FLOOD HAZARD MITIGATION:

How can Thurston County become resilient to flooding?
TONIGHT’S AGENDA

1. Overview of Flood Risks and Flood Plan Update

2. Flood Management Activities in Thurston County

3. Flood Risks, Preparedness, and Prevention Group Discussion

4. Group Discussion Report back

5. Closing
FLOOD INFORMATION STATIONS

- Thurston County Special Flood Hazard Areas and Development Regulations
- Flood Insurance and Protective Measures
- Dam Safety and Emergency Action Plans
- AlertSense Emergency Notification Enrollment
- Chehalis River Basin Flood Authority
Flooding is the most common and costliest natural hazard. Since 1953, floods have accounted for 16 of 22 federal disaster declarations. January 2009 flooding caused:

- $3 million in home damage
- I-5 shut down for 20 miles for 2 days
- State Routes 8, 12 and Hwy 101 also closed
- 49 county roads closed
- Over 200 homes isolated in Bald Hills Road/Clearwood Area
- Over 100 homes isolated in Rochester, Grand Mound, and Gate
- Nearly 50 homes in Bucoda had access issues
The science behind atmospheric rivers

An atmospheric river (AR) is a flowing column of condensed water vapor in the atmosphere responsible for producing significant levels of rain and snow, especially in the Western United States. When ARs move inland and sweep over the mountains, the water vapor rises and cools to create heavy precipitation. Though many ARs are weak systems that simply provide beneficial rain or snow, some of the larger, more powerful ARs can create extreme rainfall and floods capable of disrupting travel, inducing mudslides and causing catastrophic damage to life and property. Visit www.research.noaa.gov to learn more.

A strong AR transports an amount of water vapor roughly equivalent to 7.5–15 times the average flow of water at the mouth of the Mississippi River.

ARs are a primary feature in the entire global water cycle and are tied closely to both water supply and flood risks, particularly in the Western U.S.

On average, about 30–50% of annual precipitation on the West Coast occurs in just a few AR events and contributes to the water supply — and flooding risk.

ARs are approximately 250–375 miles wide on average.

Scientists' improved understanding of ARs has come from roughly a decade of scientific studies that use observations from satellites, radar and aircraft as well as the latest numerical weather models. More studies are underway, including a 2015 scientific mission that added data from instruments aboard a NOAA ship.
TYPES OF FLOODING

- River or Stream (Riverine)
- Groundwater
- Coastal or Tidal
- Urban/Stormwater
- Dam Failure
- Lahar
Threats

- **Safety** – potential injuries or deaths
- **Public health** – contamination of water systems, mold, untreated sewage
- **Environment** – Water quality and habitat, polluted runoff, erosion, landslides, debris generation
- **Personal property** – homes, contents, pets, livestock
- **Economy** – Businesses, agriculture, industry
- **Public & private facilities, infrastructure, and utilities** – damage to roads, bridges, culverts, energy supply (electric, gas, and liquid fuel), hospitals and clinics, septic and wastewater treatment, wells, etc.
Disruptions

- **Livelihoods** – evacuations, lost wages, school absences, interrupts everyday-activities

- **Transportation** – road closures, traffic, lengthy detours

- **Public services** – delays and increased demand on police, fire and EMS, public works, schools

- **Business** – interruption of supply chains, absent employees
# Flood Exposure

<table>
<thead>
<tr>
<th></th>
<th>Unincorporated Rural County</th>
<th>Unincorporated Urban Growth Area</th>
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<tbody>
<tr>
<td>100-Year Special Flood Hazard Area</td>
<td>29,700 acres (7.3%)</td>
<td>1,352 acres (6.5%)</td>
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<tr>
<td>Groundwater Hazard Areas</td>
<td>28,225 acres (6.9%)</td>
<td>1,957 acres (9.3%)</td>
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<tr>
<td>Dwellings Prone to Flooding</td>
<td>Over 4,110</td>
<td>960</td>
</tr>
<tr>
<td>Flood Type</td>
<td>Probability</td>
<td>Vulnerability</td>
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<tr>
<td>---------------</td>
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<td>---------------</td>
</tr>
<tr>
<td>Riverine</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Groundwater</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Coastal/Tidal</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Urban</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Overall Assessment</td>
<td>High</td>
<td>Moderate</td>
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Preparedness

Response Phase

Mitigation

Recovery Phase

EMERGENCY MANAGEMENT CYCLE

Response Phase
Why Develop a Mitigation Plan?
Analyzing & Reducing Vulnerabilities

• To periodically assess hazards
• To educate and promote awareness
• To engage residents, businesses, and stakeholders to consider diverse interests and build support for mitigation strategies
• To maintain good standing with the CRS Program
• Plan must be updated every 5 years: first adopted in 1999, updated in 2012, third edition due by October 2017
Hazard Mitigation Funding

• Pre-Disaster Mitigation

• Hazard Mitigation Grant Program

• Flood Mitigation Assistance

http://www.fema.gov/hazard-mitigation-assistance
National Flood Insurance Program (NFIP)

• NFIP provides a means for property owners to financially protect themselves in the event of a flood

• NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP

• NFIP participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce flood risks
# Summary of NFIP Coverage in Thurston County

<table>
<thead>
<tr>
<th>Policies</th>
<th>Premiums</th>
<th>Insurance in Force</th>
</tr>
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<tbody>
<tr>
<td>726</td>
<td>$417,024</td>
<td>$178,140,600</td>
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<table>
<thead>
<tr>
<th>Number of Closed Paid Losses</th>
<th>$ of Closed Paid Losses</th>
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<tr>
<td>182</td>
<td>$3,414,337.00</td>
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The Community Rating System (CRS)
A National Flood Insurance Program

• To recognize communities for floodplain management practices that exceed minimum federal flood regulatory requirements

• Credit is earned for proactive flood management activities. Rating based on total credit: A community is rated 1 (best) to 10 (minimum)

• Policy holders receive discounted flood insurance premiums: Class 9 community policies awarded minimum 5%, and Class 1 receive maximum 45% discounts

• Thurston County earned Class 2 rating: county policy holders 100-year SFHA receive 40% discount; a 10% discount for policies outside the SFHA; a $125,000 combined savings on premiums
• Reduce and avoid flood damage to insurable property;
  Reduce exposure of assets in and out of mapped areas. Identify and map flood risks and maintain data to support regulatory programs.

• Strengthen and support the insurance aspects of the NFIP; and
  Create data and maps that enables accurate actuarial rating of flood insurance. Help property owners understand their risks to purchase and maintain insurance. Help reduce repetitive losses.

• Foster comprehensive floodplain management
  Protect public safety, health, and welfare. Minimize damage and disruption to infrastructure and essential facilities, preserve and restore natural functions and resources of floodplains and coastal areas; future development doesn’t cause adverse impacts elsewhere in the watershed.
CRS 10-Step Planning Process

1. Organize
2. Involve the public
3. Coordinate
4. Assess the hazard
5. Assess the problem
6. Set goals
7. Review possible activities
8. Draft and action plan
9. Adopt the plan - Board of County Commissioners
10. Implement, evaluate, revise – County Departments

1-8 Managed by TRPC
1-8 Guided by Flood Planning Committee
Current Plan

32 Total county flood initiatives

21 Prevention
4 Property Protection
8 Public Education and Awareness
9 Natural Resource Protection
13 Emergency Services
7 Structural Projects
Plan Update Focus Areas

- Incorporate new data
- Evaluate losses and risk
- Update mitigation strategy
- Engage community
- Meet CRS requirements
Learn More, Subscribe for Updates, Take the Survey

www.trpc.org/floodplan

Paul Brewster, Senior Planner
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brewstp@trpc.org
“Foster All sectors of the community working together to create a flood-hazard-resilient community”
1. What and where are the greatest flood hazard risks to Thurston County?

2. What steps have you taken or plan to take to reduce flood impacts to your home, property, or business?

3. What actions should Thurston County take to reduce flood risks around your neighborhood or other areas of the county?