

*Natural. Valued. Protected.*

# CLIMATE CHANGE AND WEATHER DAMAGED FUELS

*Challenges to Ontario Fire Management Staff*

**Wildland Fire Canada 2010**

Presented by: Al O'Connor  
Jennifer Young  
Mike Kitney







*Natural. Valued. Protected.*

# Agenda

- Background
  - The Issue
- AFFES response
- Adapting Operational Methods
- Prescribed Burn Fire Behaviour Research

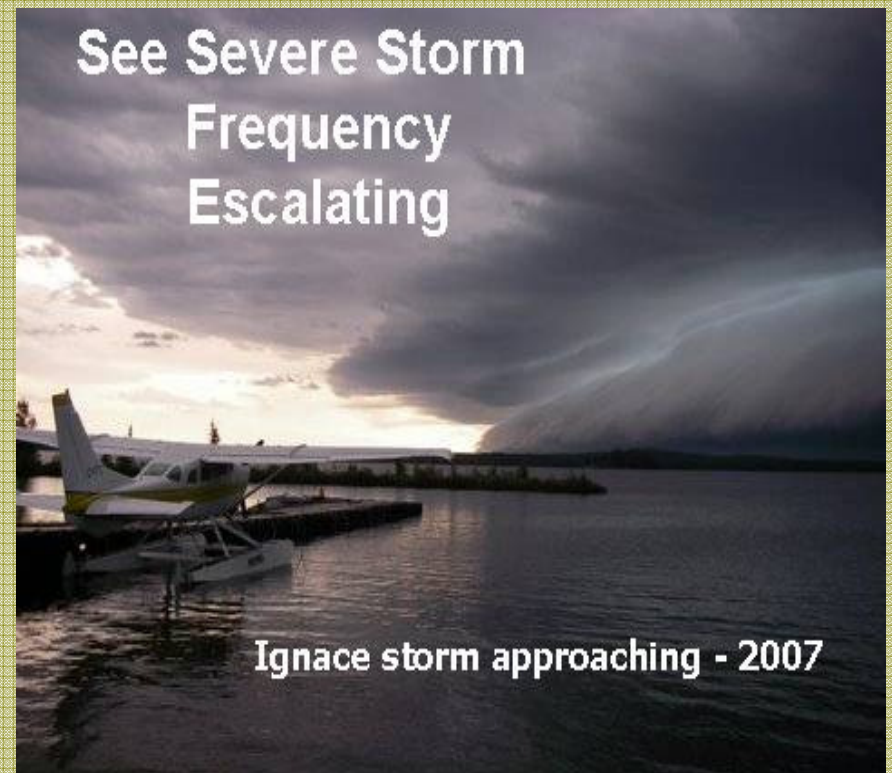




*Natural. Valued. Protected.*

## Weather Damaged Fuels - The Issue

- Climate change is affecting the landscape of Northern Ontario Forests.
  - High wind days are more frequent
  - Lightning storms are more frequent
  - Tornadoes and severe storms are occurring at a higher frequency than in the past
- This is increasing the risk to the safety of the public and MNR personnel





*Natural. Valued. Protected.*

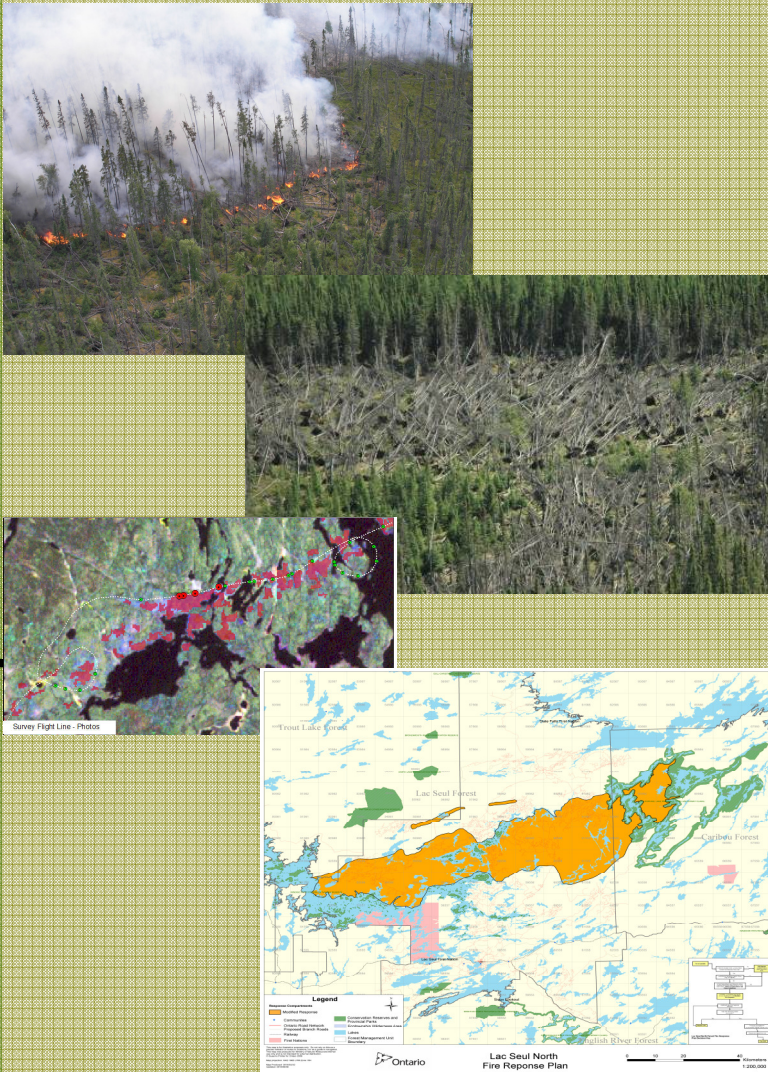
# Weather Damaged Fuels - The Issue





*Natural. Valued. Protected.*

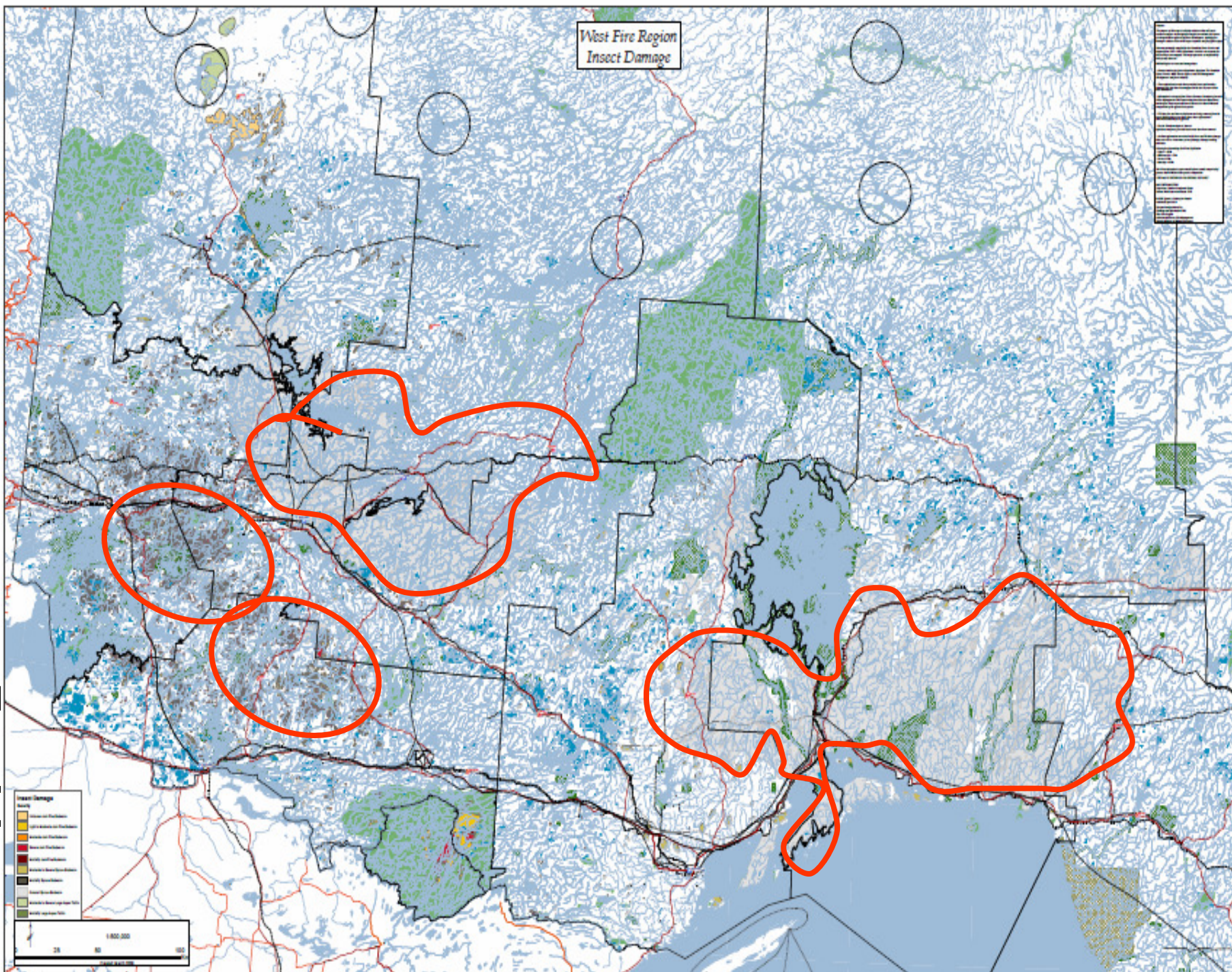
# AFFES Response to the Issue



- Mapping Disturbance
- Managing Fire Response
- Enhancing Fire on the Landscape
- Adapting Operational Methods
- Fire Behaviour Research



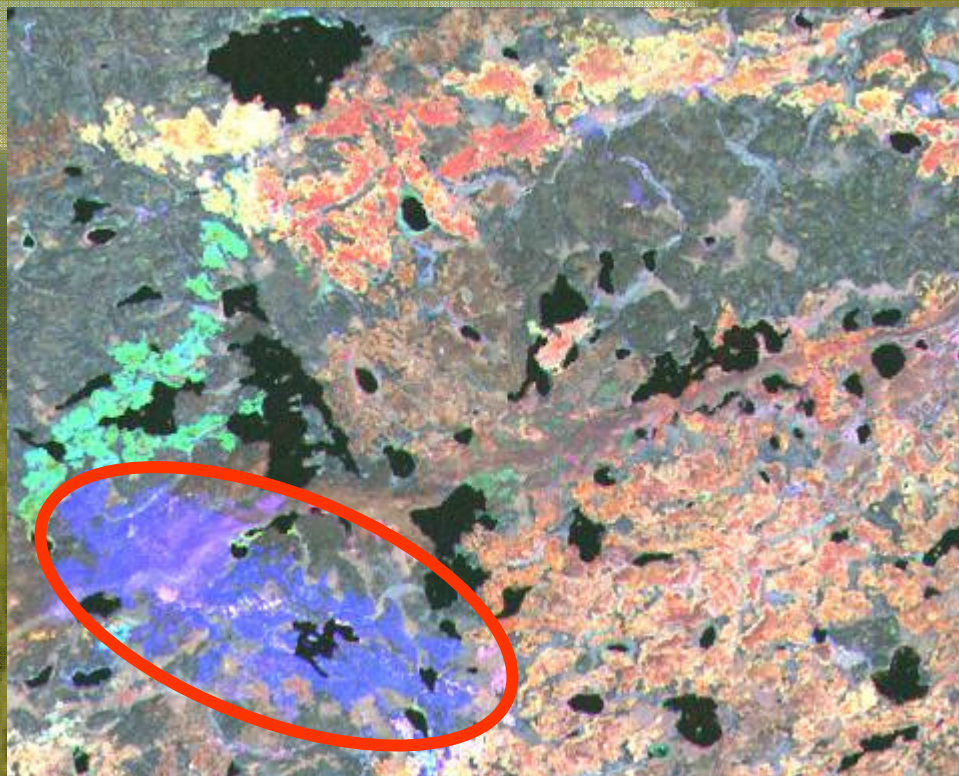
# Mapping Disturbance





*Natural. Valued. Protected.*

**Change Detection** based on conditioned Green-ness Index and Normalized Burn Ratio for **Landsat TM triplicats**, coinciding with PLC vintages.



Time 0  
(~ 1990)



Time 1  
(~ 2000)



Time 2  
(~ 2008)

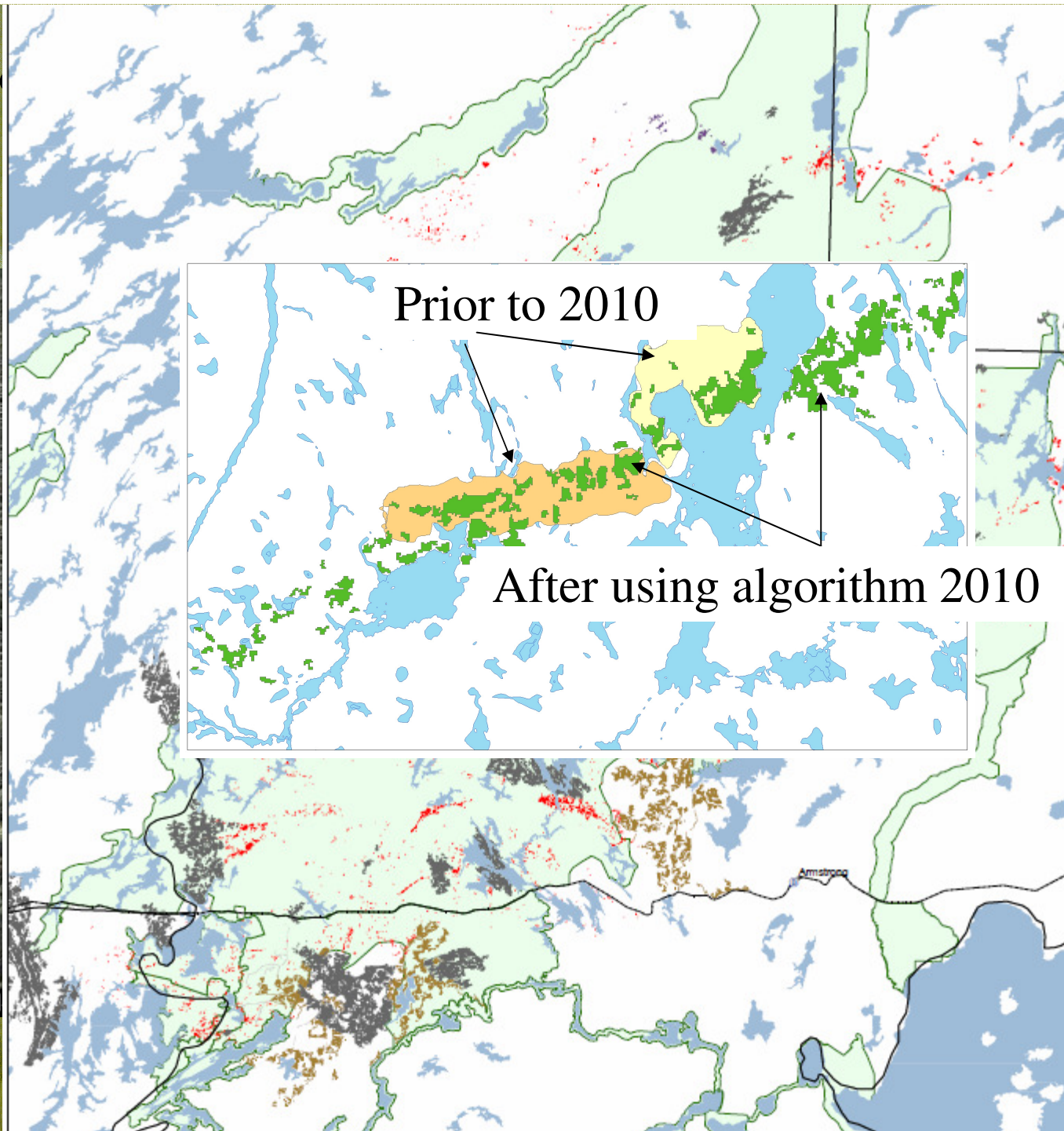
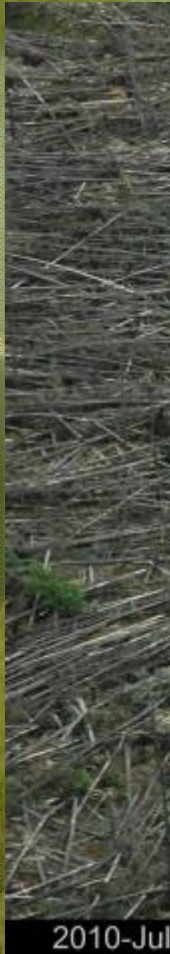


Mapping Disturbance

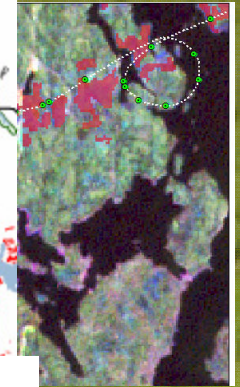


# Mapping Disturbance

Location:  
Event:

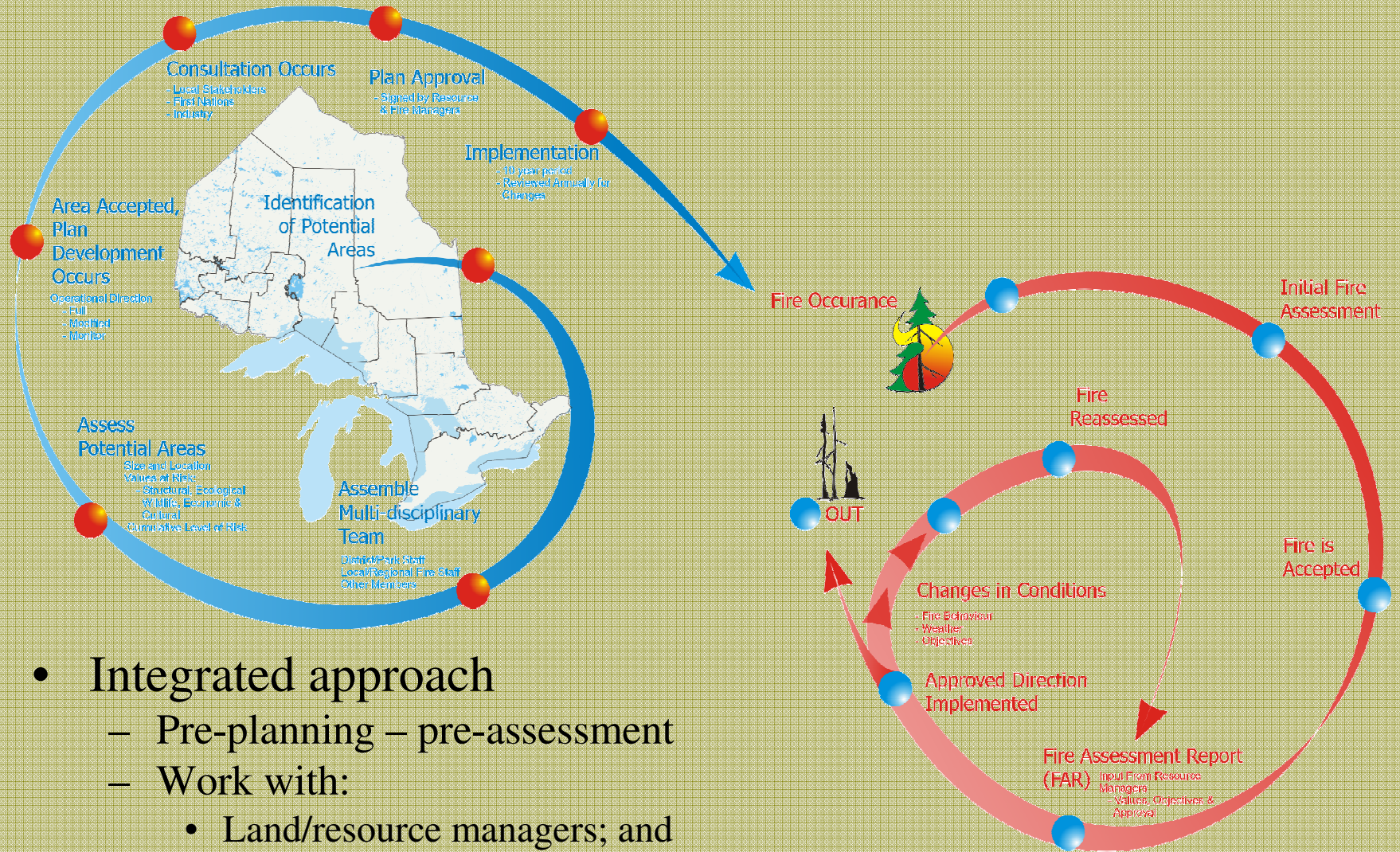


JUL-22  
2005



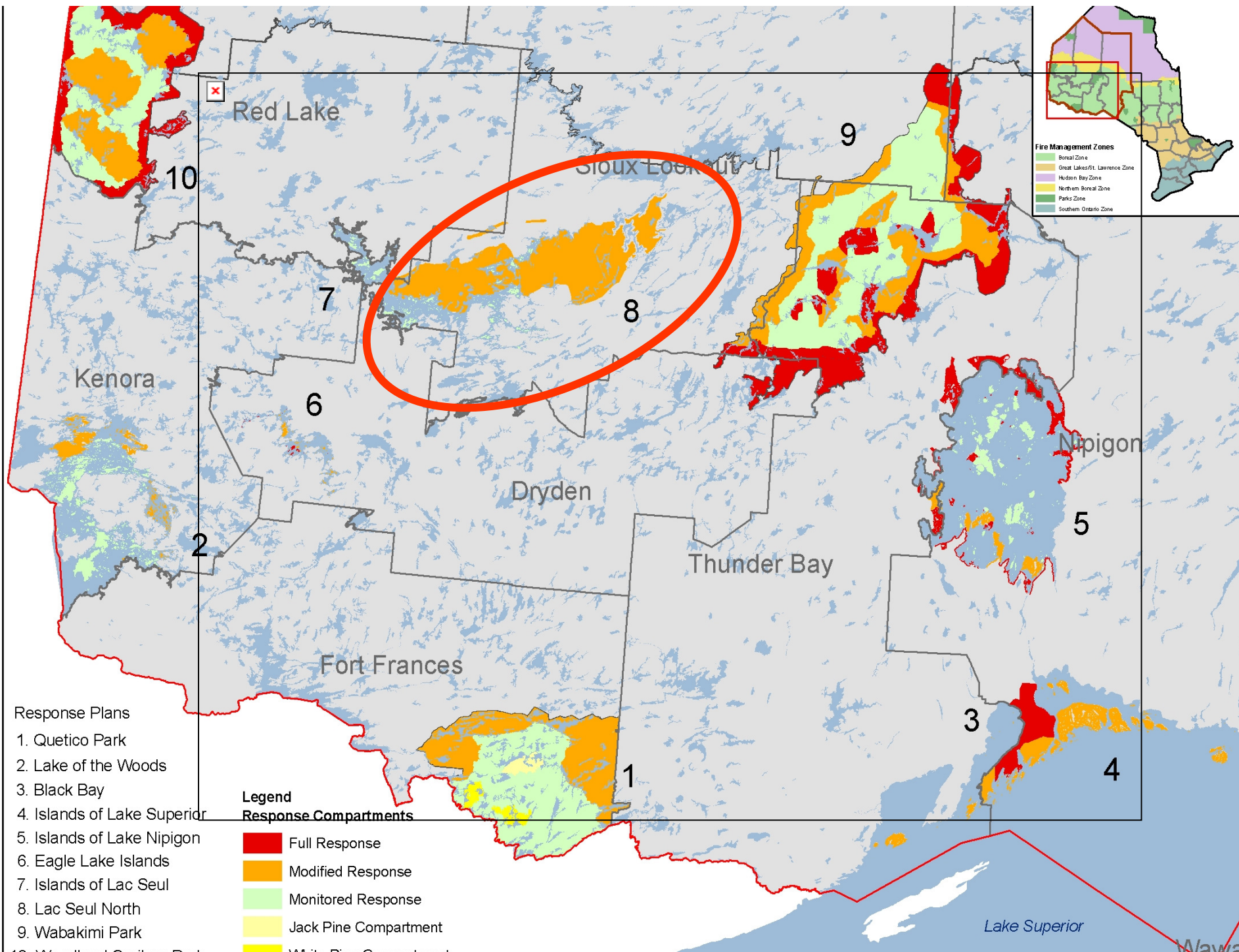


# Managing Fire Response



- Integrated approach
  - Pre-planning – pre-assessment
  - Work with:
    - Land/resource managers; and
    - affected stakeholders
  - Plan development (delineate fire response and use areas)
  - Implement approved direction
  - Adaptive Management







# Nature



hrs

the  
ratio  
is  
not  
quite  
a  
line



*Natural. Valued. Protected.*

## Enhancing Fire on the Landscape

- AFFES – working with other program areas
  - Educate on benefits of fire response and use
    - Ecological sustainability
    - Ecological Integrity
    - Forestry
    - Species at Risk
- Promote prescribed burning, prescribed fire and managed fire response on the landscape across Ontario
- Working with forest industry to promote silvicultural burning on the managed forest





Ministry of Natural Resources



*Natural. Valued. Protected.*

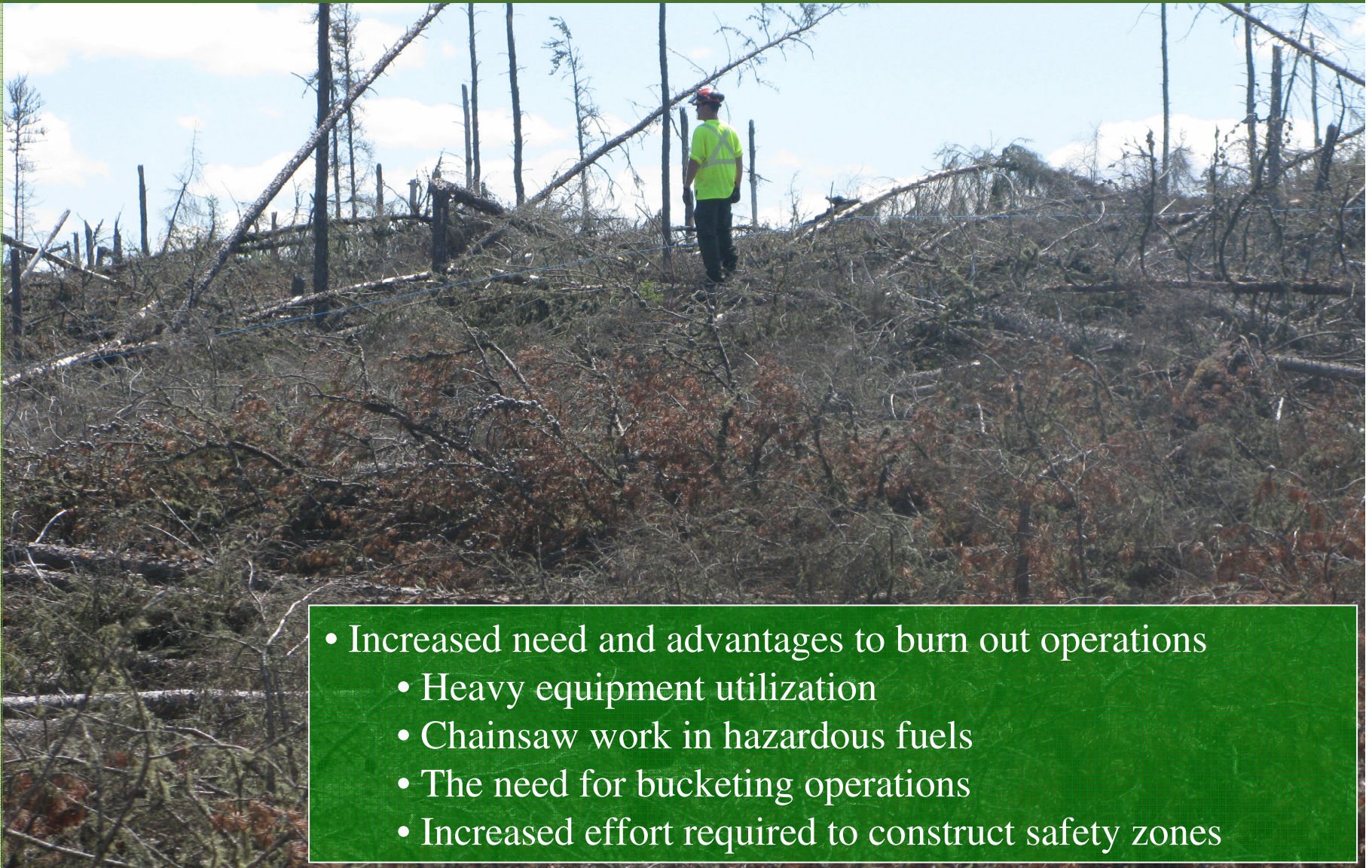
# Operational Response





*Natural. Valued. Protected.*

# Operational Response



- Increased need and advantages to burn out operations
  - Heavy equipment utilization
  - Chainsaw work in hazardous fuels
  - The need for bucketing operations
  - Increased effort required to construct safety zones



Ministry of Natural Resources



*Natural. Valued. Protected.*

# Operational Response





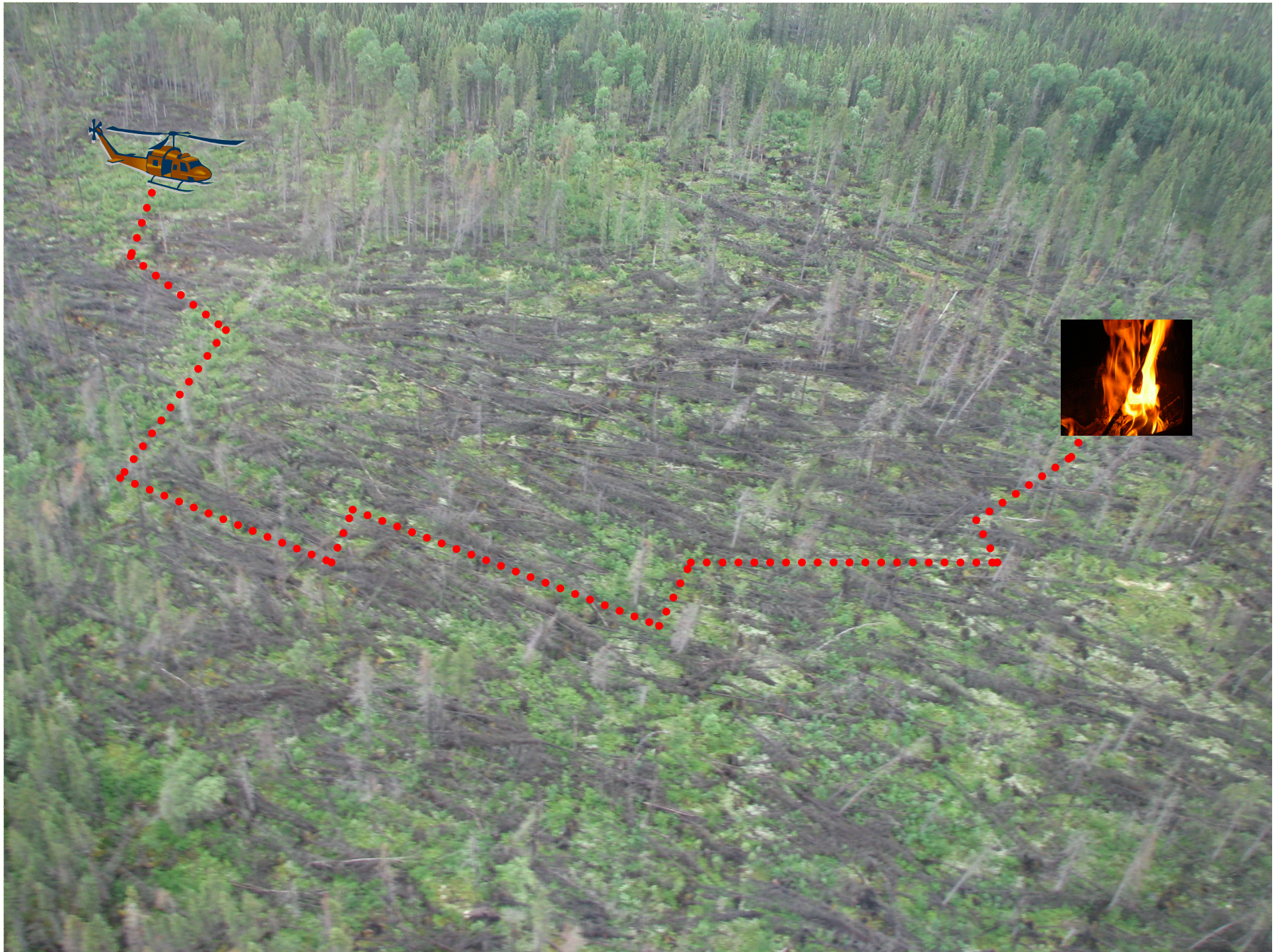
*Natural. Valued. Protected.*

Operational Response

## Recommended Equipment Combinations Based on Results

1. Feller buncher with two excavators with thumbs
2. Feller buncher with one bulldozer
3. Two excavators with thumbs
4. Two bulldozers
5. Feller buncher with two skidders
6. Excavator with one skidder
7. Two skidders







*Natural. Valued. Protected.*

## Escape Routes

Operational Response





Ministry of Natural Resources



*Natural. Valued. Protected.*

Operational Response

## *Bucketing*





Ministry of Natural Resources



*Natural. Valued. Protected.*

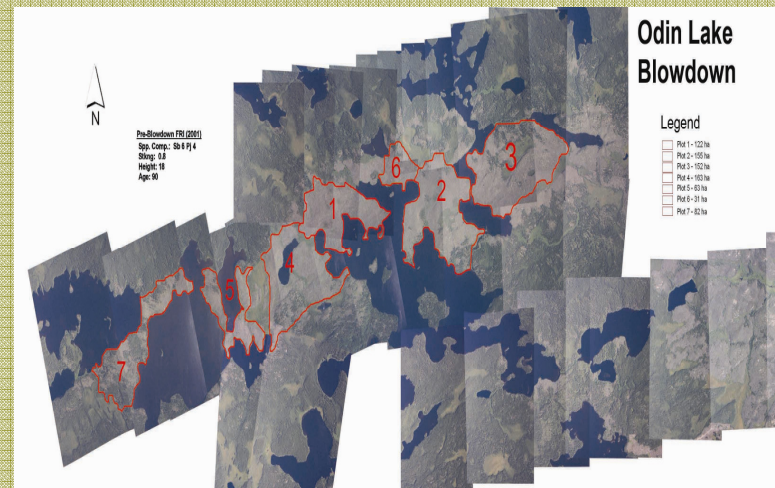
# PB's and Fire Research





*Natural. Valued. Protected.*

# PB's and Fire Research



Valhalla / Odin – Red Lake fire management headquarters

- 45 km NW of Red lake. 50 km south of Pikangikum FN.
- blowdown event occurred in 2005.
- approximately 2500 ha.
- objective is fire behaviour research
- timing is mid August till late fall



*Natural. Valued. Protected.*

# PB's and Fire Research



## Pekagoning

- Fort Frances fire management headquarters
- 60 km NW of Atikokan.
- blowdown event occurred in 2007.
- approximately 112 ha.
- objective is fire behaviour research
- timing is early September till late fall



*Natural. Valued. Protected.*

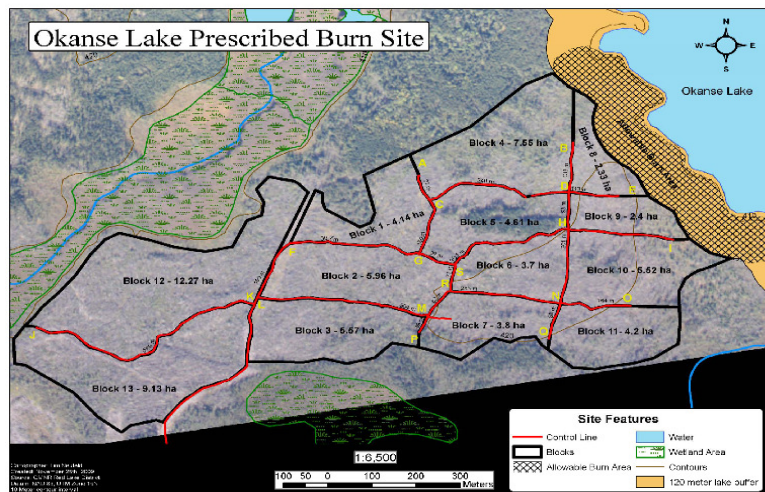
# PB's and Fire Research



- Smoothrock Lake - Thunder Bay fire management headquarters
- 40 km NW of Armstrong in Wabakimi Provincial Park
  - blowdown event occurred in 2003.
  - 25 ha island.
  - restoring health, integrity and sustainability of forest ecosystems;
  - timing is mid August till early October.



*Natural. Valued. Protected.*



- Okanse Lake
- Red Lake fire management headquarters
  - 90 km NE of Ear Falls.
  - blowdown event occurred in 2007.
  - approximately 70 ha.
  - objective is fire behaviour research
  - timing is 3 block / year over 4 years. Early September till late fall



*Natural. Valued. Protected.*

# Summary

- Changing climate increased the incidents of insect, disease and storm damage on the Landscape
- AFFES is adapting to the changing landscape by:
  - Working with internal and external partners, stakeholders to:
    - Pre-plan to manage fire on the landscape;
    - Undertake prescribed burns to mitigate fuel hazards;
    - Adapt to new incidents;
    - Address operational concerns surrounding fire fighter/public safety; and,
    - Undertake fire behaviour research.



*Natural. Valued. Protected.*

Questions?

For more information.

Al O'Connor. (807) 937-7387  
[al.oconnor@ontario.ca](mailto:al.oconnor@ontario.ca)

Jennifer Young (807) 937-7351  
[jennifer.young@ontario.ca](mailto:jennifer.young@ontario.ca)

Mike Kitney (807) 937-7245  
[mike.kitney@ontario.ca](mailto:mike.kitney@ontario.ca)