

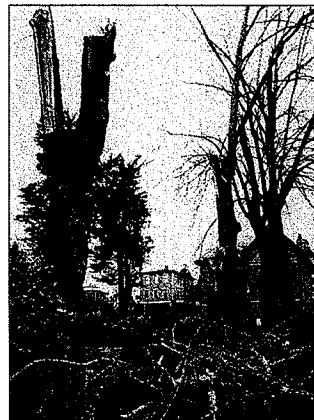
Lessons Learned – 2007 Winter Storm Event

Board of Forestry Meeting
March 5, 2008



Overview

- ◆ Introduction: Ted Lorensen
 - Damage by-the-numbers
 - All-agencies' response
 - ODF response
- ◆ Lessons Learned: Mike Bordelon
 - Public Safety
 - Organizational
 - Natural Resources
 - State Forests
- ◆ Highway 30 Debris Flow: Ted Lorensen
- ◆ Next Steps: Mike Bordelon
- ◆ Wrap-up and Questions

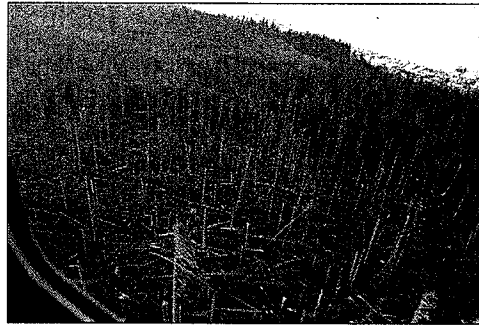


Cities were not immune
from fallen trees,
including many historic
areas of Astoria 2



Overview of 2007 Storm: Wind

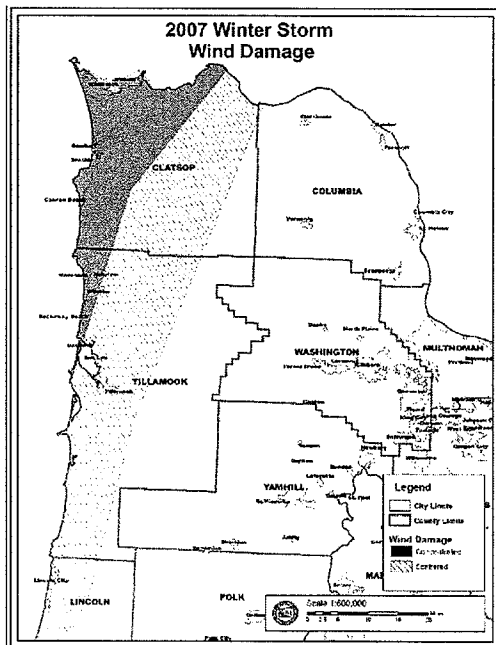
- ◆ Data suggests that the 2007 storm may be the longest-lasting high-wind event on record for the west coast
- ◆ Peak Gusts:
 - 129 mph at Bay City
 - 96 mph at Astoria
 - 125 mph at Lincoln City



Aerial view of wind-damaged timber



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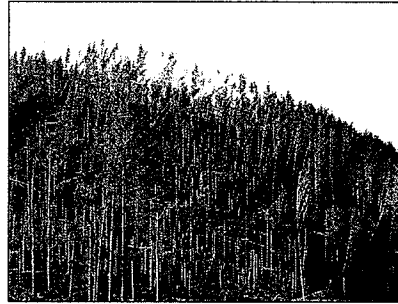
- ◆ The majority of the wind damage was limited to areas within a 20-mile band along the coastal margin



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By-the-Numbers: Significantly Wind-Damaged Timber

- ◆ Clatsop County: 16,500 acres
- ◆ Tillamook County: 820 acres
- ◆ Total: 17,320 acres/390 million board feet* (Mmbf)
- ◆ State lands: 3,500 acres/40 Mmbf
- ◆ Industrial lands: 10,650 acres/202 Mmbf
- ◆ Non-industrial (family/small woodland, city, county): 2,000 acres/28 Mmbf
- ◆ Federal Lands: 1,170 acres/21 Mmbf



Some of the more than 17,000 acres of timber that was damaged in Tillamook and Clatsop Counties

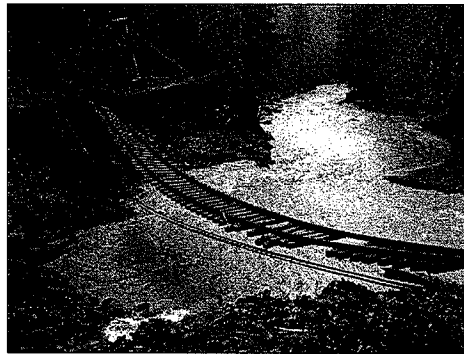


*270 Mmbf is estimated merchantable volume

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Overview of 2007 Storm: Rain

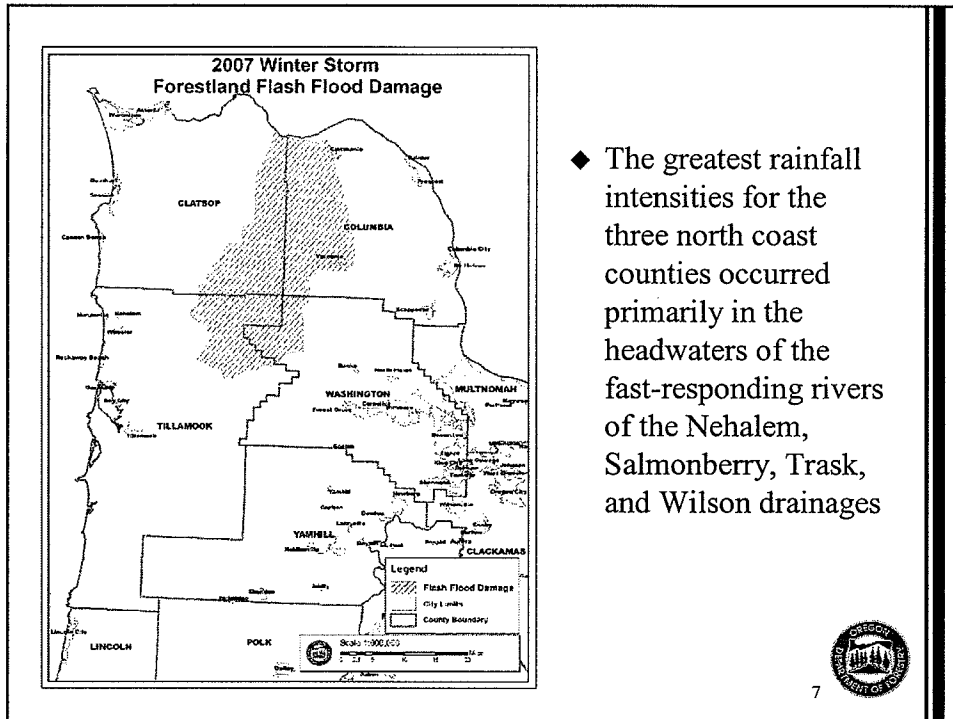
- ◆ Rainfall for the December 2007 storm compares to that of the 1964 and 1996 flood events, but at a more localized scale
- ◆ Maximum Precipitation:
 - 14.5 in at Lee's Camp
- ◆ Coastal River Flooding:
 - At or above 25 year stage



Flood damage on the Salmonberry River



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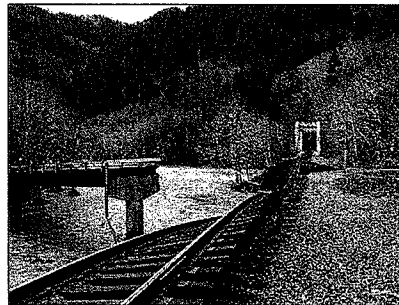
◆ The greatest rainfall intensities for the three north coast counties occurred primarily in the headwaters of the fast-responding rivers of the Nehalem, Salmonberry, Trask, and Wilson drainages



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By-the-Numbers: Flood Impact on Forestland Clatsop, Columbia, and Tillamook Counties*

- ◆ Road damage sites: 111
- ◆ Landslides reported: 77
- ◆ Debris flow sites: 41
- ◆ Woody debris deposits: 25
- ◆ Initial estimate of road damage on state forest lands: \$3.3 million (February 2008)



Flood damage to a bridge and the railroad line at the confluence of the Nehalem and Salmonberry Rivers

*Most significant damage and immediate concerns; not a comprehensive assessment.



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All-Agencies' Response

- ◆ As statewide mobilization of emergency services coalesced, the Governor requested that ODF become integrated into the Office of Emergency Management and the county's Emergency Operation Centers.
- ◆ Governor's role establishing the tone and effort of response critical
- ◆ Other natural resource agencies' emergency response culture not well developed



Governor over Vernonia,
December 2007



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Lessons Learned: All Agencies Response

- ◆ Tools and mitigation to address lessons learned from 1996 storm not in place
- ◆ State funding mechanisms to support emergency response not adequate (though addressed in special session)



Storm damage and initial clean-up on
a highway near Seaside



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ODF Response

- ◆ Initially, local ODF districts in Astoria, Forest Grove, and Tillamook began assessing damage on State Forest lands.
- ◆ At the request of Clatsop, Columbia, and Tillamook Counties, on December 10, the Governor tasked ODF with establishing a Forest and Debris Recovery Team



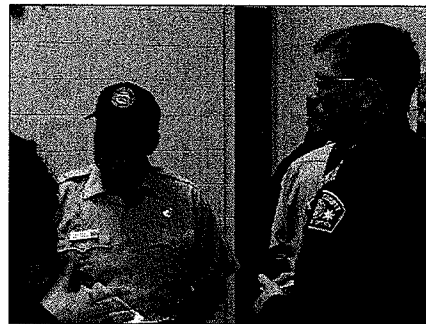
ODF Stewardship Forester Ashley Lertora answers questions from a landowner about recovering downed timber from a rugged hillside south of Astoria



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ODF Response

- ◆ ODF's Incident Management Team worked with a variety of organizations, including:
 - Oregon Department of Transportation
 - Clatsop, Columbia, and Tillamook County Sheriff's Offices; Emergency Operations Centers Public Works Departments
- ◆ ODF completed and delivered assessment report



ODF Incident Commander and Clatsop County Sheriff at Public meeting



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ODF Response

- ◆ ODF Stewardship Foresters continued to work with landowners in ongoing efforts to cut red tape, provide maximum flexibility, maintain consistent application of the rules, and achieve desired results on the ground.



ODF Stewardship Forester Ashley Lertora working with landowner



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Lessons Learned: Public Safety

- ◆ Homeowners living in areas of high-risk for landslides may not be aware of risks
 - May not take appropriate actions during storm events
- ◆ Completion of “further review area maps” are an important part of addressing this issue



Debris flow near Woodson that closed Highway 30 for several days



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Lessons Learned: Organizational

- ◆ ODF's response worked well
 - Local districts
 - South Fork inmate crews
 - Incident Management Team
- ◆ Good opportunity to gain additional knowledge and experience managing non-fire incidents



Soon after the winds subsided, ODF staff were in the field documenting damage and detecting safety risks



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Lessons Learned: Organizational

- ◆ The complex permitting process for debris removal from streams can delay or prevent action
- ◆ Inherent conflicts between the benefits of woody debris for fish and risks to infrastructure/public safety
- ◆ Interagency work needs to be done to “streamline”



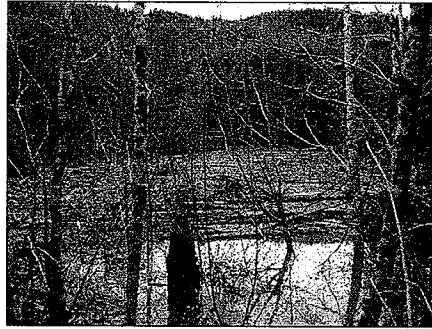
Fallen trees/debris in Wrongway Creek, Clatsop County



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Lessons Learned: Natural Resources

- ◆ High fills (legacy railroad or others) can pose significant public safety and infrastructure risks
- ◆ High fills need to be identified and mapped in advance and closely monitored during significant storm events



Pond formed behind railroad fill at Eilertsen Creek



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Lessons Learned: State Forests

- ◆ Road/infrastructure investments on Clatsop State Forest over past several decades greatly reduced the level of economic and environmental damage associated with this storm event



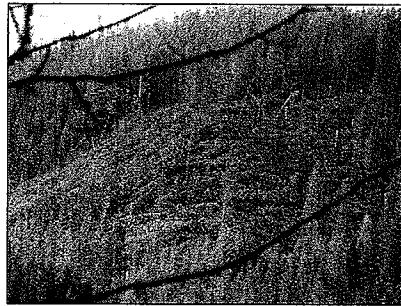
Road/infrastructure investment in the Clatsop State Forest



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Lessons Learned: State Forests

- ◆ Some changes in silvicultural prescriptions are needed in “wind-prone” areas
- ◆ Lessons learned from 2006 and 2007 windstorms will be integrated into future operational plans



Blow-down in a recent retention cut at Minich Creek



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Highway 30 Debris Flow Event

- ◆ ODF conducting review of debris flow event
 - Geotechnical assessment
 - Evaluation of Forest Practice Act administration and compliance
 - Development of lessons learned



Orthophoto quad of Woodson and forest location of debris flow event



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Debris Flow Geotechnical Assessment

- ◆ One from the geotechnical expertise from ODF and one from a consulting engineering geologist
 - The path and delivery areas of railroad fill failure and subsequent dam-burst flood.
 - The landslide run-out paths and delivery areas for the two known landslides
 - Identify the causal factors for each of these events



Aerial view of Woodson shortly after the debris flow event



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Debris Flow Forest Practice Act Assessment

- ◆ An evaluation relative to ODF and landowner responsibilities including:
 - Road maintenance on the railroad fill
 - Road maintenance on the lands above the railroad fill
 - The landslide and public safety rules



View of landslides originating on forestland



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Status of Debris Flow Reports

- ◆ Data collection completed on March 3, 2008
- ◆ Assessment delayed by four weeks of unexpected snow
- ◆ Data analysis ongoing and completed reports are expected April 7, 2008



Geotechnical staff collecting data on the Highway 30 Debris Flow Event



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General Lessons Learned - Debris Flow

- ◆ During 2007 storm, ODF had geotechnical specialists available for risk assessment
- ◆ Increased awareness of risk
- ◆ IMT structure facilitated communication between ODF, ODOT, and county sheriff's office
- ◆ Loss of life prevented in this debris flow event



Debris flow reaches Woodson after homes evacuated and Highway 30 closed



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Next Steps

- ◆ Agency Action Plan
 - Eight high priority areas
- ◆ Continue to provide services to landowners to support recovery efforts
- ◆ Seek funding opportunities to build on the 1996 study: landslides in forested areas



Storm Damage near Mail Creek
along Highway 26



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Next Steps (continued)

- ◆ State Forests: Ensure that blow-down is salvaged within appropriate time frame, consistent with the Northwest Oregon State Forests Management Plan (30-40 Mmbf)



Storm damage on Green Mountain in
the Clatsop State Forest



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