

B & B COMPLEX



Booth and
Bear Butte Fires

Sisters, Oregon
August & September,
2003

Detection

August 19, 2003

- Bear Butte Fire
 - Reported 12:57 PM
 - Helicopter 206NU
- Booth Fire
 - Reported 3:23 PM
 - Hinkle Butte LO

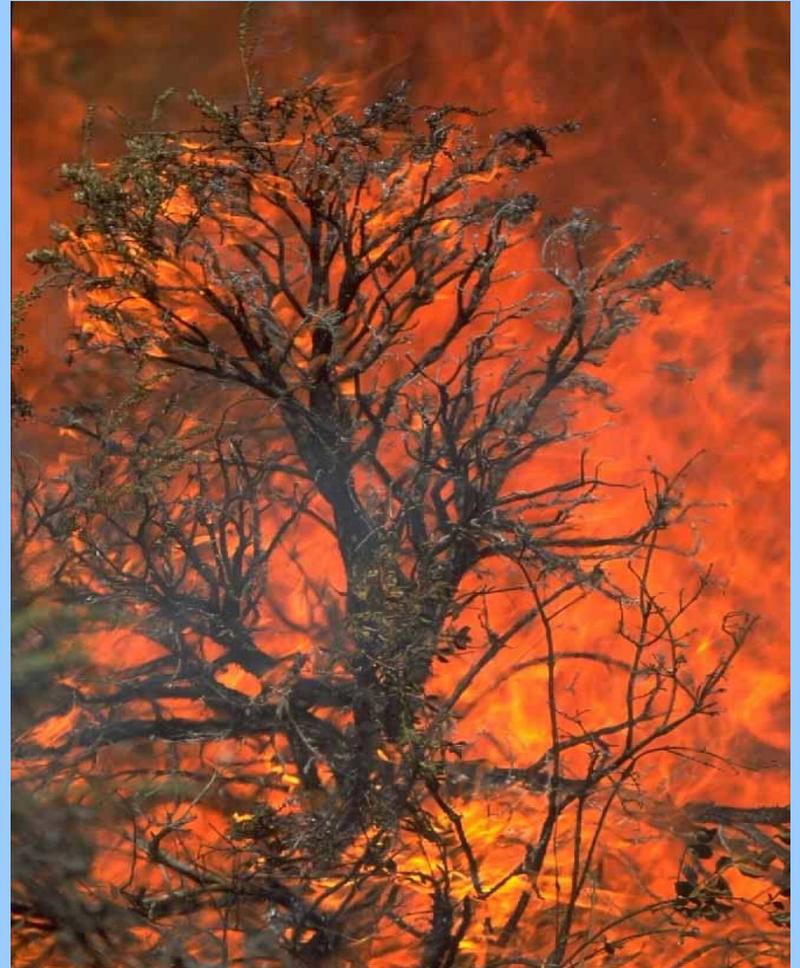
The Central Oregon Arson Task Force (COATF)

An interagency group comprised of 18 local, state and Federal fire & law enforcement agencies

- Deschutes County Sheriff's Office
- Oregon State Police
- Oregon Department of Forestry
- U.S. Forest Service
- Bureau of Land Management
- Walker Range Fire Protection Dist.
- Sisters/Camp Sherman Fire Dept.
- Bend Fire Department
- Redmond Fire Department
- Sunriver Police Department
- La Pine Rural Fire Protection Dist.
- Jefferson Co. Rural Fire Protection Dist.
- Jefferson County Sheriff
- Crooked River Ranch Fire Dept.
- Klamath County Sheriff's Office
- Bend Police Department
- Confederated Tribes of the Warm Springs
- Bureau of Indian Affairs

COATF Objective

Investigate all wildland fires to determine origin and cause and further investigate human caused fires to determine if they are accidental or intentional



COATF History

- **1983 Central Oregon Fire Investigation Team**
 - Formed to reduce wildland Arson
 - Informal association of local, state & federal fire & law enforcement fire investigators
- **1993 COATF Formed**
 - Formal Operating agreement between agencies
 - Share resources and personnel to provide the public w/ the highest level of fire investigation possible

COATF Results

Since 1983 the work of COATF and its predecessor, COFIT, has resulted in the arrest and conviction of nine serial arsonists, responsible for 63 fires.

Fire Investigators



- Bear Butte

- Janice Madden

- USFS

- Bill Welch

- Redmond FD

- Oliver Kirk

- Warm Springs

- Pat Ryan

- ODF (Ret.)

- Anne Minden

- USFS

- Booth

- Gary White

- BLM (Ret.)

- Larry Langley

- CRR FD

- Fred Perl

- USFS

- Roman Reyes

- USFS

- Pat Ryan

- ODF (Ret.)

The Investigation

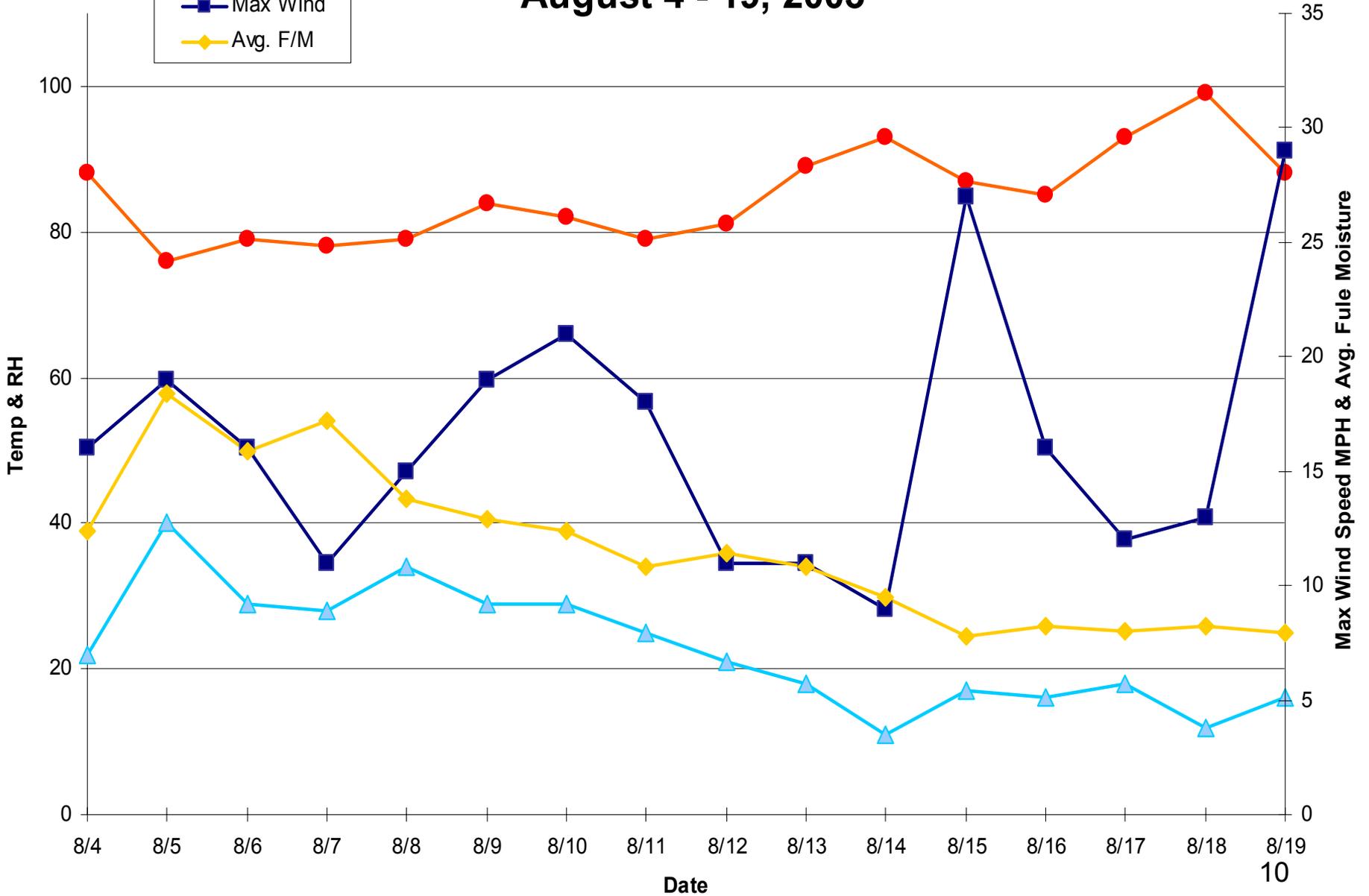
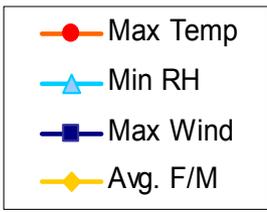
- **Standardized Methodology**
- **Over 50 tips and other leads followed up**
 - **Interviews w/**
 - **Wilderness campers**
 - **Hikers**
 - **Fishermen**
 - **Passing motorists**
 - **Pilots**
- **Results show lightning caused both fires**

Hold Over Lightning Fires

- Examples of Lightning holdover fires
 - Elk Lake Fire 1998, held over 21 days
 - Newberry Crater Fires (2) 2003 8 days
- Climatic conditions
 - Some rain w/ lightning storm
 - Gradual warming & drying trend

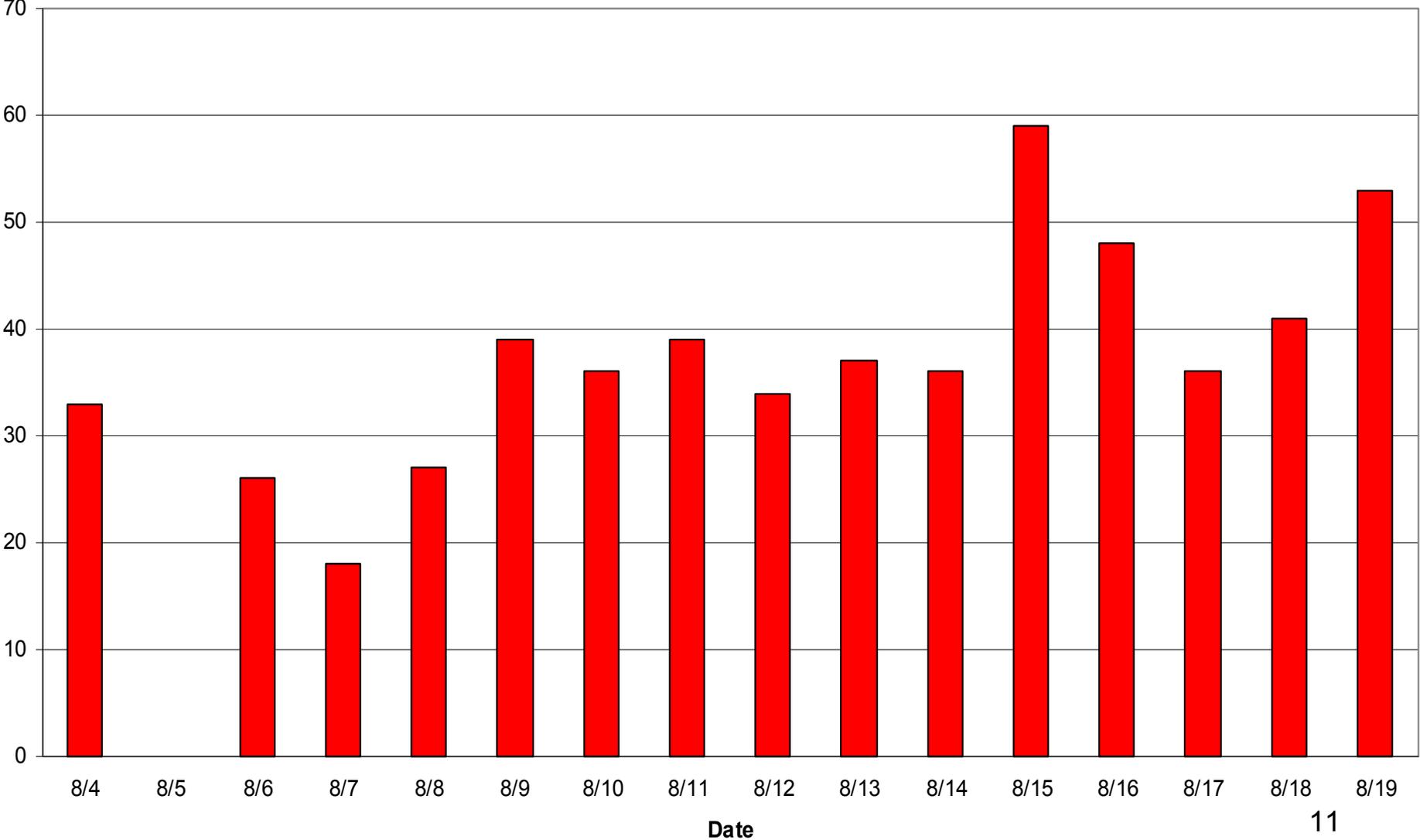
Colgate RAWS Weather Data

August 4 - 19, 2003

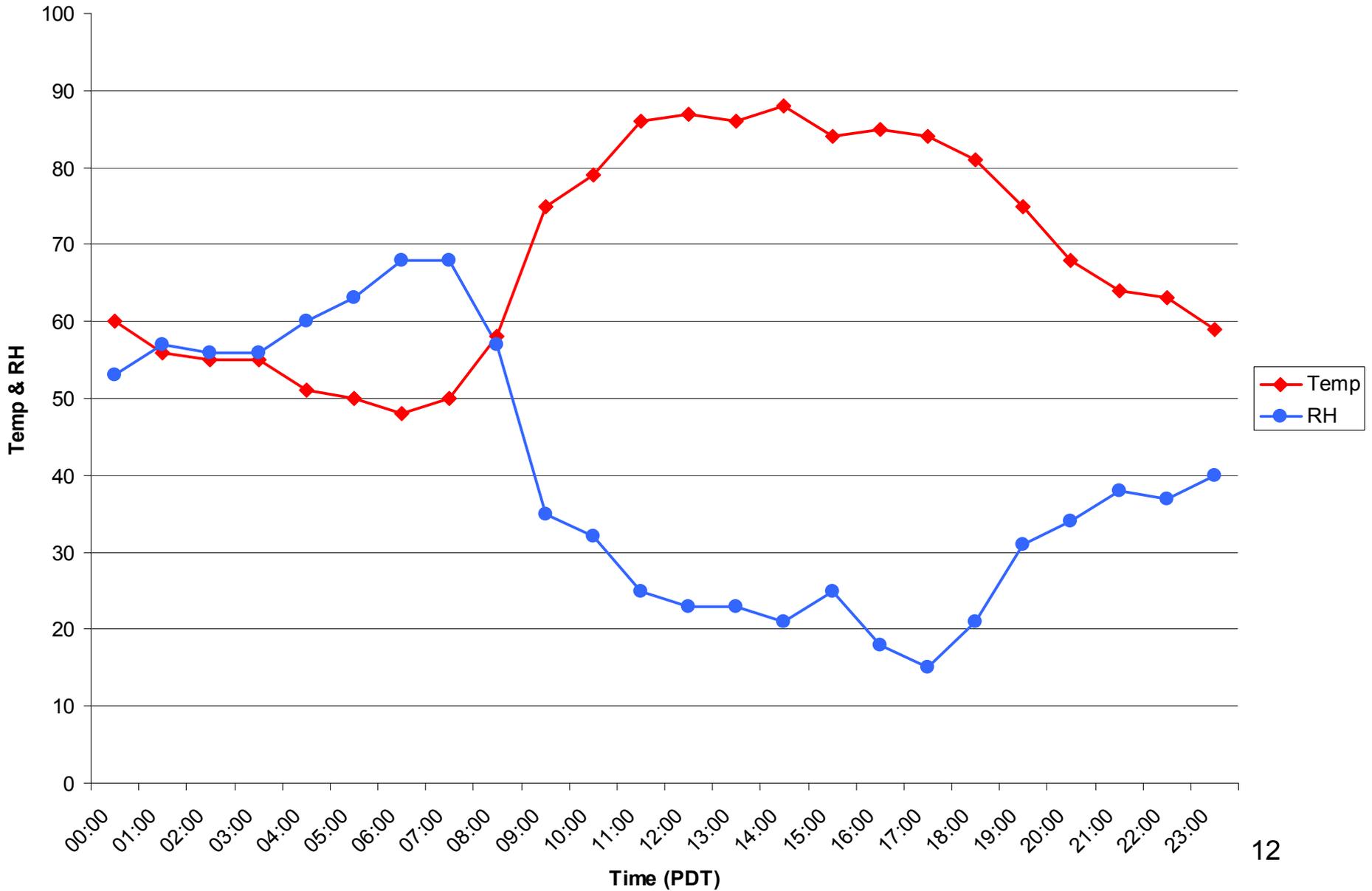


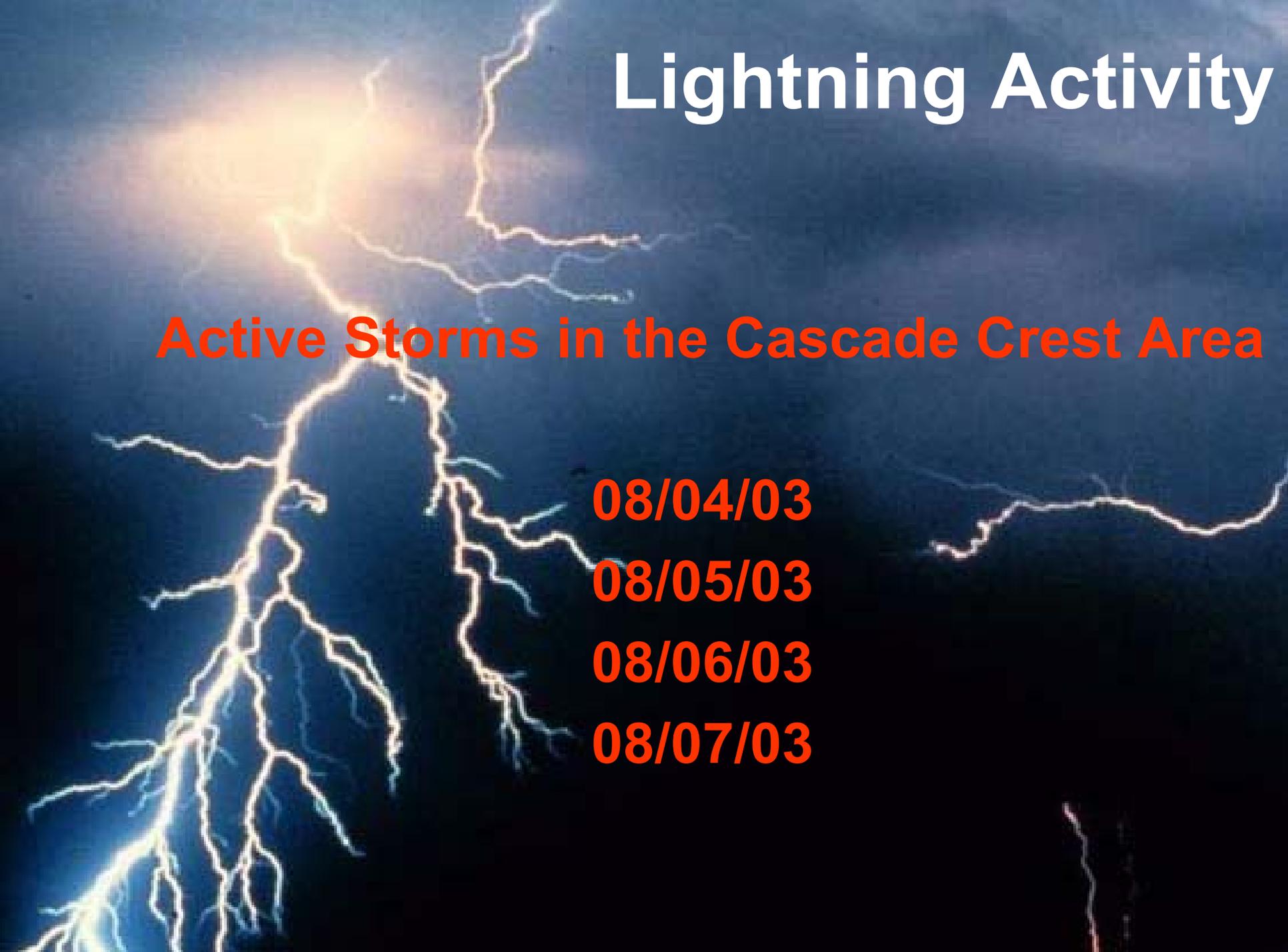
Burning Index Colgate RAWS

August 4 - 19, 2003



Colgate RAWS Temperature & Humidity
8/19/2003





Lightning Activity

Active Storms in the Cascade Crest Area

08/04/03

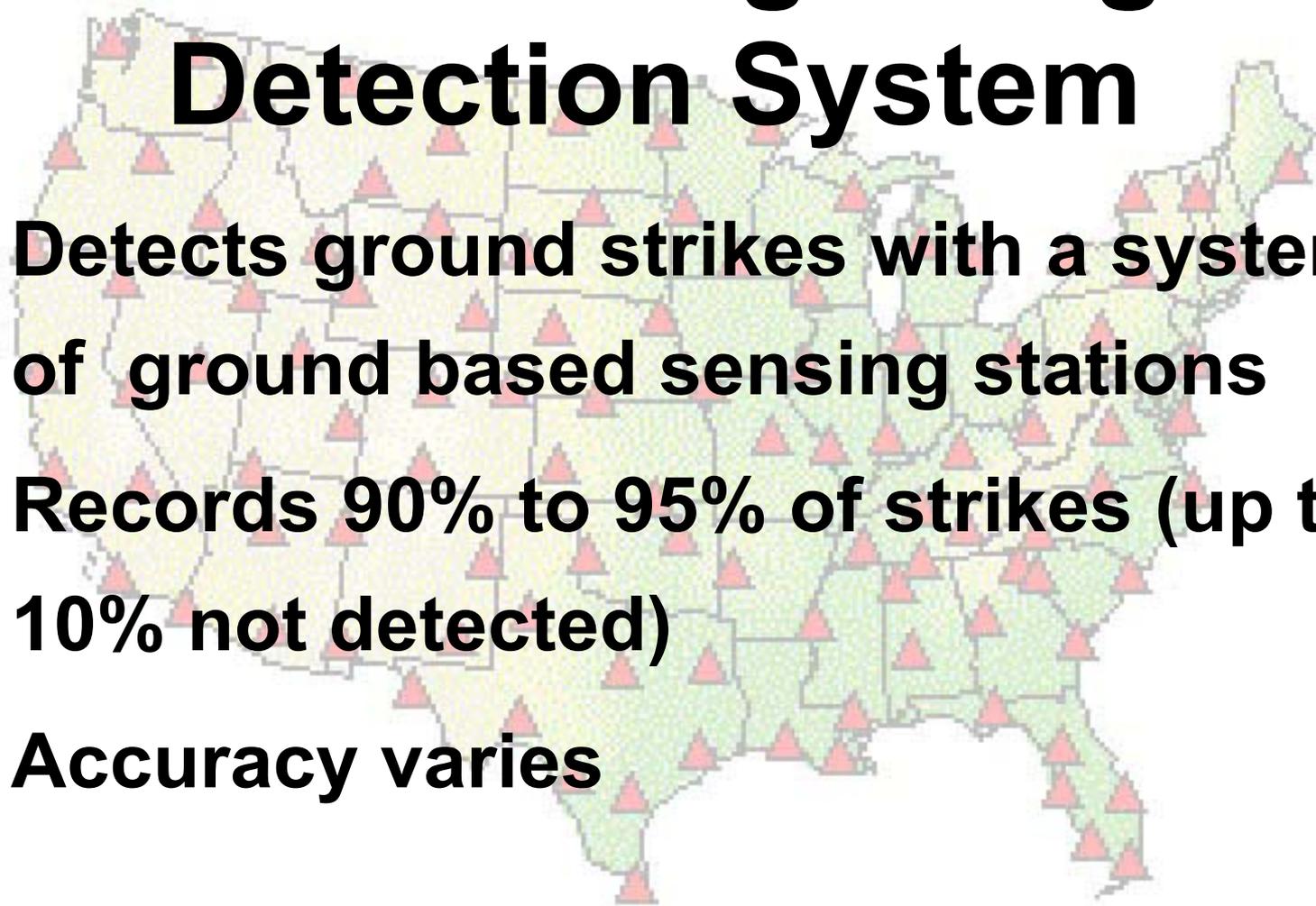
08/05/03

08/06/03

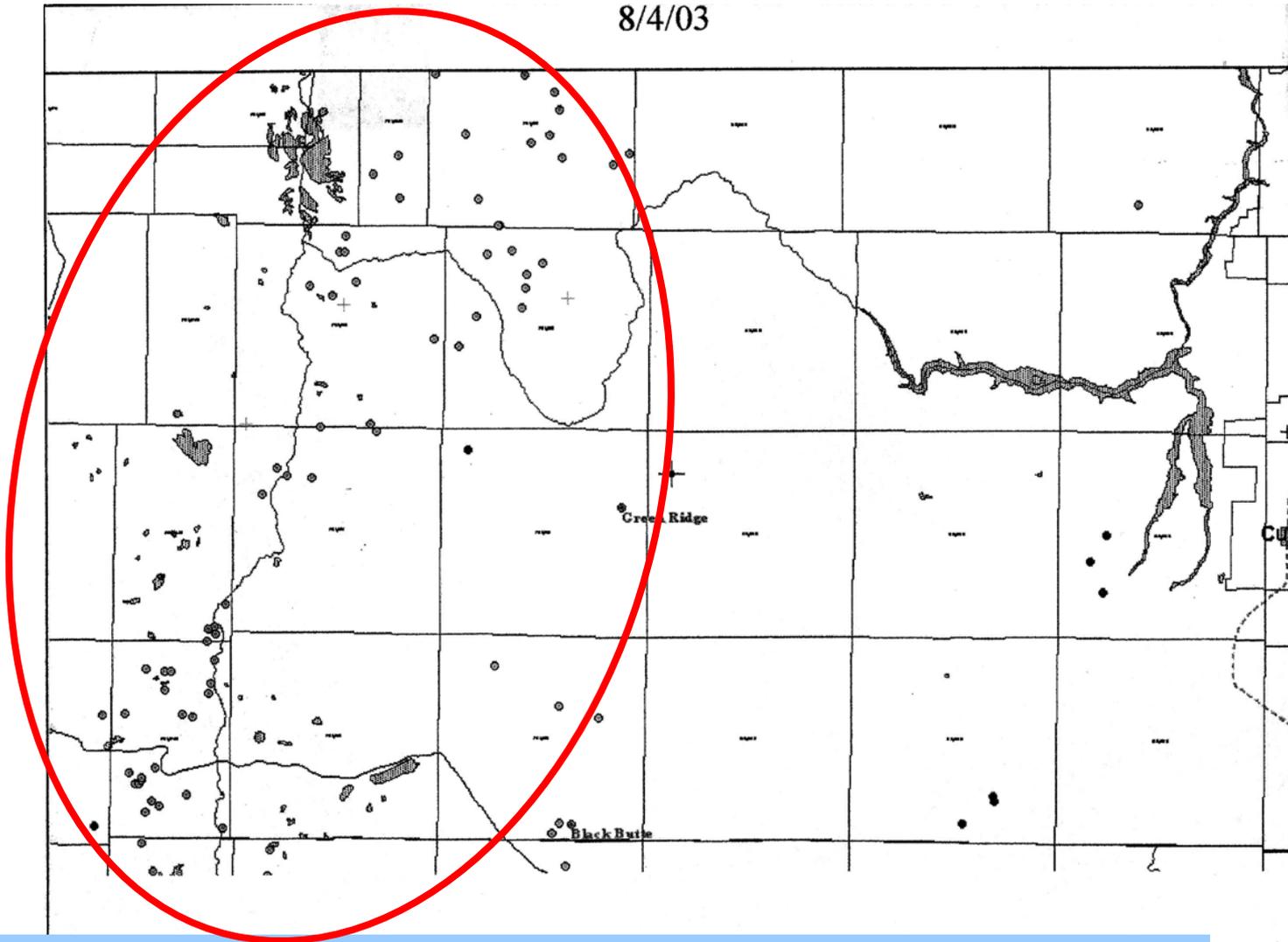
08/07/03

National Lightning Detection System

- Detects ground strikes with a system of ground based sensing stations
- Records 90% to 95% of strikes (up to 10% not detected)
- Accuracy varies



8/4/03



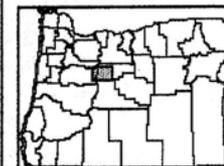
Legend

- △ Burn Permits
- ▲ Agricultural
- ▲ Commercial
- ▲ Construction
- Demolition
- Domestic
- Incinerator
- Industrial
- Slash
- + Counties
- ▭ Fire Polygons
- ▭ Fire Protection
- HomeSite Inspection
- ▲ Incidents
- Look Outs
- ▨ City Limits
- ▭ Highways
- ▭ Rail Road
- ▭ wetus
- ▭ Lakes



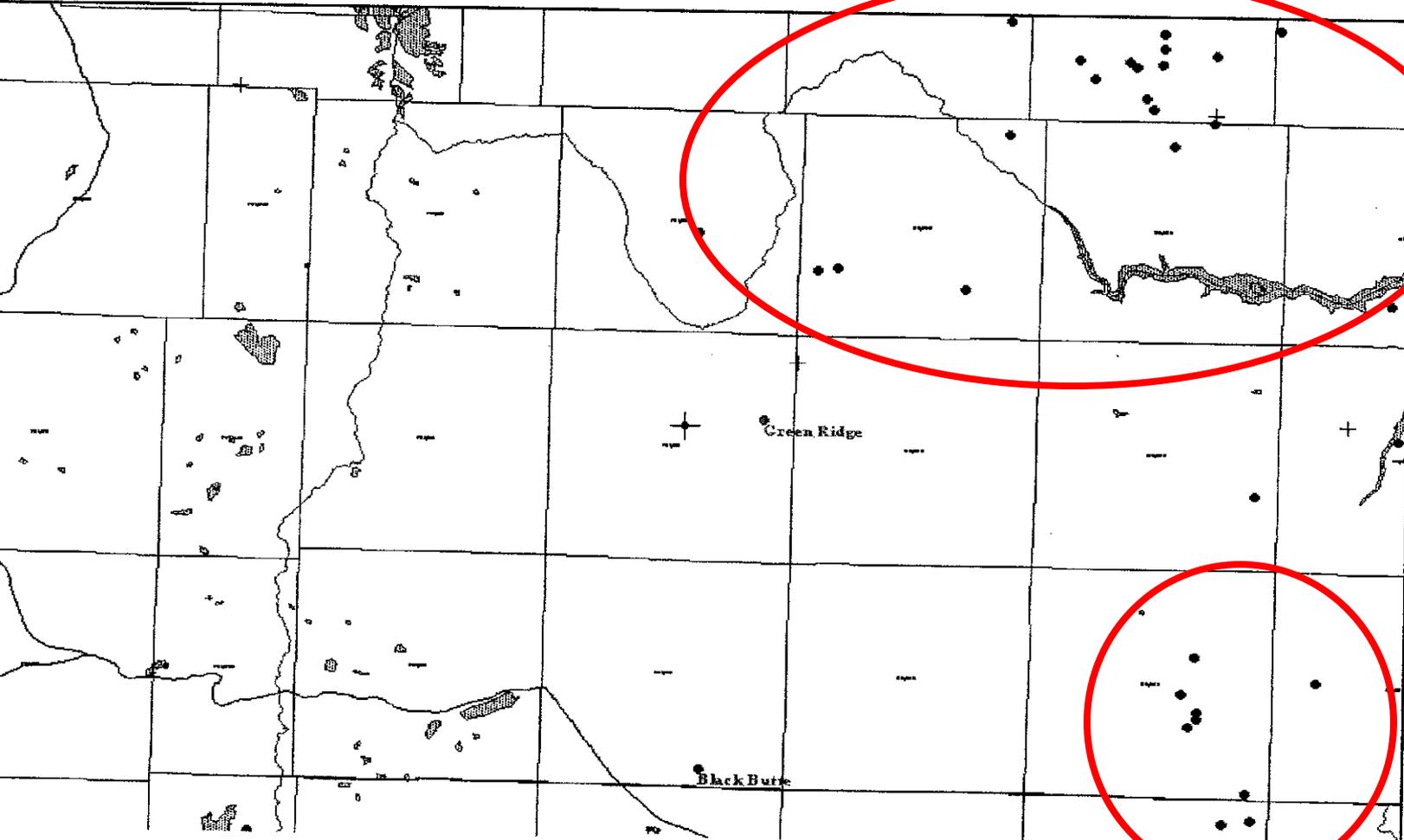
1in. = 22087ft.

Vicinity



Lightning Activity 8/4/03

8/05/03



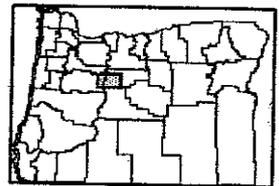
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- ▨ westus
- ▨ Lakes



1in. = 21681ft.

Vicinity



Lightning Activity 8/5/03

8/6/03



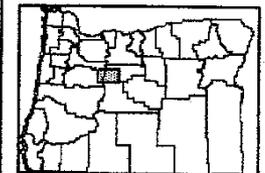
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- ▭ westus
- ▭ Lakes



1in. = 21681ft.

Vicinity



Lightning Activity 8/6/03

08/07/03



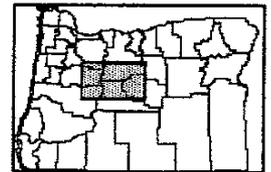
Legend

- △ Burn Permits
- ▲ Agricultural
- ▲ Commercial
- ▲ Construction
- Demolition
- Domestic
- Incinerator
- Industrial
- +
- +
- Country
- Fire Polygons
- Fire Protection
- Homesite Inspection
- Incidents
- Look Outs
- ~ Highways
- ~ Rail Road
- westus



1in. = 64063ft.

Vicinity



Lightning Activity 8/7/03

Lightning Holdover Fires from 8/4 – 8/7 Storms

N44° 56' 08"
W121° 44' 38"

Pinhead Butte Fire
Aug 15

N44° 38' 01"
W121° 45' 37"

Bear Butte Fire
Aug 19

N44° 25' 47.05"
W121° 49' 54.04"

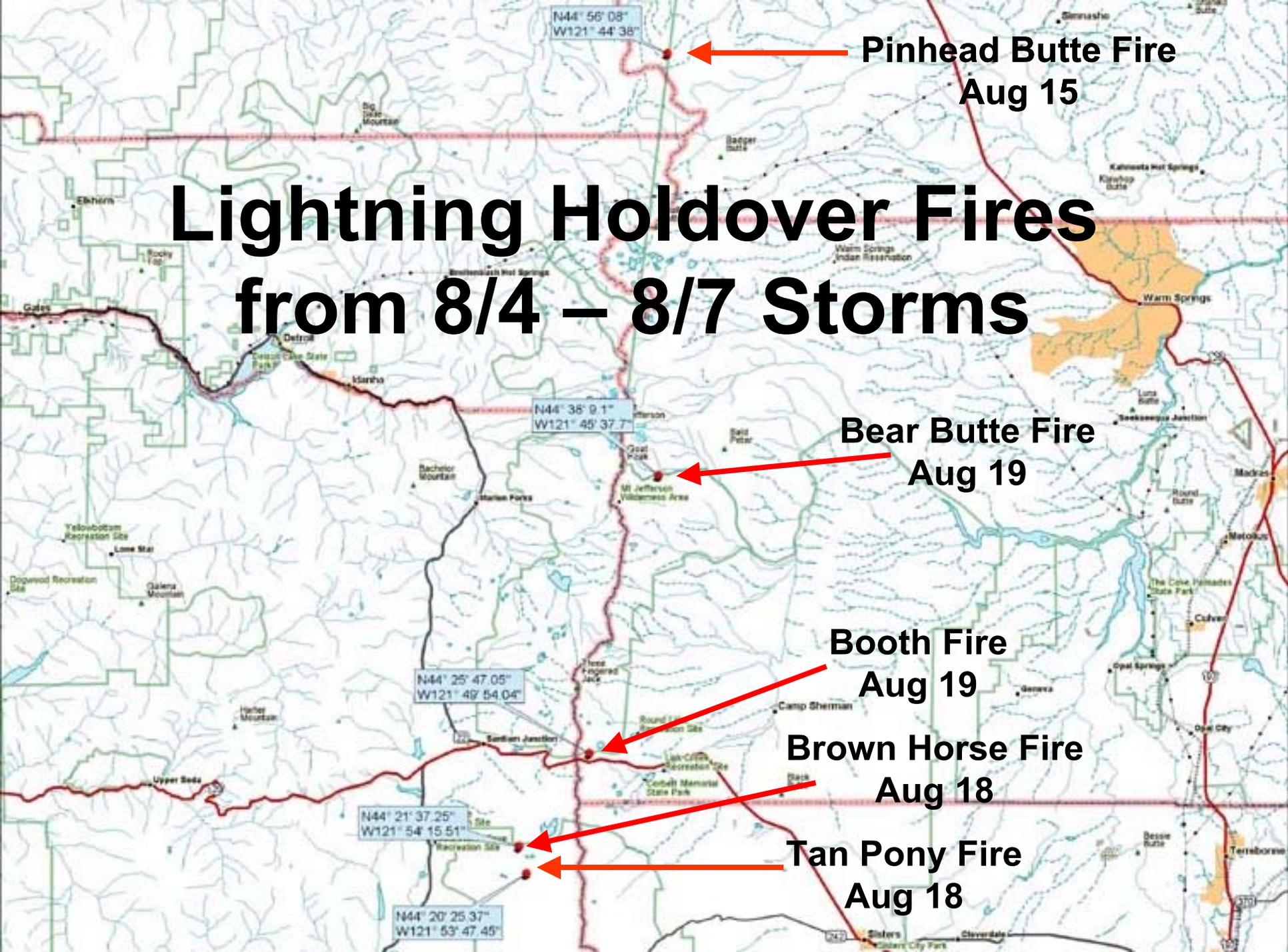
Booth Fire
Aug 19

N44° 21' 37.25"
W121° 54' 15.51"

Brown Horse Fire
Aug 18

N44° 20' 25.37"
W121° 53' 47.45"

Tan Pony Fire
Aug 18



Pinhead Butte Fire

Aug 15

- Warm Springs Reservation
- Reported: 4:20 PM
- N 44° 56' 08" W 121° 44' 38"
- 1/4 Acre
- Cause: Lightning (Holdover)

Brown Horse Fire

Aug 18

- Willamette National Forest
- Reported: 10:28 AM
- N 44° 21' 37.2" W 121° 54' 15.4"
- 1/10 Acre
- Cause: Lightning (Holdover)

Brown Horse

Aug 18

- First Tree
- Obvious Lightning Damage
- Fire in Top, No Ground Fire



Brown Horse

Aug 18

- Second Tree
- Classic Lightning Damage
- Started Ground Fire



Tan Pony Fire

Aug 18

- Willamette National Forest
- Reported: 11:28 AM
- N 44° 20' 25.4" W 121° 53' 47.5"
- 1/4 Acre
- Cause: Lightning (Holdover)

Tan Pony Fire

Aug 18

- First Tree
- Obvious Lightning Damage
- No Fire



Tan Pony Fire Aug 18

- First Tree
- Close-up of
Lightning Damage
- No Fire



Tan Pony Fire Aug 18

- Second Tree
- Subtle Lightning Scar (does not continue to ground)
- Started Ground Fire



Tan Pony Fire

Aug 18

- Second Tree
- Close up of
Lightning Damage
- Started Ground Fire



Bear Butte Fire

Aug 19

- **Deschutes National Forest**
- **Reported: 12:57 PM**
- **N 44° 38' 09.1" W 121° 45' 37.7"**
- **11,250 Acres (Merged with the Booth fire on 9/4)**
- **Cause: Lightning (Holdover)**

Bear Butte Fire

Probable Weather

Area of Origin at 12:57 Hrs.

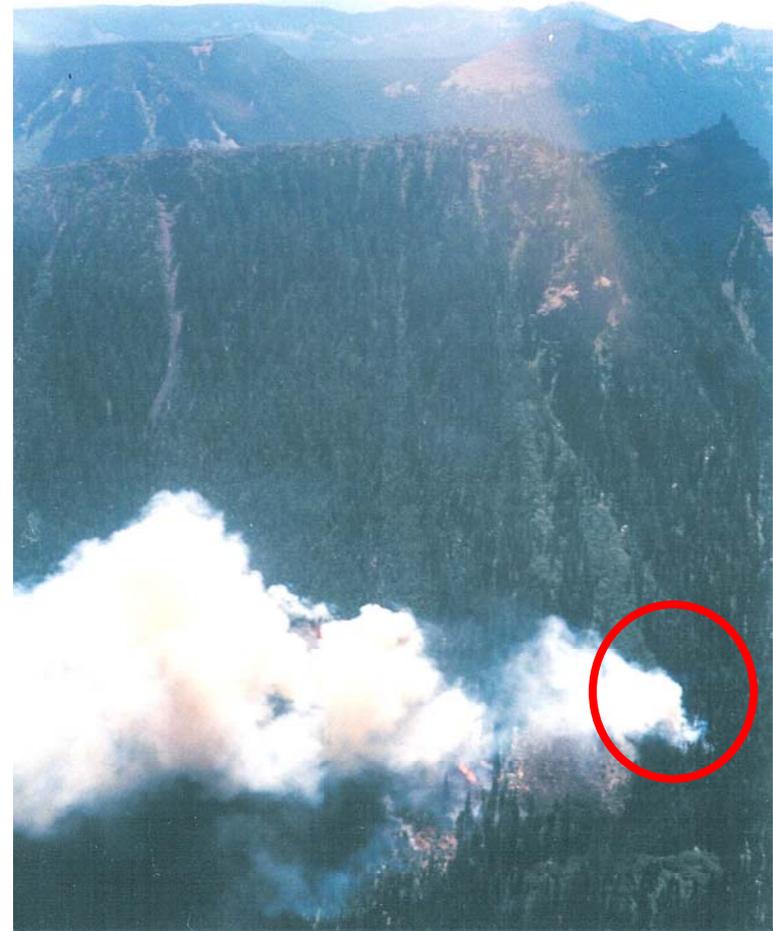
- Temperature** **85° F**
- Relative Humidity** **22%**
- 20' Wind Speed** **6 to 12 mph**
- Wind Direction** **SW**

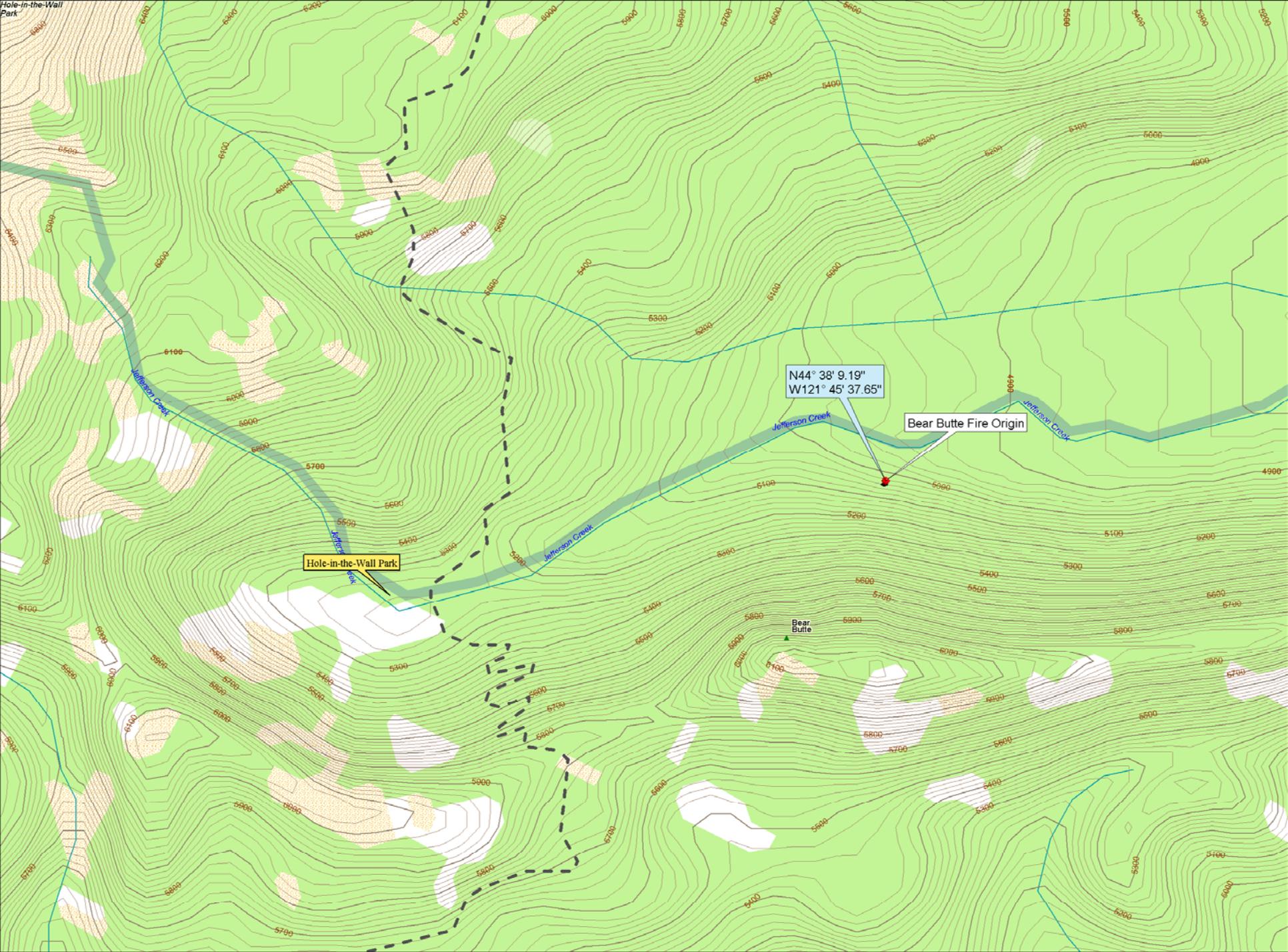
Bear Butte Fire

- **General Area of Origin located by**
 - **Witness Statement**
 - **Warm Springs Helitac crew**
 - **Smokejumpers**
 - **Photographs**

Bear Butte Smoke Jumper Photo

- View looking South
- Fire on west side of scree slide





Hole-in-the-Wall Park

Hole-in-the-Wall Park

N44° 38' 9.19"
W121° 45' 37.65"

Bear Butte Fire Origin

Bear Butte

Bear Butte Fire Origin Area Investigation

- 9/12 Flew to “Hole in the Wall Park and hiked to origin area
- Searched from Jefferson Creek uphill on West side of scree slide
- Traced burn patterns
- Found lightning struck trees



Bear Butte Fire Origin Area

Conductor Tree



**Slab Blown from
Conductor Tree**

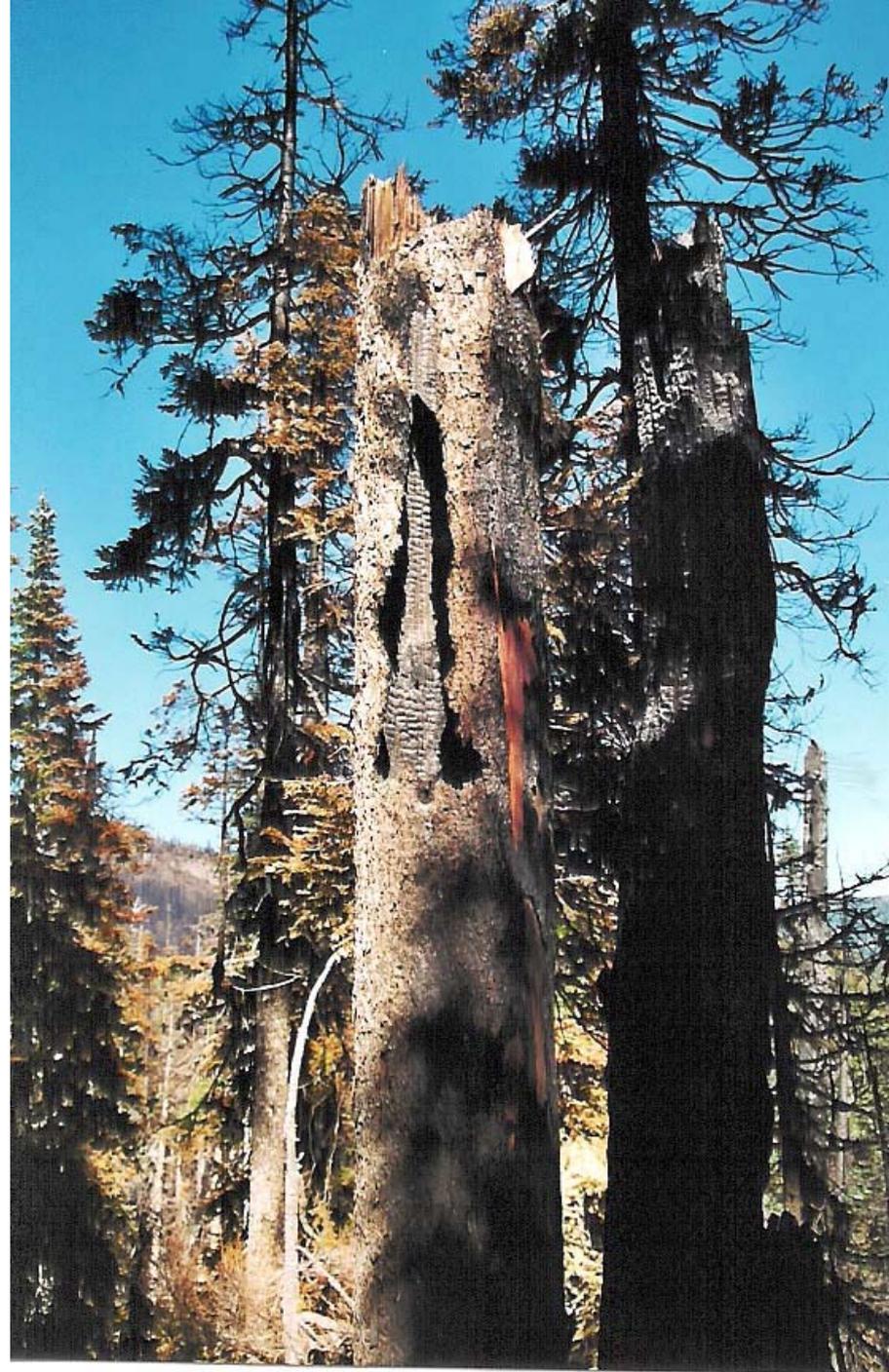
Bear Butte Fire Origin Area

Source Tree



Bear Butte Fire Origin Area

**Source Tree
Back Side**



A black and white photograph showing a close-up of a weathered wooden surface, likely a tree trunk or a wooden boardwalk. The wood is heavily charred and shows signs of fire damage, with dark, irregular spots and a rough, cracked texture. A metal stake is driven into the wood, supporting a small, rectangular sign with a white background and a large, bold, black letter 'A'. The sign is slightly tilted. The background is dark and out of focus, suggesting a wooded area.

A

**Spot fires from
Source Tree**

Booth Fire

Aug 19

- **Deschutes National Forest**
- **Reported: 3:23 PM**
- **N 44° 25' 47.05'' W 121° 49' 54.04''**
- **59,519 Acres** (Merged with the Bear Butte fire on 9/4)
- **Cause: Lightning (Holdover)**

Booth Fire Probable Weather

Area of Origin at 15:23 Hrs.

- **Temperature** **85° F**
- **Relative Humidity** **22%**
- **20' Wind Speed** **6 to 14 mph**
- **Wind Direction** **SW (225°)**

Booth Fire

- **General Area of Origin located by**
 - **Witness Statement**
 - **Air Attack**
 - **Helictac**
 - **Photographs**
 - **Burn Pattern**

Booth Fire Origin Area





Elapsed Time 0:00



Elapsed Time 7:13

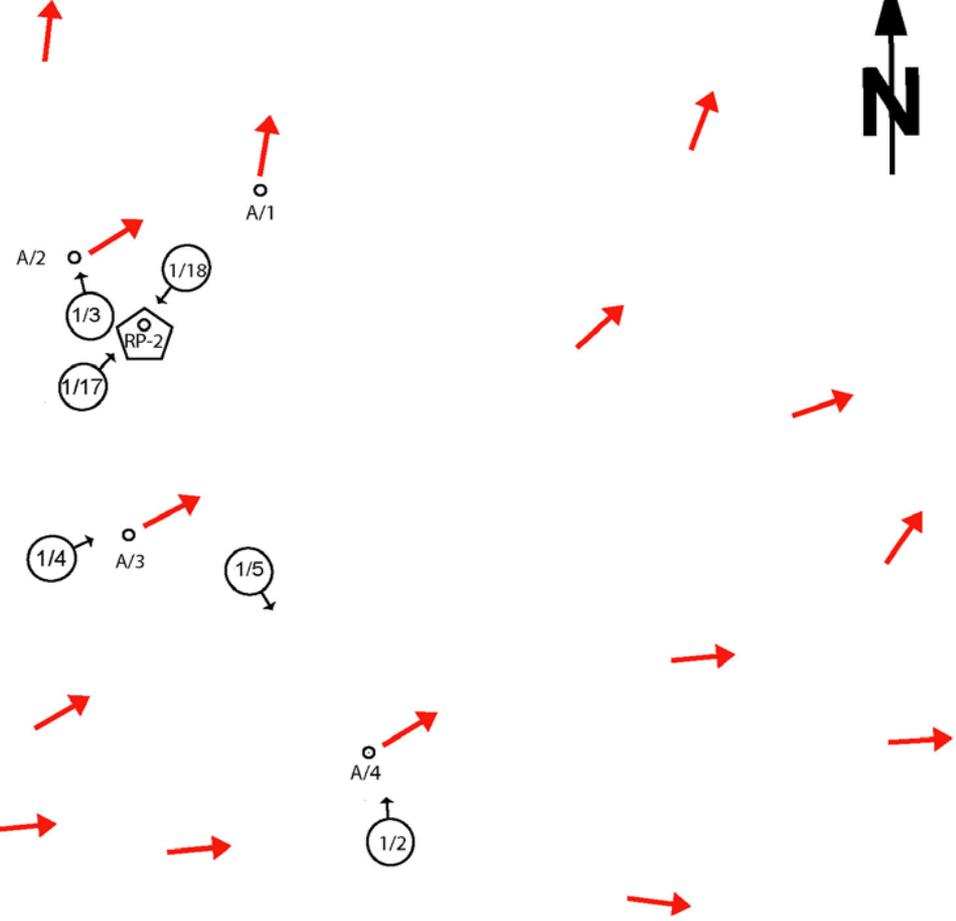
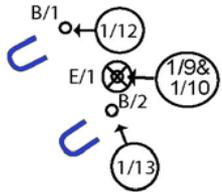
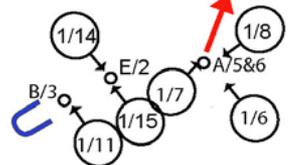
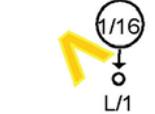
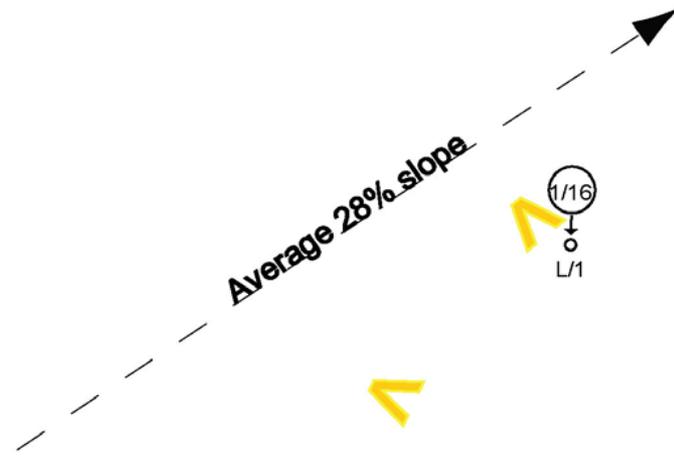
Booth Fire Origin Area Investigation

- **8/23 – 8/29 Investigators hiking area**
- **Burn pattern traced to general origin area**
- **Systematic origin search**
 - **Burn Pattern Indicators Documented**
 - **Origin Grid searched**
 - **Visual**
 - **Magnification**
 - **Magnet**
 - **Metal detector**

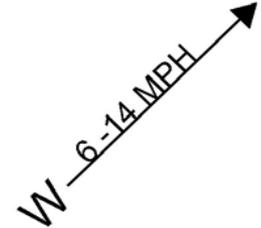


Fire Scene Diagram

Booth Fire 8/19/2003



To Square Lake Trail



LEGEND

Advancing Fire	→
Lateral Fire	↗
Backing Fire	↖
Photo Point	○→
Reference Point	⬠
Point of Origin	⊗

Scale 1" = 25 Feet

Indicator A/1



Indicator A/2



Indicator A/5

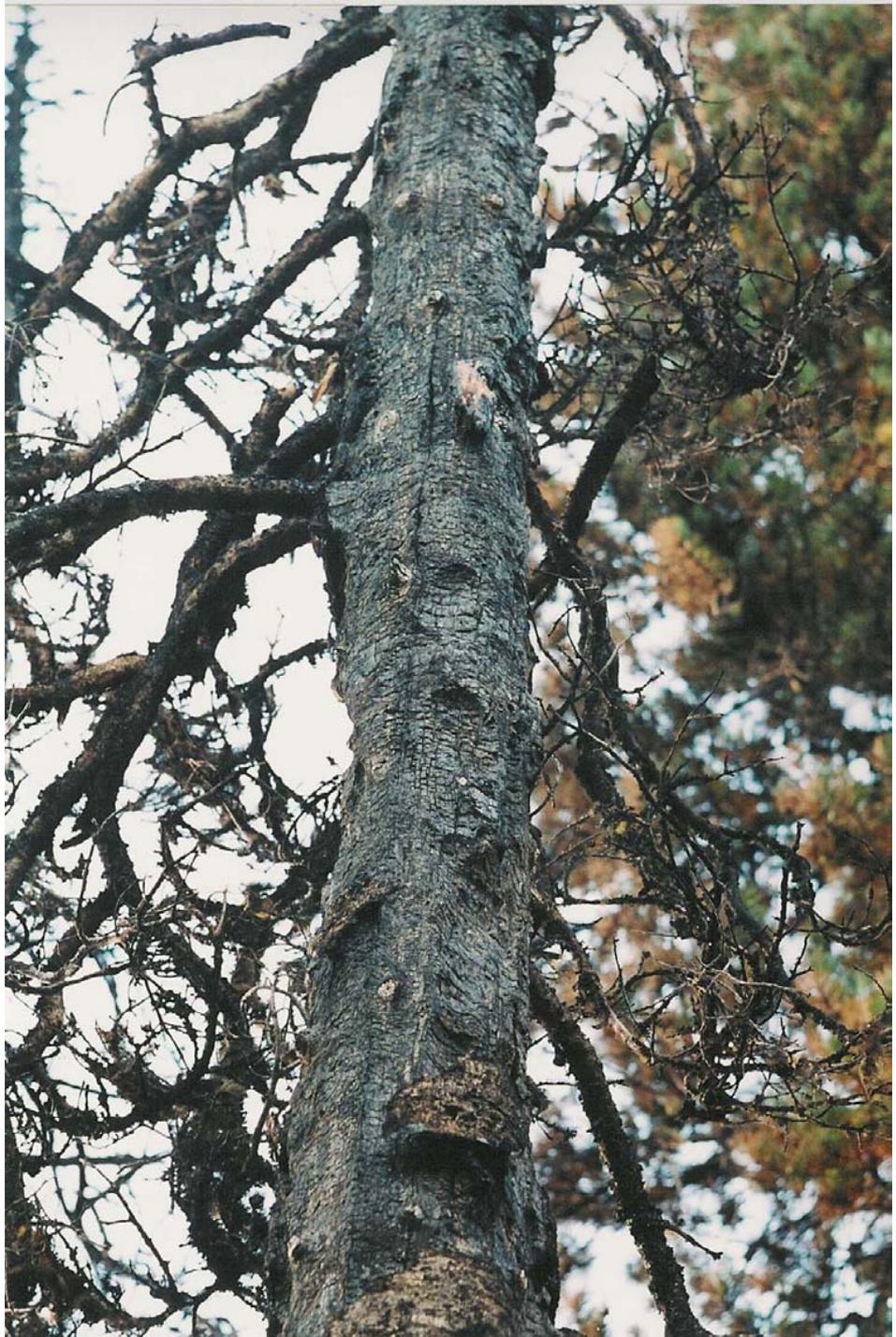


Indicator B/1



E-1





E-2



E-2



Determination of Specific Fire Cause

Booth Fire

- **Power lines:** Excluded. There were no power lines present at or near the origin area.
- **Railroad:** Excluded. There was no railroad near the origin area.
- **Children:** Excluded. The origin of the fire is in a remote, isolated location, far from any schools, parks, playgrounds, campgrounds, or residential areas frequented by children.
- **Debris Burn:** Excluded. There was no evidence of debris burning activity at the origin of the fire.

Determination of Specific Fire Cause

Booth Fire

- **Campfire:** Excluded. The location of the origin is not typical of a place where someone would be likely to kindle a campfire. A campfire leaves physical remains in the form of coals and partially burned fuels that are easily recognizable due to their volume and arrangement. Campfires are usually built within the confines of a rock ring and often contain partially burned trash remnants. No evidence of any of these indicators was present at the origin.

Determination of Specific Fire Cause

Booth Fire

- **Exhaust:** Excluded. Exhaust systems may start fires from either the expulsion of exhaust related particles or by direct contact with flammable vegetation. Most exhaust particle fires occur within a few feet of a road's edge. The point of origin was well over 500 vertical feet above and almost one half mile laterally from the closest roadway, far beyond the known range of exhaust particles from motor vehicles. Exhaust systems from small multi-position engines (such as chain saws) can start fires. There was no evidence of any human activity at or near the point of origin and there was no evidence of chain saw, motorcycle, or ATV use in the area.

Determination of Specific Fire Cause

Booth Fire

- **Fireworks:** Excluded. Oregon as a state strictly controls all fireworks, and the use of fireworks on National Forest lands is strictly prohibited. Generally, fireworks leave distinctive physical evidence that is easily detectable at the fire's origin. No Physical evidence of fireworks was found in the origin area.

Determination of Specific Fire Cause

Booth Fire

Incendiary: Partially excluded/included. No arson device or other remains of an ignition source was recovered during the origin search, their absence does not rule out arson. However, investigators believe that arson is unlikely for several reasons 1) the extremely remote area of the origin, 2) the physical difficulty of reaching the area, 3) the lack of an easy escape route for the potential arsonist and 4) the lack of any evidence of human activity at or in the vicinity of the origin.

Determination of Specific Fire Cause

Booth Fire

Lightning: Determined to be the most probable cause. Lightning records show lightning near the Booth Fire origin area occurred on August 4th, 15 days prior to the start of the fire. Although none of the detected strikes were at the origin area, several of the detected lightning strikes are within the margin of error of the detection system. Two holdover fires were reported on Monday August 18, 2003 in the vicinity of the Booth fire origin and the Bear Butte Fire was reported on August 19.

B & B Statistics

- **Final Acreage:** 91,915
- **Suppression Cost:** \$38,740,000
- **Miles of Fire Line:** 33
- **Structures destroyed:** 13
- **Injuries:** 8



A photograph of a forest fire. The scene is dominated by tall, green evergreen trees in the foreground and middle ground. In the background, a large fire is burning, with bright orange and yellow flames and thick white smoke rising into the sky. The overall atmosphere is one of destruction and tragedy.

THE END