8.0		14,400	410	2,000	Heli	Heli
Armit	ST-05	S		46.7	17.0	13,680	13,680	410	1,600	Heli	Heli
Armit	ST-06	S		91.1	85.0		153,000	410	2,000	Heli	Heli
Steepprock	SR-49		11	11.6	8.0		14,400	410	2,000	Truck	Truck
Steepprock	SR-50	S	9	9.2	6.0		11,040	410	2,000	ATV	ATV
Steepprock	SR-54	M		16.1	10.0		15,840	410	2,000	ATV	ATV
Steepprock	SR-65	S		23.2	17.0	10,080	20,520	410	2,000	ATV	ATV
Steepprock	SR-71	S		77.6	50.0	10,080	88,800	410	2,000	ATV	ATV
Steepprock	SR-78	S	100	119.6	95.0	60,120	110,880	410	2,000	ATV	ATV
Steepprock	SR-95	S	23	22.0	20.0	20,880	9,720	410	1,600	ATV	ATV
Steepprock	SR-115				1.5		2,160	410	1,800	ATV	ATV
Steepprock	SR-135	S		7.3	5.0		9,000	410	2,000	ATV	ATV
The Bluff	RD-01S	S		74.4	65.0	117,000		410	2,000	Heli	Heli
The Bluff	RD-01T	M		151.1	10.0	7,920	7,920	410	1,600	Heli	Heli
The Bluff	RD-01V	M		339.8	37.0	27,360	32,040	410	1,600	Heli	Heli

366,480 824,880

1,191,360

2023 Tree plant estimates are not available. Blocks harvested in 2022 will be renewed as required

Table 6.3
2022 Forest Assessment Surveys

Operating Area	Block	Area (ha)
AMT	AR-09	36.6
AMT	AR-11	14.4
NLM	NLM-134	2.4
SRR	SRR-310	35.6
SRR	SR-120	22.8
SRR	SR-136	24.0
SRR	SR-14	59.4
SRR	SR-51	25.5
SRR	SR-56	57.0
SRR	SR-58	65.1
		342.8

These blocks will be surveyed in 2022

Operating Area	Block	Area (ha)
AMT	AR-20	14.6
AMT	AR-20	12.4
AMT	SR-137	10.6
SRR	SR-138	23.5
SRR	BR-26	74.1
SRR	BR-28	22.0
SRR	SR-137	36.0
SRR	SR-138	18.4
SRR	SR-22	26.8
SRR	SR-33	49.0
SRR	SR-96	22.0
SRR	VL-53	2.0
SRR	VL-54	4.0
VGL	VL-55	29.7
VGL	VL-56	89.2
VGL	VL-79	41.9
		476.4

These blocks will be surveyed in 2023

Table 6.4

MFSRC POTENTIAL STAND TENDING AREAS FOR 2022-24

Block Number	Operating Area	Area	Year Harvest	Pre Harvest	Pre Subtype	Plant Year	Priority
AR-05	AMT	40.8	2016	S	11	2017	2
AR-07	AMT	51.4	2015	M	51	2016	1
AR-09	AMT	36.6	2017	N	82	2018	2
AR-11	AMT	14.4	2017	N	82	2018	2
AR-11	AMT	13.2	2018			2019	3
AR-13	AMT	31.8	2017	M	51	2018	2
AR-20	AMT	14.6	2017	N	82	2018	2
AR-20	AMT	12.4	2018			2019	3
AR-66	AMT	70.3	2017	S	15	2018	2
AR-67	AMT	58.7	2015	S	13	2016	1
AR-68	AMT	74.9	2016	S	15	2017	2
AR-68	AMT	14.1	2017	S		2018	2
AR-87	AMT	75.6	2019	S	15	2020	3
AR-89	AMT	48.2	2018	S	13	2019	3
AR-90	AMT	13.6	2018	M	53	2019	3
AR-94	AMT	31.4	2017	S	15	2018	2
SL-77	AMT	32.8	2019	S		2021	3
ST-07	AMT	46.7	2019	S		2020	3
RD-01J	BLF	28.0	2019	S	15	2021	3
RD-01L	BLF	7.6	2019	S	15	2021	3
RD-01M	BLF	32.4	2019	S	15	2021	3
RD-01N	BLF	98.6	2019	S	13	2021	3
RD-01P	BLF	25.2	2019	S	13	2021	3
RD-01R	BLF	26.7	2019	S	15	2021	3
RD-01T	BLF	39.4	2019	M		2021	3
BR-04	BRK	33.4	2015	S	13	2016	1
BR-06	BRK	15.4	2015	S	13	2016	1
BR-06	BRK	10.1	2016	S	13	2017	2
BR-07	BRK	14.3	2015	S	13	2016	1
BR-12	BRK	53.1	2016	S	13	2017	2
BR-12	BRK	16.3	2017	S		2018	2
BR-13	BRK	20.8	2016	S	13	2017	2
BR-25	BRK	27.2	2015	S	13	2016	1
BR-28	BRK	23.2	2015	S	13	2016	1
LP-01	BRK	16.9	2015	S	13	2016	1
SR-100	SRR	57.3	2019	S	14	2020	3
SR-105	SRR	39.0	2017			2019	3
SR-107	SRR	9.5	2015	S	14	2016	1
SR-108	SRR	47.4	2017	S	14	2018	2
SR-112	SRR	7.4	2018	S	13	2019	3
SR-114	SRR	24.0	2016	S	14	2017	2
SR-115	SRR	70.2	2019	S	13	2020	3
SR-116	SRR	14.1	2018	S	13	2019	3
SR-118	SRR	7.5	2017			2019	3
SR-119	SRR	17.8	2016	S	13	2017	2
SR-134	SRR	43.8	2018	S	14	2019	3
SR-143	SRR	3.3	2017			2019	3

Table 6.4

MFSRC POTENTIAL STAND TENDING AREAS FOR 2022-24 (Con't)

Block Number	Operating Area	Area	Year Harvest	Pre Harvest	Pre Subtype	Plant Year	Priority
SR-144	SRR	5.2	2019	S	14	2020	3
SR-145	SRR	10.1	2018	S	14	2019	3
SR-146	SRR	8.0	2018	M	55	2019	3
SR-53	SRR	2.7	2017	S	13	2018	2
SR-55	SRR	12.2	2017	S	14	2018	2
SR-57	SRR	6.2	2017	S	13	2018	2
SR-59	SRR	111.7	2015	S	14	2016	1
SR-60	SRR	38.4	2018	S	13	2019	3
SR-60	SRR	25.4	2019	S	14	2020	3
SR-63	SRR	9.0	2019	S	13	2020	3
SR-68	SRR	6.4	2019	S	13	2020	3
SR-69	SRR	48.4	2017	S	14	2019	3
SR-69	SRR	61.5	2018	S	14	2019	3
SR-70	SRR	22.8	2016	S	13	2017	2
SR-72	SRR	28.1	2015	S	13	2016	1
SR-73	SRR	24.3	2017	S	14	2019	3
FG-10	VGL	65.5	2019	S		2020	3
FG-11	VGL	16.1	2019	S		2020	3
FG-12	VGL	30.9	2019	S		2020	3

532.9 **Potential Spray Areas**
(includes 2023 potential spray blocks)

7.0 Compliance and Monitoring

7.1 Compliance

As part of the OP and subsequent work permit approval process mitigation measures are prescribed and conditions are provided related to operational implementation of activities. Work permits issued for each operation are signed by the respective quota or allocation holder who is then responsible for follow-up supervision of operations and compliance with all stated conditions. Once approved all operations are confined to boundaries as provided for in the OP and subsequent work permits. Compliance monitoring will be conducted by MARD Regional Operations staff. A final cutblock inspection is completed jointly by MARD and the permittee/operator. Clearance for each cutblock is given prior to approval of further work permits for new operations.

7.2 Monitoring

The MQHA participates in the monitoring process in terms of timber volumes harvested and utilized through volume reporting to MARD. This is done using a monthly timber reporting administration process. As part of the compliance monitoring process, joint cutblock inspections prior to release of the next work permit include review of the implementation of mitigation procedures prescribed at the OP and work permit stages. As such, this compliance and monitoring process includes review of all work permit conditions and the mitigation processes that were jointly agreed to for each cutblock at the planning stages (OP and work permit). Further monitoring processes in terms of harvest and natural depletions, forest renewal record keeping and regeneration success are undertaken by MARD as a component of their forest renewal responsibilities for the area.

APPENDIX I

**MOUNTAIN QUOTA HOLDERS
ASSOCIATION**

**STANDARD OPERATING PROCEDURES
FOR FOREST PLANNING
AND OPERATIONS**

2022

February 2022

STANDARD OPERATING PROCEDURES For FOREST PLANNING AND OPERATIONS

MOUNTAIN QUOTA HOLDERS ASSOCIATION



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Revised February 2022

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1.0 Background to the Standard Operating Procedures

1.1 Introduction

Members of the Mountain Quota Holders Association (MQHA) and Louisiana Pacific Canada Ltd. (LP), Swan Valley Forest Resources Division, undertake forest management activities, including the harvest of hardwood and softwood timber resources, in Forest Management Units (FMUs) 12 and 14 of the Mountain Forest Section to provide the fibre requirements for Spruce Products Ltd. softwood sawmill and chip operations, Louisiana Pacific Canada's (LP's) OSB production facility and other quota holder entitlements in the region.

At the present time, neither of these FMUs are included within an established Forest Management License (FML) Area. Forest management activities are undertaken under the authority of approved Operating Plans (OPs) developed by the Mountain Quota Holders Association and approved by Manitoba Agriculture and Resource Development (MARD).

The MQHA is currently involved in a forest management planning and environmental licensing process through which forest management activities within FMUs 12 and 14 are described. The Operating Plan describes the proposed forest management activities for the current plan period while the previously developed and approved Environmental Impact Statement examines any potential environmental impacts in relation to the planned activities.

These Standard Operating Procedures (SOPs) have been developed and are implemented as part of the AOP/EIS package to document the processes and procedures to be followed by the Mountain Quota Holders operating within FMUs 12 and 14. These SOPs, in conjunction with the application of government guidelines and standards for forest management in Manitoba, provide the basis for the development and implementation of mitigation of potential impacts associated with forest management activities for these operations. The MQHA has prepared these SOPs to complement the guidelines and standards of Manitoba and demonstrate the commitment of the quota holder members to plan and conduct their operations in a manner consistent with the values of the local communities of the area and sustainable forest management practices in general.

It is recognized that for forest management activities involving LP within FMUs 12 and 14, the LP Standard Operating Procedures (Louisiana-Pacific Canada Ltd. Swan Valley Forest Resources Division, 1999) will be applied by the Company. The MQHA has developed their SOPs with the goal of maintaining the intent of the LP Standard Operating Procedures. This will ensure a consistent approach to forest management activities in FMUs 12 and 14.

As part of the development of the OP and EIS, a review of these SOPs has been undertaken and revisions have been incorporated to provide processes and procedures, that when applied in conjunction with government guidelines and standards, will meet the objectives of the MQHA to operate in a responsible manner in their operating areas.

Implementation of these SOPs recognizes that adaptive management principles are an important part of forest management planning and operating procedures. Adaptive management will allow the MQHA to continually improve the manner in which their operations are planned and implemented. It is expected that on-going review of the SOPs, in consultation with government and stakeholders, will provide the opportunity for continuous improvement.

1.2 Purpose of the Standard Operating Procedures

The purpose of the SOPs is to provide MQHA members operating in FMUs 12 and 14 with a framework of processes and procedures for the development and implementation of their forest management activities. These SOPs document the commitment of the MQHA members to sustainable forest management activities in conducting their operations in the following ways:

- Document planning processes and operating procedures to be followed by the MQHA in planning and implementing forest management activities in FMUs 12 and 14;
- Provide direction to ensure consistent mitigation procedures across operating areas;
- Provide MQHA members and their contractors with direction for undertaking operations which reflect the guidelines and standards of Manitoba;
- Reflect input received from other stakeholders and interested parties through the public consultation program;
- Integrate the mitigation strategies of the Regional Integrated Resource Management Team (IRMT) with the guidelines and standards for forest management in Manitoba;
- Implement the resulting integrated program of procedures as stipulated and agreed to in the approved OP and associated conditions of approval; and,
- Adhere to the identified final conditions as formulated and agreed to on the MARD Work Permit for each operation.

These SOPs are intended to be applied in conjunction with government initiatives, including the direction provided by *Manitoba's Forest Plan ... Towards Ecosystem Base Management* (KPMG, 1996) and the guidance provided in applicable guidelines and standards for forest management in Manitoba.

The SOPs are robust and provide sufficient flexibility to accommodate most site and operating situations. They are to be applied in conjunction with sound judgement based on practical experience and technical competence. Where modifications to these SOPs occur, they will be implemented in association with the Regional IRMT and other government agencies within the review, approval and monitoring process.

1.3 Application of the Standard Operating Procedures

These SOPs are considered interim in nature and apply to the Mountain Quota Holder Association members operating in FMUs 12 and 14 of the Mountain Forest Section for the term of this Operating Plan.

Each individual member of the MQHA is responsible for the implementation of the SOPs on areas associated with their quota volume, including operations undertaken on their behalf by contractors.

Louisiana-Pacific Canada Ltd. will plan and conduct operations under the Company's own Standard Operating Procedures for areas from which the hardwood allocation of the Company is harvested, including operations undertaken by their contractors.

It is recognized that these SOPs are a part of the overall planning and implementation process for forest management, and that to be effective they must be integrated with other planning and mitigation development tools including public consultation and review/approval and monitoring/compliance processes with MARD and other government agencies.

2.0 Planning Requirements

2.1 Forest Management Planning for FMUs 12 and 14

Under The Forest Act (Chapter F150, CCSM) and Regulations, forest management activities to be undertaken on Crown lands in Manitoba must be covered under an appropriate forest management plan. In this context, all environmentally significant developments proposed or operating in Manitoba are regulated by The Manitoba Environment Act (Chapter E125, CCSM). Manitoba Regulation 164/88 sets out the types of developments that are automatically subject to an assessment/licensing process prior to construction and operation. The forest management activities being proposed for FMUs 12 and 14 are identified as Class 2 developments, and are hence subject to the assessment/licensing process set out in Section 11 of The Act.

2.2 Operating Plan

2.2.1 Three Year Projection

The Operating Plan documents three years of forest management activities. Year one activities are described in detail, with specific harvest and access prescriptions, as they will be submitted to the IRMT for work permit approval. Years two and three of the plan include more general descriptions of approximate harvest and access locations, which will be modified in subsequent Operating Plans when Pre-harvest Survey (PHS) information becomes available.

Operating areas will be identified for the entire three year period. The identification and approval of general operating areas through the AOP/EIS licensing process is necessary to ensure that the MQHA maintains the flexibility required to respond to evolving forest management priorities resulting from consultation with stakeholders and government. Without general approval of operating areas, the MQHA would be unable to re-allocate harvest areas in year two and three of the plan without re-submitting a modified AOP/EIS package to MARD for environmental licensing. The need to modify the environmental license would hamper the MQHA's and MARD's ability to adapt their plan to insect and disease infestations, fire, and other evolving forest management requirements.

All forest management activities are documented in detail in OPs, and are reviewed and mitigated by the IRMT, stakeholders, and the general public. This allows the MQHA to look ahead for opportunities to operate efficiently, minimize impacts and coordinate activities amongst operations. This component of the OP provides medium-term information ahead of time to enable non-timber values to be reviewed and to allow parties to develop mitigation processes.

Operating Areas

An outline of the major operating areas to be used in FMUs 12 and 14 during the three year term of the OP (actual plan year and two year projection) is presented. The boundaries of these areas will be indicated on associated OP maps.

The maps:

- Identify operating areas;
- Identify key areas for mitigation development and/or exclusion from operations, such as ecological reserves, protected areas, treaty land entitlement areas, provincial parks and wildlife management areas; and,
- Provide for the organization of subsequent harvest areas, road development and forest renewal planning.

Access Development

This section outlines road development and related infrastructure to be upgraded or constructed within FMUs 12 and 14 during the three year term of the OP. The locations of roads and related infrastructure are provided on associated maps (road locations for year 1, road corridors for years 2 and 3). The maps and associated tables:

- Illustrate existing roads;
- Identify and describe all proposed road corridors;
- Schedule the sequence of construction (corridor kilometre distances by year for each Class of road) by year for the 3 year projection; and,
- Illustrate all water crossings and the type of structure planned for each crossing.

Harvesting

This section outlines the cutblocks proposed for harvest within FMUs 12 and 14 during the three year projection term of the OP. Detailed and accurate block boundaries are provided for year one of the OP. Approximate boundaries and general operating areas are provided for years two and three of the projected areas. The locations of the cutblocks and operating areas will be provided on associated maps. Detailed prescriptions and scheduling information will be illustrated on maps and in Pre-Harvest Cutblock Prescriptions in the AOP. The OP will also indicate the relationship of these volumes (total of all planned cutblocks) to the approved MARD Annual Allowable Cut (AAC) and the existing entitlements of all quota and allocation holders covered by the plan.

2.2.2 Current Plan Year Proposal

It is the current year proposal that provides the detailed plan for road access and harvesting activities being put forward by the MQHA for the coming year. This component of the OP provides short-term detailed plan information, including the development and description of mitigation to be undertaken in implementing the OP. As part of the development of this component of the OP, Pre-harvest Surveys are undertaken for all planned cutblocks and contingency cutblocks to be submitted in the current plan year proposal.

Access Development

For the current plan year, detailed information on the location, length, type of development, and type of access control for roads for use in that year will be described. In addition, the type and location of any associated watercourse crossings to be constructed in the current year will be provided. The access development plan will:

- Identify the class of roads to be developed as per the definitions in these SOPs; and,
- Identify the location and type of current year proposed water crossings.

Access Management Plan

- Presents road management prescriptions to be applied for in the OP as related to these SOPs.

Harvesting

This section identifies the location and provides detailed harvest prescriptions for proposed cutblocks for the current plan year. Information obtained from the pre-harvest surveys provides the basis for mitigation strategies to be included within the pre-harvest cutblock prescription.

During the pre-harvest surveys timber and non-timber values for proposed harvesting areas are assessed for input to mitigation strategies development including:

- Timber volume assessment;
- Wildlife habitat;
- Non-timber resource use values including:
 - Recreation areas (e.g. camping, fishing, snowmobiling, hiking, cottaging, etc.);
 - Cabins and trails; and,
 - Trapline locations.
- Ecologically sensitive sites;
- Heritage/cultural sites;
- Vegetation communities including:
 - Canopy and understory tree species composition; and,
 - Non-timber (including competitive) plants composition.
- Terrain and slope; and
- Soil and site conditions.

Sources of information reviewed to design and schedule cutblocks and develop mitigation strategies include:

- Operational cruising and timber investigation;
- Pre-harvest survey information;
- Past cutovers and renewal status;
- Provincial and federal guidelines including those relating to wildlife, fisheries and aquatic resources protection;
- Stakeholder input including the IRMT and First Nations;
- Non-timber resource user values; and,
- Existing access and opportunities for development of new access as well as potential requirements for access management.

2.2.3 Pre-harvest Surveys

The MQHA will undertake Pre-harvest Surveys (PHS) for all cutblocks prior to submission as current plan year proposals to provide information for development of mitigation plans and to provide information to MARD for development of their renewal plan for the area. Pre-harvest Surveys are undertaken in order to investigate areas proposed for operations and gather

information to supplement that already available and in use from MARD Forest Inventory, aerial photography, ortho-photos, geographic information system (GIS) data, government agencies and other sources such as discussions with other stakeholders.

Information is gathered to:

- Provide detailed site level information to establish season of harvest and design including:
 - Soil types and moisture conditions; and,
 - Slopes and topography.
- Provide forest cover and regeneration information to support MARD Forestry Branch staff in identification of forest renewal requirements (to enable MARD to develop a pre-harvest renewal prescription for each cutblock);
- Identify serious insect and disease infestations;
- Identify operating constraints including access requirements;
- Provide site information on non-timber values for mitigation development including:
 - Non-timber resource uses; and,
 - Sensitive sites including heritage resources; Vulnerable, Threatened and Endangered (VTE) flora; and other unique values.
- Develop mitigation plans where wildlife habitat is a critical concern.

Pre-harvest Surveys have been undertaken by the MQHA to provide information for OP preparation and mitigation development for past years commencing with the development of the 2001/02 AOP by the MQHA. Collection of information has included both timber and non-timber values to provide the basis for preparation of the Pre-harvest Cutblock Prescription for each cutblock submitted for the respective plan year in the OP.

The Forest Guidelines Technical Advisory Committee has developed a Forest Practices Guidebook for undertaking Pre-Harvest Surveys in Manitoba. The MQHA is working within these guidelines for PHS's in their planning process.

Timing

Pre-harvest surveys will generally be performed one year prior to inclusion of the cutblock in an OP. Actual timing will vary dependent upon availability of access and local knowledge of features of particular interest. Pre-harvest surveys will be completed for all cutblocks prior to submission as a planned cutblock in the OP.

Timber and Non-timber Elements for Survey

As indicated earlier, the MQHA has incorporated both timber and non-timber features in the implementation of PHS for planned cutblocks in preparation of OPs to date, including the preparation of the integrated 2003/04 – 2005/06 AOP/EIS. These features and those described in the *Manitoba Sustainable Development Forest Practices Pre-harvest Guidebook* include the following elements that will be included in the PHS for OP preparation:

- Timber
 - Timber data to provide estimates of volumes and products to be harvested from the cutblock;

- Summaries of this harvest volume information provides relationship of proposed harvest to the AAC; and,
 - Indicates tree species composition to assist in forest renewal plan preparation.
- Vegetation Communities
- Enables Manitoba Forest Ecosystem Classification (FEC) for the stand(s) comprising the cutblock; and,
 - Assists in formulation of forest management applications including harvest and renewal prescriptions.
- Soils
- Provides input to harvest and renewal prescriptions including operating procedures;
 - Assists in determination of operating season to minimize site disturbance such as potential rutting and/or subsequent erosion or ponding on the cutblock; and,
 - Formulation of forest renewal prescription.
- Understory Trees
- Identify advanced softwood regeneration which will determine development of understory protection measures that may:
 - Assist in meeting renewal objectives
 - Maintain biodiversity
 - Provide wildlife habitat
 - Assist with line of sight mitigation
 - Provide watershed protection
- Other Residual Vegetation
- Identification of the presence of other plants such as shrubs and grasses;
 - Provides input to the forest renewal plan in terms of potential competition for regenerating tree species; and,
 - Assists in development of mitigation for wildlife (line-of-sight, habitat) and aesthetics.
- Special Concern Species including VTE
- Identification of locations of VTE plant species and habitats;
 - Corresponds to those listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the Manitoba Endangered Species Act (MESA); and,
 - Assists in mitigation development for sensitive sites and wildlife habitat.
 - Forest Health
 - Identification of forest health concerns including insect and disease damage; and,
 - Assists in development of harvest and renewal plans to mitigate damage to forest stands and impact on the AAC.
- Wildlife habitat
- Documentation of wildlife habitat and use evidence, including snags;
 - Assists in development of mitigation to accommodate wildlife and related non-timber user values;

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- To accommodate the sensitive nature of such information, it will be conveyed to the IRMT during the mitigation process rather than being documented in the OPs themselves; and,
 - Assists in determination of harvest equipment to be utilized in terms of potential safety concerns (presence of snags).
 - Geographic and Physical Features
 - Identification of features such as slope, topography, non-operable areas and other significant features;
 - Assists in operability decisions (harvest season and equipment); and,
 - Incorporation of data for development of mitigation for line-of-sight, buffers, etc.
 - Heritage Resources
 - Documentation of the presence of heritage resource features through training of PHS staff; and,
 - To accommodate the sensitive nature of such information, it will be conveyed to the IRMT and Manitoba Historic Resources Branch staff during the mitigation process rather than being documented in the OPs themselves.
 - Forest and Non-timber Resource User Values
 - Documentation of forest and non-timber resource user values (trapline activities, trails, portages, research plots, etc.); and,
 - Assists in preparation of mitigation for these identified uses.
 - Watercourses and Wetlands
 - Identification of in-block watercourses and wetlands when encountered to supplement existing information; and,
 - Assists in mitigation for wildlife, aesthetics and non-timber users.

As described earlier, the PHS process already in place for the preparation of the 2003/04 – 2005/06 Integrated AOP/EIS incorporates both timber and non-timber values to arrive at mitigation strategies. These strategies are provided for each planned cutblock on the Pre-harvest Cutblock Prescriptions and Renewal Prescriptions sheets contained in the OP.

2.2.4 Harvest Volume Levels

Sustainable harvest levels have been established and approved by MARD Forestry Branch for FMUs 12 and 14 through the development of Annual Allowable Cut (AAC) levels. Within these AAC levels the volumes to be planned for by the MQHA are based upon the timber volume entitlement that has been assigned to each timber sale or allocation holder by MARD.

- Quota and allocation volume entitlements provide the basis for the current plan year and the three year projection harvest plans submitted within each OP;
- These entitlements represent the volumes to which each individual quota and allocation holder will be regulated. Monitoring is through the application of the provincial volume reporting system;
- Inclusion of forest stands for harvest is based upon forest types and age class corresponding to those comprising the AAC; and,

- Regulation of and compliance to the AAC is administered by MARD.

2.2.5 Roads and Watercourse Crossings

Within the OP development process attention is applied to investigation, planning and approval of watercourse crossings associated with road development. Watercourse crossing information is collected through on-site investigation of crossing locations proposed for permanent watercourses. Site investigation provides input for decision-making regarding road route planning and identification of crossing types to be installed which will handle water flows and mitigate impacts to the watercourse and associated riparian habitat, including sensitive sites

Watercourse crossing site information includes:

- Watercourse information:
 - Watercourse name;
 - Wet channel width;
 - Channel width to accommodate high water;
 - Channel depth;
 - Watercourse bed substrate material type;
 - Identified fisheries values for fish migration and identified species;
 - Identified fish spawning habitat;
 - Water flow characteristics; and,
 - Navigability.
- Watercourse banks and associated riparian values identified for each bank at crossing site:
 - Soil types and ground conditions;
 - Slope from top of bank to high water mark;
 - Height of bank from high water mark; and,
 - Presence and type of vegetation/root mat on slopes.
- Photographs are taken of the proposed crossing site to provide visual assistance in documenting the characteristics of the location;
- Federal Fisheries requirements are reviewed for proposed crossings prior to plan submission. Where a DFO Manitoba Operational Statement will not cover a water crossing structure, the crossing will be submitted to DFO for approval;
- If a crossing is considered navigable the Navigable Waters Protection Act requires application and approval by Transport Canada who are responsible for the Navigable Waters Protection Act.
- All proposed watercourse crossings are reviewed by Manitoba Agriculture and Resource Development representatives as part of the IRMT review.
- Any identified concerns will be addressed through mitigation that may include, but will not be limited to, measures such as:
 - Alteration of the watercourse crossing design;
 - Relocation of the watercourse location;
 - Consideration of access management controls; and,
 - Alteration of the crossing removal and reclamation prescription.

2.2.6 Contingency Planning

Contingency areas for harvest will be outlined and described within the OP. These areas are important to allow for needed flexibility in light of potential concerns that can be encountered in planned cutblocks arising from weather conditions or operating circumstances not foreseen at the time of plan development.

- Plan information submitted for contingency cutblocks is the same as that for current plan year cutblocks. This level of detail ensures that harvest in contingency areas can be initiated without delays beyond those expected at the work permit level;
- Contingency volumes and corresponding areas will be indicated to provide a level of flexibility to enable the MQHA to access alternate harvest cutblocks should unforeseen conditions arise that prevent operation of planned cutblocks and/or operating areas;
- The inclusion of contingency areas also provides the benefit of allowing for salvage of fire, insect, disease, wind or other damaged stands to minimize losses of available timber; and,
- Inclusion of contingency cutblocks is important to minimize potential impacts that may otherwise arise should scheduled cutblocks be harvested in adverse conditions (too wet, lack of frost, etc.).

2.2.7 Forest Renewal

The Mountain Forest Section Renewal Company (MFSRC) is responsible for Forest Renewal in FMUs 12 and 14. The MQHA, working in conjunction with MFSRC, will submit a Forest Renewal Plan within the OP. The MQHA will provide MFSRC with pre-harvest survey information, proposed harvest block locations, and associated data as input into the forest renewal component of the AOP.

- MFSRC will provide the necessary input for this section of the plan to be incorporated within the overall OP submission;
- The renewal plan for the current year will be developed for cutblocks already harvested and for any cutblocks planned for the current plan year that MFSRC intends to begin renewal activities on right away; and,
- The MQHA will provide MFSRC the results of the pre-harvest surveys for the current plan year and for cutblocks harvested prior to OP submission in order to allow MFSRC to develop forest renewal prescription information for each cutblock. This will lead to the development and documentation of the overall forest renewal requirements and prescriptions.

Information on the past three years harvest will be indicated on the OP Maps. This information is useful for assessing the impact of the proposed harvest and also assists in development of the forest renewal component of the OP by MFSRC.

2.3 Environmental Licensing

The MQHA is committed to undertaking forest management activities in an environmentally responsible manner within provincial and federal approval and licensing processes. As part of this commitment, the MQHA has prepared an integrated planning and environmental application document to meet requirements of *The Forest Act* (CCSM) and *The Manitoba Environment Act* (CCSM) in Manitoba. The integrated Mountain Quota Holders Association 2003/4 – 2005/6 Annual Operating Plan and Environmental Impact Statement includes components to satisfy the approval and licensing requirements for Manitoba, including:

- Project description;
- Area description in terms of biophysical environment and land/resource use;
- History of activities;
- Public consultation process;
- Standard Operating Procedures;
- Current plan year proposals and an additional two year projection of operations;
- Proposed mitigation actions; and,
- Environmental impact assessment.

The OP will describe the proposed forest management activities and locations over the prescribed three year period, while the EIS will examine the potential environmental impacts in relation to the planned activities. These SOPs are an important component in the preparation of the AOP/EIS document and will continue to play a key role in development of mitigation for future OP development and work permit applications for MQHA operations.

The integrated AOP for 2003/4 – 2005/6 will be guided in its development by the Manitoba Natural Resources Ten Year Forest Management Plan Submission Guidelines and the Planning and Submission Requirements for Annual Operating Plans. Subsequent OPs will be submitted annually by the Mountain Quota Holders Association throughout the period covered by this AOP/EIS document.

The AOP and EIS have been integrated into a single document reflecting the emerging and dynamic realities of both industry and governments as they seek to practically implement the principles and guidelines of sustainable forest management in Manitoba.

2.4 Public Consultation

As an active member of the communities in which they operate, the MQHA recognizes the role and need for public consultation as an important component of the forest management planning and environmental licensing process. Quota and allocation holders and their staff have developed and participated in on-going public consultation processes with other timber and non-timber resource users, interested parties and the general public in the past and will continue to do so.

Public Consultation Open House

Open house meetings have been utilized as part of the preparation for past OP's.

- The MQHA is committed to continuing to hold Public Open House Meetings annually in the preparation of future OPs to present the draft plan and seek input and comment; and,

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- For the open house, steps will be taken to encourage and provide opportunity for public participation:
 - The MQHA will provide advance notice of the open house(s); and,
 - The MQHA will advertise the open house events in regional and local media.

Resource User Consultation

Throughout the planning and operations implementation cycle the MQHA and staff meet on an informal basis with resource users who also undertake activities in FMUs 12 and 14. These discussions and meetings are viewed by the MQHA as being of particular value in assisting in developing mitigation processes and methods to address specific concerns. Such meetings often take place in a one-on-one basis on-site in the field.

2.5 Mitigation Development

Mitigation development within the planning process, operational implementation, and compliance monitoring occurs through several activities:

Pre-harvest Surveys and Watercourse Crossing Site Investigations

The PHS and crossing site investigation processes provide considerable input for development of mitigation strategies by supplementing the information available from other sources such as aerial photographs and GIS data.

- PHS's and Watercourse Crossing Site Investigations provide specific on-site detailed information to assist planning and government staff in decision-making to address mitigation requirements.

Public Consultation

Public consultation processes contribute to preparation of mitigation prescriptions by the MQHA through input received from individuals and groups in review of plans:

- Issues and concerns brought forward at open house meetings in review of draft plans provide opportunities to ensure appropriate mitigation strategies are developed prior to final plan submission; and,
- Issues of a site specific nature are discussed and investigated in an on-going manner with resource users ensuring input to plan development or subsequent refinement of mitigation strategies at the work permit stage.

Standard Operating Procedures

These SOPs have been prepared by the MQHA to provide a consistent framework to the development of best management procedures for planning and undertaking operations in FMUs 12 and 14.

- MQHA quota and allocation holders are committed to application of the SOPs;

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- The intent of the SOPs is to be brought together with that of provincial guidelines and standards, along with incorporation of regional strategies suggested by the IRMT for development of mitigation strategies; and,
 - The preparation of the EIS in conjunction with the 2003/4 – 2005/6 AOP includes considerable review and input to the development of the SOPs to address potential impacts of activities.

Work with the IRMT and Other Government Agencies

The MQHA will work closely with the Regional IRMT and other agencies in the development of OPs, and in an on-going manner to communicate objectives and plans, and to develop mitigation for planned forest management activities, including the incorporation of regional concerns.

- The MQHA is committed to working with the IRMT and other government representatives in the development of mitigation strategies for current plan year cutblocks and access roads as part of the OP development process;
- Mitigation development occurs through joint interactive sessions with the IRMT representing the various stakeholders to address the design of cutblocks and access development plans with the integration of SOPs and government guidelines and standards for forest management, consideration is given to:
 - Season of harvest;
 - Riparian management strategies;
 - Retention of understory;
 - Wildlife trees (bunches, singles, etc) and other residuals;
 - Access management;
 - Sensitive sites;
 - Wildlife values; and,
 - Cumulative effects.
- Includes notification to the Department of Fisheries and Oceans (DFO), where required, to specifically address mitigation strategies for watercourse crossings prior to OP submission.

Compliance Monitoring

Through the supervision and compliance monitoring process the implementation of mitigation plans are reviewed and monitored by the MQHA and MARD.

- On-going review occurs as operations proceed to ensure that the mitigation developed in OP preparation remains relevant (in light of changing weather or other operating conditions, etc);
- Quota or allocation holders are responsible for the supervision of their own operations; and,
- MQHA members cooperate with compliance monitoring through joint cutblock inspections with MARD and by receiving clearance and approval to move forward with implementing block and access prescriptions.

3.0 Access Development and Harvesting Operations

3.1 Work Permit Application and Approval

Role of the Work Permit

Following review and approval of the OP for each operating year, the MQHA quota and allocation holders will submit work permit applications for each planned operation prior to the commencement of operations. The role of the work permit includes:

- MQHA provision of cutblock/road development timing and notification of the commencement of operations to MARD for approved areas as per the OP;
- Opportunity for MQHA to provide additional or amended information relative to OP approved cutblocks and access development for subsequent review and approval by MARD through the IRMT;
- Final discussion and development of mitigation, as required in addition to that developed at the OP stage; and,
- MARD approval of work permits includes:
 - Identification of any amended or additional conditions for implementation of operations and subsequent compliance monitoring; and,
 - Provision of any conditions required to meet forest fire protection requirements.

Information Requirements

The information to be provided for work permit applications varies according to the nature of the activity and the level of information already provided at the OP stage of plan development. In many cases, much of the information listed below has already been provided with the OP and would only be re-submitted for changes and modifications:

- Road construction (for new Primary and Secondary All-weather Road Construction):
 - Road name and location;
 - Amount and timing of construction activity;
 - Identification of road classification;
 - Locations of major watercourse crossings;
 - Activities to be undertaken (right-of-way clearing, stumping, grade construction);
 - Mitigation measures to be implemented (erosion control, etc.); and,
 - Maps and/or photos to identify locations.
- Watercourse crossing construction (may be incorporated with respective road work permit application):
 - Crossing name and location;
 - Type of structure and crossing design;
 - Timing of construction;
 - Soils information and indication of any required modifications to the stream banks;
 - Any further watercourse crossing investigation information results and site photos required beyond that provided with the OP;
 - Mitigation measures to be undertaken (erosion protection, etc.); and,
 - Maps and/or photos to identify locations.

- Log storage and processing sites:
 - Site location;
 - Required period of use;
 - Mitigation measures to be undertaken; and,
 - Maps and/or photos to identifications.
- Harvest operations:
 - Work permits for cutblocks include related temporary road or trail access and associated watercourse crossings;
 - Cutblock name as assigned in the AOP;
 - Location, operating area and operator;
 - Season of harvest;
 - Approximate volumes of timber by species;
 - Forest types description (FEC and/or general species composition); and,
 - Maps and/or photos identifying:
 - Roads to access the cutblock;
 - Cutblock boundaries;
 - Riparian management strategies;
 - Known in-block watercourse crossings; and,
 - Known sensitive sites.
 - Mitigation measures to be undertaken.

Responsibility for Work Permit Implementation

Each quota or allocation holder will be responsible for signing work permits and adhering to all conditions respecting operations for harvesting of their quota volume entitlement in FMUs 12 and 14.

Supervision and compliance of individual quota and allocation holders is the responsibility of MARD.

3.2 Integration of Harvest Operations

Where possible, efforts will be made to integrate the harvesting operations of individual quota and allocation holders in order to minimize overall duplication of effort and associated impact related to road development and other aspects of cutblock development.

- This includes the integration of softwood/hardwood harvests and/or the integration of small operator volume entitlements within larger harvest operations where such operators also contract for the larger quota holder operation; and,
- This strategy minimizes the landbase affected by road development and other forest management activities and focuses renewal and other follow-up efforts on a smaller overall landbase.

3.3 Silviculture Systems

The silviculture systems in use by the MQHA in FMUs 12 and 14 include:

- Modified Clearcut Silviculture System:
 - Applied to even-age softwood, hardwood and mixedwood stands;
 - Predominant system employed for application to pure hardwood stands and even-aged softwood stands; and,
 - Removal of merchantable trees from within the cutblock with application of a variety of modifications such as understory and wildlife/windfirm seed tree retention.
- Understory Protection for Uneven-aged Mixedwood Stands:
 - Removal of selected or prescribed trees from within the cutblock based on tree species, size or age;
 - Particularly applied to uneven-aged white spruce mixedwood stands in FMUs 12 and 14:
 - Removal of white spruce based on size and/or age criteria and the mature hardwood component; and,
 - Maintains windfirm immature white spruce and allows for hardwood natural regeneration.
- Seed Tree Retention in Mixedwood Stands with White Spruce Component:
 - Maintenance of mature white spruce trees as seed trees may be left to continue the source of seed and promote the continuance of the mixedwood uneven-aged stands in these areas;
 - Seed trees may be incorporated into the overall prescription for wildlife tree patch retention for the cutblock; and,
 - This prescription will only be applied where windfirm white spruce trees are present within patches of hardwoods to provide protection and support.

3.4 Timber Utilization Standards

The members of the MQHA develop a number of interim and final products from the timber harvested in FMUs 12 and 14. As such, the processing of timber from harvested stands results in a range of products including poles and posts, rails, chips and saw logs. During the planning stage and as part of the integration of operations, harvest plans are developed to consider the requirements of the various operators to develop plans to make full use of timber resources. Timber utilization by members of the MQHA will meet the standards for utilization specified by MARD Forestry Branch upon which the AAC is based.

3.5 Road Development and Management

3.5.1 Road Classifications

The MQHA use a road classification system for access development prescriptions in FMUs 12 and 14. Roads are classified into six classes as described in Table 3.1. As a result of the

existing access infrastructure present throughout much of the operating areas of FMUs 12 and 14, and in consideration of the cost of major road construction and the seasonal nature of many of the quota and allocation holder operations, very little Class I or II road is built. With a focus on winter operations, most roads are low-grade and unimproved trails with predominantly winter trails in use for many areas. Much of the access development in FMUs 12 and 14 consists of upgrading existing roads and trails for temporary use with the intent of returning the road to the original access level when operations are complete.

For descriptive and communication purposes, staff of the MQHA will use the classification system for roads described in Table 3.1.

3.5.2 Road Construction Requirements

Construction requirements for MQHA roads and trails include those described in Table 3.1 for the classification system. Details of construction procedures to be applied in upgrading of existing roads and trails and the development of new roads/trails are described in the following sections of these SOPs. The magnitude of construction that will be undertaken to develop roads corresponds to their intended use and life span.

Table 3.1: Road Classification System

Class	Descriptor	ROW Width	Surface Width	Criteria
1	Primary All- weather Road	45 m	8.5 m	<ul style="list-style-type: none"> ● Life span of 20 years or more ● Design speed up to 80 Km/hr ● Gravelled
2	Secondary All-weather Road	30 m	8 m	<ul style="list-style-type: none"> ● Life span up to 20 years ● Decreased design speeds ● Gravelled
3	Low-grade Road	20 m	8 m	<ul style="list-style-type: none"> ● Life span generally 1 – 2 years ● Longer for inter-block access ● Dry weather access. Gravelled if extended wet periods ● May include ditching and/or minor grade work
4	Unimproved High Ground Trail	20 m	6 m	<ul style="list-style-type: none"> ● Life span generally 1 – 2 years ● Longer for inter-block access ● Dry weather access. Gravelled if extended wet periods ● Development limited to clearing and stumping
5	Unimproved Seasonal Trail	20 m	6 m	<ul style="list-style-type: none"> ● Life span varies considerably dependent on the nature of the operation (generally 1 – 10 years) ● Longer for inter-block access ● Development limited to clearing and stumping ● Routing includes occasional crossings of lowland meadows/swamps ● Used only under frost conditions
6	Unimproved Winter Trail	15 m	6 m	<ul style="list-style-type: none"> ● Life span ranges from a single season to 5 years or more ● Longer for inter-block access ● Routing primarily through lowland meadows/swamps and water bodies ● All crossings are ice crossings ● Intermittent high-ground areas may be cleared and stumped ● Used only under frozen conditions

3.5.3 General Road Development Mitigation Strategies

Planning processes and construction procedures for road development will include a number of measures to mitigate potential impacts arising from the development of the road and its use, including consideration of identified values present in each area. Highlighted mitigation measures are described in the following sections. As described in the SOPs for planning, mitigation strategies are developed jointly with the IRMT and representatives of other government agencies as well as through input received from public consultation. Work with

the IRMT includes integration of other values through IRMT implementation strategies for a number of provincial guidelines and standards as listed below:

- *Forest Management Guidelines for Wildlife in Manitoba* (MNR, 1989);
- *Manitoba Sustainable Development Forest Practices Guidebook: Forest Management Guidelines for Riparian Management Areas* (MSD 2008)
- *Manitoba Sustainable Development Forest Practices Guidebook: Forestry Road Management* (MSD 2012)
- *Planning and Submission Requirements for Annual Operating Plans* (MNR, 1994a);
- *Ten Year Forest Management Plan Submission Guidelines* (MNR, 1998); and,
- *Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat* (MNR/DFO, 1996).

The MQHA was also involved with FPInnovations and Ducks Unlimited Canada in the development of the publication SP-530E RESOURCE ROADS AND WETLANDS: A guide for planning, construction and maintenance practices for resource roads that cross wetlands.

Mitigation strategies include:

- Location of roads:
 - Route as directly as possible and transverse as close as possible, to areas of timber concentration. The intent is to minimize road construction activity, length of road, area impacted, and associated costs;
 - Utilize all available information on sensitive sites and critical habitats in location and design of roads, including information obtained through PHS undertaken for cutblocks through which the road is routed;
 - Route to avoid sensitive sites, including known locations of vulnerable, threatened or endangered (VTE) plant species;
 - Locate roads in non-frost conditions on stable soils;
 - Utilize natural benches, moderate slopes, and ridges to reduce road cuts and fills; and,
 - Minimize locations approaching water sources and wetlands to the extent possible;
 - Investigate watercourse crossing locations in conjunction with road location in order to identify suitable crossings and integrate crossing locations and approaches into the overall road route.
- Right-of-way (ROW) clearing:
 - Minimize ROW widths to that needed for safe travel and effective drying of the road surface, with a general ROW maximum width of 20 metres;
 - Harvest and stockpile all merchantable timber within the prescribed ROW for utilization; and,
 - Clear and windrow non-merchantable trees along the edge of the ROW.
- Stumping and grubbing:
 - Pushing of stumps and removal from the trail/road areas required for obtaining mineral soil for sub-grade construction;

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- Stripping of duff and other organic matter as required for clearing of the unimproved trail or for subsequent deposition of grade material (Class I, II, or III) and from areas required for obtaining sub-grade materials as applicable;
 - Material to be windrowed to the side of the ROW and compacted as close to the ground as possible by tramping with heavy equipment;
 - Debris will not be pushed into standing timber;
 - In areas with soils/slopes that are subject to erosion, stumping and grubbing operations will be minimized to only the road alignment with progressive erosion control measures undertaken as work proceeds;
 - In wet locations the root mat will be maintained intact unless the mineral soil layer is close to the surface and suitable for sub-grade construction; and,
 - Tramping and blading for winter roads will be limited to the extent required to provide a safe and effective driving surface with disturbance to underlying rootmats and peatland surfaces minimized.
- Sub-grade and grade construction and borrow pits (Class I, II, III only):
 - Utilize suitable mineral soils from the ROW area or from borrow pits as required;
 - Granular material will be applied as a running surface for Class I and II roads;
 - Compact materials on road bed to provide stable travel surface and minimize erosion; and,
 - Minimize location of areas utilized for mineral soil from the ROW or borrow pits on downslopes approaching watercourses. Where this cannot be accommodated pits will be landscaped to ensure sediment does not enter the watercourse.
- Erosion control:
 - Undertake drainage control measures as required to prevent erosion;
 - Utilize appropriate materials and equipment to build roads;
 - Install cross-drain culverts through roads as required to minimize obstruction to drainage flows and pooling;
 - Route ditches and outflows to drain away from streams including use of deflection berms and off-take ditches to direct water into adjacent vegetation; and,
 - Utilize rip-rap as required on steep erodable slopes.
- Road and borrow pit abandonment and rehabilitation:
 - Borrow pits may be utilized for one or more seasons for construction and continuing maintenance. Once operations are complete in the area the following measures will be utilized:
 - The sides of borrow pits will be sloped to minimize erosion; and,
 - Overburden materials from the ROW and/or pit will be pushed into the pits, levelled and compacted.
 - Temporary roads and trails (Class III, IV, V, VI):
 - Removal of any temporary crossing structure will be undertaken once the road or trail beyond that point is no longer in use (use can include continuing utilization by other parties as directed by the IRMT); and,

- For Class III Roads and Class IV, V, and VI Trails, seeding of approaches may be undertaken in the spring on slopes subject to erosion where sedimentation may enter a watercourse. Straw bales could be placed on roads and trails or other measures taken if required to slow run-off.

3.5.4 General Watercourse Crossing Mitigation Strategies

Planning Processes

Planning of watercourse crossings will include the review of prescriptions and development of mitigation at the planning stage with appropriate government agencies as described earlier including the IRMT, DFO and Transport Canada (Navigable Waters Protection) where required. All crossings will be approved at the planning stage prior to construction and will be implemented in conjunction with guidelines provided in the *Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat* (MNR/DFO, 1996).

Crossing Types and Applications

The MQHA make use of a variety of crossing types to meet operational requirements and to implement crossings that will meet site conditions as follows:

- Arch Culvert
 - Can be utilized for permanent or temporary crossing structure;
 - Provides year-round access;
 - Applied to well-defined channels; and,
 - Enables water passage without alteration to the streambed.
- Round Culvert
 - Can be utilized for permanent or temporary (metal or plastic) crossing structure;
 - Provides year-round access; and,
 - Generally utilized for channels with width less than 2 metres.
- Timber Bridge
 - Temporary crossings of lifespan from 1 to 10 years;
 - Provides year-round access;
 - Maximum bridge span of 5 metres applied to relatively narrow channels;
 - No alteration to channel; and,
 - Minimum alteration to banks only as required to place abutments back from channel.
- Portable Bridge
 - Temporary crossings of lifespan from 1 to 10 years;
 - Provides year-round access;
 - Bridge span of 6 to 18 metres applied to varying channel widths;
 - No alteration to channel; and,
 - Minimum alteration to banks only as required to place abutments back from channel and for installation of cribbing, retaining walls or other measures to prevent erosion.
- Log – Geotextile Bridge

- Temporary crossings of lifespan from 1 to 5 years;
 - Logs placed at top of banks parallel to stream to act as abutments;
 - Log deck then placed to span the crossing sitting on top of these abutments;
 - Additional logs placed as side borders on both edges of the deck to prevent material from falling off the sides into the water;
 - Geotextile placed across entire deck and wrapped over the deck side borders providing a base cover layer impervious to soil movement to prevent seepage of soil materials into watercourse while allowing water to drain;
 - Soil material then placed on the geotextile/decking as required to provide level running surface, held in place by the geotextile; and,
 - Upon decommissioning of the crossing the geotextile and decking logs are rolled back and, along with the abutment logs, are pulled back from the crossing site, resulting in no lasting impact to the site channel or banks.
- Log – Geotextile Corduroy
- Temporary or permanent crossings for wetland areas such as treed fens, conifer swamps or alder runs with no defined channel flow or, a very shallow or intermittent channel with limited water flow;
 - Smaller diameter softwood trees or logs are placed across the drain in a corduroy fashion to enable continued water flow to take place;
 - The corduroy is then covered with geotextile material to provide an impervious base layer upon which the roadbed can be built; and,
 - If the crossing is decommissioned the geotextile and corduroy logs are pulled back and removed thereby minimizing impacts to the drain and associated channel.
- Snow and Ice
- Temporary winter crossing;
 - Snow is packed into the channel until a smooth road surface is achieved that allows for a level crossing above the height of the banks;
 - Relatively narrow and/or shallow crossings where the stream will completely freeze-up;
 - No alteration to the banks; and,
 - Upon decommissioning with spring thaw a V-groove is notched into the surface parallel to the banks to maintain the meltwater within the channel banks and prevent erosion from occurring.
- Ice Bridge
- Temporary winter crossing;
 - Ice bridges are built across wider watercourses where water flow is slow enough to permit flooding and freezing of the road travel surface width to a safe thickness to enable heavy truck traffic; and,
 - Upon decommissioning with spring thaw a V-groove is notched into the surface parallel to the banks to maintain the meltwater within the channel banks and prevent erosion from occurring.

Mitigation Measures

Mitigation strategies for crossing construction will consider:

- Location of crossing:
 - Placed where channel is well defined, unobstructed and straight;
 - Minimize location in areas of fish spawning habitat;
 - Select narrow point of stream for crossing; and,
 - Minimize requirement to cut banks for construction.
- Develop road approaches:
 - To cross at right angles to the stream;
 - Minimize ROW width on slopes of approaches to be as narrow as possible;
 - Maintain root mat on slopes to extent possible; and,
 - Allow for gentle, direct and stable approaches.
- Crossing structures to be designed to:
 - Not restrict stream flow or impinge on stream channel;
 - For fish-bearing streams, allow both upstream and downstream movement of fish year-round; and,
 - On navigable streams, accommodate boat travel as per the *Navigable Waters Protection Act* through the approval of Transport Canada.
- Construction activities:
 - On fish bearing streams, construction is restricted to those periods of the year as identified in the DFO (Fisheries and Oceans Canada) Manitoba Operational Statement *Manitoba In-Water Construction Timing Windows For The Protection Of Fish And Fish Habitat*,
 - Localized with minimal disturbance to stream banks or upstream/downstream areas; and,
 - Structures are backfilled with suitable materials.
- Erosion control mechanisms as required may include:
 - Armouring of erodible areas with rip-rap;
 - Construction of deflection berms on approach slopes to divert run-off away from watercourses and into adjacent vegetation to filter sediment;
 - Erosion control matting on disturbed slopes adjacent to waterways;
 - Seeding of slopes as required to stabilize soils; and,
 - Silt fencing during and following installation to prevent siltation into waterway.

Mitigation measures for ice crossings and temporary portable crossings will include:

- Location of ice and temporary crossings:
 - At points of lowest possible slopes to reduce requirements for cutting and disturbance of the bank.
- Establishment and use:
 - Construction and use limited to periods providing frozen ground conditions;
 - Limit width of road surface and ROW at watercourse approaches;

- Minimizing exposure of mineral soils and maintenance of root mats to extent possible on approach slopes;
- Use of straw bales or other deflection mechanisms as needed for erosion control; and,
- Debris and soil is not to be pushed onto and left on the ice. Any material deposited on the ice during establishment will be pushed back onto the bank prior to break-up.

3.5.5 Access Management and Decommissioning/Retirement

Access Management

Access management mechanisms are developed to mitigate issues and concerns relative to backcountry access for hunting and fishing and other forest management objectives (safety, minimizing damage to road surfaces, etc.). Prescriptions for access management are developed in conjunction with the IRMT and put into place under the approval of MARD.

Methods to be applied depend upon the current and potential future use of the road for conducting forest management activities and/or other land uses. Access management mitigation mechanisms can include:

- Earth and/or snow berms;
- Spreading of slash and woody debris;
- Removal of temporary crossing structures and/or access road approach; and,
- Installation of gates and closure.

Decommissioning/Retirement

Once a newly developed or upgraded temporary road or unimproved trail is no longer required for forest management activities it may be temporarily or permanently decommissioned dependent upon other access requirements. Many of the access routes utilized by the MQHA consist of already existing trails that are then upgraded to the extent necessary for temporary use as outlined in the listing of road classifications in Table 3.1. Once operations are complete, steps are then taken to decommission the road to allow it to return to the original access condition prior to upgrade. As with access management, decommissioning actions are only taken in conjunction with IRMT review and approval.

For roads, trails, camps and other infrastructure sites no longer in active use, decommissioning includes:

- Removal of equipment and construction materials;
- Roll back and spreading of slash and organic materials as required to aid in the return of the site to its original condition and level of access and use;
- Removal of temporary crossing structures and/or access road approach;
- Seeding or other erosion control measures to stabilize banks and slopes as needed; and,
- Natural re-vegetation of the site with potential subsequent forest renewal by MFSRC in association with adjacent cutblocks.

3.5.6 Road Maintenance

Road maintenance activities are undertaken to ensure roads and trails in use for forest management activities are safe and in operable condition. Maintenance activities will include:

- Inspection of routes and associated watercourse crossings to ensure that safe road conditions and that employed mitigation strategies are effective;
- Grading and levelling to maintain safe driving conditions, and to maintain drainage, prevent pooling and minimize rutting;
- Snow removal to maintain safe travel conditions and to limit snow/water build-up and subsequent pooling and rutting;
- Clearing of culverts and other crossing structures to ensure that water flows are maintained to prevent pooling and flooding of areas and damage to road structures; and,
- Clearing of brush within ROW areas as required to maintain safe driving conditions.

3.6 Harvest Operations

3.6.1 Forest Stand Selection

At the planning stage, stands are considered for harvest eligibility based on characteristics including covertype, minimum merchantability, and age class. Final stand selection and schedule for harvest is based on:

- Mill facility timber supply requirements;
- Forest stand timber and operating conditions;
- Contractor availability and equipment;
- Safety considerations;
- Potential for erosion and other factors that may impact other values (water resources, wildlife habitat, resource users, aesthetics, sensitive sites, etc.);
- Available access and access management concerns; and,
- Timber salvage priorities resulting from insect and disease and fire.

To assess these factors and select stands for harvest, a variety of information sources and other factors are considered:

- Forest inventory;
- Aerial photography;
- Orthophotography;
- Satellite imagery;
- Personal knowledge;
- Stakeholder priorities;
- Location of known cultural / historic sites;
- Location of known “exceptional” features;
- Past operating experience for area;
- Pre-harvest surveys; and,
- Public consultation.

3.6.2 Operating Areas and Cutblocks

Operating Areas

Within FMUs 12 and 14 the MQHA makes use of a series of identified operating areas for the purpose of organizing and tracking forest management activities across the landscape. These operating areas have been developed with several criteria in mind:

- Concentrations of mature timber;
- Logical geographic boundaries based on features such as topography, watercourses and drainages and man-made features such as road networks;
- Existing and planned access infrastructure providing logical effective access to concentrations of timber; and,
- Access to primary access routes (e.g. major roads and highways).

Cutblocks

Within operating areas, cutblock location, design, and scheduling are driven by a number of factors as identified through a variety of sources, including the site specific PHS:

- Natural topographical features;
- Soil types and moisture conditions;
- Forest types and age class distribution corresponding to stand classifications that comprise the provincial AAC;
- Existing and planned road infrastructure;
- Volume requirements for operators to be located in the area;
- Identified non-timber values for the area including resource users;
- Forest health and vigour:
 - Insect and disease damage, salvage needs, control requirements related to harvest design; and,
 - Fire history, salvage needs.

Overall cutblock size is guided by MARD Forestry Branch guidelines indicating a normal maximum size of 100 ha. (MNR, 1995). Larger cutblocks may be proposed for approval by the Director of Forestry under certain conditions such as for the purpose of salvage operations.

Subsequent pass cutblocks are scheduled within the harvest plan based upon:

- Adjacent cutover renewal status relative to minimum MARD reforestation standards for return cuts (adjacent cutover has met MARD renewal standards and regeneration has met minimum height of 2 metres for softwood and 3 metres for hardwood); and,
- Health and vigour of stands in the leave cutblocks which could result in salvage requirements or control cuts as part of an insect/disease control program.

Within cutblocks, plan design and operational implementation will incorporate a number of mitigation criteria, dependent upon the values present in each area. Highlighted mitigation measures are described in the following sections. As described in the SOPs for planning, development of mitigation is undertaken jointly with the IRMT and representatives of other government agencies and includes public consultation. Work with the IRMT includes integration of other values as provided through the IRMT's implementation strategies for a number of provincial guidelines and standards as listed below:

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- *Forest Management Guidelines for Wildlife in Manitoba* (MNR, 1989);
 - *Manitoba Sustainable Development Forest Practices Guidebook: Forest Management Guidelines for Riparian Management Areas* (MSD, 2008);
 - *Manitoba Sustainable Development Forest Practices Guidebook: Forestry Road Management* (MSD, 2012);
 - *Manitoba Sustainable Development Forest Practices Guidebook: Brush Disposal* (MSD, 2005);
 - *Planning and Submission Requirements for Annual Operating Plans* (MNR, 1994a);
 - *Timber Harvesting Practices for Forestry Operations in Manitoba* (MNR, 1994b);
 - *Forestry Cut Block Guidelines* (MNR, 1995);
 - *Ten Year Forest Management Plan Submission Guidelines* (MNR, 1998); and,
 - *Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat* (MNR/DFO, 1996).
 - *Manitoba Sustainable Development Forest Practices Guidebook: Pre-harvest Surveys* (MSD, 2002)
 - *Manitoba Sustainable Development Forest Practices Guidebook: Protection of Softwood Understory in Mixedwood and Hardwood Forests* (MSD, 2012)
 - *Manitoba Sustainable Development Forest Practices Guidebook: Forest Management Guidelines for Terrestrial Buffers* (MSD, 2010)

Timber Storage Sites (Including Chipper Wood Storage)

In most cases sawlogs are delivered to the mill as soon as possible to minimize inventory costs incurred in holding the wood. Chipper wood is generally moved to storage locations at staging points on all-weather roads or provincial highway locations that will enable future hauling of the chips under all weather conditions without damage to roads or delays to deliveries. Where timber is stored in the bush it is generally over a single season for haul under improved road conditions (reduced moisture or frozen ground):

- Consideration of topography and soils in site selection for the storage of timber results in site selection to keep logs away from downslopes leading to streams and lakes; and,
- Where local terrain allows, log storage sites will be placed at least 30 metres from drainage areas and 100 metres from permanent watercourses to ensure that run-off does not enter adjacent waters.

Camp, Equipment and Fuel Storage and Service Sites

Camp, equipment and fuel storage sites are minimized to the extent needed to facilitate efficient operations. Location, development and use of these sites will meet requirements as described in the MARD conditions attached to each approved work permit including the following actions:

- Careful storage and handling of petroleum products is undertaken to minimize spills, and where they occur, to contain, report and clean up as required to meet MARD requirements;
- Waste oil and other equipment lubricants will not be drained onto the ground or into watercourses. Such materials will be drained into leak-proof containers for transportation

and disposal at an approved disposal site or recycling facility or incineration in a registered CSA certified oil burner;

- Consideration of topography, soils and high-value recreation/tourism locations in site selection for the location of fuel storage and equipment servicing sites on level terrain and to ensure that these are not located on downslopes leading to any watercourse;
- Undertake regular inspections of equipment and storage tanks to minimize the opportunity for, and / or respond to, spills of fuel or other petroleum products and,
- Locate and construct fuel storage sites in accordance with the requirements of the *Manitoba Environment Act and Regulations*.

3.6.3 Residual Vegetation Protection

Protection of residual vegetation within and surrounding cutblocks is undertaken to assist in protection of softwood understory regeneration, maintenance of structural and genetic diversity, provide wildlife habitat, break lines-of-sight and improve aesthetics within operating areas. Measures undertaken by MQHA operators on softwood operations complement those utilized by LP on its hardwood cutblocks for understory protection in the overall goal of maintaining structural diversity across FMUs 12 and 14.

Protection and retention of residual vegetation will be subject to maintaining safe working conditions as per Manitoba Workplace Health and Safety regulations.

Maintenance of residuals can incorporate objectives associated with retention of trees for protection of softwood understory regeneration and for wildlife habitat (wildlife trees), including:

- Retention of softwood understory in mixedwood and hardwood forest stands to provide advanced regeneration for promotion of natural regeneration, enhancement of the softwood timber supply and reduction in renewal costs:
 - Primarily applied to retention of healthy white spruce advanced regeneration; and,
 - Where large areas of softwood understory regeneration are diseased or infected (root or stem decay, stem cankers, dwarf mistletoe) softwood understory protection may not be appropriate.
- Retention of immature, mature and overmature trees having poor form, decay and other characteristics not preferred for timber utilization (non-merchantable) for wildlife trees, provided that such tree retention will not promote infection of other healthy trees or regeneration.

Mitigation strategies to retain residual vegetation, including wildlife trees, will include:

- Review of findings from the PHS to identify areas of expected residual vegetation from harvesting operations and potential areas of concentration;
- Make use of guidelines offered by the *Manitoba Sustainable Development Forest Practices Guidebook: Protection of Softwood Understory in Mixedwood and Hardwood Forests* (MSD, 2002) for harvest prescriptions and management of cutblocks for which PHS data and management and renewal objectives correspond to softwood understory protection for advanced regeneration;

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- Taking care at harvest and skidding / forwarding phases of operations to avoid areas of concentrated residual vegetation, particularly areas of concentrated softwood understory of white spruce and residual vegetation adjacent to wetland areas and streams;
 - Locating roads trails and landings away from identified areas of residuals concentration;
 - Subject to safety considerations and equipment limitations, operators will avoid knocking down standing residuals; and,
 - Avoid isolated clumps containing only a few trees that contain high densities of understory.

3.6.4 Riparian and Aquatic Habitats

The MQHA recognizes the significant values contributed by riparian areas to the overall diversity of the boreal forest and the particular value of these areas to fish and wildlife habitat, stream flow characteristics, non-timber resource users and aesthetics. Planning and operating mitigation strategies related to road construction and watercourse crossings in these areas has been described earlier in these SOPs.

Planning and conducting operations in riparian areas involves the following activities:

- PHS's are undertaken and results reviewed to identify any critical values in the area requiring protection;
- Review of recreational and other specific values with the IRMT during OP development to identify key areas requiring buffers for aesthetic purposes;
- Review of fisheries values in conjunction with planned watercourse crossings with the Regional Water Stewardship Fisheries Biologist;
- Review of navigable waters potential; and,
- Input from resource users and interested parties through the public consultation process.

The principal mitigation strategy used for managing riparian zones involves the use of buffers of varying widths and management levels that serve to filter sedimentation, assist in maintaining water temperatures, provide for wildlife habitat and travel corridors and for maintenance of aesthetic quality.

- The MQHA will utilize the Manitoba Sustainable Development Forest Practices Guidebook; Forest Management Guidelines for Riparian Management Areas (MSD 2008);
- Application of buffers can include limits to tree harvest, heavy equipment travel and road or landing development in the vicinity of watercourses as appropriate and specified in the harvest prescription;
- Modifications will often occur in response to specific values to be managed, age and health of trees within the buffer, slope, soils, season of harvest and the susceptibility of trees to windthrow. Modifications are approved by the IRMT;
- Selective harvesting may be prescribed within buffer zones under site specific conditions; and,
- Final mitigation for riparian management areas will be developed jointly with the IRMT.

An additional tool utilized for protection of riparian values is the scheduling of cutblocks for winter seasonal harvest operations, this strategy:

- Limits road and harvest operations to take place on frozen ground; and,
- Reduces ground disturbance and soil exposure and the potential for erosion and sedimentation.

3.6.5 Wildlife Habitats

The MQHA works closely with the IRMT to meet wildlife objectives for FMUs 12 and 14 in the planning and implementation of its forest management activities. The planning and operating procedures described here are used in conjunction with the guidelines and standards for Manitoba referenced in Section 3.6.2, particularly the *Forest Management Guidelines for Wildlife in Manitoba* (MNR, 1989). Guidelines described above for residual vegetation protection, riparian zone management, and access management play a key role in contributing to the incorporation of wildlife management objectives in forest management planning.

General guidelines to be utilized are as follows:

- Use pre-harvest surveys to provide information on wildlife habitat values for areas planned for harvest in advance of OP and work permit submissions;
- Use natural terrain and vegetation boundaries to plan and lay out cutblocks, resulting in harvest openings that are variable in shape and size across the landscape, and which emulate natural disturbance patterns and patch distribution;
- Within cutblocks, use residual vegetation guidelines to ensure clumps, islands and single trees are left standing. This strategy minimizes losses of non-merchantable trees and retain wildlife trees (subject to Manitoba Workplace Safety and Health regulations) to provide structural diversity and future snags;
- Within cutblocks, moderate levels of coarse woody debris will be left scattered throughout harvested areas, assisting with structural diversity and benefiting long term soil productivity;
- Within and adjacent to cutblocks and roads, adhere to riparian management guidelines, including establishing buffers and corridors to maintain important riparian and aquatic habitats;
- Use road planning and construction guidelines (Section 3.5) to incorporate aquatic habitat values to planning and implementing forest management activities; and,
- At the planning stage, identify harvest and access development schedules that can be used to meet wildlife habitat management objectives, including use of winter operations and associated seasonal access restrictions.

Mitigation strategies to integrate wildlife habitat objectives will be facilitated through a joint process including the IRMT and local Manitoba Agriculture and Resource Development staff. This process enables the integration of these general SOP guidelines with district level concerns, and with those described in various Manitoba guidelines and standards for application at the OP and work permit planning levels.

3.6.6 Exceptional Features & Specialized or Unique Habitats

Exceptional features and specialized or unique habitats can include a number of rare or critical habitats, plant or wildlife communities, or biophysical, geophysical or topographic features.

These types of features typically hold key values to one or more wildlife or plant species or are sites which are sensitive to disturbances. These may include:

- Mineral licks;
- Unique nesting locations (raptors nests, great blue heron rookeries);
- Steep slopes; and,
- Critical wildlife winter habitats.

Where specialized or unique habitats are identified, either before harvest (PHS, MARD surveys) or during operations, the MQHA will work jointly with the IRMT to address the management needs for the site. Management prescriptions will be developed and incorporated into the overall planning for associated cutblocks and roads including use of:

- Buffers;
- Exclusion areas;
- Amended scheduling of operations;
- Access management controls; and,
- Cessation of activities.

3.6.7 Vulnerable, Threatened and Endangered Species

Where a Vulnerable, Threatened or Endangered (VTE) plant, plant community or animal species is identified that falls within the Manitoba Endangered Species Act (MESA) or the Committee Of the Status of Endangered Wildlife In Canada (COSEWIC), either before or during operations, the MQHA will work with the IRMT to implement appropriate measures which may include:

- Buffers;
- Exclusion areas;
- Amended scheduling of operations; and,
- Cessation of activities.

3.6.8 Heritage Resources

Where locations are identified as unique cultural and heritage sites the MQHA will work with Manitoba Heritage Resources Branch and the IRMT to develop appropriate mitigation for incorporation into the OP and work permits.

Appropriate measures which may include:

- Modification to operational prescription;
- Buffers;
- Exclusion areas; and,
- Amended scheduling of operations.

3.6.9 Aesthetic Values

The MQHA recognizes the value that is placed upon aesthetic qualities and viewscapes by a range of people and the contribution made in this regard to recreational and commercial operations such as hunting, fishing and outfitting. The planning process utilized by the MQHA includes:

- Public consultation to enable direct review and input to the planning process by interested stakeholders and the general public; and,
- Joint mitigation development with the IRMT to enable full review of proposed forest management activities, including incorporation of measures to maintain aesthetic values.

Measures used to address aesthetic value concerns are generally integrated with those associated with other non-timber values and include:

- Buffers of varying widths and vegetation composition along watercourses of high recreational value;
- Retention of residual vegetation within cutblocks to maintain structural diversity and reduce line of sight; and,
- Cutblock planning and layout design to include a variety of opening shapes and sizes which follow natural terrain and vegetation edges across the landscape, resulting in an appropriate mosaic of forest stands as renewal occurs.

3.6.10 Recreational, Commercial and Other Uses

The MQHA recognizes the value that is placed upon the forests of FMUs 12 and 14 for a variety of recreational, commercial and other uses including trapping, commercial and recreational fishing, hunting, outfitting and snowmobiling. The MQHA maintains processes designed to enable communication to take place with organizations and individuals involved in these activities. The planning process used by the MQHA includes:

- Public consultation to enable direct review and input to the planning process by interested stakeholders and the general public; and,
- Joint mitigation development with the IRMT to enable full review of proposed forest management activities, including incorporation of measures to address non-timber user concerns.

Measures used to address recreational and non-timber commercial and non-commercial values concerns are generally integrated with those associated with other non-timber values and include:

- Buffers of varying widths and vegetation composition along watercourses of high recreational value;
- Retention of residual vegetation within cutblocks to maintain structural diversity;
- Cutblock planning and layout design to include a variety of opening shapes and sizes which follow natural terrain and vegetation edges across the landscape, resulting in an appropriate mosaic of forest stands as renewal occurs;
- Incorporation of specific identified values such as trails and cabins into the planning process to minimize disruptions; and,

- Access management strategies which respect traditional levels of access, and return upgraded roads and trails to the condition and level of access which existed prior to recent forest management related improvements.

3.7 Operational Implementation

Implementation of these SOPs and all conditions of approval relating to OP and work permit submissions is the responsibility of each individual quota or allocation holder.

At the planning stage, the OP submission is provided to MARD for approval on behalf of all members of the MQHA operating in FMUs 12 and 14. Subsequent work permits for authorization to conduct operations will be submitted by the Mountain Quota Holders Association on behalf of the respective quota or allocation holder. It is then the responsibility of the respective quota or allocation holder to review and commit to all conditions of approval and sign the work permit.

Supervision is then to be undertaken by each quota holder to ensure all conditions of the approved OP, Environmental License and Work Permit are met on the operation.

Once approved, all operations will be confined to the boundaries of the respective approved area (cutblock, road or trail ROW, or other infrastructure site). Temporary work stoppages may be utilized where necessary to minimize impacts due to changes in operating conditions (i.e. wet soils, extreme weather events). Similarly, application for contingency cutblocks may be made to accommodate these or other changing operating conditions.

Monitoring and regulation of all quota and allocation holders on FMUs 12 and 14 will be undertaken by MARD through compliance monitoring, including final cutblock inspection and clearance prior to subsequent approval of further work permits for new operations.

4.0 Forest Renewal

4.1 Responsibility for Forest Renewal

The Mountain Forest Section Renewal Company (MFSRC) has responsibility for planning and undertaking forest renewal activities for areas to be harvested by MQHA quota and allocation holders for FMUs 12 and 14. This responsibility includes the subsequent monitoring of renewal success for all such areas harvested by these operators.

In support of these renewal actions the MQHA quota and allocation holders are assessed a forest renewal fee as a component of the timber dues payable to MFSRC for all timber harvested from Crown lands.

4.2 Role of Mountain Quota Holders Association

In addition to this financial contribution made in support of forest renewal activities for FMUs 12 and 14, the MQHA works cooperatively with MFSRC to assist in the preparation of plans for forest renewal prepared as part of the OP process.

The MQHA and LP:

- Provide information from PHS surveys for each planned cutblock to assist in the preparation of pre-harvest renewal prescriptions by MFSRC staff;
- Provide additional on-going advice and information for harvested areas, including information on access limitations and other operational limitations and opportunities; and,
- Work cooperatively with MFSRC staff to integrate the MFSRC forest renewal plans within the OP for FMUs 12 and 14.

5.0 Forest Protection

5.1 Responsibility for Forest Protection

Manitoba Agriculture and Resource Development has responsibility for planning and undertaking forest protection activities for FMUs 12 and 14. This responsibility includes monitoring programs, and implementation of insect and disease control programs, as well as the fire protection program.

5.2 Role of Mountain Quota Holders Association

In support of forest protection programs for FMUs 12 and 14, the MQHA works cooperatively with MARD to assist in the preparation of plans for forest protection activities, and by updating MARD with an indication of program effectiveness. The MQHA:

- Provides information from PHS surveys for each planned cutblock to assist in identification of any insect or disease infestations or damage for evaluation by MARD Forestry Branch;
- Provides additional on-going advice and information for areas in FMUs 12 and 14 where potential insect or disease infestations may be of concern; and,
- Work cooperatively with MARD staff to review and revise harvesting plans as applicable to assist in control measures for combating insect or disease infestations.

February 2022

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APPENDIX II

SPL PRIMARY ACCESS PLAN

(FMU 14)

2022 – 2024 OPERATING YEAR

SPL PRIMARY ACCESS PLAN (FMU 14)

1.0 Background Information

The National Mills, Virgin Lake and Rice Creek Roads have been in existence for over 25 years as forest resource access roads and were used by industry during both summer and winter. Although these roads have not been used to any great extent by the forest industry for a number of years, government and industry personnel, as well as the public, have continued with fairly consistent use of this road for resource management and recreational purposes.

More recently, primarily due to weight restrictions, market conditions and changing customer requirements, changes have been necessary in the movement of wood from the top of the Porcupine Hills.

Re-establishment of these primary roads is required to move wood south to PR 365 and east to the Baden stockpile site.

2.0 Access Development

The intent of use for these primary roads is winter access and haul, and as such, no major road improvements are anticipated at this time. Some work has been required to maintain/repair some existing grades, corners and crossing locations primarily for safety reasons.

However, the operating areas transected by these primary roads do have summer accessible wood. In the event summer wood is required by Spruce Products as a result of market conditions or low yard inventories, these areas will be activated. If so, upgrading will be required to return some roads to a Class II level (see MQHA Road Classification System attached). These roads were at one time Class II summer haul roads; however, neither the province nor industry has maintained them to any degree for at least 15 years.

Four main crossing locations have been installed to allow unrestricted traffic flow across rivers without damage to the aquatic environments. These crossings were all culvert installations that washed out due to heavy rain/flooding events and never repaired/replaced.

Virgin Lake Road – Unnamed creek inflow to Steeprock Lake

- Approx. 1 km west from the end of PR 385
- Navigable
- A 46.5 ft. single span metal bridge with wooden decking was installed at this location
- This is a permanent crossing

Virgin Lake Road – Km 9 - Hoodoo Creek

- Non-navigable
- A 53 ft. single span metal bridge with wooden decking was installed at this location
- This is a permanent crossing

Virgin Lake Road – Km 16 – Spider Creek

- Non-navigable
- A 53 ft. single span metal bridge with wooden decking was installed at this location
- This will be in place for a minimum of 5 years

Rice Creek Road – Km 24.5 – Rogers Creek

- Non-navigable
- A 53 ft. single span metal bridge with wooden decking was installed at this location
- This is a permanent crossing

Further access management strategies will be developed for roads into operating areas that do not have current access or previous infrastructure and identified prior to the development of Operating Plans.

Information will include:

- A general description of the road development and timber harvest strategy
- Proposed periods of activity within the operating area
- A map showing the road system and class of each road
- Location of each water crossing
- The access management strategy for the operating area with decommissioning or access control plans

Road development plans may change due to:

- Economic conditions in the forest industry
- Forest health conditions i.e. Insects, disease, fire, etc.
- Wood yard inventories

3.0 Road Maintenance and Safety

The intent of use for these roads is primarily winter and as such maintenance has been limited to:

- Clearing of the brush that has ingrown along the road to widen the right of way, with attention to the inside of all corners for obvious safety reasons
- Cut and fill on two hill locations to reduce the grade
- Straightening of one narrow/sharp curve for safety reasons
- Winter grading/snow clearing
- Spreading gravel on hills and corners during the winter haul season

- Signage posted where necessary to warn the general public and insure safe movement of traffic on the logging roads
- Clearing culverts during the summer that are plugged by beavers to avoid washed out grades
- Regular inspections of crossing structures each spring and periodic following major rain events

4.0 Access Control

Spruce Products Limited realizes the need to control access and will work with the local I.R.M.T. to solve access control issues on inactive/non-maintained portions of the road to mitigate wildlife resource concerns, public safety issues and, to protect road infrastructure.

Access control strategies will be identified for new or improved secondary roads that are developed off the primary access roads.

Methods of access control and timing will vary dependent on harvest and renewal activity:

Temporary – Harvest and renewal activity ongoing in an operating area

- Impassable ground following spring thaw of winter roads
- Berms
- Slash and debris

Permanent – Completion of 1st pass harvest in an operating area

- Impassable ground following spring thaw of winter roads
- Removal of crossings
- Ditching
- Berms
- Slash and debris

Five gates are already in place at various locations on these primary roads:

Virgin Lake Road

- One is located at Km 29 which is the end of the Steeprock Lake Rd

National Mills Road

- One is located at the junction of PTH #77 and the National Mills Rd.

Rice Creek Road

- One is located immediately past the junction of the Rice Creek Tower Road

5.0 Short Term Requirements

Operational plans for the 2022-24 operating years include:

Chipperwood and Log Haul Operations

Summer 2022 to March 2024

Virgin Lake Rd.

- ST Blocks to PTH 10
- AR and LW Blocks to National Mills stockpile site and PTH 77

6.0 Long Term Forecast

Current annual softwood and hardwood quota volumes which would potentially be harvested from the Rice Creek (southwest), Armit, and Virgin Lake operating areas in FMU 14 are:

	<u>Softwood</u>	<u>Hardwood</u>
SPL Quota/SA Marvin Capital Corp.	83,694	500
Adams	756	
Wozny	157	
Prendiville Industries (Prairie Forest Products)	12,500 2,577	
Thompson		1,000
Barker		2,000
Kotyk	2,037	500
Intermountain Contracting		7,000
Total	<u>101,721</u>	<u>11,000</u>

The above annual quota volumes can vary depending on any undercuts carried forward.

The attached map shows forecasted harvest locations in the Rice Creek, Armit and Virgin Lake operating areas. Based on a two-pass harvest system and an annual softwood quota of ~ 80,000 m³, the volumes shown below will sustain 20 years of harvest. Approx. 55% of that volume is only the first pass.

<u>Area</u>	<u>Volume</u>	<u>Harvest Period</u>
Spider Lake Jctn. (1 st pass)	20,000	1 year
Johnson Lake (1 st pass)	120,000+	3 - 4 years
Woody Lake Southwest (1 st pass)	120,000	3 - 4 years
Woody Lake West (1 st pass)	25,000	1 year
Fagnan Lake (1 st pass)	60,000	2 - 3 years
Spider Lake (2 nd pass)	200,000	5+ years
Stove Road (2 nd pass)	25,000	1 year
Rice Creek (2 nd pass)	42,000	1 - 2 years

7.0 Consultation

As in past plans, the Mountain Quota Holders Association will work with resource stakeholders to identify issues related to access development into operating areas in order to mitigate issues/concerns. This will be done during the AOP development process.

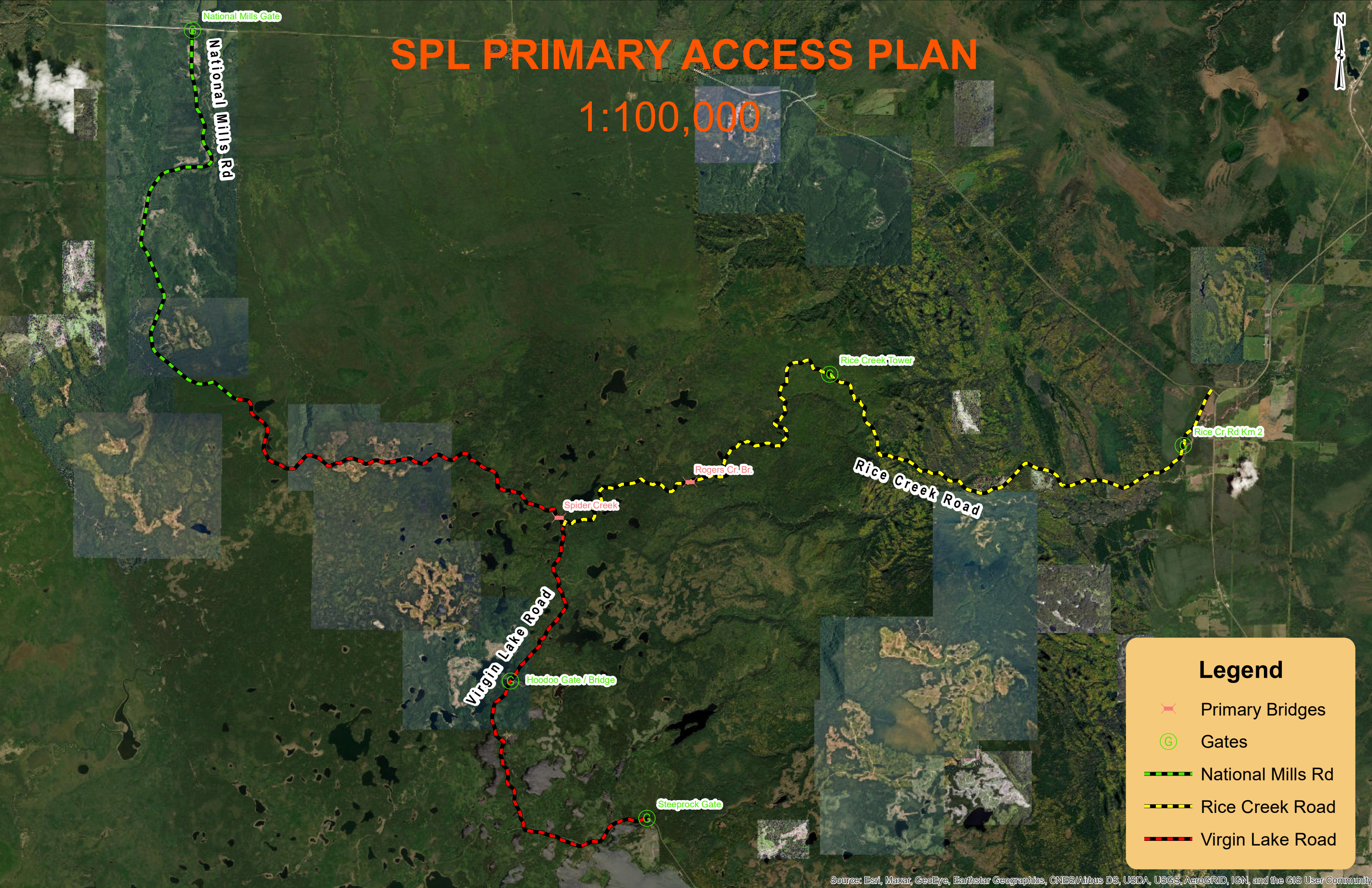
Current stakeholders in FMU 14 include:

- Outfitters
- Trappers
- North Mountain Riders Snowmobilers
- Swan Valley Sport Fishing Enhancement Assoc.

First Nations are consulted through a separate process with MCWS.

SPL PRIMARY ACCESS PLAN

1:100,000



Legend

- Primary Bridges
- Gates
- National Mills Rd
- Rice Creek Road
- Virgin Lake Road

APPENDIX III

STEEPROCK FOREST ROAD

DEVELOPMENT PLAN

2022



STEEPROCK FOREST ROAD DEVELOPMENT PLAN



MOUNTAIN QUOTA HOLDERS ASSOCIATION

FEBRUARY 2010

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1.0 PURPOSE

The purpose of the Steeprock Forest Road Development Plan is to develop access into the area east of Steeprock Lake in order to source a summer wood supply for the quota holders in Forest Management Unit 14. Most of the area encompassed by this road development plan is targeted as summer harvest, except for the northeast side which is not summer accessible and will be harvested during winter. The forest management plan for this area is a single pass harvest due to the age and health of the forest. Based on current economic conditions, planning levels and, allowable annual volumes, this area could provide approximately 30 years of harvest at approximately 150 hectares per year. Initial access into this area began in 2008.

The first draft of this plan was presented to the public at the 2010-2011 Mountain Quota Holders Association open houses held Feb. 8th and 9th, 2010.

Mitigation of issues or concerns with the Steeprock Forest Road Development Plan will be undertaken jointly with the Western Region Integrated Resource Management Team (I.R.M.T.) of Manitoba Conservation.

2.0 AREA DESCRIPTION

The total area encompassed by this plan is 10,809 hectares. The area of merchantable timber is 4,230 hectares which will generate approximately 850,000 m³ of fiber, primarily softwood.

The plan area is bordered to the north/northeast, east/southeast by the Steeprock-Bell Protected Area. This is a permanent leave.

There will be a no harvest corridor extending from the Protected Area on the northwest side to PR 365 at Steeprock Lake and north to Shade Lake. This leave area is 1460 hectares and comprised of both juvenile pine/spruce (past harvest) and mature/overmature pine/spruce covertypes. No forest management activities will be planned in this corridor until the VL blocks in the Shade Lake area reach adjacency.

The north Bell leave area to the south encompasses 2204 hectares of both juvenile pine/spruce (fire/hail damage) and mature/overmature pine/spruce covertypes. The mature/overmature softwood in the north Bell leave area has been in recent plans for harvest, however, the

registered trap line holder was concerned about sustaining Marten habitat so the planned blocks will not be harvested.

The area description above is summarized as follows:

Total Plan Area	10,809 Ha
Merchantable Harvest	4,230 Ha
No Harvest	3,664 Ha
Non-Operable	2,915 Ha

Approximately 61% of the total area will not be harvested.

3.0 FOREST VEGETATION

The vegetation in this area consists primarily of overmature black spruce/jack pine stands. There is a very minor component of hardwood associated with the upland spruce/pine covertypes.

The dominant V-Type of the proposed harvest blocks is V-28. Soil types associated with these are fresh/coarse loamy, generally deep mineral soils.

The non-merchantable stands within this planning area are primarily V-29/32/33 V-Types with the associated wet, poorly drained deeper organic soils.

Much of this area has evidence of advanced stem and root rot. Mortality is approximately 10% with blowdown throughout. Western Gall Rust is prevalent in the overmature pine and already evident in the young pine that has regenerated in the adjacent cutovers to the east and west.

4.0 RESOURCE USE

The southwest and southeast sides of this plan area have had previous forestry activity. Salvage harvest of hail damage timber occurred in the early to mid 1990's.

There are two registered traplines on the area. Most of the plan area is covered by RTL #6 which is trapped by Herb Leslie. The extreme north portion of the plan area is covered by RTL #7. The trapper is Frank Fagnan.

The old logging trails to southwest and southeast are used by licensed and non-licensed (aboriginal) hunters. These are ATV accessible for the

most part. There are no vehicle restrictions regarding hunting in this forest management unit.

The area within this road plan has no lakes that support sport fishing.

There are currently no outfitters active in the area; however, the local outfitter(s) will be consulted on this current plan.

There should be no conflicts with the North Mountain Riders snowmobile trails in this area. One road right-of-way will cross the snowmobile trail at three locations (SR-56 Rd). The SR-99 Rd will parallel portions of the snowmobile trail. If these roads are active during the snowmobile season, consultation will take place with the snowmobile club. Signage will be implemented for safety purposes.

Resource user consultation regarding this road plan will take place at the Annual Operating Plan level.

5.0 TRADITIONAL USE

No traditional use has been identified on this area other than what was defined in the above section (4.0 RESOURCE USE).

6.0 EXISTING ACCESS AND PLANNED ROADS

The Steeprock Forest Road Development Plan area is accessed from PR 365 (Steeprock Road). There were originally three potential access points off the Steeprock Rd. However, during mitigation with the Western Region Integrated Resource Management Team, it was agreed only one access point would be utilized for forest management purposes. This will allow for better access control into this operating area. The intent is to protect road infrastructure during non-active periods and assist Manitoba Conservation with wildlife management strategies.

The primary access roads throughout this plan area will be developed to a Class 3 level. In block secondary roads will be Class 4. Further northeast the roads will be Class 5 and 6 where winter harvest is planned. The Mountain Quota Holders Association Standard Operating Procedures Road Classification System is located in Table 6.1.

Table 6.2 provides the details of the roads planned for this area.

Table 6.3 provides the details of the associated water crossings planned for the area.

Construction and retirement timing estimates for roads and crossings may change based on actual harvest volumes required each year.

7.0 SHORT TERM ACCESS CONTROL

Short term access control will be achieved at the entry point on PR 365 with temporary berms and/or barriers. These controls will restrict pickup traffic.

8.0 LONG TERM ACCESS CONTROL / DECOMMISSIONING

Long term access control will be implemented on each spur road location following harvest of the blocks accessed by that specific road. Water crossings will be removed and, a combination of permanent berms and/or slash and debris established at these locations.

In block road decommissioning will take place following completion of each harvest block if the road is not required for further renewal activities:

- Slash and debris will be spread on in block roads. In block ATV corridors will remain for planting activity where needed.
- Removal of temporary crossing structures will take place following planting if ATV access is required.
- Erosion control measures will be implemented where required, either short term if the road will be in use again or, permanently during decommissioning.

More detail regarding road development, access control and retirement strategies will be provided at the Annual Operating Plan level.

9.0 ROAD / CROSSING MAINTENANCE

This area will be closed to pickup traffic each season until harvest activities begin. Harvest could begin anywhere from July to September depending on summer yard inventories. Normal summer maintenance will be required, i.e. grading, gravelling if necessary.

Crossing maintenance within the plan area may be required to ensure water flows and road infrastructure are maintained, i.e. beaver dam removal, cleaning culverts.

Table 6.1: Road Classification System

Class	Descriptor	ROW Width	Surface Width	Criteria
1	Primary All-weather Road	45 m	8.5 m	<ul style="list-style-type: none"> • Life span of 20 years or more • Design speed up to 80 Km/hr • Gravelled
2	Secondary All-weather Road	30 m	8 m	<ul style="list-style-type: none"> • Life span up to 20 years • Decreased design speeds • Gravelled
3	Low-grade Road	20 m	8 m	<ul style="list-style-type: none"> • Life span generally 1 – 2 years • Longer for inter-block access • Dry weather access. Gravelled if extended wet periods. • May include ditching and/or minor grade work
4	Unimproved High Ground Trail	20 m	6 m	<ul style="list-style-type: none"> • Life span generally 1 – 2 years • Longer for inter-block access • Dry weather access. Gravelled if extended wet periods. • Development limited to clearing and stumping
5	Unimproved Seasonal Trail	20 m	6 m	<ul style="list-style-type: none"> • Life span varies considerably dependent on the nature of the operation (generally 1 – 10 years) • Longer for inter-block access • Development limited to clearing and stumping • Routing includes occasional crossings of lowland meadows/swamps • Used only under frost conditions
6	Unimproved Winter Trail	15 m	6 m	<ul style="list-style-type: none"> • Life span ranges from a single season to 5 years or more • Longer for inter-block access • Routing primarily through lowland meadows/swamps and water bodies • All crossings are ice crossings • Intermittent high-ground areas may be cleared and stumped • Used only under frozen conditions

6.2 Steeprock FRDP Road Development Table

Road Name	Length (Km)	Life Span (Years)	Type	Road Class
SR-101 East Rd	15.20	5	Dry Frozen	3
SR-56 Rd	12.81	2	Dry Frozen	3
SR-59 Rd	0.86	2	Dry Frozen	3
SR-99 Rd	8.05	5	Dry Frozen	3
SR Centre Rd	2.54	10	Dry Frozen	3
SR Southeast Rd	2.32	10	Dry Frozen	3

6.3 Steeprock FRDP Water Crossing Table

Crossing Name	Type	Coordinates	
		X	Y
BSR A	Culvert	346517	5835347
BSR B	Culvert	346797	5834238
SR-36 Xing	Culvert	345426	5833534
BSR C	Culvert	345424	5833534
BSR D	Culvert	347061	5833456
BSR E	Culvert	348856	5833515
BSR F	Culvert	350935	5832608
BSR G	Culvert	349766	5830729
BSR H	Culvert	347384	5837954
SR-101 Xing	Culvert	350126	5835708
SR-101 A Xing	Culvert	350823	5835762
SR-101 B Xing	Culvert	351568	5832544

APPENDIX IV

-FISHERIES AND OCEANS CANADA-

**MANITOBA OPERATIONAL
STATEMENT**

CLEAR SPAN BRIDGES



CLEAR-SPAN BRIDGES

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 3.0

This Operational Statement applies to the construction of small-scale bridge structures that completely span a watercourse without altering the stream bed or bank, and that are a maximum of two lanes wide. The bridge structure (including bridge approaches, abutments, footings, and armouring) is built entirely above the ordinary high water mark (HWM) (see definition below). A clear-span bridge is often preferred to structures that are placed within the stream bed and therefore result in loss of fish habitat or alteration of natural channel processes.

Clear-span bridge construction has the potential to negatively affect riparian habitat. Riparian vegetation occurs adjacent to the watercourse and directly contributes to fish habitat by providing shade, cover and areas for spawning and food production. Only the vegetation required to accommodate operational and safety concerns for the crossing structure and approaches, within the right-of-way, should be removed. Stormwater run-off and the use of machinery can introduce deleterious substances to the water body and result in erosion and sedimentation.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat and maintain passage of fish. You may proceed with your clear-span bridge project without a DFO review when you meet the following conditions:

- the bridge is placed entirely above the HWM,
- the bridge is not located on meander bends, braided streams, alluvial fans, active flood plains, or any other area that is inherently unstable and may result in the alteration of natural stream functions or erosion and scouring of the bridge structure,
- the bridge is no greater than two lanes in width and does not encroach on the natural channel width by the placement of abutments, footings or rock armouring below the HWM,
- the work does not include realigning the watercourse,
- there is no alteration of the stream bed or banks or infilling of the channel, and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Constructing Clear-Span Bridges* listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project

may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Manitoba Operational Statement notification form (www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Constructing Clear-Span Bridges

1. Use existing trails, roads, or cut lines wherever possible to avoid disturbance to the riparian vegetation.
2. While this Operational Statement does not apply to the clearing of riparian vegetation, the removal of select plants within the road right-of-way (ROW) may be required to meet operational and/or safety concerns for the crossing structure and the approaches. This removal should be kept to a minimum and within the road or utility right-of-way. When practicable, prune or top the vegetation instead of uprooting.
3. Design and construct approaches so that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
4. Design the bridge so that stormwater runoff from the bridge deck, side slopes and approaches is directed into a retention pond or vegetated area to remove suspended solids, dissipate velocity and prevent sediment and other deleterious substances from entering the watercourse.
5. Generally there are no restrictions on timing for the construction of clear-span structures as they do not involve in-water work. However, if there are any activities with the potential to disrupt sensitive fish life stages (e.g., crossing of watercourse by machinery), these should

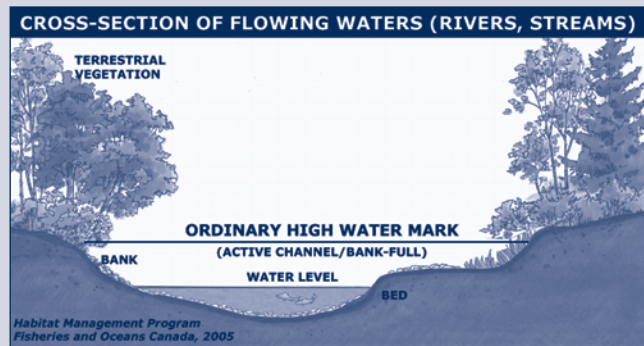
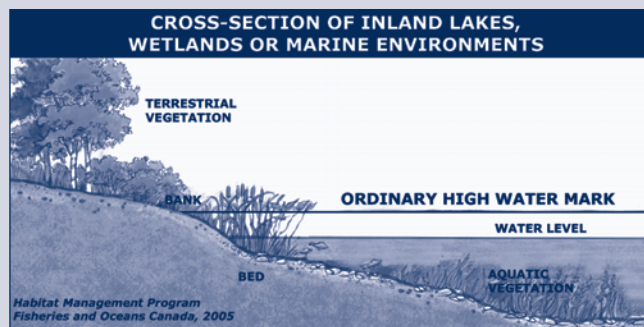
adhere to appropriate fisheries timing windows (see the *Manitoba In-Water Construction Timing Windows*).

6. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing Operational Statement* is also available.
 - 6.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
 - 6.2. Grading of the stream banks for the approaches should not occur.
 - 6.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
 - 6.4. The one-time fording should adhere to fisheries timing windows (see Measure 5).
 - 6.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
7. Install effective sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.
8. Operate machinery on land (above the HWM) and in a manner that minimizes disturbance to the banks of the watercourse.
 - 8.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
 - 8.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
 - 8.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
 - 8.4. Restore banks to original condition if any disturbance occurs.
9. Use measures to prevent deleterious substances such as new concrete (i.e., it is pre-cast, cured and dried before use near the watercourse), grout, paint, ditch sediment and preservatives from entering the watercourse.
10. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.
11. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

- 11.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).



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http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_f.asp



TIMING WINDOWS

MANITOBA IN-WATER CONSTRUCTION TIMING WINDOWS FOR THE PROTECTION OF FISH AND FISH HABITAT

Restricted activity timing windows have been identified for Manitoba lakes, rivers and streams to protect fish during spawning and incubation periods when spawning fish, eggs and fry are vulnerable to disturbance or sediment. During these periods, no in-water or shoreline work is allowed except under site- or project-specific review and with the implementation of protective measures. Restricted activity periods are determined on a case by case basis according to the species of fish in the water body, whether those fish spawn in the spring, summer or fall, and whether the water body is located in Northern or Southern Manitoba.

Timing windows are just one of many measures used to protect fish and fish habitat when carrying out a work or undertaking in or around water. Be sure to follow all of the measures outlined in the Operational Statements to avoid negative impacts to fish habitat.

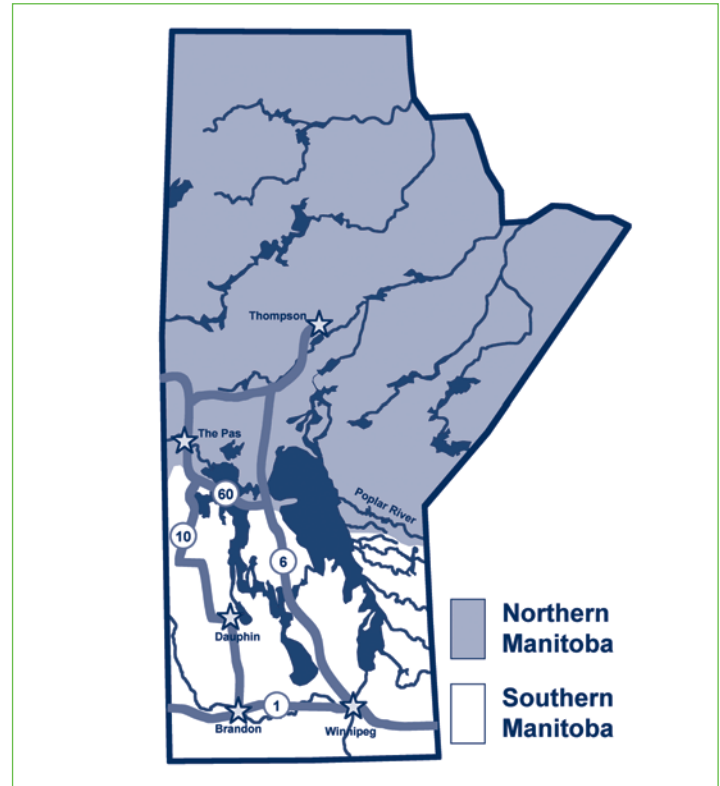


Figure 1:
Northern and Southern Manitoba boundaries for spawning timing windows.

How To Determine Timing Windows

1. Determine the fish species living in the water body where you wish to do work. Consult the Province of Manitoba Angling Map (available from the Government of Manitoba map sales) which details the fish present in most Manitoba lakes and streams, or contact your local Fisheries and Oceans Canada (DFO) office. Pictures of most of these fish species can be found in the Manitoba Angler's Guide (sport fishing regulations).
2. Determine if the fish living in the water body spawn in the spring, summer, or fall according to Table 1. You can have one, two or all three fish spawning types in one water body. In Manitoba, essentially all lakes and streams contain one or more of the spring spawning fish listed, however far fewer contain summer or fall spawning fish.
3. Determine if the water body is located in Northern or Southern Manitoba according to Figure 1.
4. Use Table 2 to determine the in-water work timing restrictions according to the location of a water body (North or South) and the type of fish found within (spring, summer or fall spawners). During these periods no in-water work (below the ordinary high water mark) is to occur without site- or project-specific review by DFO.

Table 1:
Common spring, summer and fall spawning fish.

Spring Spawning Fish	Summer Spawning Fish	Fall Spawning Fish
<ul style="list-style-type: none"> ▶ Northern Pike ▶ Walleye, Sauger ▶ Yellow Perch ▶ Suckers ▶ Smallmouth Bass ▶ Arctic Grayling 	<ul style="list-style-type: none"> ▶ Channel Catfish ▶ Lake Sturgeon ▶ Goldeye, Mooneye ▶ White Bass ▶ Freshwater Drum ▶ Carmine Shiner* 	<ul style="list-style-type: none"> ▶ Brook Trout ▶ Lake Trout ▶ Arctic Char ▶ Lake Whitefish

Table 2:
Timing Windows when no in-water work is to occur in order to protect spawning fish and developing eggs and fry.

	Spring Spawning Fish	Summer Spawning Fish	Fall Spawning Fish
Northern Manitoba	April 15 – June 30	May 15 – July 15	September 1 – May 1
Southern Manitoba	April 1 – June 15	May 1 - June 30*	September 15 – April 30

* Carmine Shiner – This is a Species At Risk found only in Southern Manitoba in the Whitemouth River and its tributaries, the Bird River and its tributaries and the Pinawa Channel. This fish spawns from May 15 to July 15 and this extended summer spawning timing window should be applied to those water bodies where it is found.

FISHERIES AND OCEANS CANADA OFFICES IN MANITOBA

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APPENDIX V

WETLAND CROSSING DESIGNS

2011



SPRUCE PRODUCTS LIMITED

**WETLAND
CROSSING
DESIGNS
2011**



FPIinnovations

THE ATTACHED DOCUMENT WAS PRODUCED BY FPIinnovations. IT IS ADAPTED FROM VARIOUS CROSSING DESIGNS UTILIZED BY SPRUCE PRODUCTS LIMITED IN THE MOUNTAIN FOREST SECTION.

Treed Fen: Culvert amongst continuous corduroy

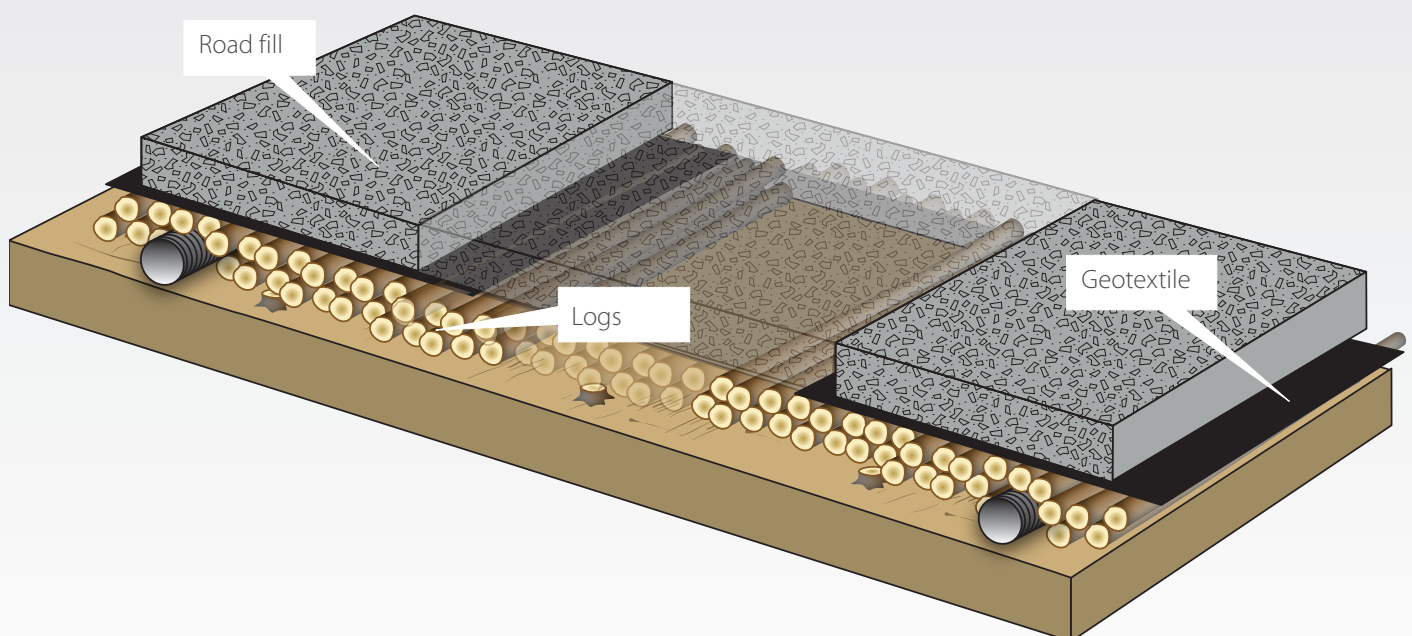
Crossing needs to accommodate slow but continuous below surface water movement.

Hydrology

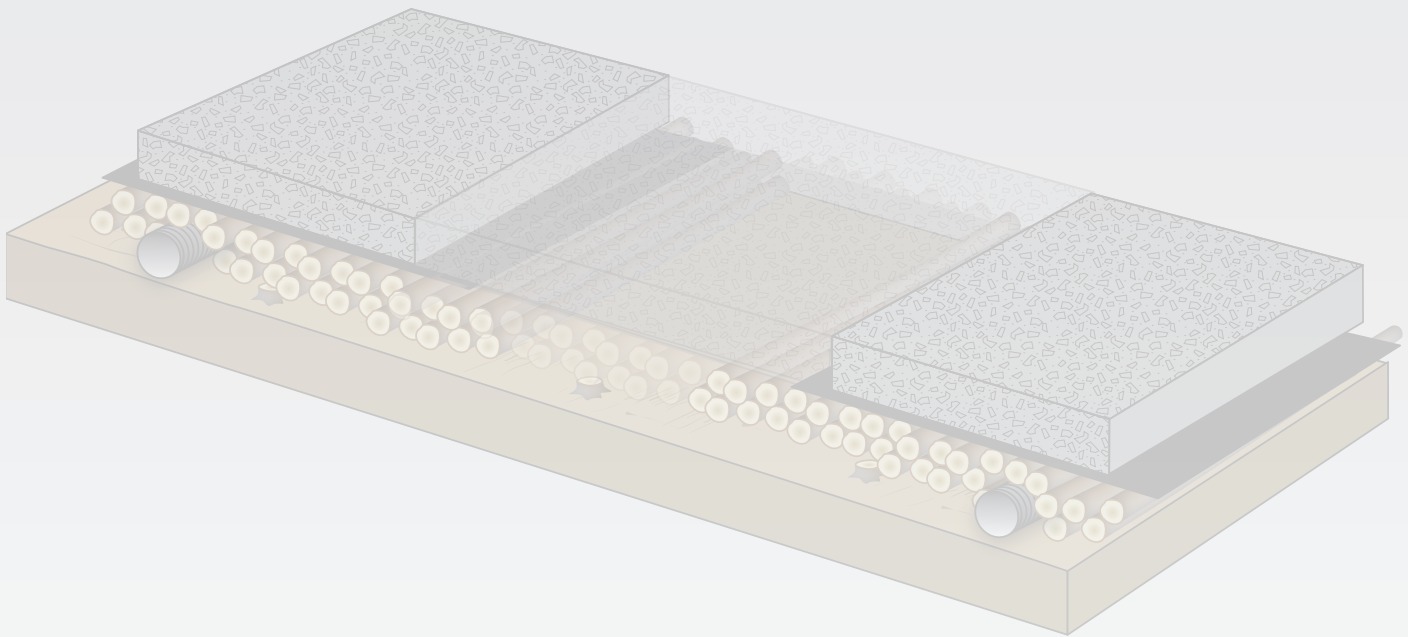
- Slow lateral flows at and below the surface, including continuous seepage at depths greater than 30 cm, can provide connectivity of various wetlands that are sometimes great distances apart or somewhat continuous.
- Because of a Fen's ability to connect wetlands, the entire system can be considered sensitive with respect to disruption to flows. This promotes the need to take care so as to not break through the forest floor / root mat and therefore protect the peat columns from disturbance.
- Local sites can be saturated and / or flooded; watertable is typically at or just below the surface with little seasonal fluctuation (little season drawdown). Small culverts (less than 300 mm) are not suggested for use with Fen wetlands due to the continuous water passage required.

Suggested construction notes

- Culvert diameter: 300 –800 mm
- Culvert spacing: 20 – 100 m (site specific). Key is that culvert is placed amongst continuous length of corduroy which also has a water passing capability.
- Culvert location: attempt to place in low lying area(s) of the crossing. Where the length of the Fen crossing requires more than one culvert, place culverts at equal spacing to each other. Transition areas into and out of a Fen may offer a shallow depth to mineral soil, providing support for a culvert.
- Geotextile to be placed above the corduroy to provide a separation layer between the road fill material and the logs; it will also help to stabilize the corduroy by reducing movement.
- Where a defined stream channel is present, an appropriate sized culvert or bridge crossing may be required.



As-built



Notes

Treed Fen: Embedded culvert amongst continuous corduroy

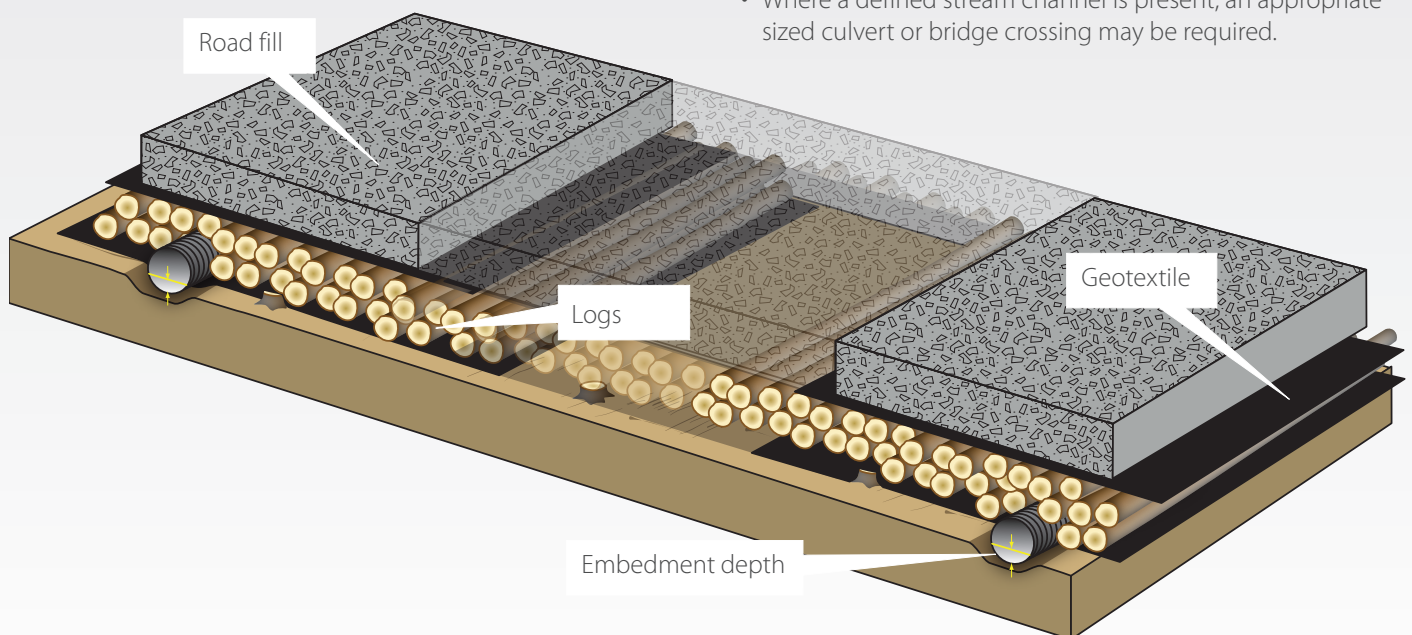
Crossing needs to accommodate slow but continuous below surface water movement

Hydrology

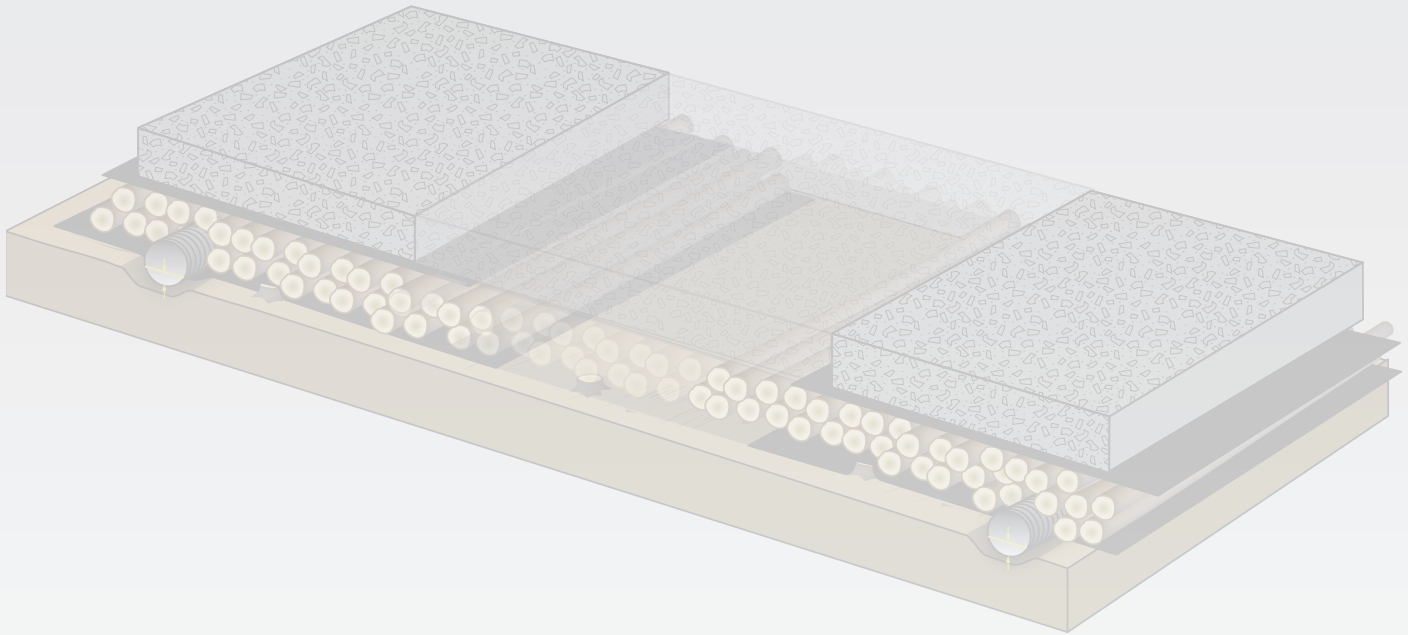
- Slow lateral flows at and below the surface, including continuous seepage at depths greater than 30 cm, can provide connectivity of various wetlands that are sometimes great distances apart or somewhat continuous.
- Because of a Fen's ability to connect wetlands, the entire system can be considered sensitive with respect to disruption to flows. This promotes the need to take care so as to not break through the forest floor / root mat and therefore protect the peat columns from disturbance.
- Local sites can be saturated and / or flooded; watertable is typically at or just below the surface with little seasonal fluctuation (little season drawdown). Small culverts (less than 300 mm) are not suggested for use with Fen wetlands due to the continuous water passage required; embedded / countersunk culverts can help maintain subsurface flows.

Suggested construction notes

- Culvert diameter: 300 –800 mm
- Culvert spacing: 20 – 100 m (site specific). Key is that culvert is placed amongst continuous length of corduroy which also has a water passing capability.
- Culvert location: attempt to place in low lying area(s) of the crossing. Where the length of the Fen crossing requires more than one culvert, place culverts at equal spacing to each other. Transition areas into and out of a Fen may offer a shallow depth to mineral soil, providing support for a culvert.
- Embedment / countersunk depth of culvert:
 - 25 – 40 % of culvert diameter (see yellow arrow). Excavation (for culvert placement) through the natural forest floor / root mat should be kept to a minimum width; the undisturbed areas provide greater strength / bearing capacity.
- Geotextile to be placed below culvert to provide additional bearing capacity, and placed above the corduroy to provide a separation of road fill material from the logs as well as to help stabilize the corduroy by reducing movement.
- Where a defined stream channel is present, an appropriate sized culvert or bridge crossing may be required.



As-built



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Shrub Swamp: Embedded culvert amongst corduroy

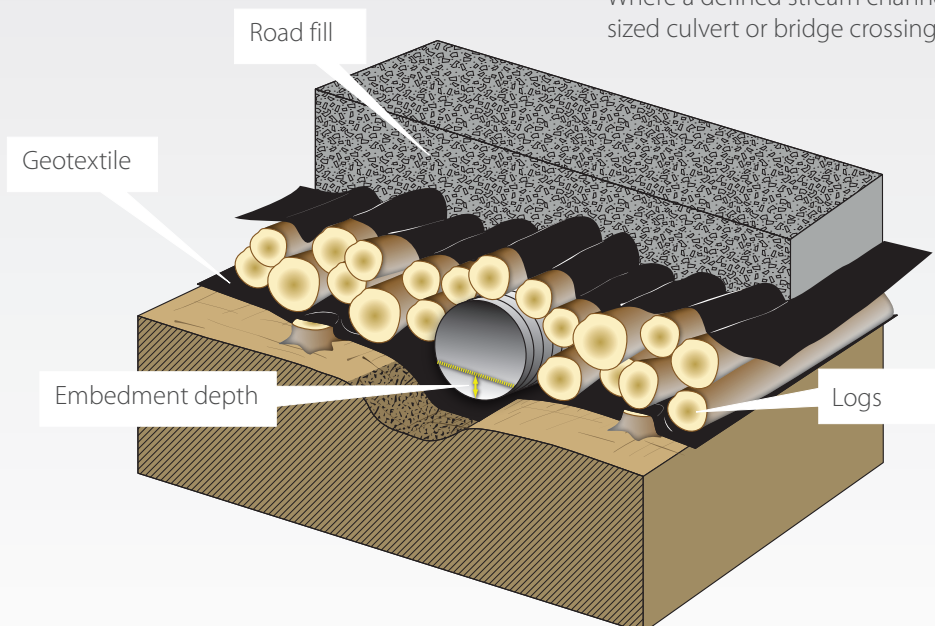
Crossing needs to accommodate seasonally fluctuating water levels and ongoing below surface flows

Hydrology

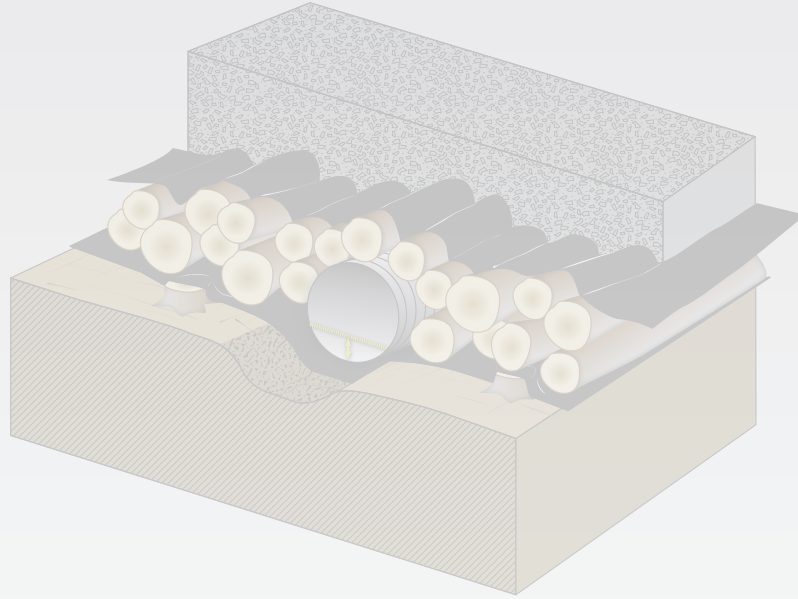
- Water level will fluctuate seasonally or semi-annual, and may fluctuate widely flooding above the root mat. Slow lateral water movement at and below the surface from adjacent areas.
- Often sites will have hummocky terrain with pools of water present.
- Water table is typically maintained below the surface requiring the need for continued subsurface flows through a road. Embedded / countersunk culverts can help maintain subsurface flows.

Suggested construction notes

- Culvert diameter: 400 – 800 mm
- Culvert spacing: 20 – 100 m (site specific). Key is that culvert is placed amongst continuous length of corduroy which also has a water passing capability.
- Culvert location: attempt to place in low lying area(s) of the crossing. Where length of the Swamp crossing requires more than one culvert, place culverts at equal spacing to one another.
- Embedment / countersunk depth of culvert: 25 – 40 % of culvert diameter (see yellow arrow). Excavation (for culvert placement) through the natural forest floor / root mat should be kept to a minimum width; the undisturbed areas provide greater strength / bearing capacity.
- Geotextile to be placed below culvert to provide additional bearing capacity, and placed above the corduroy to provide a separation of road fill material from the logs as well as to help stabilize the corduroy by reducing movement.
- Where a defined stream channel is present, an appropriate sized culvert or bridge crossing may be required.



As-built



Notes

Conifer Swamp: Culvert amongst corduroy

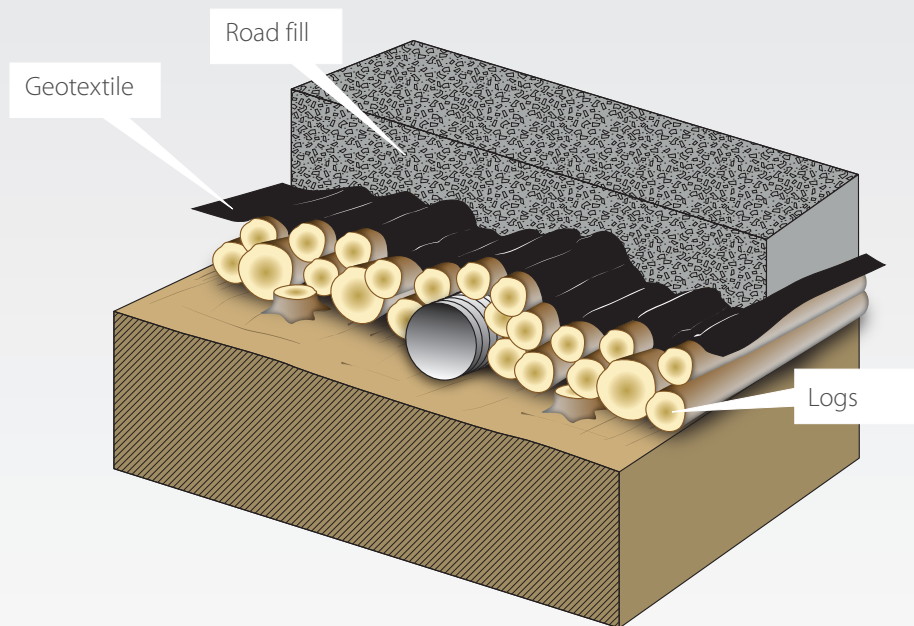
Crossings needs to accommodate minimal fluctuating water levels below the surface.

Hydrology

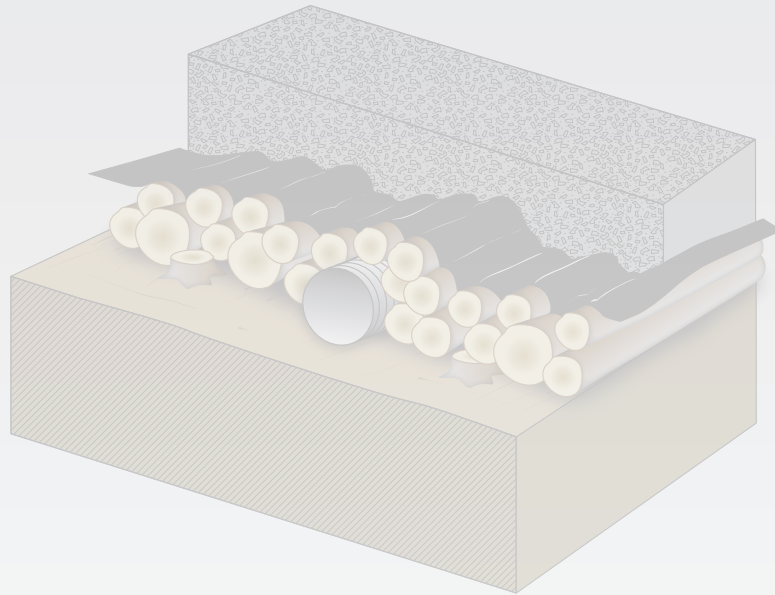
- Water source typically from ground water and will fluctuate seasonally, yet not as widely as Shrub Swamp.
- Conifer Swamps are typically not flooded for long periods of time; water is often present at or below the surface.
- Can be considered dryer than Shrub Swamps. For this reason relatively small culverts placed along the undisturbed forest floor / root mat will provide a conduit for water when flooded conditions do occur.
- Often sites will have hummocky terrain; pools of water may be present during periods of high water.
- Unlikely to encounter a defined stream channel.

Suggested construction notes

- Culvert diameter: 150 – 300 mm.
- Culvert spacing: 20 – 100 m (site specific). Key is that culvert is placed amongst continuous length of corduroy which also has a water passing capability.
- Culvert location: attempt to place in low lying area(s) of the crossing.
- Geotextile to be placed above the corduroy to provide a separation layer between the road fill material and the logs; it will also help to stabilize the corduroy by reducing movement.



As-built



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