

# **CANADIAN BOREAL COMMUNITY FIRESMART PROJECT 2011 OPERATIONS PLAN**



**Prepared in Consultation With:**

**ENR South Slave Region  
Fort Providence Resource Management Board  
FP Innovations**



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*Photo Credit Larry Nixon*

# TABLE OF CONTENTS

GENERAL PROVISIONS .....	6
TITLE .....	6
REFERENCE TO OTHER PLANS .....	6
LAND USE PERMIT (MV20092X0005) .....	6
PERMIT TO BURN .....	6
MANUALS & OPERATING PROCEDURES .....	6
DESCRIPTION OF THE PROJECT SITE .....	7
LOCATION .....	7
MAP 1. PROJECT SITE MAP .....	8
MAP 2. BLOCK 1 AND BLOCK 2 .....	9
Map 4 CBCFS (Block 1&2 ) Plot Layout .....	10
PROJECT MANAGEMENT .....	11
CONTACTS .....	11
PROJECT ORGANIZATION CHART .....	11
DUTIES AND RESPONSIBILITIES .....	12
Manager of Forests, South Slave Region .....	12
Project Manager .....	12
Crew Coordinator .....	12
Community Projects Coordinator .....	12
Science Coordinator .....	13
COLLABORATIVE AGREEMENTS .....	13
CONTRACTORS .....	13
COMMUNICATIONS PLAN .....	14
OBJECTIVE .....	14
COMMUNITY CONSULTATION .....	14
DAILY REPORTS .....	14
BRIEFINGS .....	14
Project Site Development & Maintenance .....	15
South Slave Duty Officer .....	15
Project Daily Briefing .....	15
Crew Briefing .....	15
On-Site Briefings .....	15
POSTED INFORMATION & NOTIFICATIONS .....	16
Land Use Permit .....	16
Internet .....	16
Highway Signs .....	16
Media .....	16
SAFETY PLAN .....	17
OBJECTIVE .....	17
SAFETY OFFICER .....	17
BRIEFINGS .....	17
PERSONAL PROTECTIVE EQUIPMENT .....	17
AIRCRAFT SAFETY BRIEFING .....	17
SAFETY AUDITS .....	17
2011MEDICAL PLAN .....	18
NONE .....	18
INCIDENT & ACCIDENT REPORTS .....	18
SITE MAINTENANCE PLAN .....	19
OBJECTIVE .....	19
PETROLEUM PRODUCT MANAGEMENT .....	19
Small Fuel Cache .....	19
Methods of Fuel Transfer .....	19

EXCAVATIONS.....	19
WATERCOURSE CROSSINGS .....	19
CLEARING OF LINES, TRAILS, OR RIGHT-OF-WAY .....	19
MONUMENTS .....	19
HISTORICAL & ARCHAEOLOGICAL SITES AND BURIAL GROUNDS .....	20
MECHANIZED EQUIPMENT.....	21
CAMP SITES.....	22
Garbage .....	22
Sewage (Sanitary and Gray Water) .....	22
FUEL SPILL CONTAINMENT & CLEAN UP CONTINGENCY PLAN.....	23
OBJECTIVE.....	23
WORST CASE SCENARIO.....	23
TRAINING.....	23
REPORTING PROCEDURES.....	23
Spill Containment Kit.....	23
Containment .....	23
Clean-up .....	23
Disposal.....	23
BURN PLAN .....	24
OBJECTIVE.....	24
FIRE WEATHER STATION.....	24
FIREGUARDS & FUELBREAKS .....	24
WATER SUPPLY SYSTEM .....	24
INCIDENT COMMAND SYSTEM .....	24
Incident Commander .....	24
Strike Team Leader .....	24
Strike Teams.....	25
Ignition Supervisor .....	25
Safety Officer .....	25
COMMAND ORGANIZATION CHART .....	25
TRAINING.....	25
COMMUNICATIONS.....	26
RADIO FREQUENCIES .....	26
PROCEDURES TO CONDUCT BURNS .....	26
Notification.....	26
Burn Plan.....	26
Air Tanker Support.....	26
Notice to Airmen (NOTAM).....	27
Briefings .....	27
South Slave Duty Officer .....	27
Research Team Briefing .....	27
Fire Operations Briefing.....	27
On-Site Briefings.....	27
Designated Work Areas.....	28
Site Security .....	28
Count Down Procedures.....	28
VALUES AT RISK ANALYSIS .....	29
Northwestel Microwave Site .....	29
Caen Lake Fire Tower .....	29
2011 WORKPLAN .....	31
1 Burn I3 FireSmart plot Project Lead: Ray Ault.....	31
2 Burn Plot C Project Lead: Greg Baxter .....	31
3 Burn girdled trees (south of I4) Project Lead: Colleen Mooney.....	31
4 Collection of peat samples – Project lead: Larry Nixon .....	32
5 Strip ignition I4 Project lead: Ray Ault .....	32
6 Fire survival zones Project Lead: Greg Baxter and Mark Ackerman .....	32

6 Bridge Timber protection –Project Lead: Jim Thomasson .....	33
7 Linear Corridors - Project Lead: Greg Baxter .....	33
8 Structure protection (I5 cabin plots) Project Lead: Ray Ault .....	34
9 Investigation of Fire Behaviour in mulched fuel- Project Lead: Jon Large.....	34
10 Fire Suppressant Gel performance Project Lead: Peter DeBruijn .....	34
11 Fire Behaviour in Blowdown .....	35
12 Fire Behaviour in Regenerated Stands – Leader Colleen Mooney .....	35
13 Hazard abatement – spring fuel reduction – Leader Kris Johnson .....	35
14 Evaluation of handheld IR Scanners - Leader: Steve Hvenegaard .....	36
15 Fuel treatment Amendments: Leader – Jon Large .....	36
RESOURCE REQUIREMENTS .....	39
FIRE EQUIPMENT .....	39
OFFICE & COMMUNICATIONS EQUIPMENT .....	39
SITE DEVELOPMENT & TRAINING .....	39
TRANSPORTATION .....	39
AIRCRAFT .....	40
WILDLIFE SHACK.....	40
HUMAN RESOURCES .....	40
Radio Operator .....	40
Community Projects Coordinator.....	40
Appendix A Annual Target dates .....	41

## GENERAL PROVISIONS

### TITLE

This plan is entitled Canadian Boreal Community FireSmart Project: 2011 Operations Plan is hereafter referred to as the “Operations Plan”.

### REFERENCE TO OTHER PLANS

The Canadian Boreal Community FireSmart Project 5-Year Plan, hereafter referred to as the “5-Year Plan”, sets out the overall objectives, methodologies and expected results of the Canadian Boreal Community FireSmart Project. The Canadian Boreal Community FireSmart Project will hereafter be referred to as the “Project”.

The Operations Plan is a component of the 5-Year Plan for the Project.

### LAND USE PERMIT (MV20092X0005)

The activities outlined in the 5-Year Plan for the Project will be conducted under the terms and conditions of the two year extension of Land Use Permit # MV20092X0005 issued by the Mackenzie Valley Land and Water Board.

Issue date: March 12 2009

Expiry date: April 29 2014

### PERMIT TO BURN

Prior to conducting the experimental prescribed burns or disposing of slash resulting from cutting fireguards or any other purpose, the Project Manager will obtain a Permit to Burn from Forest Management Division.

### MANUALS & OPERATING PROCEDURES

The overall management of the Project will be done in compliance with the operations manuals and procedures established by the Forest Management Division, specifically,

- 2011 Air Crew Briefing Manual
- Forest Management Division Fire Operations Manual
- 2009 GNWT Ignition SOP

## DESCRIPTION OF THE PROJECT SITE

### LOCATION

The Project site is located approximately 40 kilometres north east of Fort Providence off highway #3 (kilometre 70.6).

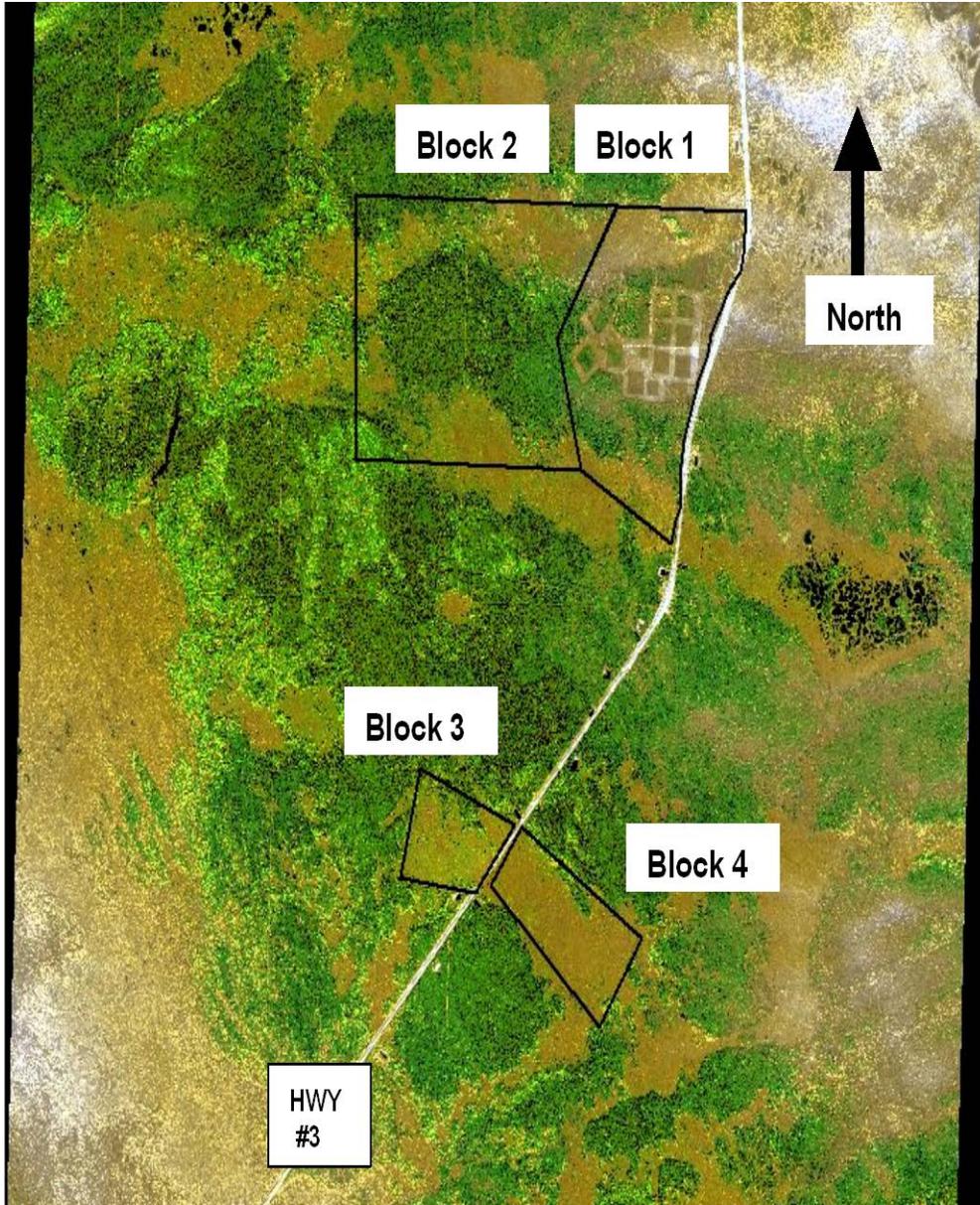
The Project site is located entirely on National Topographic map sheet 85-F-11.

The Project consists of 4 blocks. Activities planned for 2011 will take place on Blocks 1 and 2 only. The maximum and minimum latitudes and longitudes are as follows:

<b>Blocks 1 and 2 (combined unit)</b>	
Minimum latitude <b>61° 34' 14"</b>	Maximum latitude <b>61° 35' 30"</b>
Minimum longitude <b>117° 08' 23"</b>	Maximum longitude <b>117° 12' 31"</b>

<b>Block 3</b>	
Minimum latitude <b>61° 32' 53"</b>	Maximum latitude <b>61° 33' 21"</b>
Minimum longitude <b>117° 10' 40"</b>	Maximum longitude <b>117° 11' 52"</b>

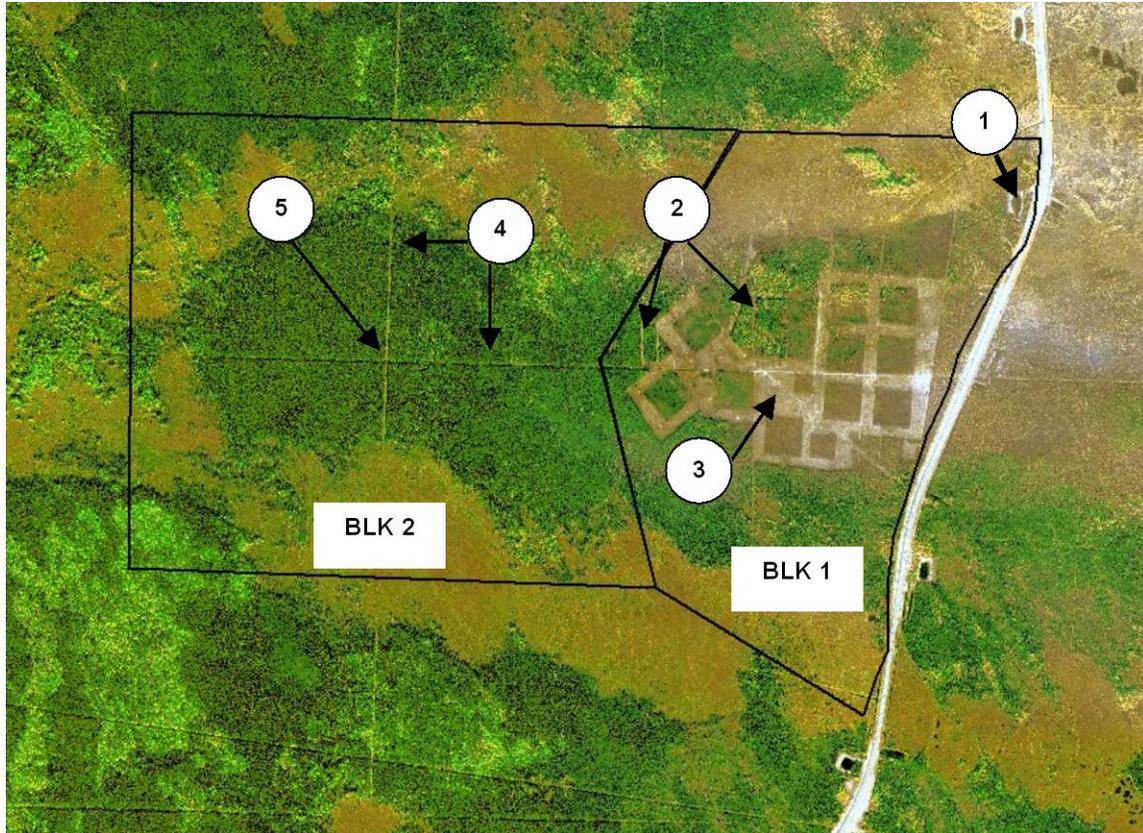
<b>Block 4</b>	
Minimum latitude <b>61° 32' 24"</b>	Maximum latitude <b>61° 35' 09"</b>
Minimum longitude <b>117° 09' 18"</b>	Maximum longitude <b>117° 10' 55"</b>



**MAP 1. PROJECT SITE MAP**

Scale 1:50,000  
 IKONOS Satellite Image July 22, 2001

Map 1 shows the location of Block 1 (a.k.a ICFME site); Block 2 (pine forest surrounded by bog birch); Block 3 (shrub fuel type); Block 4 (shrub fuel type). The bog birch in Block 2 will serve as a fuelbreak on the north, west, and south sides of the pine forest. The “developed” area in Block 1 (regenerating fireguards and burned plots) will be used as a fuelbreak on the west side of Block 2.



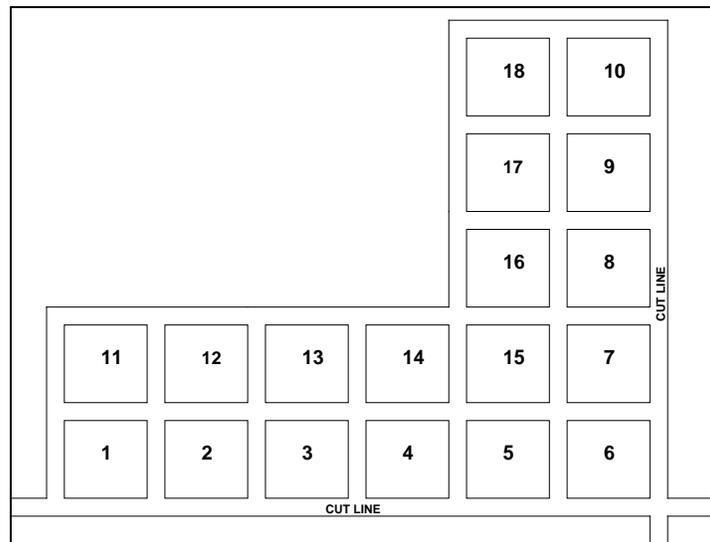
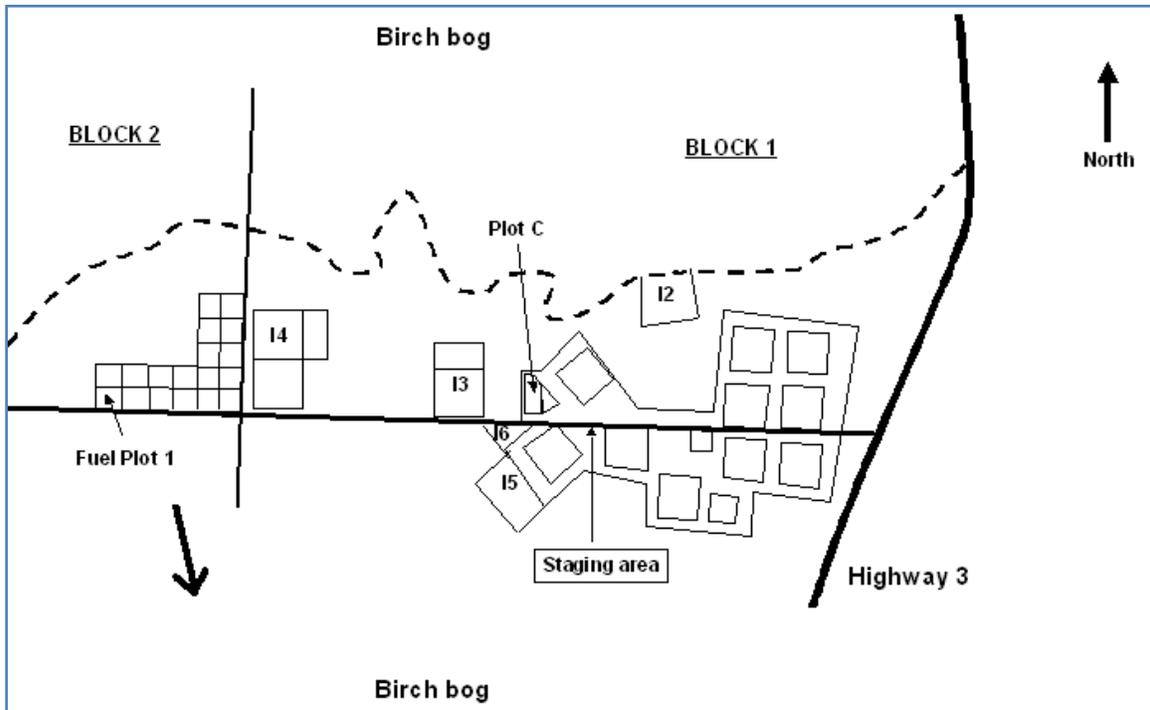
**MAP 2. BLOCK 1 AND BLOCK 2**

**1:20,000**

**IKONOS Satellite Image July 22, 2001**

Map 2 shows the location of the following features, referenced by number:

1. The “borrow pit” used as a water source for the water supply system,
2. Plots established but unburned in Block 1, Plots containing house shells for the House Survival Study
3. Fire weather station,
4. Existing cut lines that will be used to access the plots in Blocks 1 and 2,
5. Plots (paired layout) for the Fuel Treatment Study.



**Map 4 CBCFS (Block 1&2 ) Plot Layout**

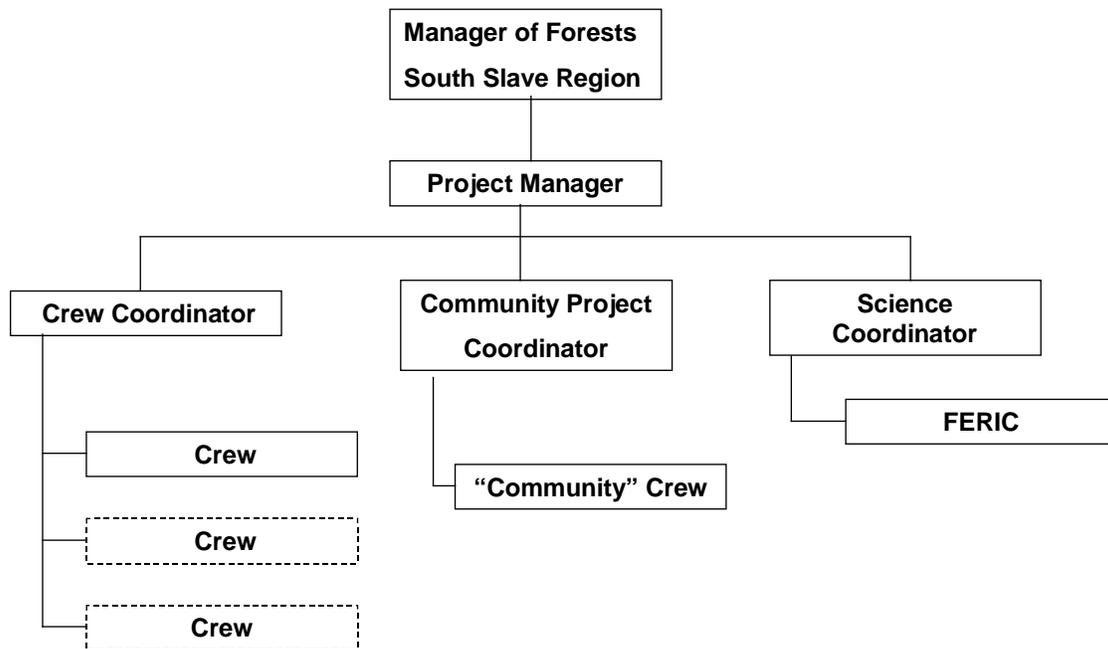
## PROJECT MANAGEMENT

The South Slave Region will manage the overall project within the context of regional fire management operations. The Project Manager will manage the day-to-day operations, in collaboration with South Slave Region, the Fort Providence Resource Management Board and the FP Innovations - Forest Engineering Institute of Canada (FERIC) will manage the Project.

### CONTACTS

TITLE	NAME	PHONE
Manager of Forests, ENR South Slave Region	Rick Olsen,	867-872-6425
Project Manager, Forest Management Division	Kris Johnson,	867-872-7706
Fort Providence Resource Management Board	Priscilla A. Canadien,	
Forest Engineering Institute of Canada	Ray Ault,	780-817-1840

### PROJECT ORGANIZATION CHART



## **DUTIES AND RESPONSIBILITIES**

The duties and responsibilities given below apply to the positions identified in the Project organization chart. These positions are specific to the Project and may not correspond to positions found within the organization of the Forest Management Division or the South Slave Region.

### **Manager of Forests, South Slave Region**

The Manager of Forests, South Slave Region, (or Designate) is responsible for the overall management of the Project and coordinates the operational requirements of the Project with other Regional activities by:

- Assigning and scheduling crews to carry out work assignments
- Acquiring aircraft and other resources
- Providing support services from the Fort Providence Base
- Operating a fire management organization responsive to planned experimental prescribed burns or slash burning

### **Project Manager**

The Project Manager is responsible for the operational management of the Project and the coordination of scientific studies with other activities including school projects, Elders' projects and training by:

- Developing and maintaining the Project site in accordance with the terms and conditions of the Land Use Permit
- Preparing and implementing the Operations Plan
- Preparing and delivering reports and oral briefings
- Providing logistical support to the scientific studies, school projects, and Elders' projects
- Preparing daily work plans for fireguard construction, slash burning, experimental prescribed burns, and other activities.
- See appendix A

### **Crew Coordinator**

The Crew Coordinator is responsible for the supervision of one or more crews assigned to carry out daily work assignments given by the Project Manager, such as:

- Installing water delivery system
- Constructing fireguards
- Piling and burning slash
- Extinguishing fires resulting from slash burning or experimental prescribed burning.

### **Community Projects Coordinator**

The Community Projects Coordinator is responsible for coordinating the projects planned by the Deh Gah School and the Traditional Knowledge team and assisting the Science Coordinator with data collection and other activities. A person will be assigned from the Fort Providence Base by the South Slave Manager of Forests to act in this capacity as and when required.

## **Science Coordinator**

The Science Coordinator manages the scientific studies to ensure that the objectives of the experimental burns are met while at the same time providing opportunity for concurrent, non-conflicting research by:

- Coordinating proposals developed by third party “agencies” with planned experimental prescribed burns
- Co-developing daily work plans with the Project Manager
- Reporting information about the experimental prescribed burns to the website
- Delivering fuel inventory and fire hazard assessment training to the Forest Management Division (see Training Plan)

## **COLLABORATIVE AGREEMENTS**

A collaborative agreement will be negotiated between the Director, FMD and the Fort Providence Resource Management Board. The Director of FMD will provide a training opportunity for two young adults at the Project site under the CRA with FPIInnovations to accomplish the objectives of this agreement.

## **CONTRACTORS**

Evergreen Forest Management Limited has a contract with the Forest Management Division to provide basic forest management services. Either the three Evergreen crews of 5 persons (or other designated by South Slave Manager of Forests) each and one supervisor will be used to develop the Project site and conduct the experimental prescribed burns.

Digaa Enterprises Limited may provide a crawler tractor and front end loader.

## COMMUNICATIONS PLAN

### OBJECTIVE

The objective of the communications plan is to ensure that information about the operation of the Project is communicated to the appropriate people, in an acceptable format, in a timely manner by the most effective means commencing the second week of June to the end of the field season.

### COMMUNITY CONSULTATION

Community consultation will be coordinated through the Renewable Resources Officer posted at Fort Providence.

The community will be kept informed about the daily activities of the Project by including the Fort Providence Resource Management Board and the Hamlet of Fort Providence on the list of recipients of the Daily Report (see Appendix A).

### DAILY REPORTS

The Project Manager (or delegate) will prepare a Daily Report and send it either electronically or by facsimile to Duty Officers and principal collaborators before 10:00.

Territorial Duty Officer	(867) 872-2077
Duty Officer, South Slave Region	(867) 872-4250
Duty Officer, Hay River	(867) 874-3749
Duty Officer, Fort Providence	(867) 699-3031
Hamlet of Fort Providence	(867) 699-3210
Fort Providence Resource Management Board	(867) 699-3133

The Daily Report will include, but not be limited to, the following topics:

- Summary of the previous day's activities
- Weather observations and FWI System values from the on-site weather station
- Planned activities for the current day
  - Forecasted weather
  - Crew requirements and work assignment
  - Aircraft requirements and work assignment
  - Burn plan (if applicable)
    - Time of the burn
    - Type of burn
    - Description of the plot or burn site

### BRIEFINGS

Oral briefings will be prepared and delivered to convey specific information about planned activities to selected audiences.

## Project Site Development & Maintenance

The Project Manager will brief all personnel involved in the development and maintenance of the Project site about the terms and conditions contained in the Land Use Permit prior to their first work assignment.

### South Slave Duty Officer

The Project Manager will telephone the South Slave Region Duty Officer daily (09:00) and provide a briefing about planned activities. This communication also confirms the planned use of fire suppression crews and the deployment of aircraft and any other matter, which pertains to the project.

### Project Daily Briefing

A briefing will be held each day at 08:00 starting on June 21<sup>st</sup> at the Snowshoe Inn. The briefing is primarily for the research scientists, overhead team, and support staff, however, anyone interested in the project may attend. The briefing will include, but not be limited to, the following topics:

- Planned activities for the day
- Fire weather (on days where experimental prescribed burns are planned)
- Safety
- Aircraft management and assignments

The Forest Management Division will provide the daily fire weather forecast and briefing through its contractor.

### Crew Briefing

The crews will receive a briefing by the Project Manager (or delegate) each day starting June 21<sup>st</sup>. The briefing will include, but not be limited to, the following:

- Fire weather and potential fire behaviour
- Work assignments including resource requirements (crews & equipment)
- Safety
- Comms plan
- Org chart updates
- Site changes

### On-Site Briefings

On days that an experimental prescribed burn is planned, all personnel will receive a briefing at least one hour prior to the burn (see Burn Plan).

## POSTED INFORMATION & NOTIFICATIONS

### Land Use Permit

Condition 3 – The Project Manager will contact the Inspector and Board on June 15, 2011.

Condition 11 – The Project Manager will report all spills immediately to the 24-hour Spill Report Line (867) 920-8120 (see Fuel Spill Containment & Clean-up Contingency Plan).

Condition 18 – The Project Manager will ensure that all persons who are working under the authority of the permit are aware of Condition 20 (see Site Development & Maintenance Plan).

Condition 19 – The Project Manager will immediately cease any activity which disturbs an archaeological, historical, and/or burial site and contact the Mackenzie Valley Land and Water Board at (867) 669-0506 should an archaeological site or specimen be encountered or disturbed by any land use activity (see Site Development & Maintenance Plan).

Condition 30 – The Project Manager will carry, at all times during the land use operation, a copy of the Land Use Permit.

Condition 31 – The Project Manager will display the Land Use Permit on a bulletin board at the site of the Day Camp.

### Internet

No specific posting planned.

### Highway Signs

Highway signs will not be required.

### Media

An ENR communication officer will notify the media about the Project prior to June 14.

## SAFETY PLAN

### **OBJECTIVE**

The objective is to minimize the risk of injury or death for all persons working on or visiting the Project site.

### **SAFETY OFFICER**

The Project Manager will assign a person to the position of Safety Officer within the Incident Command organization when a burn is planned.

Safety Officer(s) will be assigned for the entire project. The Project Manager assumes the duties and responsibilities of the Safety Officer should one not be available..

The Safety Officer is responsible for administering a safe work environment for all personnel and visitors to the Project site, specifically by:

- Receiving full and complete support from all personnel
- Preparing safety plans for specific activities
- Preparing and delivering briefings
- Establishing designated work areas

### **BRIEFINGS**

The Project Manager or delegate (usually the Safety Officer) will conduct a briefing to all personnel before they begin work on the site and whenever specific briefings are required (Experimental Prescribed Burn & Slash Disposal Plan).

### **PERSONAL PROTECTIVE EQUIPMENT**

The NWT standard for personal protective equipment applies to all personnel working in a designated work area or working with equipment, specifically:

- Operating chainsaws
- Operating pumps
- Operating handheld drip torches
- Mixing jelled fuel and operating a terra-torch
- Hooking up helicopter sling loads and water buckets

### **AIRCRAFT SAFETY BRIEFING**

Prior to their first flight, all personnel involved with the project must participate in an aircraft safety briefing conducted by the pilot of each aircraft type.

### **SAFETY AUDITS**

The Project Manager or Safety Officer will conduct safety audits from time to time.

**2011MEDICAL PLAN**

SITE MEDICAL FACILITY							
MEDICAL AID STATIONS	LOCATION		ATTENDANT (Y/N)		CONTACT		
Site 1 <sup>st</sup> Aid Centre	Block 2 (Day Camp Location)		No		CH-5		
SITE TRANSPORTATION							
VEHICLE	LOCATION		ATTENDANT (Y/N)		CONTACT		
Crew Cab	Block 2		Yes		CH-5		
Helicopter	Site Helispot		Yes		CH-5		
AMBULANCE SERVICES							
NAME	LOCATION		ATTENDANT (Y/N)		CONTACT		
	<u>NONE</u>						
HOSPITALS/HEALTH SERVICES							
LOCATION	TRAVEL TIME		HELIPAD		BURN UNIT		CONTACT
	GRND	AIR	YES	NO	YES	NO	
Fort Providence Nursing Station	00:30	00:10	X			X	CH-5
Yellowknife Hospital	4:00	1:20	X			X	CH-5
Edmonton Royal Alexander	14:00	2:15	X		X		CH-5

**INCIDENT & ACCIDENT REPORTS**

The Safety Officer or Project Manager will conduct an investigation of all incidents and accidents associated with activities of the project and prepare the appropriate reports, including a shell analysis and workman’s compensation report.

## SITE MAINTENANCE PLAN

### OBJECTIVE

The objective is to reinforce the 10 m wide fireguards around the 18 plots established for testing fuel treatments in Block 2.

### PETROLEUM PRODUCT MANAGEMENT

The caching of petroleum products on the Project site will be restricted to gasoline for a generator, mixed gasoline for the fire pumps, saws, and mixed diesel for the handheld drip torches (less than 410 L total).

The caching of petroleum products on the Project site for the purpose given above will be restricted to the period of operation, between June 18 and August 31. Otherwise, all petroleum products will be removed from the site.

#### **Small Fuel Cache**

If a small fuel cache is required (410 – 4000 L), the Project Manager shall provide, within 30 days after its establishment, written notice to the Mackenzie Valley Land and Water Board the location, amount and type of fuel, the size of the containers used, and the method of storage and the proposed date of removal of the cache.

#### **Methods of Fuel Transfer**

Fire pumps will be “re-fuelled” by hooking up a fuel line from the fuel tank (20-L container) to the pump using a quick connect fitting or fuel supply adapter. In essence, there is no actual transfer of fuel.

Chainsaws, brushsaws, and the generator will be re-fuelled by pouring fuel from a small nozzle-equipped container into the fuel tank.

### EXCAVATIONS

There will be no excavations on the Project site.

### WATERCOURSE CROSSINGS

There will be no watercourse crossings on the Project site.

### CLEARING OF LINES, TRAILS, OR RIGHT-OF-WAY

No roads will be constructed on the Project site. Existing cut lines will be used to access the experimental prescribed burn plots. A cut line, which transverses Blocks 1 and 2 (see Map 2), will be used to access the plots in these two blocks. The cut line provides adequate access without grading provided that vehicle traffic is restricted following rainfall events.

The hand-constructed fireguards will be used to access the burn plots within each of the blocks.

### MONUMENTS

The Project Manager shall report immediately to the Surveyor General in the case where a boundary monument is damaged, destroyed, moved or altered.

The Project Manager shall report immediately to the Dominion Geodesist in the case where a topographic or geodetic monument is damaged, destroyed or altered.

## **HISTORICAL & ARCHAEOLOGICAL SITES AND BURIAL GROUNDS**

The Prince of Wales Northern Heritage Centre searched the NWT Archaeological Sites Data Base and reported (December 12, 2001) that there were no archaeological sites within the boundaries of Blocks 1, 2, 3, or 4 of the Project.

The Project Manager shall immediately suspend operations and report to the Mackenzie Valley Land and Water Board in the case where a suspected historical or archaeological site or burial ground is discovered.

**MECHANIZED EQUIPMENT**

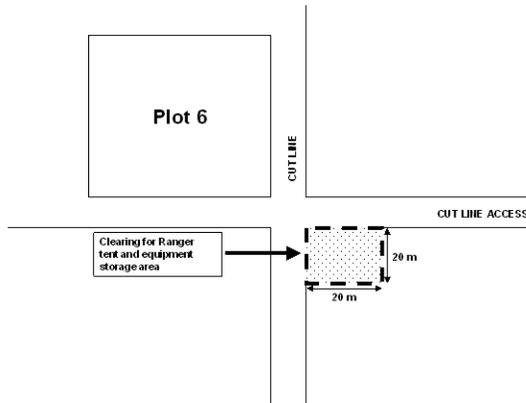
As per Mackenzie Valley Land and Water Board Permit # MV2009X0005 The following is a listing of the number and type of equipment approved for the development of the Project site.

<b>Table 1 Summary of the Type, Number, Size, and Purpose of Mechanized Equipment</b>			
<i>Type &amp; Number</i>	<i>Size</i>	<b>Proposed Use</b>	
5	Chainsaws	Various	Cutting trees on the fireguards in Block 2.
5	Brushsaws	Various	Cutting brush on the fireguards in Blocks 3 & 4
6	Fire Pumps	Mark 3 (or similar)	Controlling and suppressing fire following the burning of a plot.
1	Generator	Honda-type 50 kg	Operating and re-charging electronic devices
1	Mulcher	<200hp	Redistribute vegetation debris, grind down stumps that reduce access and pose safety threats, improve access, create opportunities to investigate fire behaviour in mulched fuel.
1	Crawler Tractor	D-6H 20 tonnes	Grading hand-constructed fireguards in Plot 2 to facilitate the installation of the house-shells. Improving access and egress along selected areas of the cut line that transverses Block 1 & 2 including a designated parking area. Winter time plot preparation.
1	Front-end Loader with forks	Case 10 tonnes	Removing “green” firewood from the hand-constructed fireguards in Block 2. Assist with construction of survival zones and access to water sources for fire suppression purposes
1	Trailer-mounted Terratorch	Buckmaster Mark III (or similar)	Igniting experimental prescribed burn plots.
2	All Terrain Vehicles	Various	Pulling the terratorch unit Assisting fire crews with set up and delivery of suppression services
6	Crewcabs	2.8 tonnes	Transporting forestry work crews and researchers.
1	Mobile bandsaw	500 kg	Potential for on-site training to process wood removed from fuel management plots

## **CAMP SITES**

There will be no camp established on the Project site. Commercial accommodation in Fort Providence will be used instead.

If conditions warrant, a day camp may be established in Block 2 (see sketch below). The day camp will consist of a Ranger tent for the purpose of eating lunch in a dry, insect-free environment and for classroom space.



## **Garbage**

Garbage resulting from use of the day camp area or any other activity will be removed daily and will be deposited in the landfill site in Fort Providence.

## **Sewage (Sanitary and Gray Water)**

Portable lavatories (out houses) will be established on the Project site. The waste pits will be buried at the conclusion of each field season.

Wash water, resulting from clean up before lunch at the day camp area, will be poured into a pit and covered with earth.

## FUEL SPILL CONTAINMENT & CLEAN UP CONTINGENCY PLAN

### **OBJECTIVE**

The objective of the plan is to manage a fuel spill under the worst-case scenario.

### **WORST CASE SCENARIO**

The worst-case scenario is containing, cleaning up, and disposing a fuel spill of 205 litres.

### **TRAINING**

All personnel who will be handling petroleum products will be trained how to report a spill incidence and how to contain and clean up the spill and how to dispose any contaminated materials (see Training Plan).

### **REPORTING PROCEDURES**

All spills will be reported immediately to the Project Manager (or delegate) by radio or in person. The Project Manager (or delegate) will immediately report the spill incident to the 24-hour Spill Report Line:

**(867) 920-8120**

The Project Manager will also report the spill incident immediately to the ENR Renewable Resource Officer based in Fort Providence, in accordance with Standard Operating Procedures.

### **Spill Containment Kit**

A spill containment kit consisting of absorbent materials, shovels, and a temporary storage drum will be maintained on the Project site.

### **Containment**

Containment will consist of mopping up all liquids using absorbent material.

### **Clean-up**

Contaminated soil will be dug up using shovels and placed in a drum for disposal.

### **Disposal**

Disposal of absorbent material used to mop up liquids and any contaminated soil will be transported to the ENR base station in Fort Providence and temporarily stored there for ultimate disposal in a landfill that allows such disposal.

## BURN PLAN

### OBJECTIVE

The objective is to conduct all burns under a command system that has in place procedures that minimize safety risks and escaped fire.

- Burn plots C, and E located in Block 1 (former ICFME site)
- Burn hand-piled slash piles on fireguards constructed in Block 2
- Burn plots to test sprinkler systems (located in Block 2)
- Burn test fires to train personnel about conducting experimental prescribed burns

### FIRE WEATHER STATION

A fire weather station will be established on Block 1 (see Map 2) prior to conducting any burns to monitor fuel moisture conditions using the Canadian Forest Fire Weather (FWI) System and to monitor wind conditions on burn days.

### FIREGUARDS & FUELBREAKS

Fire breaks and fuel treatments will be established prior to conducting any research burn. They will be checked and confirmed by the IC (or delegate) prior to burn operations.

### WATER SUPPLY SYSTEM

A water supply system, consisting of pumps, hose, and portatanks, will be installed and tested prior to conducting any experimental prescribed burn or burning slash.

A borrow pit, located adjacent to Highway #3 (see Map 2), will be used as the source of water for the water supply system. Water has been pumped from this site over the past four years and has proved adequate. Water will be pumped from the borrow pit to a series of portatanks, located near the plot to be burned. The usual configuration is to have two tanks along the side of the plot where the fire will exit, located in opposite corners of the plot.

### INCIDENT COMMAND SYSTEM

The experimental prescribed burns and slash burning will be conducted under an Incident Command System implemented by the Project Manager on burn days.

#### **Incident Commander**

The Incident Commander is responsible for the maintenance of the water delivery system, preparing a fire suppression plan on “burn” days, and supervising the fire operations.

#### **Strike Team Leader**

The Strike Team Leader is responsible for operating the water delivery system and the tactical deployment of other suppression equipment for use by the Strike Team(s).

**Strike Teams**

The Strike Team(s) is responsible for controlling and extinguishing burns under the direction of the Strike Team Leader.

**Ignition Supervisor**

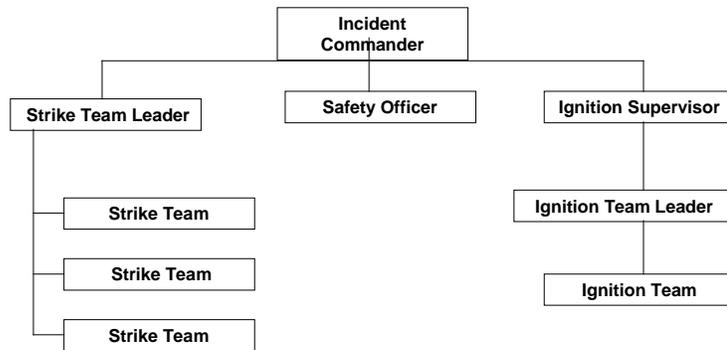
The Ignition Supervisor is responsible for selecting ignition devices, planning ignition patterns, monitoring wind and fuel moisture conditions prior to a burn and directing the Ignition Leader when to commence the ignition sequence.

**Safety Officer**

In addition to other assigned responsibilities, the Safety Officer, during an experimental prescribed burn operation, is responsible for:

- Conducting a pre-burn briefing to all personnel on the Project site
- Restricting access to and establishing safety zones around burns
- Stopping any activity that poses a threat to the safety and well-being of personnel working on the Project site
- Conducting the sequence of safety checks coordinated with the Ignition Leader and Incident Commander prior to the ignition of a burn plot

**COMMAND ORGANIZATION CHART**



**TRAINING**

The Incident Manager will conduct training sessions to ensure that all aspects of the burn plan are clearly understood by personnel assigned to the Incident Command organization (see Training Plan).

## COMMUNICATIONS

The Project Manager will set up a communications network integrated with the South Slave Regional network to communicate information about conducting burns on the Project site. This will include having a satellite phone on site.

### RADIO FREQUENCIES

The following radio frequencies have been assigned to the Project. All radio communication on the Project site will be on channel 5. Communication from the Project site to Fort Providence Base, if not relayed by radio, will be conducted using a Satellite Phone.

FUNCTION	CHANNEL	FREQUENCY	
		Transmit	Receive
Project site air-to-ground	5	153.470	153.470
Project site	5	153.470	153.470
Fort Providence Area Office	6	153.890	153.890
Caen Tower (relay CH-5 to Fort Providence Area Office) <b>NOT operational for 2011</b>	6	153.890	153.890
Air Attack		122.90	122.90
Air Attack		131.85	131.85
Air to Air		122.05	122.05
Air Advisory		126.70	126.70
Fort Providence Aerodrome		123.20	123.20

## PROCEDURES TO CONDUCT BURNS

### Notification

The Project Manager will notify the Manager of Forests (or Regional Duty Officer) in the Daily Report that burning (slash or an experimental prescribed burn plot) is planned for the current day.

### Burn Plan

The Daily Report contains a section that provides details about the burn planned for the current day, which is summarized below:

- Date and time of the burn
- FWI System values for the peak of the burning period
- Type of burn (experimental prescribed burn plot, slash disposal, sprinkler plot, test fire)
- Resource requirements (Strike Teams, aircraft, other resources)
- Description of the plot or site

### Air Tanker Support

The Territorial Duty Officer, on the advice of the Regional Duty Officer, will place the air tankers on appropriate alerts, based on the burn plan submitted by the Project Manager.

**Notice to Airmen (NOTAM)**

An automatic NOTAM is in effect once ignition takes place. If one is required at any other time, the South Slave Regional Duty Officer may establish one. The information provided below applies.

<b>Site</b>	Canadian Boreal Community FireSmart Project
<b>Geographic location</b>	Highway #3 at kilometre 70.6
<b>Coordinates</b>	61° 35' north by 117° 10' west
<b>Time</b>	1300 to 1900 or otherwise stated
<b>Elevation</b>	4000 feet above sea level
<b>Radial distance</b>	5 kilometres

**Briefings**

**South Slave Duty Officer**

Before 09:00, the Project Manager will telephone the South Slave Region Duty Officer and give a briefing about planned burn activities. This communication also confirms the planned use of Strike Teams and the deployment of aircraft and any other matter, which pertains to the project.

**Research Team Briefing**

At 10:00 a briefing will be held at the Canadian Boreal Community FireSmart Project site. The briefing is primarily for the research scientists, overhead team, and support staff; however, anyone interested in the project may attend. The briefing will include, but not be limited to, the following topics:

- Burn planned for the current day
- Fire weather
- Safety
- Aircraft management

**Fire Operations Briefing**

The Strike Teams and Fort Providence Base management personnel will receive a briefing given by the Project Manager (or delegate) prior to 11:00. The briefing will include, but not be limited to, the following:

- Fire weather and potential fire behaviour
- Work assignments including resource requirements (crews & equipment)
- Communication procedures prior to, during, and after the burn
- Safety

**On-Site Briefings**

All personnel on the Project site will receive a briefing at least one hour prior to the planned burn. The purpose of the briefing is to ensure that all personnel are aware of the safety issues particular to the planned burn and that all personnel understand their duties and responsibilities before and during the burn. The Commander (or delegate) and the Safety Officer will conduct the briefing. The following situations require specific briefings, which may be held following the main briefing:

- Visits to the site by the media or members of the general public

- Visits to the site by students and teachers from the Deh Gah School
- Film crews

**Designated Work Areas**

The burn site will be cordoned off by the Safety Officer and designated work areas where only authorized personnel are permitted. All other personnel and visitors on the Project site will be directed to specific locations while the burn is being conducted.

**Site Security**

Posted to hwy access to restrict access 30 minutes prior to burn (who? FA? FCM?)

**Count Down Procedures**

The Incident Commander, Ignition Supervisor, and Safety Officer conduct the countdown procedures starting 30 minutes before the planned ignition time.

The Safety Officer has the authority to shut down the procedure at any time.

1	✓	Incident Commander telephones South Slave Regional Duty Officer <b>“30 minutes to Ignition”</b> Ignition Supervisor and Safety Officer sweep burn plot and confirm clear of all personnel	-00:30
2	✓	Incident Commander directs R/W to start-up and begin positioning	-00:20
3	✓	Ignition Supervisor advises Incident Commander to announce <b>“All Stations”</b> for activation of data collection instruments	-00:15
4	✓	Science Team members complete activation of data collection instruments, clear burn plot area and report to Team Leader Team Leader confirms all clear for team members	-00:05
5	✓	Safety Officer confirms burn plot is clear of personnel. <b>“Site all clear”</b> message transmitted to Incident Commander and confirmed.	-00:04
6	✓	Incident Commander directs Ignition Supervisor to commence ignition sequence	-00:03
7	✓	Ignition Supervisor confirms R/W in position and assesses Wx conditions to initiate ignition. Scrub ignition for instrument reset if 40 minutes past instrument activation	+00:40
8	✓	Ignition Supervisor assesses Wx conditions to initiate ignition and announces <b>“All Stations Time X to Ignition”</b> . Countdown begins	-00:01
9	✓	Ignition Supervisor signals Ignition Team or terra-torch to commence ignition	00:00
10	✓	Fire burns through plot. Ignition Supervisor directs R/W return to helipad	Variable
11	✓	Incident Commander confirms R/W down and clear	Variable
12	✓	Incident Commander advises <b>“All Stations: Fire Suppression Commencing”</b>	Variable
13	✓	Safety Officer clears burn plot for research personnel	00:40+/-
14	✓	Fire suppression completed. Incident Commander returns burn site and air space control to Project Manager	Variable

## VALUES AT RISK ANALYSIS

### **As of mm/yy**

The Forest Management Division maintains a values-at-risk database, which is used in fire management operations to spatially display the location of potential values-at-risk relative to forest fire occurrences. In operation, when a fire is reported, all values-at-risk within a radius of 20 kilometres are identified and displayed. The same methodology was followed to produce the risk analysis map shown below. Eleven (11) values-at-risk were identified. (Map on next page)

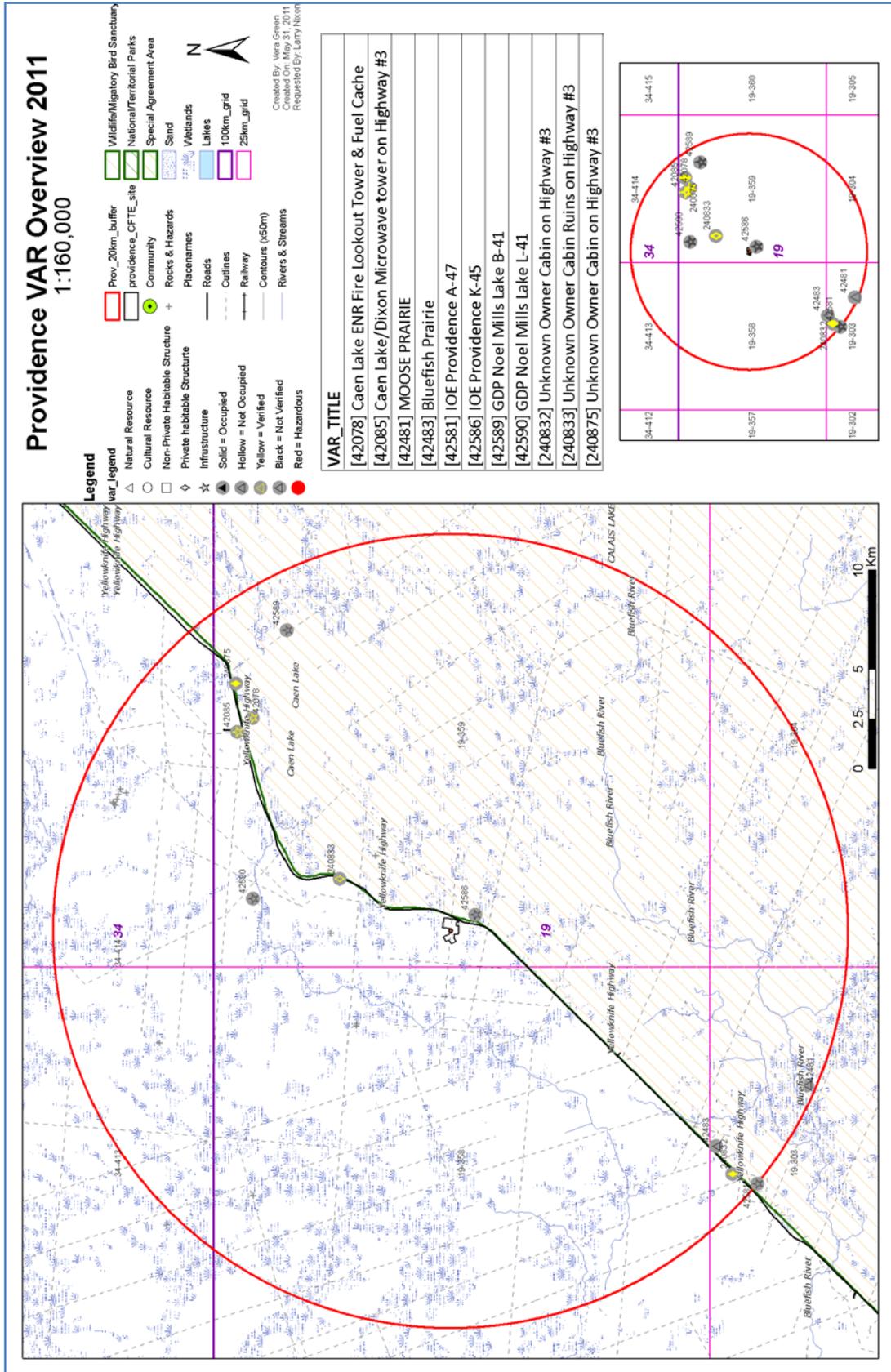
Two of note are:

### **Northwestel Microwave Site**

The microwave site is located 15 kilometres northeast of the Project site and is characterized by structures (steel tower and small building) located in the center of a clearing, which has minimal flammable vegetation to carry fire. The facility is accessible by vehicle off highway #3.

### **Caen Lake Fire Tower**

The fire tower is located 18 kilometres northeast of the Project site and is characterized by structures (steel, 30-meter tower and adjacent small building) located in the center of a large clearing, which has minimal flammable vegetation to carry fire. The facility is accessible by vehicle off highway #3.



## 2011 WORKPLAN

### **1 Burn I3 FireSmart plot Project Lead: Ray Ault**

Objective: document fire behaviour in a 2 meter crown spaced stand

Burn conditions required: On a north wind (15 km/h) burn from untreated into thinned stand. FFMC min 90, BUI min 60.

Results: Produce a case study with rate of spread and video documentation of fire behaviour that can be used in training and community meetings to better explain the changes in fire behaviour.

Activities and resources required before burning: Access trail and cleanup within thinned stand => 1-2 days with FPInnovations staff (3-4 people). Guard burning, completed by GNWT staff, to provide a 10 meter reduced fuel zone needs to be done around south and west sides prior to main unit 1-2 days based on 2007 around I4. Fuel moisture sampling and line transects for dead and down woody debris, if significant blowdown. Re-measure density, if significant blowdown.

Co-operators: ASRD, Ontario's MNR, FPInnovations, GNWT

Deliverables: A short co-authored report on results.

### **2 Burn Plot C Project Lead: Greg Baxter**

The C Plot treatment has been ready to burn under suitable weather conditions for many years, however the desired winds are not common at the site. Therefore, simultaneous ignitions in both the treated and untreated portions of this stand will allow a comparison of spot fire development in both.

Objective: Document fire behaviour in a non FireSmart treatment forest stand with limited debris removal.

Burning conditions required: On a south wind (10-15 km/h) burn from untreated into treated stand (understory fuel removal)

Results: Rate of spread and video documentation of fire behaviour.

Activities and resources required before burning: Fuel moisture sampling and line transects for dead and down woody debris, if significant blowdown.

Co-operators: ASRD, BCFS, FPInnovations, GNWT

Deliverables: A short co-authored report on results.

### **3 Burn girdled trees (south of I4) Project Lead: Colleen Mooney**

A plot has been set up where one in three trees has been killed by girdling. This plot is to be burned along with a control plot to investigate the difference in fire behaviour between the two treatments.

Resources Required: if burned the site will require a fire crew, an ignition crew, a film crew with a minimum of 2 video cameras and 2 still cameras. Plots will be ignited at the same time and fire behaviour will be documented. Rate of spread loggers will be placed in the plots for data collection. One day will be required to set up the plots.

Personnel Required: the entire FPInnovations crew will be required at the time of burning. Two people are required for plot instrumentation prior to the burn. The fire crew will be required at the time of burning.

Co-operators: ASRD, BCFS, FPInnovations, GNWT

Deliverables: A short co-authored report on results.

#### **4 Collection of peat samples – Project lead: Larry Nixon**

Methane gas released by burning peat bogs contributes substantially to climate change. To compliment current research into wildland fire and climate change the CBC research site will be assessed to see if peat wildland fire studies can be complemented by ongoing research fires.

Resources required: FPInnovations and the GNWT will work with the CFS Peat Wildland Fire Group to determine sampling protocol.

Personnel Required: FPInnovations personnel and one wildland fire crew.

Co-operators: FPInnovations, GNWT and CFS

Deliverables: In the fall of 2011 the collected samples will be reviewed – if they meet the requirements of the Peat Wildland Fire Group experimental burn data collection strategy will be co-developed by the co-operators.

#### **5 Strip ignition I4 Project lead: Ray Ault**

Objective: Record behaviour of fire ignited within in a FireSmart and determine if active crown fire develops under windy conditions

Burning conditions required Light a strip ignition (20-30 m) within the FireSmart portion of the I4 plot under moderate to strong winds (15 km/h+). FFMC = 90+ , BUI = 80+

Resources: Water on site, surrounding area has been burned in 2005 and 2007.

Co-operators: FPInnovations, ASRD, GNWT

Deliverables: A short co-authored report on results.

#### **6 Fire survival zones Project Lead: Greg Baxter and Mark Ackerman**

Planned Work: Three survival zones have been established. One zone is ready for burning and is the priority this summer for this project. One zone still has debris piles that require burning. One zone is flagged and requires clearing. The zone ready for burning has an ignition line cut and will have three mulch lines cut in at the end of the plot to test these as fire breaks. The cleared zone that has debris piles within it will be burned and these piles will be used for other projects for exposure to high radiation values. These piles can be burned during low hazard conditions. The final zone to be cleared will be cleared by the mulcher at the end of April. Data collected will include fire intensity (kW/m), temperature, rate-of-spread and air quality (CO, CO<sub>2</sub>, O<sub>2</sub>). Air quality data will be collected to determine if a firefighter is able to survive based on air quality alone.

#### Resources Required

Minimum of three CO monitors for placing within a survival zone to collect data on the survivability of a human based on air quality.

K-type wire for use by dataloggers.  
Use a mobile tower to collect video on the fire travelling above tree level.

Personnel Required: three people will be required for one day for plot set-up prior to the burn and the entire crew will be required to ignite the burn and data collection.

Co-operators: ASRD, U of Alberta, MTDC, USFS, GNWT

Deliverables: Further develop methodology and summary of results.

## **6 Bridge Timber protection –Project Lead: Jim Thomasson**

Four 'hitching posts' are located in plots to be burned by FPInnovations. These posts have been treated with paint that is meant to absorb flame and protect the wood. If conditions allow these plots will be burned. Six more posts will be instrumented in Hinton and brought up for testing. Posts will be either transported by FPInnovations or CN may get them to Hay River for pickup and then instrumented up north. The testing of the posts transported up will be by worked into the burning schedule as they can be done during lower hazards (mornings).

Resources Required: A number of bridge posts are required for this project. These will be drilled and painted and then placed into post holes for testing. Paint will also be required. Data acquisition modules are also required. Three would be preferred. K-type thermocouple wire is also required for the project for data collection.

Personnel Required: Two personnel will be required for loading and unloading the bridge timbers. One person can instrument the posts and one for data collection during burning.

Co-operators: CN Rail, ASRD, GNWT

Deliverables: WFORG web report and recommendations for in depth study.

## **7 Linear Corridors - Project Lead: Greg Baxter**

Debris disposal has been the focus of this project in the NWT. Temperature profiles above burning debris piles have been collected to understand how tall a pile can be burned safely under transmission lines. To date these have been debris piles 2 m in height and shorter. It is the objective this season to burn a number of windrows to see if the same profiles exist. The distance between piles is another project that can take place this summer. Continuous linear debris exists on the site and fuel breaks will be cut into these of varying distances to identify a minimum break distance required to stop spread through the fuel. BCTC will assist in this project.

Resources Required: No special equipment is required for this project. The system is in place for the collection of temperatures above the windrows. Lines will need to be cut in the linear debris.

Personnel Required: A minimum of three people will be required to build the windrows under the tower to collect temperature data. Data collection requires two people. Windrows can be cut by the fire crew and data collection will require three people. These projects can be completed in lower hazard conditions (the mornings). The fire crew will be required for burning the debris on the linear corridor.

Priority: low, only if other projects are not available and/or ready

Co-operators: FPInnovations, BCTC, GNWT

Deliverables: A short co-authored report on results.

### **8 Structure protection (15 cabin plots) Project Lead: Ray Ault**

Objectives: Demonstrate the effectiveness of fire suppressant gels.

Methods: Replicate the gel set up from 2005 (Advantage Report).  
Apply gel on the vertical surfaces of the structure.

Burning conditions required: to be discussed – preference for an intense fire.

Activities and resources required before burning: Guard burning (tied into I3) needs to be completed.

Co-operators: FPInnovations, GNWT

Deliverables: A short co-authored report on results of gel applications on structures.

### **9 Investigation of Fire Behaviour in mulched fuel- Project Lead: Jon Large**

Mulchers have been used by NWT Power to control vegetation under power transmission lines and can be used for seismic (lines and rig sites) and community protection. There are a number of questions related to the impact of mulching on fire behaviour and site reforestation. This project aims to illustrate the impacts and effectiveness of mulchers in community protection projects by testing them in the NWT.

Another advantage of using a mulcher is the potential to build a base for winter roads. The design and placement of the mulched lines at the CBC FireSmart site will provide improved access for winter fire wood collection. Mulched lines have been used as winter access for oil and gas in Alberta and for winter access for harvesting by companies such as Ecoroads.

Objectives: Investigate the effectiveness of mulchers in treating forest fuels in conditions common to communities located in the boreal forest, including ignition potential of mulched fuel, mulched corridor effectiveness as control lines and grid mulching as a way to reduce fire behaviour.

Monitor the effectiveness of mulched corridors for use as a winter road bed, facilitating access to the sites.

Methods: Ignition testing will be done using 2-minute match tests, and fire behaviour will be monitored using in-stand cameras to document a crown fire moving into the treated areas. Winter road potential will be evaluated by considering the resulting surface bed depth and monitoring settlement and sustainability over time.

Burning conditions required: to be discussed – preference for an intense fire.

Co-operators: FPInnovations, ABSRD, GNWT

Deliverables: FPInnovations will compile the results and provide a report outlining fire behaviour in the mulched areas.

### **10 Fire Suppressant Gel performance Project Lead: Peter DeBruijn**

The objective of this project is to document how long gel is effective as a barrier to fire spread. A key question is how it adheres to flat, vertical surfaces (such as houses). FPInnovations will investigate this question this by applying gel to flat surfaces for various time lengths and then subjecting the surface to high radiation values. Small 'dog' houses will be built and used for this project. The gel will be applied and the houses will be placed at a set distance from a fire (most likely a burning debris pile).

Resources Required: Gel will be required and will be collected by FPIInnovations staff. A number of 'houses' will also be needed and these will be sourced and transported by FPIInnovations.

Personnel required: two FPIInnovation personnel are required for this project. It will be completed during the mornings when debris can be burned. Video cameras will be used to collect visual data for this project. Gel concentration and application methodology will be documented. Gel company representatives may also take part.

Co-operators: FPIInnovations, ICL, ThermoGel, GNWT and Wildfire

Deliverables: A co-authored report documenting the findings.

## **11 Fire Behaviour in Blowdown**

Objective: Utilization of existing blowdown areas on the site to monitor fire behaviour in blowdown fuel types.

Methods: Control lines surrounding the blowdown areas will be established using mulching equipment prior to burning.

Co-operators: FPIInnovations, ABSRD, GNWT

Deliverables: A co-authored report documenting weather, fuel, and fire behaviour in blowdown.

## **12 Fire Behaviour in Regenerated Stands – Leader Colleen Mooney**

The international crown fire modeling plots were burnt 10 to 12 years ago and are now growing a crop of jack pine that are in some case 2 meters in height. These stands may provide a useful example of fuel treatment maintenance requirements as well as some good information on fire behaviour in previously burnt stands.

Objective: Early study sites with new regeneration provide opportunities for additional research investigating fire behaviour in regenerated fuels.

Methods: Fire guards will be re-established if required. Fire behaviour will be documented on the site.

Co-operators: FPIInnovations, ABSRD, GNWT

Deliverables: A co-authored report documenting the pre-burn characteristics of the regeneration and the subsequent fire behaviour.

## **13 Hazard abatement – spring fuel reduction – Leader Kris Johnson**

Objective: Reduce fire hazard by conducting low intensity spring burns in the standing grass / meadows surrounding the forested burn plots. This will reduce the chance of having a fire excursion and compliment any fire suppression activities. Moreover, low intensity spring burns will provide excellent habitat for buffalo.

Methods: A series of hand ignited test burns will be conducted to validate receptivity of fuels and to reinforce natural perimeters. If water levels impede access, rotary wing and the red dragon aerial ignition device will be used.

Deliverables: Fortified boundaries for the 2011 experimental season and a briefing to regional fire management staff.

#### **14 Evaluation of handheld IR Scanners - Leader: Steve Hvenegaard**

In 2010 the evaluation of handheld infrared cameras for hotspot detection was initiated on wildfires in Ontario. We intend to continue this research using the experimental burns at Fort Providence as a testing site. The objectives for this research are to:

1. Compare hotspot detection results achieved with the aid of a handheld infrared camera against results achieved by using conventional detection methods (sight and smell).
2. Provide a cost benefit analysis of three hotspot detection methods:
  - a) Conventional hotspot detection
  - b) Hotspot detection with the aid of handheld infrared cameras
  - c) Hotspot detection with aid of helicopter based infrared cameras
3. Develop a set of 'best practices' to outline optimum conditions for use of handheld infrared cameras and establish guidelines for effective and efficient infrared camera operation and patrolling methods during hotspot detection operations.

Resource Requirements: The personnel requirements for this project are minimal. After experimental burns have been completed and conditions permit, we intend to conduct a scan using the handheld infrared camera during the early morning followed immediately by a conventional patrol. Another patrol will be conducted at the peak of the burning day. Each patrol will require 3 personnel.

Co-operators: FPIinnovations, ABSRD, GNWT

Deliverables: A report outlining the evaluation methodology and initial results on effectiveness.

#### **15 Fuel treatment Amendments: Leader – Jon Large**

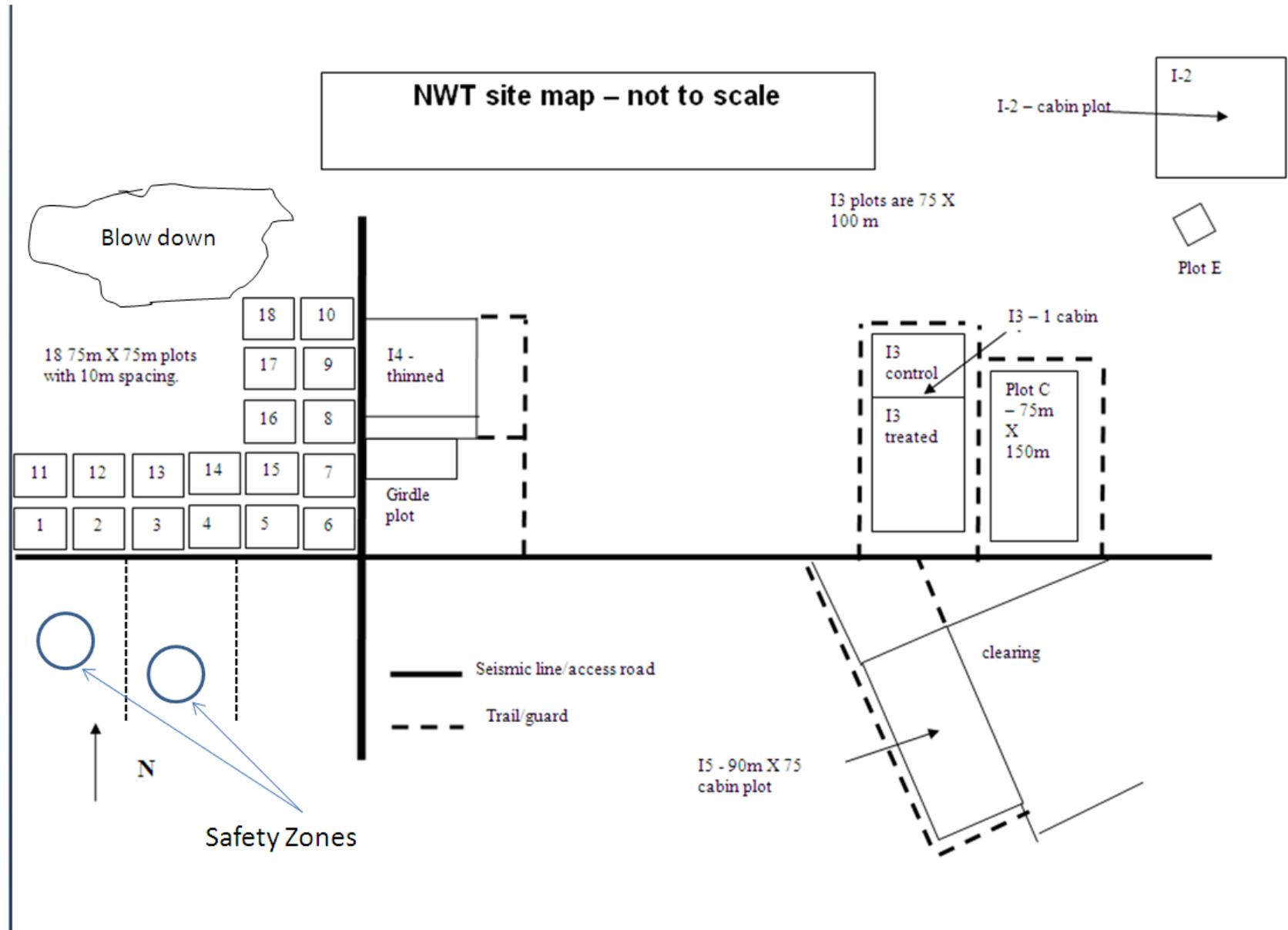
Agencies conducting prescribed burns are often subjected to delays as they wait for weather conditions to fit with their prescription for desired fire behaviour. Work is being considered in some areas to modify the existing stand structure to facilitate burning under lower intensities. The concept is to provide more surface and ladder fuels through mechanical manipulation to achieve greater fire intensities in the treated area. Theoretically, this would allow burning under low to moderate fire indices which would widen the range of suitable burning conditions available to managers.

Suitable plots at the NWT study site will be determined, and crews will focus on removing various amounts of the standing timber. Tree's that are felled will be left on site. The amount of vegetation affected will be recorded, to allow a comparison with the resulting fire behaviour.

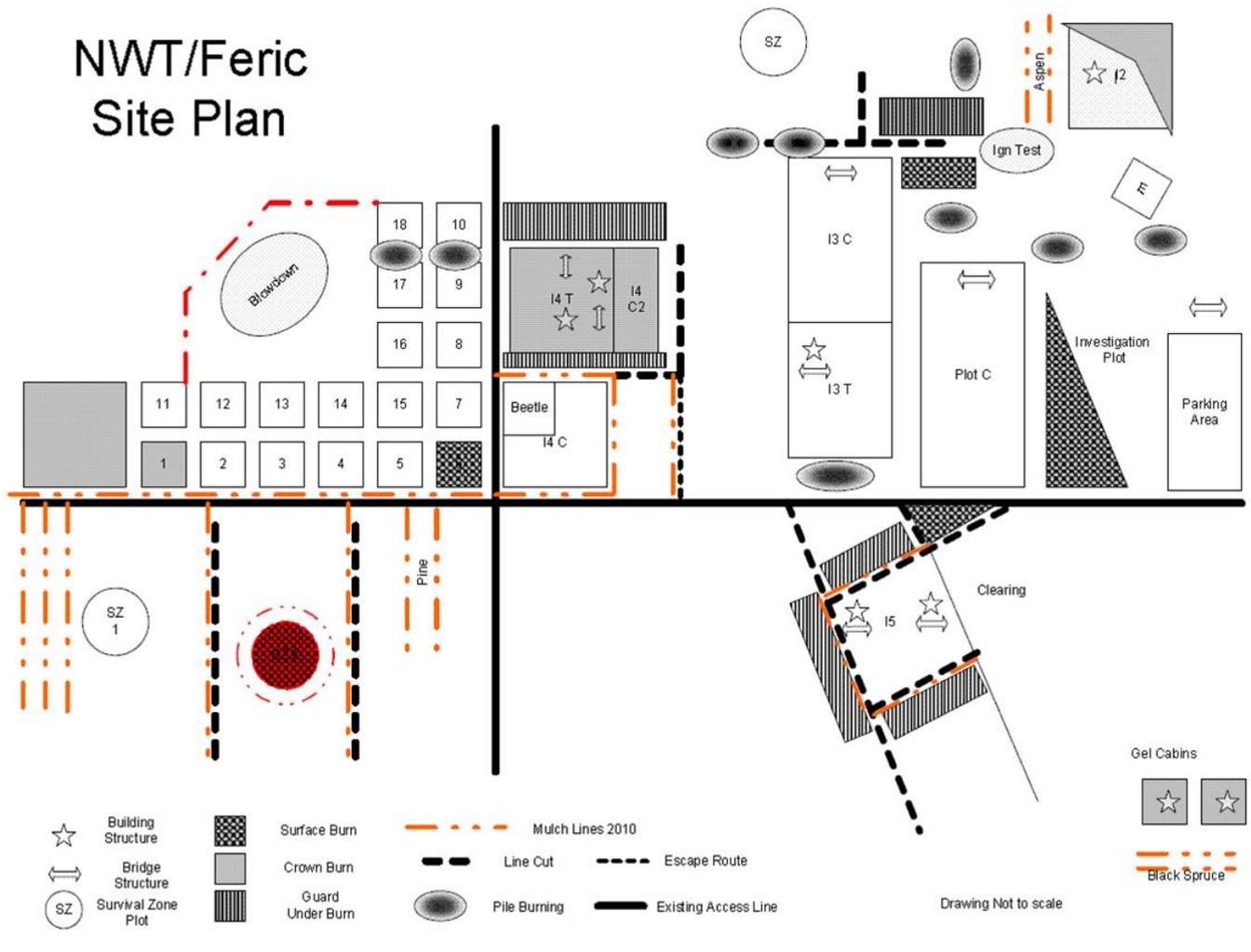
Resources Required: FPIinnovations researchers will work with SRD representatives to determine suitable plots. Crews will be required for one to two days to conduct falling operations.

Co-operators: FPIinnovations, ABSRD, GNWT

Deliverables: A co-authored report outlining results.



# NWT/Feric Site Plan



- ☆ Building Structure
- ⇄ Bridge Structure
- SZ Survival Zone Plot
- ▨ Surface Burn
- Crown Burn
- ▤ Guard Under Burn
- Mutch Lines 2010
- Line Cut
- Pile Burning
- Escape Route
- Existing Access Line
- ☆ Gel Cabins
- Black Spruce

Drawing Not to scale

## RESOURCE REQUIREMENTS

### FIRE EQUIPMENT

#	Description	Source	Delivery Date/Remarks
150	Hose lengths	Regional & Territorial stores	Deliver to JP week of June 18
4	Portatanks Complete with frames	Regional stores	Deliver to JP week of June 18
4	Pump kits complete	Regional stores	Deliver to JP week of June 18
15	Backpack pumps	Regional stores	Deliver to JP week of June 18
6	Drip torches	Regional stores	Deliver to JP week of June 18
1	Ranger tent	Regional stores	Deliver to JP week of June 18
1	"Trash" pump kit	Regional stores	Deliver to JP week of June 18

### OFFICE & COMMUNICATIONS EQUIPMENT

#	Description	Source	Delivery Date/Remarks
6	Hand-held radios	Communications Group	Ready for transport June 13
1	Satellite phone	Communications Group	Ready for transport June 13
1	Printer complete	Territorial stores	Ready for transport June 13
500	Paper	Territorial stores	Ready for transport June 13

### SITE DEVELOPMENT & TRAINING

#	Description	Source	Delivery Date/Remarks
10	Chainsaw kits	Territorial stores	Ready for transport June 13
1	Spill kit	Territorial stores	Ready for transport June 13
4 cases	Chain oil for chainsaws	Include in regional order	Ready for transport June 13

### TRANSPORTATION

#	Description	Source	Delivery Date/Remarks
1	4X4 pickup	FMD, Fort Smith	Ready June 18
2	4x4 "quads" c/w trailers	Hay River (FMD)	Has not been confirmed – if not possible a local source will be secured

## **AIRCRAFT**

Based on past experience, one light or type IV helicopter will meet the operational requirements of the project. In addition to providing rotary wing support the machine may be required to move equipment and supplies.

## **WILDLIFE SHACK**

Use of the wildlife shack requested for use by researchers to temporarily store equipment and operate drying ovens for fuel moisture sampling. The wildlife shack will not be used as sleeping quarters.

## **HUMAN RESOURCES**

### **Radio Operator**

A radio operator should be on duty at the Fort Providence Base Station during the period June 15 to the conclusion of the field season. This requirement is essential on days when burns are planned.

### **Community Projects Coordinator**

A person will be assigned from the Fort Providence Base to act in this capacity as and when required.

Appendix A Annual Target dates

<b>DATE:</b>	<b>Activity</b>	<b>• WHO</b>
Year round	Search out other groups looking to do research	• Project Manager
Fall	attend FPInnovations fall AGM <ul style="list-style-type: none"> <li>• secure drafts of upcoming seasons projects</li> <li>• remind group of deadlines/formats/ requirements</li> </ul>	• Project Manager
Feb-30	Review Land Use Permit # MV20092X0005. Expiry date: April 29 2014	• Project Manager
Feb-30	Draft plan out to players for comments	•
March	Attend Spring FPInnovations mtgs <ul style="list-style-type: none"> <li>• get finals of work plans</li> <li>• present draft ops plan</li> <li>• Review resource list</li> </ul>	• Project Manager
Apr-30	Final OPs plan out to players	• Project Manager
Apr-30	Obtain a Permit to Burn from Forest Management Division.	• Project Manager • South Slave Manager of Forests
Apr 30	Contact Radio Techs re portable rptr/sat connection.....	• Project Manager
Apr-30	Meet with South Slave Manager of Forests to discuss coming projects Review Ops Plan Discuss and arrange for: <ul style="list-style-type: none"> <li>• crews</li> <li>• heli</li> <li>• use of wildlife shack</li> <li>• First Aid</li> <li>• resources</li> <li>• Radio Op (at Fort Providence Base) during burns</li> </ul>	• Project Manager • South Slave Manager of Forests

# Canadian Boreal Communities FireSmart Project



Apr-30	Review VARs	<ul style="list-style-type: none"> <li>• Project Manager</li> <li>• GIS Analyst</li> <li>• South Slave Manager of Forests</li> </ul>
May-15	Info/briefing to ENR Manager, Public Affairs and Communication	<ul style="list-style-type: none"> <li>• Project Manager</li> </ul>
May-30	Arrange for additional staff	<ul style="list-style-type: none"> <li>• Project Manager</li> <li>• South Slave Manager of Forests</li> <li>• Manager Forest Science</li> </ul>
Jun-01	Confirm resources (tables and dates in Plan) ready to go week of June 13 <sup>th</sup> and 18 <sup>th</sup> as required.	<ul style="list-style-type: none"> <li>• Project Manager</li> </ul>
Jun-14	Notify the media about the Project	<ul style="list-style-type: none"> <li>• Manager, Public Affairs and Communication</li> </ul>
Jun-15	contact the Inspector and Mackenzie Valley Land and Water Board	<ul style="list-style-type: none"> <li>• Project Manager</li> </ul>
		<ul style="list-style-type: none"> <li>•</li> </ul>
End of project	<ul style="list-style-type: none"> <li>• contact the Inspector and Mackenzie Valley Land and Water Board</li> <li>• briefing to ENR Manager, Public Affairs and Communication</li> <li>• contact South Slave manager of Forests to ensure all kit returned, briefing etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Project Manager</li> </ul>
Jul-30	review of project, fine tune etc	<ul style="list-style-type: none"> <li>• Project Manager</li> </ul>