

The Tanacross Fuel Break



























The Setting



The Setting



Tanacross 2001



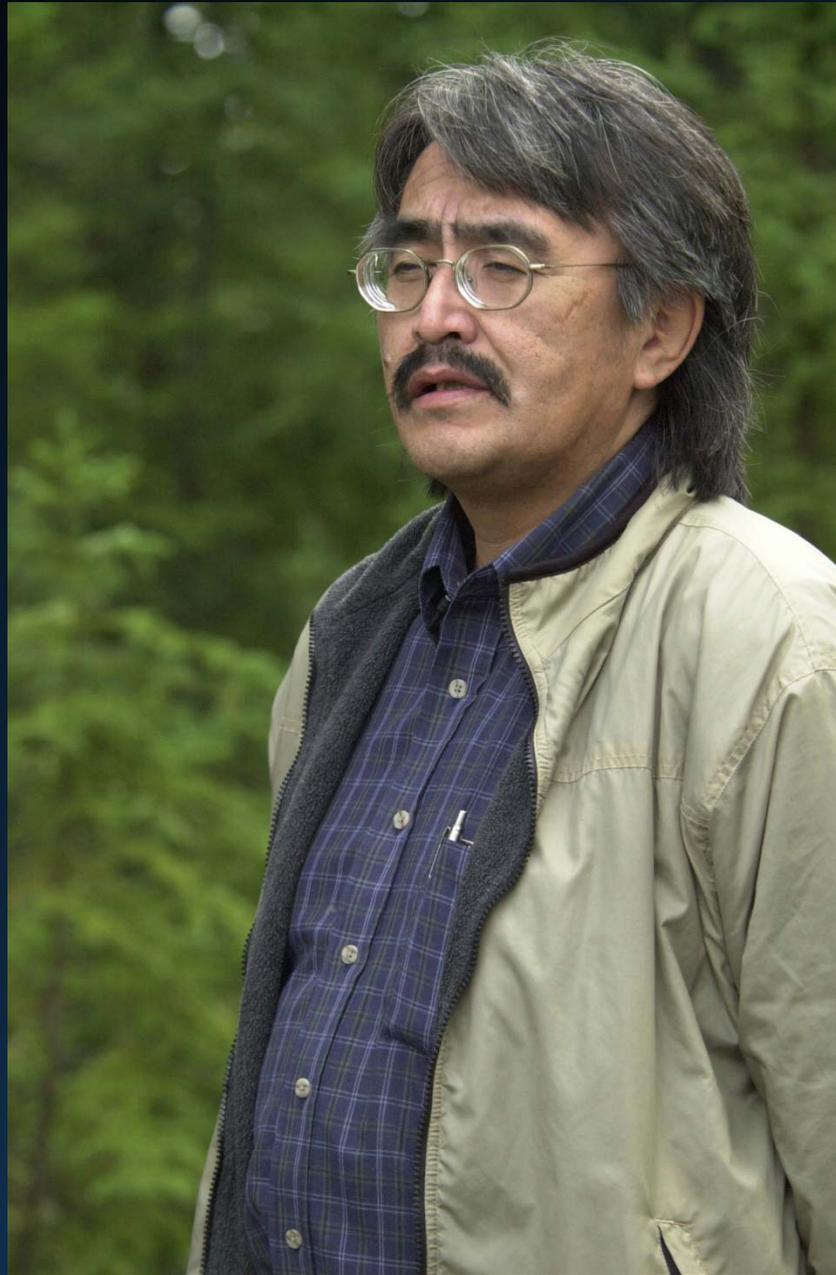
National Fire Plan objectives

- True Interagency effort
- Local hire
- Training and experience
- Improved level of protection



































The Fuel Break



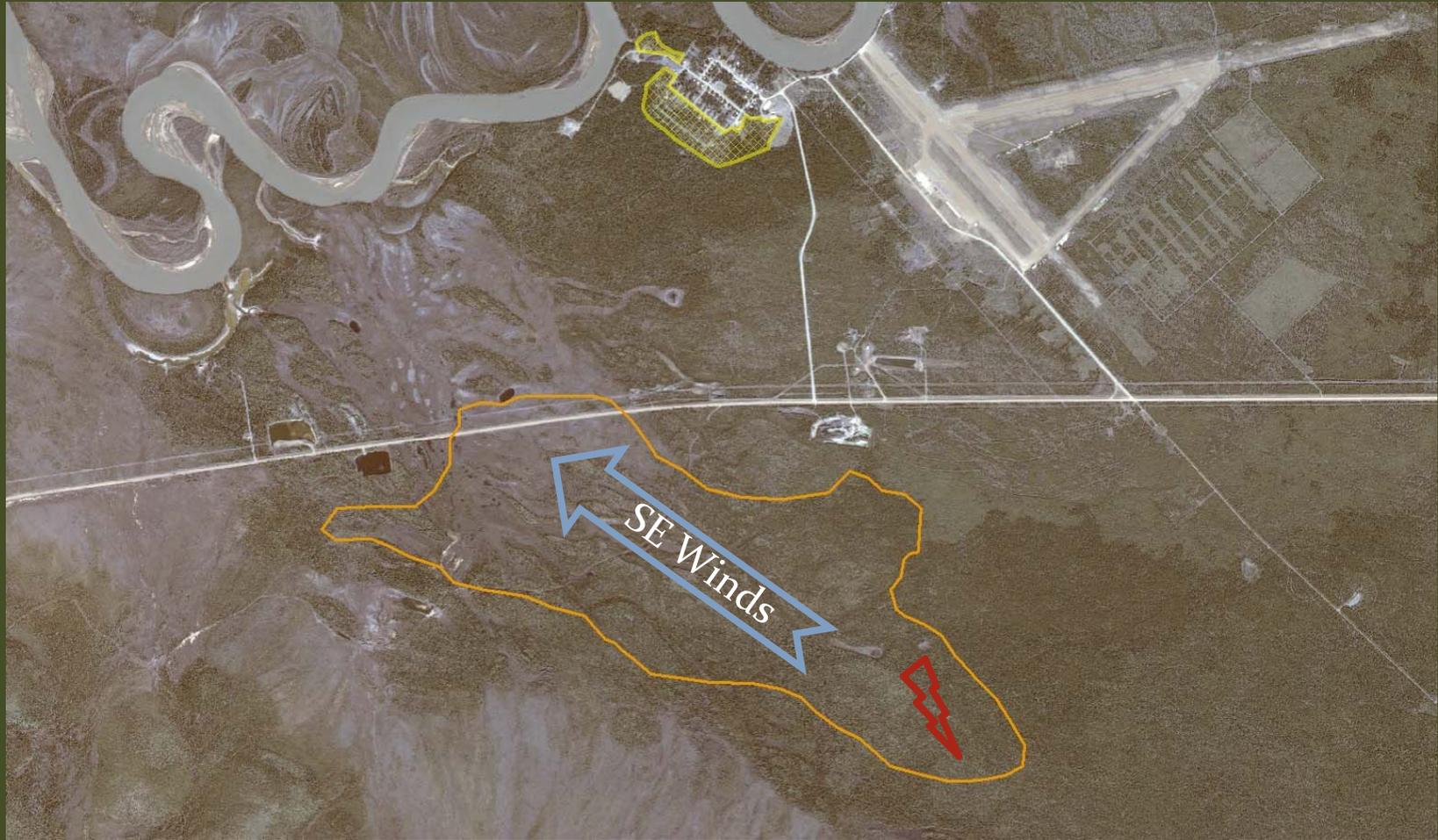
The Problem Fuel



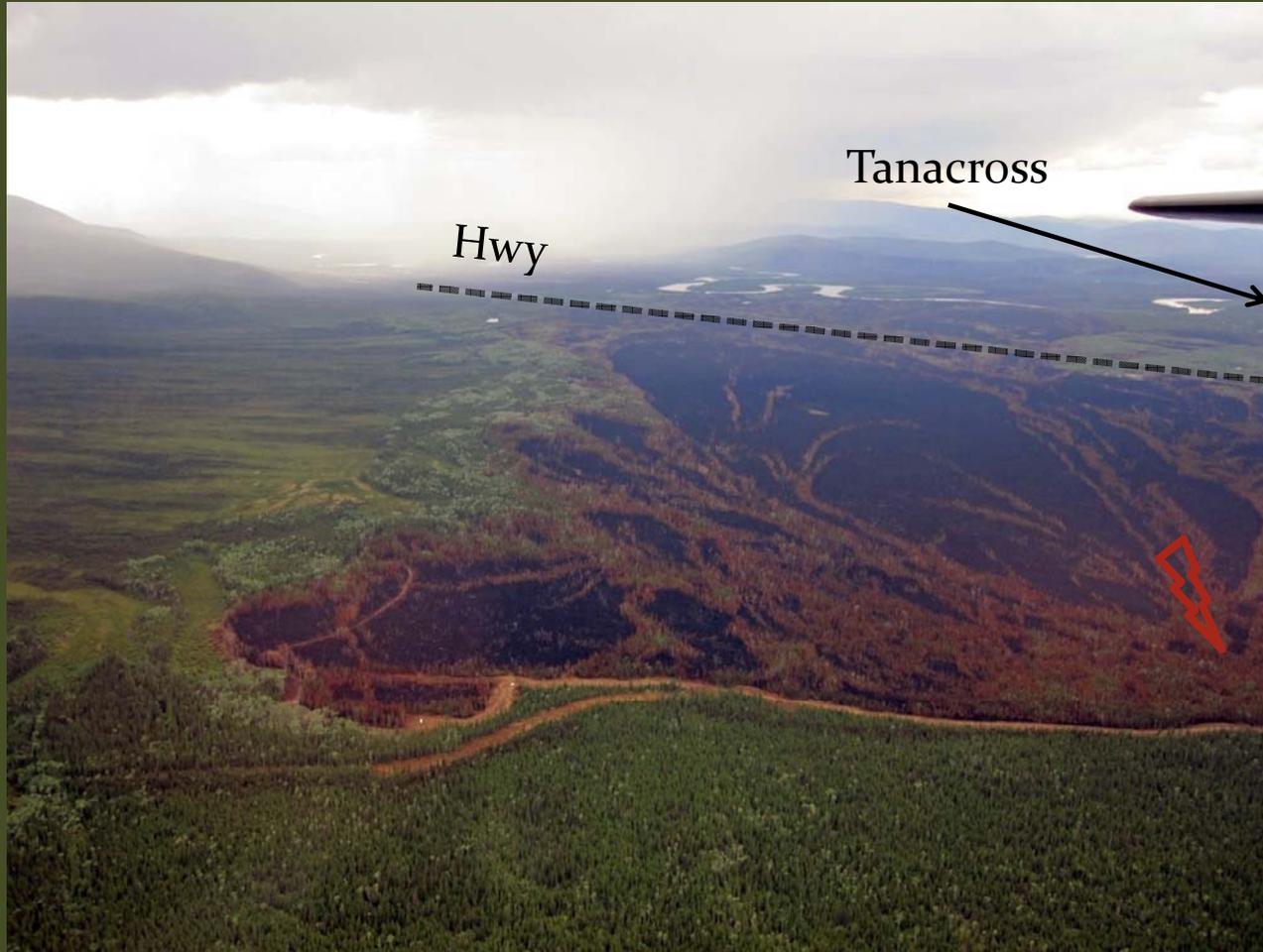
26 May 2010



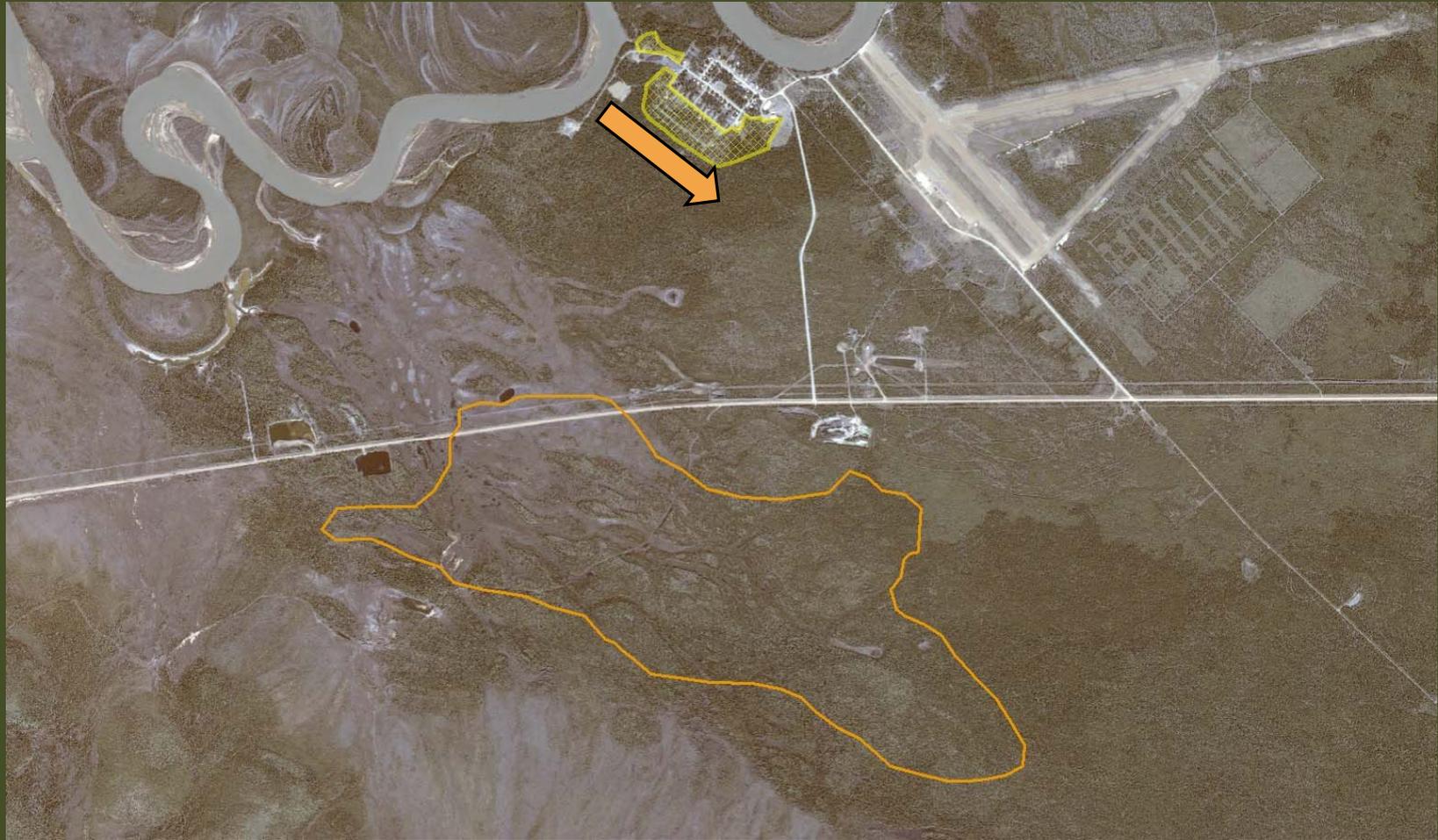
26 May



26 May



27 May Burnout



27 May End of Burn Period



28 May Burnout



28 May 2010





Eagle Trail Fire

Burnout

Burnout



National fire plan objectives

True Interagency effort

Local hire

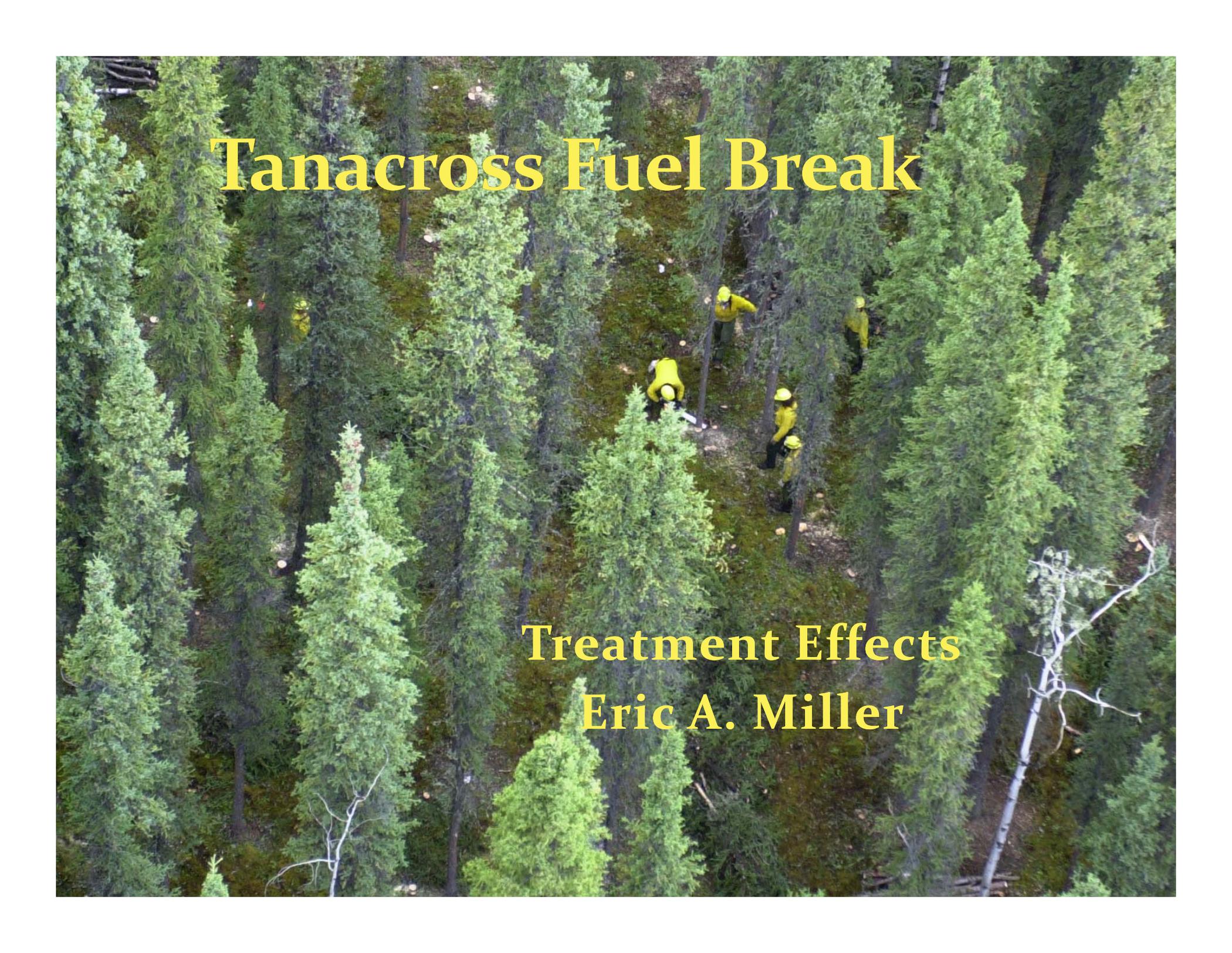
Training and experience

Improved level of protection



Summary

- “Active” defense system
 - A fuel treatment of this type is not meant to stand alone
- Provide defensible space
 - Implies defenders are present
- Provide fire tactic options
- **Shaded fuel breaks should not be marketed to the public as a passive defense but rather an improved setting in which to set up an active suppression defense (using wetline, sprinklers, further fuel reduction, etc.) against fire incursion.**

An aerial photograph of a dense forest of evergreen trees. Several workers wearing bright yellow protective gear are visible on the forest floor, engaged in fuel break activities. The ground is covered with a layer of moss and fallen needles. The text "Tanacross Fuel Break" is overlaid in yellow at the top of the image.

Tanacross Fuel Break

Treatment Effects
Eric A. Miller

Hazard Fuel Treatments

- Treatments to reduce crown fire hazard result from L48 science
 - Raise canopy base height
 - Reduce canopy bulk density



Canopy Base Height



Canopy Bulk Density



Adverse Effects?

- Tanacross
 - 3 Monitoring transects
 - Trees
 - Ground-layer vegetation
 - Woody fuels
 - Duff
 - Active Layer
 - Photo-points
 - None of the transects burned in 2010

Transect Locations

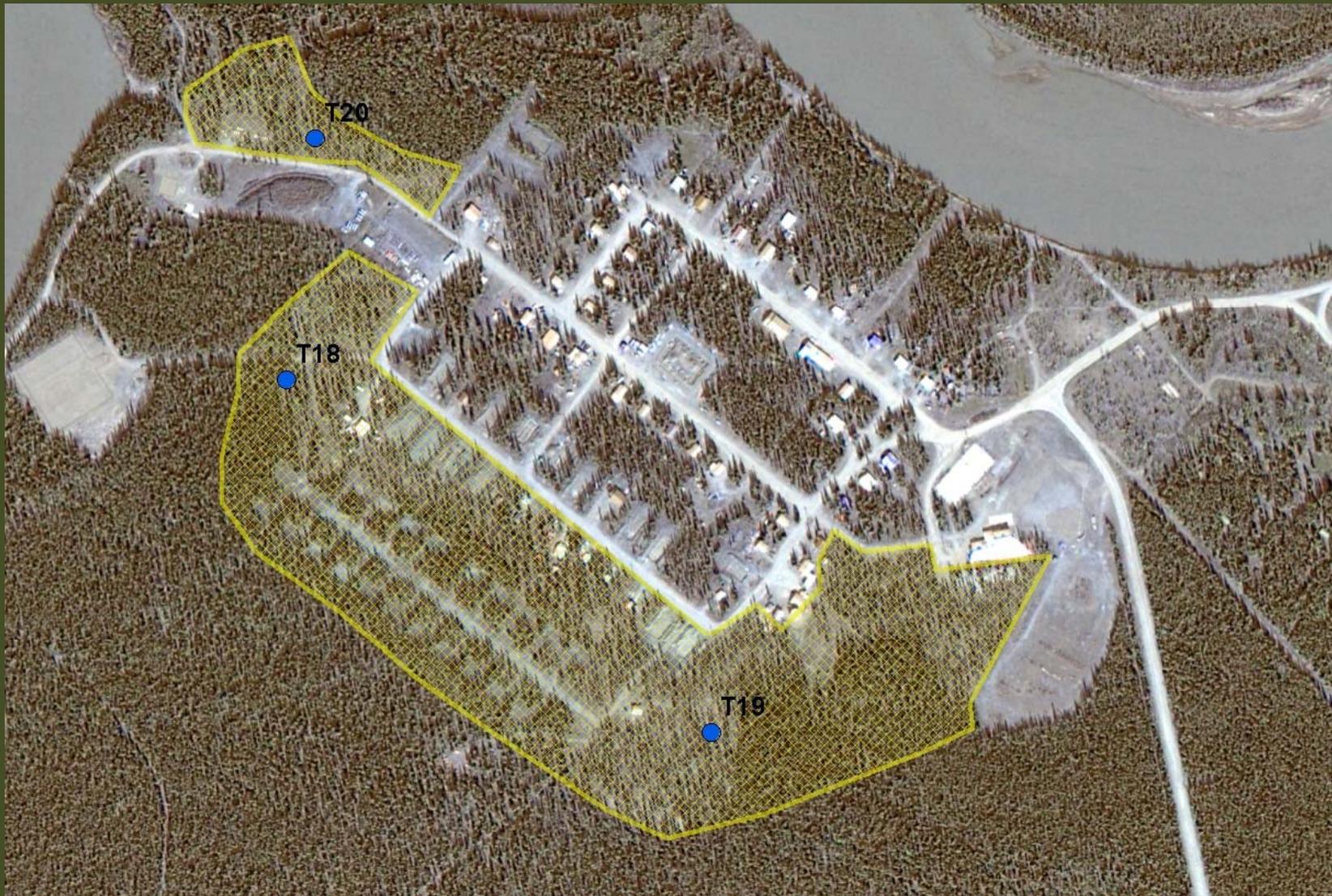


Photo-Stitch



Effects of the back-burn

Pre-Treatment Fuels 2001



2002



2003



2004



2006



2009



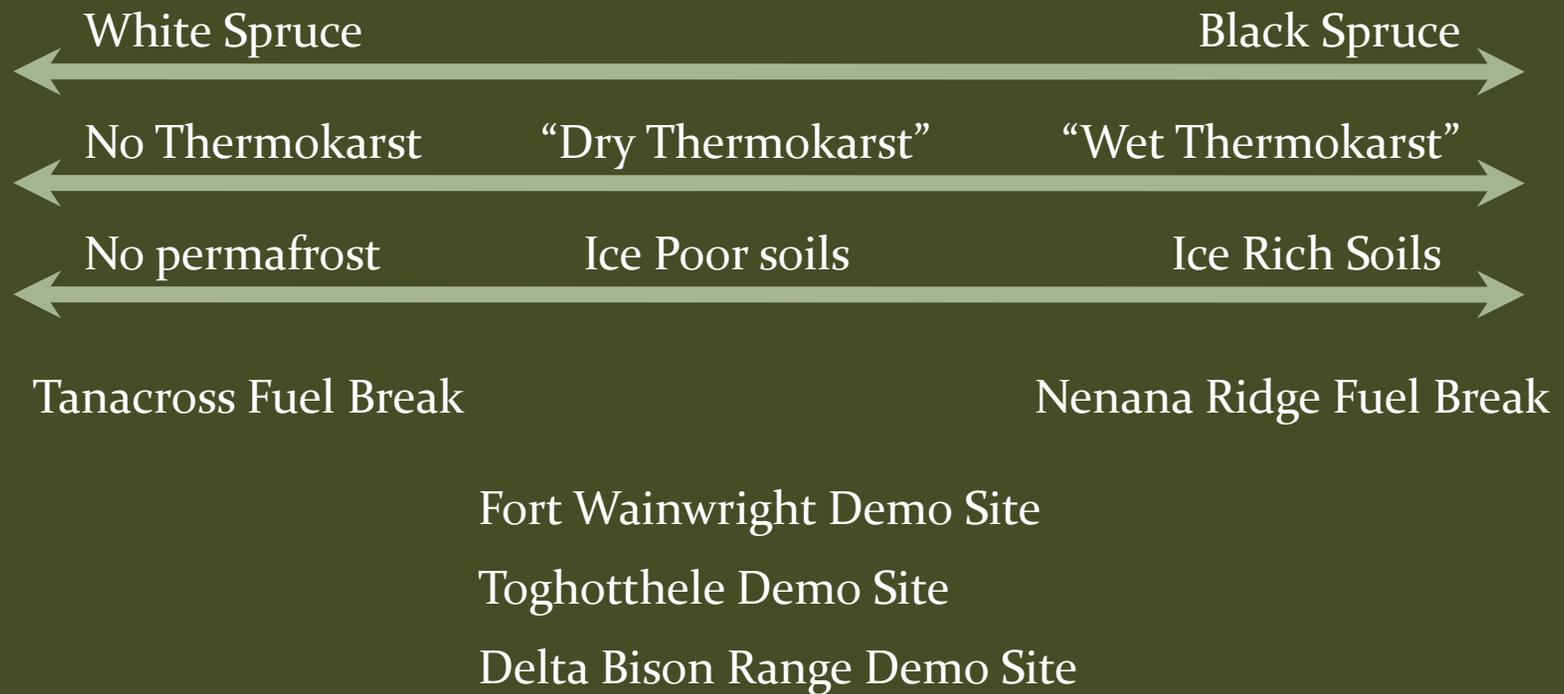
2010



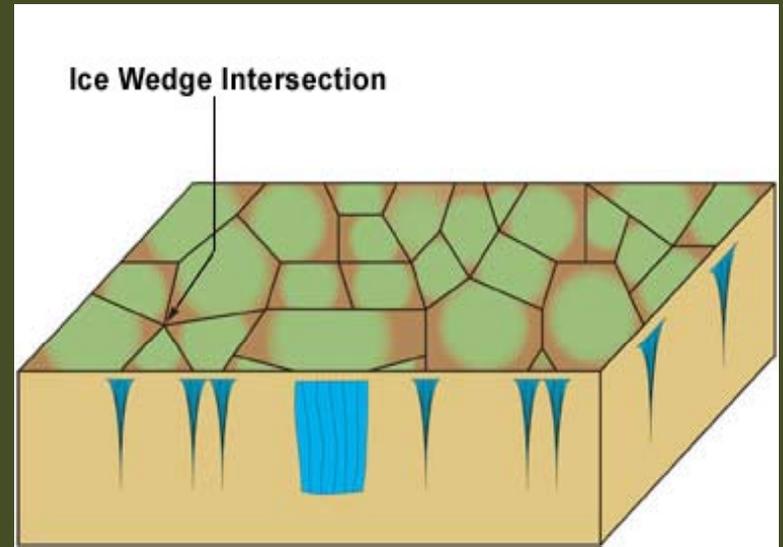
Treatment Effects

- Graminoid cover increased from 6% (pre-) to 15% after 8 years
- Tree spacing 14' x 14' spacing. This exceeded the contract specifications for 12' x 12' spacing
- After 8 years, seedlings numbered 5,867/ac: 45% white spruce and 55% aspen.
- Black spruce and birch seedlings were not found in the plots.
- Thinning induced moss mortality, increased fine woody fuels, reduced moss moisture content and increased grass and forb cover.
- Grass has increased in the understory but no invasion of mat-forming perennial grasses (bluejoint) that have caused problems elsewhere

Soils



Ice Rich Soils

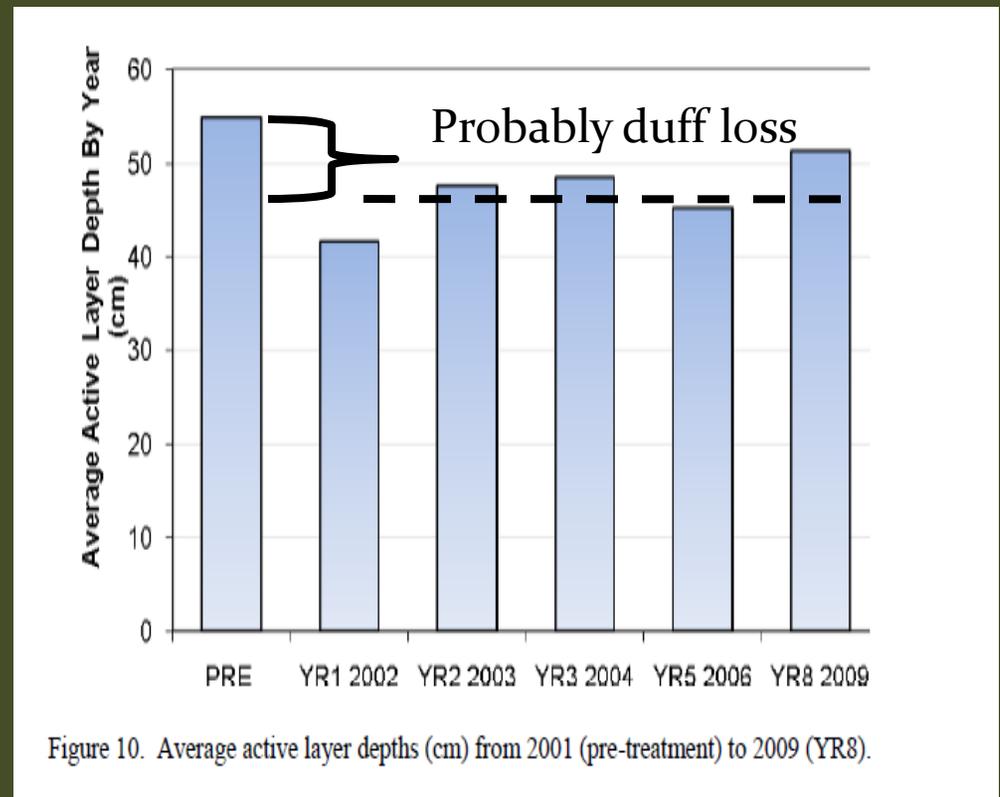


Wet Thermokarst, Nenana Ridge



Active Layer at Tanacross

- Permafrost table?
- Well drained soils
- Probably weren't measuring active layer but a "cobble" layer
- Reduction after year 1 is likely due to duff compaction



Bluejoint (*Calamagrostis canadensis*)



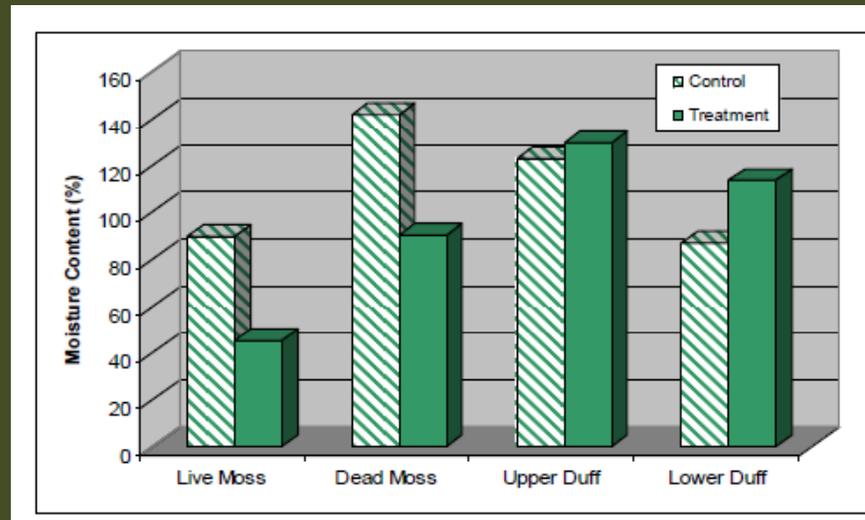
Nenana Ridge, edge of thinning unit



Nenana Ridge, shearblade unit

Duff Moisture Effects

- Duff moisture samples collected 2002-2003 in the thinning and adjacent control areas.
- The forest floor tended to be drier near the surface in thinned units. Live and dead moss layers were found to be 49% and 36% drier
- However, upper and lower duff layers exhibited the opposite effect, with post-treatment stand samples averaging slightly higher moisture contents than controls



Fire Behavior Trade-off

- Thinning reduces crown fire and spotting potential
- Increases flashy fire potential
- Modelled rates of surface spread increase due to higher surface winds in thinned stands (1-4 mph greater in treatments) (Theisen 2003, Horschel 2007)
- Critical flame length to initiate crowning increases
 - Reduced canopy bulk density
 - Increased canopy base height
- Good news from Nenana Ridge 2009: grass season is asynchronous with black spruce season

Nenana Ridge 2009



The Larger Context/One Size Doesn't Fit All

- Fuel treatment monitoring efforts
 - JFSP Demonstration Sites
 - Toghotthele
 - Delta Bison Range
 - Fort Wainwright
 - Nenana Ridge Experimental Fuel Treatments
 - Shannon Park
 - Tanacross
- Fuel break prescriptions must be matched to individual situations

Summary

- Shaded fuel break prescription works well at Tanacross
- Ice poor, dry soils
- Encourage the growth of hardwoods
- Surface fuels are not problematic
- No bluejoint problem

Hardwood Regeneration 8/11/2010



Little Duff Consumption

Plant
propagules
intact



Little Duff Consumption

