



# Advisory Committee Meeting

April 21, 2011

*Protecting public safety, the regional economy and critical infrastructure.*

**State Legislative  
Update and Adopted  
2011 Budget Resolution  
Agenda Item 2**

# State Legislative Update

- Capital Budget Request
  - \$6.2M for Green River
- Countywide Flood District Levy Pro-Rationing
  - Protect up to 25 cents/\$1000 AV

# 2011 Budget Resolution

## (FCD 2010-37, adopted 11/29/10)

- 2011 Capital Reprioritization
  - Levy 'buydowns'
  - \$4.25M to Seawall (reimbursable in July)
  - Provide recommendations by June 2011
- 2012-2016
  - If levy pro-rationing is avoided, Advisory Committee should consider, at a minimum, allocating the remaining \$25.75M for the Seawall as follows:
    - 2011-2016
    - 2011-2017 or at the time of the project completion
    - Bond debt
    - Others?
- Bellevue Coal Creek project should not be delayed

# 2010-2011 Flood Season Update

Agenda Item 3

# January 13–26, 2011 Flood Response Overview

- Reached Phase 4 on Tolt and Cedar, and Phase 3 on Green and Snoqualmie
- Longest flood response effort since 1990:
  - Total of 296 hours of flood response activity over 14 days
  - 1,500 person-hours of flood warning monitoring and flood patrol activity
- 1,600 calls to automated phone line
- 20,000 Flood Alert System messages
- 82,000 webpage viewings by 60,000 unique users

# January 2011 Flood Comparison

Gage Name (Gage Location)	Peak Flow January 2011 (cfs)*	Peak Flow December 2010 (cfs)*	Peak Flow January 2009 (cfs)	Record Peak (cfs)	Date
Tolt River (Carnation)	4,680	7,120	13,800	17,400	Jan. 1959
Snoqualmie (Sum of Forks)	34,740	29,970	54,110	54,110	Jan. 2009
Cedar River (Landsburg)	4,590	1,780	7,870	14,200	Nov. 1911
Green River (Auburn)	10,400	9,720	11,100	28,100	Nov. 1959
White River (Buckley)	6,000	7,000	11,700	28,000	Dec. 1933

\* Provisional Data

“cfs” = cubic feet per second

For reference, 2,000 cfs is about equal to 1 semi-truck of water per second



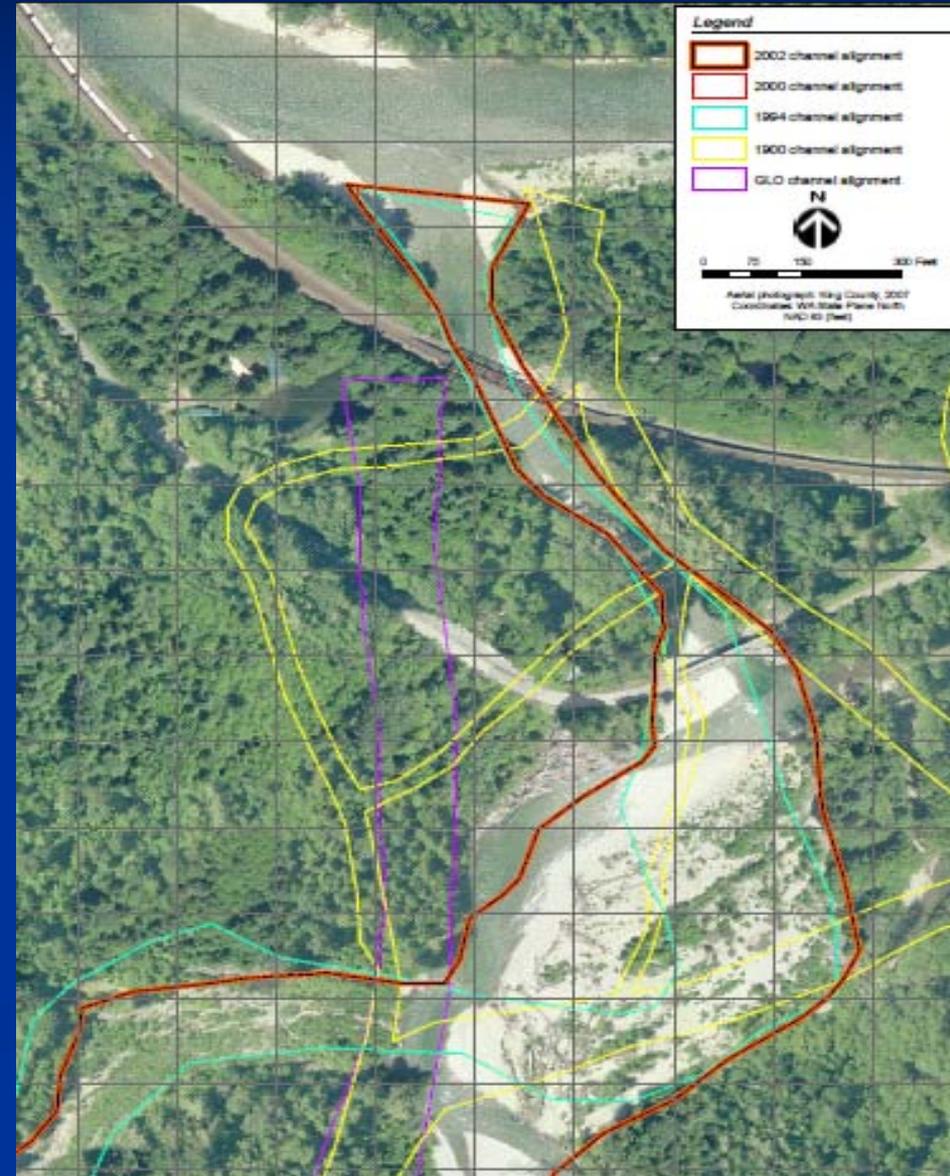


Looking East at SE 24<sup>th</sup> 1/17/11



# Miller River Channel Migration

- Highly dynamic channel, subject to sudden channel change
- January flood caused river to switch channels – 90% of flow now goes through former side-channel





Miller River—  
January 19, 2011





Miller River—  
January 19, 2011





North Fork Snoqualmie – Shake Mill Left  
January 21, 2011

# Cedar Rapids Emergency Repair



# Rainbow Bend (January 2011)



# Levee Vegetation Update

Agenda Item 4

# Key issues

- Existing federal standard = effectively no vegetation on levees
  - Seattle District variance allows vegetation up to 4”
- Proposed federal policy:
  - revoke all variances,
  - require new variances with more limitations,
  - more review, less local control
- Concerns:
  - Conflicting federal mandates for federal levee funding, Endangered Species Act, and Clean Water Act
  - Costly
  - Funding may not be going to highest safety priorities
  - Difficult/ expensive process to receive approval from HQ offices (in D.C.)

# Key Goals

Create regional program that provides for

1. Safe & effective levees,
2. Functional habitat, and
3. Cost effective use of scarce resources



Christiansen Road Levee Bioengineered Levee Repair, Spring 2010.

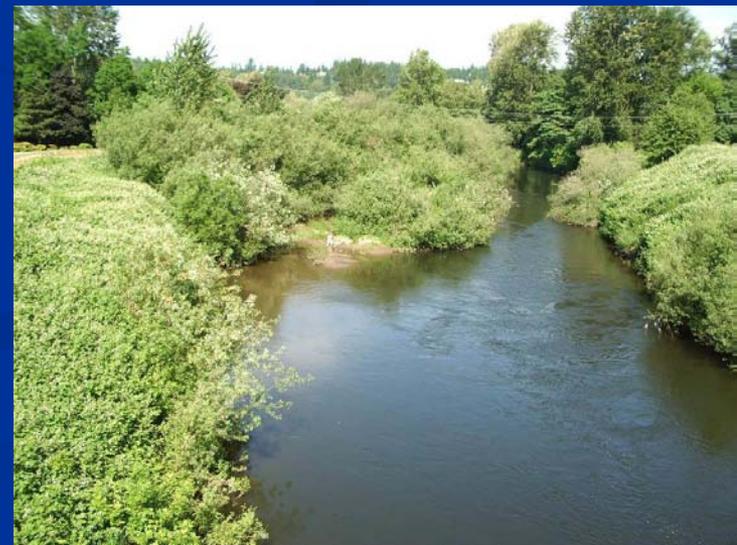


Photo shows compliance with Regional Variances. If the Corps moves forward with its proposal to eliminate the Regional Variances, and the local sponsor is unable to secure a levee specific variance, these remaining willows will also need to be removed.

USACE example of a successful brook project.

# Two track process to achieve goals

- Track 1: Targeted outreach to provide room in national U.S. Army Corps of Engineers (Corps) Policy Guidance Letter (PGL) for regional program
- Track 2: Advising and assisting staff to develop a functional and cost-effective regional program



# 2011 Proposed Capital Reprioritization

Agenda Item 5

# Presentation Overview

- Background and Context
- 2011 Budget Needs
- 2011 Budget Available
- Advisory Committee Discussion

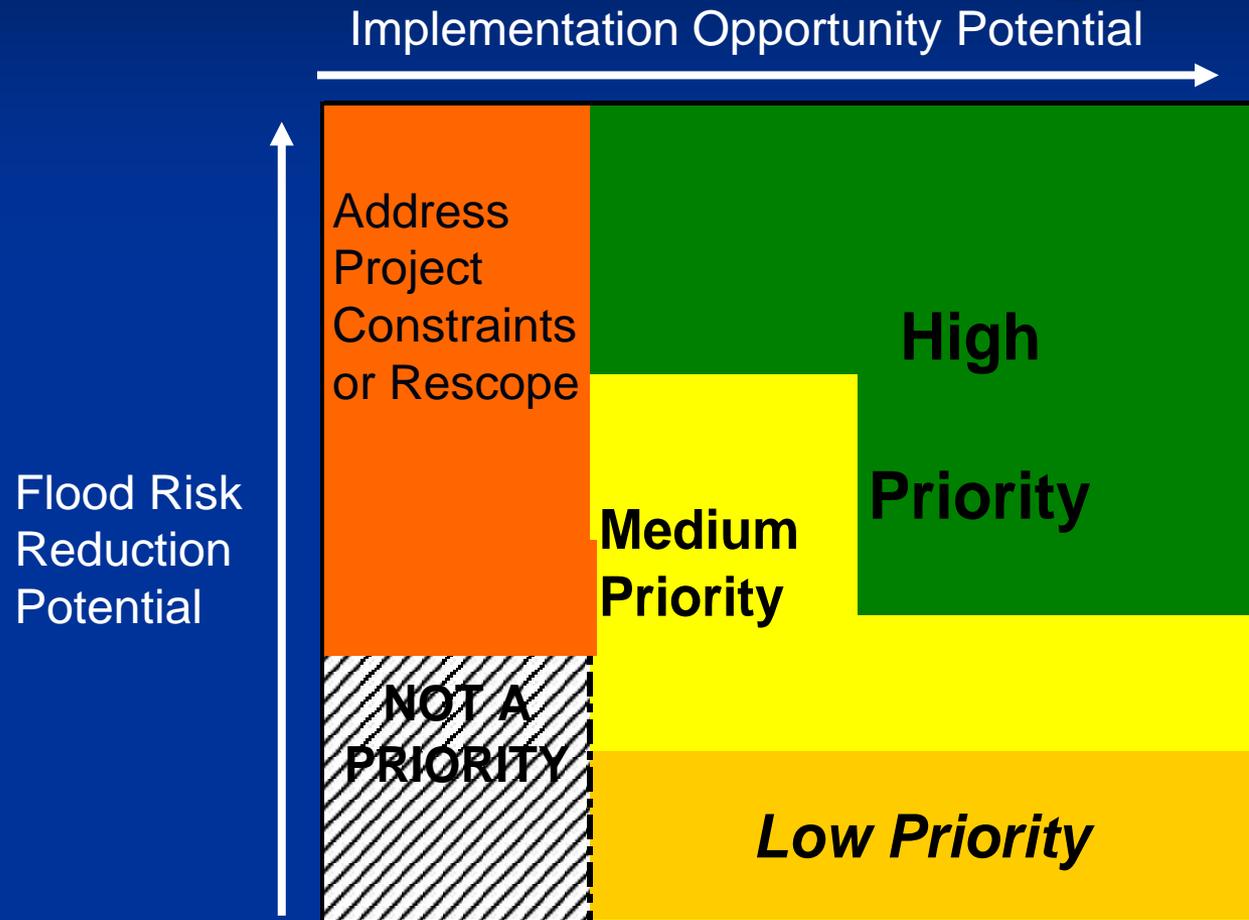
# Flood Risk Reduction Potential

- Consequences: What would happen if no action were taken?
  - Types of land use impacted; Regional Economic Benefit
- Severity: How serious is the impact?
  - Human injury or death *vs* little or no damage
- Extent of Impact: What is the scale of the problem?
  - Impacts beyond the area of flooding *vs*. localized
- Urgency: How soon will the impacts occur?
  - Next high flow event *vs*. Risks are not rapidly increasing

# Implementation Potential

- Project Readiness
- Partnerships / Leverages Funds
- Supports multiple objectives
- Long-Term Maintenance Costs
- Programmatic Activities
  - Community Rating System
  - Meet or exceed NFIP
  - Active CIP program
  - Active O&M program

# Evaluation Criteria: Project Evaluation Approach



NOTE: This is a conceptual diagram and is not intended to imply clear and distinct thresholds between these categories.

# Guidance for Reallocating Funds (from 2009)

## Funds Available:

- Fund balance for completed projects
- Repair projects canceled due to engineering investigations
- Adopted projects that have implementation constraints
  - Partnerships and Coordination
  - Land Owner Willingness
  - Grants and Leveraging

## Funds Not Available:

- Flood Risk Score > 75%
- Significant investment to date
- Partnership or leveraging in place
- Contractual obligations

# Funding Needs #1

- Defined in 2011 Board Resolution
  - Property Tax Levy 'Buydowns' (\$3.25M)
  - New allocation for Seawall (\$4.25M)

# Funding Needs #2: 2011 Flood Damage Repairs

- \$1.55M for repairs
- 7 sites on Snoqualmie and Cedar Rivers
- Potential for FEMA reimbursement of some damages



# Funding Needs #3: Landowner Willingness

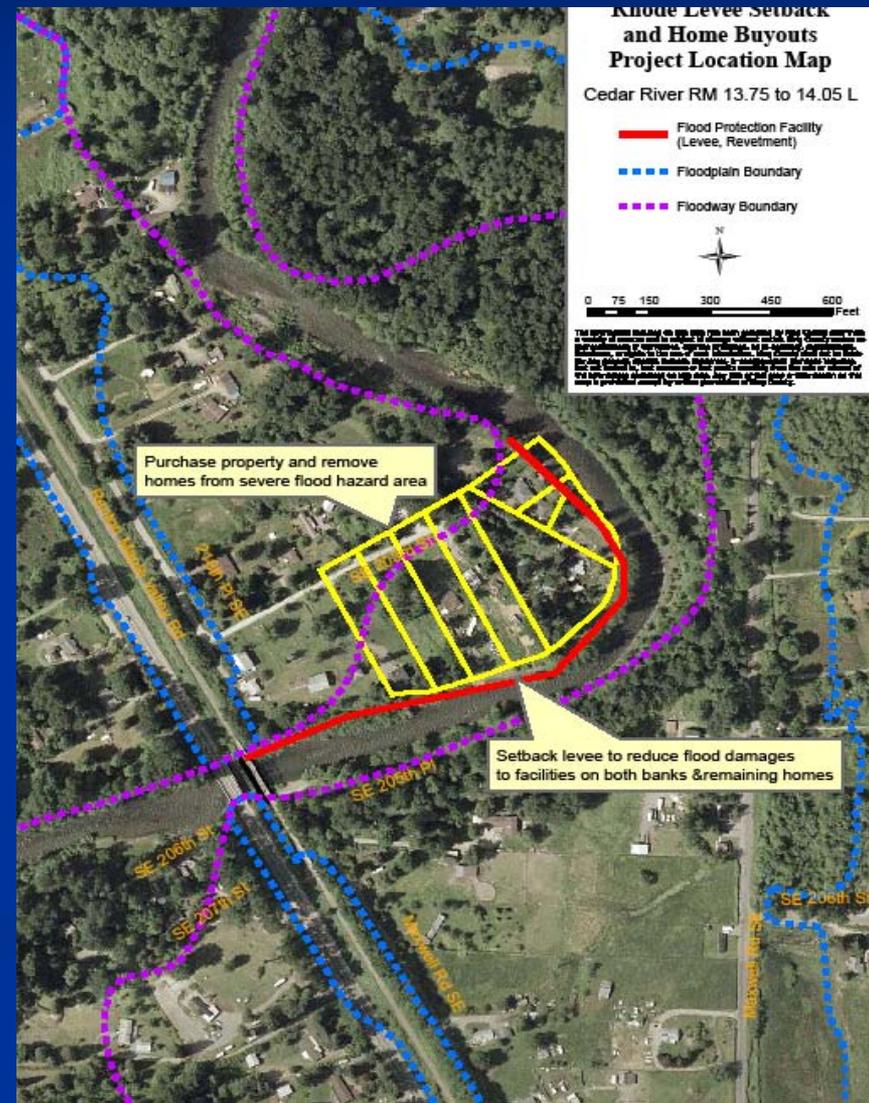
Act on existing interest  
and opportunity at  
high-priority sites:

- \$1M Sans Souci –  
Tolt Buyouts
- \$500K Aldair / Fall  
City Buyouts
- \$600K Middle Fork  
Snoqualmie  
Conveyance



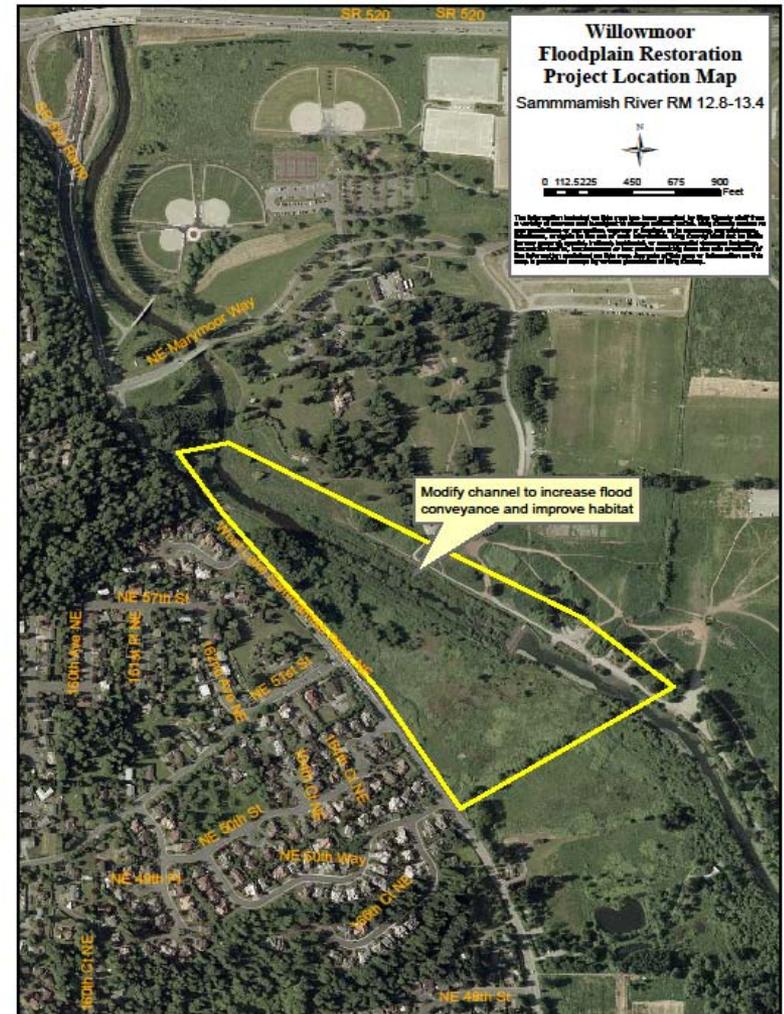
# Funding Needs #4: Acquisitions for Capital Projects

- Cedar Pre-Construction Acquisition Fund
  - Levee setback projects in out-years
  - Acquisitions needed in 2011-2012 to set up design and implementation



# Funding Needs #5: Partnership Opportunity

- \$150K Willowmoor Transition Zone
  - Moderate Flood Risk Score, out-year project
  - Not a life-safety project – docks, boathouses, landscaping
  - City of Redmond Opportunity Fund if CIP funds contributed
  - **Design only** – intent is to generate grant funding



# Funding Solutions #1: Projects under Budget

- PL 84-99  
Mitigation  
Acquisition  
completed, cost  
savings plus  
'lease-back'
- Net gain of  
\$900K



Teufel Property, Green River – Mitigation Site for  
PL 84-99 Tree Removal (Acquired January 2011)

# Funding Solutions #2: Cancelled Projects

- Gateway / Codiga (Green)
- Ratolo (Green)
- Preston Fall City Upper (Raging)
- Frees up \$825K for 2011 needs
- Cancellation based on engineering team inspection and site assessment during low flow conditions
- Monitoring and inspection plan for Preston-Fall City Upper

# Funding Solutions #3: Schedule Adjustments

- SF Snoqualmie Levee Improvements
- 180<sup>th</sup>- 200<sup>th</sup> (Green)
- Reddington Phase 2 (Green)
- Lower Snoqualmie Residential Flood Mitigation
- Cedar River Levee Setbacks
- Seattle South Park
  
- No change to total project costs
- Based on PM-identified needs for 2011



# Funding Solutions #4: Project Partnerships

- Corps Green River Ecosystem Restoration Program (ERP)
  - Cancelled by Corps
  - Upper Russell reduced by \$1.9M in 2011
  - Leaves \$1M for design work in 2011
  - Full FCD project funding over 2011-2013 \$4.1M



Upper Russell Road / Soames Dolan

# No Net Change: CIP 'Assignments'

Reallocate Green River funds from....

- \$4.9M Green River Right-of-Way Opportunity Fund

....and 'assign' funds to Green River projects:

- Reddington Levee Acquisitions
- Horseshoe Bend Acquisition
- Lower Russell Acquisition



# Summary of 2011 Impacts

- \$14.7M in expenditures for 2011
- \$15.3M in funding made available in 2011
- \$4.9M in Green River Right-of-Way funding ‘assigned’ to specific Green River projects
- \$600K increase in 2011 fund balance is expended in construction spike during 2013
- Fund balance of @ \$4M for 2011

# Advisory Committee Discussion

- What additional information is needed to make a recommendation to the Board at the May meeting?

# Flood Plan Update

# Flood Plan Update

- Required for FEMA Community Rating System
- Citizen Committee required
- Board to determine scope of update
- Schedule: 14 months to plan transmittal, 21 months to final adoption
- Potential policy issues during plan update:
  - Levee vegetation
  - Capital project eligibility and evaluation criteria
  - Risk reduction levels of service
  - Levee certification and FEMA map accreditation

# Flood Risk Tolerance and 'Levels of Service'

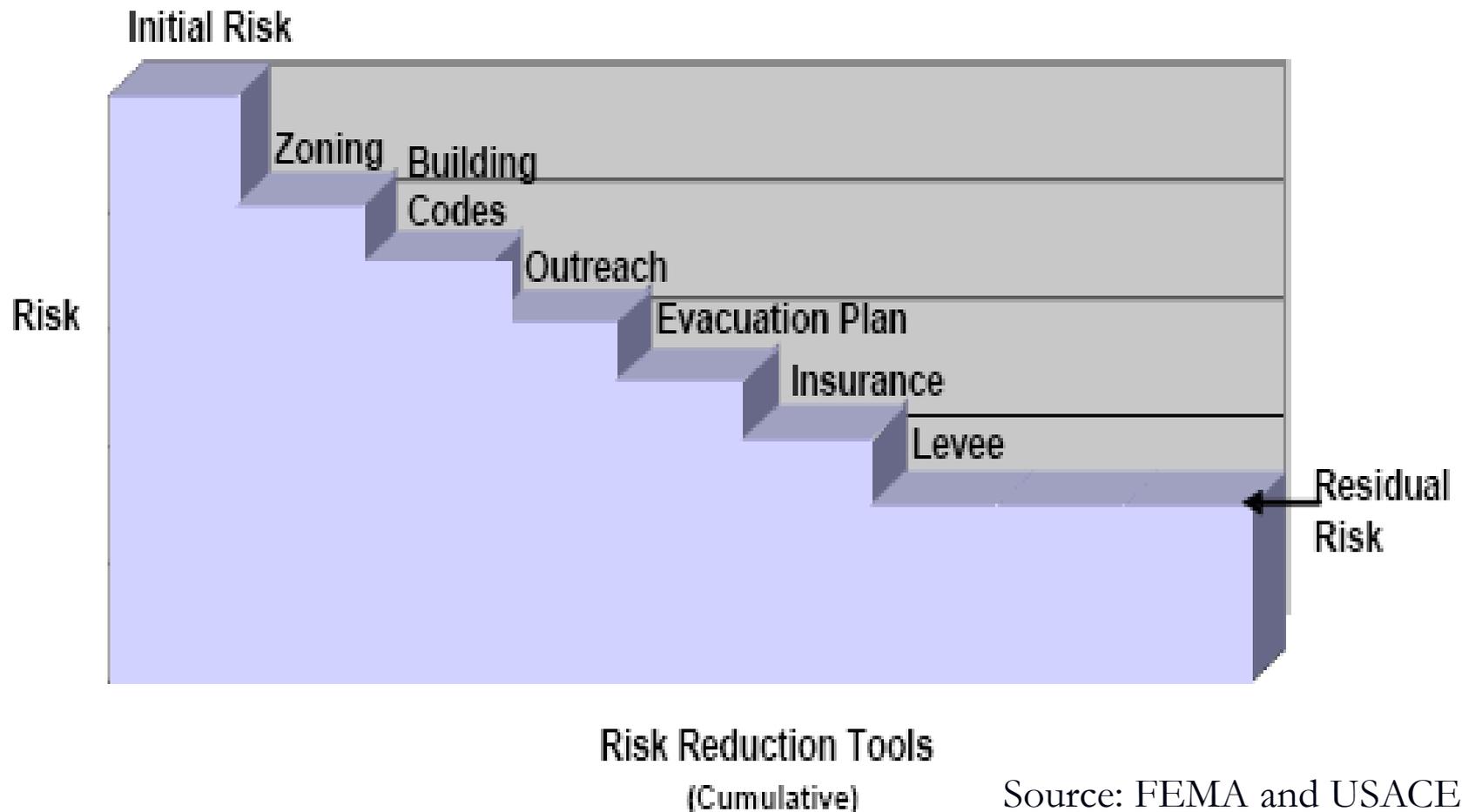
- Current plan assumes existing level of protection for levee design
- Identify appropriate 'level of service' for river systems or sections similar to stormwater or road infrastructure
- Suite of integrated actions to achieve level of service for each river basin

# Example of Flood Risk Tolerance

What is the probability of exceeding a design flow over different timeframes?

	30 Years	50 Years	75 Years	100 Years
<b>1:100 (aka 'the 100-year flood)</b>	<b>26%</b>	<b>39%</b>	<b>53%</b>	<b>63%</b>
<b>1:140 (projected design capacity of USACE Dam once repaired)</b>	<b>19%</b>	<b>30%</b>	<b>42%</b>	<b>51%</b>
<b>1:200</b>	<b>14%</b>	<b>22%</b>	<b>31%</b>	<b>39%</b>
<b>1:300</b>	<b>10%</b>	<b>15%</b>	<b>22%</b>	<b>28%</b>
<b>1:500</b>	<b>6%</b>	<b>10%</b>	<b>14%</b>	<b>18%</b>

# Tools to reduce but not eliminate risk:



# Key Questions Regarding Risk

- What level of flood risk are we willing to accept, or, What is the 'Design Flood'?
  - Near-term, 30 years, 50 years....
- What level of economic risk exposure are we willing to accept in the short-term and long-term?
- How much risk are we willing to accept regarding other river objectives?
- How much are we willing to pay in the short-term and in the long-term?
- ...and who pays for it?

# Nov 2010 Department of Ecology Report to Washington State Legislature:

- “The 100-year standard may be woefully insufficient in some areas (such as highly urbanized environments) and perhaps overly protective in others (such as agricultural lands, undeveloped lands, etc), thus FEMA accreditation should include risk and economic analysis.”

# FEMA Glossary: Levee Certification

## 44 CFR §65.2(b):

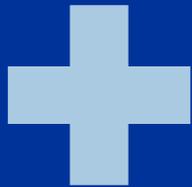
*...a certification by a registered professional engineer or other party does not constitute a warranty or guarantee of performance, expressed, or implied. Certification of data is a statement that the data is accurate to the best of certifier's knowledge. Certification of analysis is a statement that the analyses have been performed correctly and in accordance with sound engineering practices. Certification of structural works is a statement that the works are designed in accordance with sound engineering practices to provide protection from the base flood. Certification of "as built" conditions is a statement that the structure(s) has been built according to the plans being certified, is in place, and is fully functioning.*

# FEMA Glossary: Levee Accreditation

**Accreditation** refers to FEMA's recognition on flood insurance rate maps that the certified levee system offer protection from the 1% flood, and are therefore mapped as 'moderate' rather than 'high' risk. Land behind an accredited levee is not subject to FEMA insurance requirements, nor is it subject to floodplain development restrictions.

# Or, put another way....

Engineer  
Certifies  
Levee for  
1% annual  
flood event



FEMA  
Accredits  
Levee for  
1% annual  
flood event



Regulatory map  
changed – No  
NFIP  
regulations or  
insurance  
requirements

# Pros and Cons

## Why pursue accreditation?

- Insurance recommended but not required
- Development not subject to floodplain regulations – specifically elevation and compensatory storage
- Certainty for economic development and investments

## What concerns will need to be addressed in the near and long-term?

- Not an engineering safety standard
- Perception of safety and increased residual risk
- Costs
  - High ground to high ground = more levees
  - Levee design
  - Repair/Maintenance
  - Certification and Accreditation
- Downstream impacts – more flow passed downstream

# Example of Residual Risk

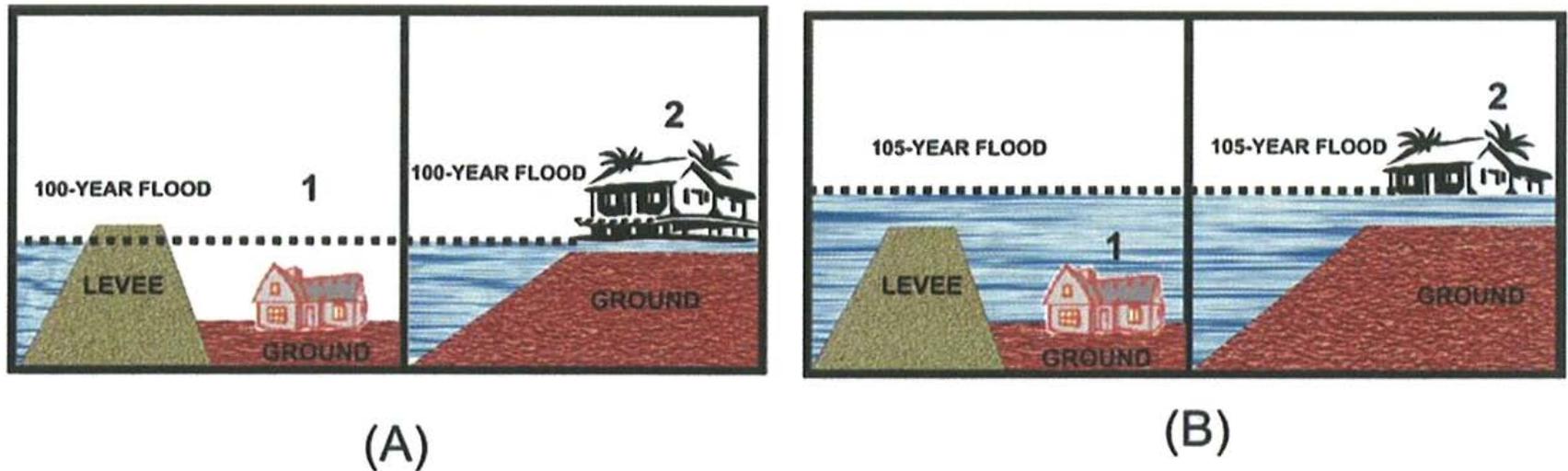


Figure 3-1. Residual Risk. Illustration (A) shows the situation when the water level in the river is below the BFE. The levee protects Home 1 up to the 100-year level. Illustration (B) shows the situation when the water reaches the 105-year flood level and overtops the levee. Home 1 is submerged and Home 2 is subjected to minimal damage.

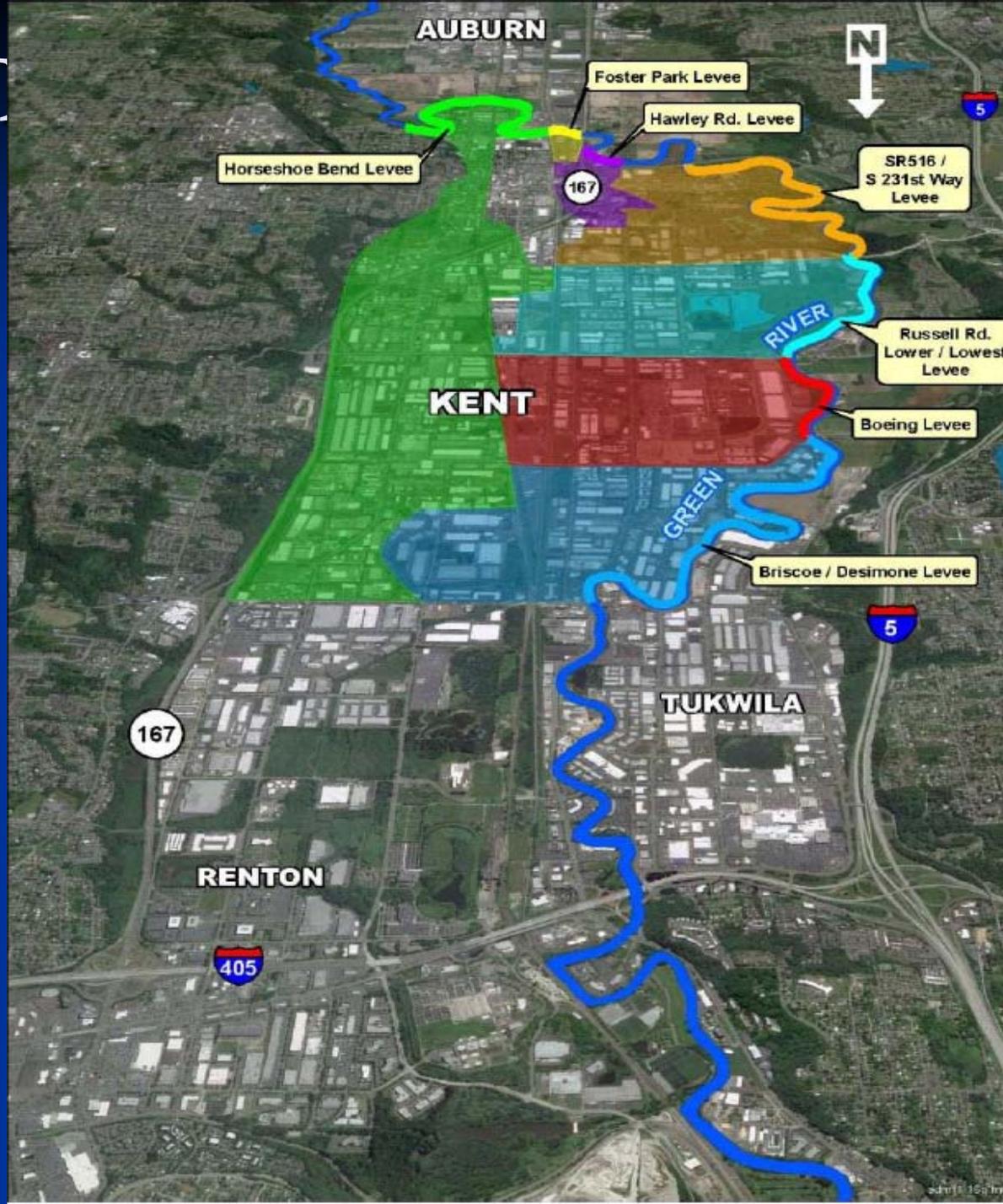
# Green River Valley Economics

## What's at Risk?

- Fourth largest warehouse distribution center in U.S.
- Approx. 1/8 of state's Gross Domestic Product
- Over 100,000 jobs
- Annual payroll of \$2.8 billion
- \$8 billion in annual taxable revenue
- **All at risk behind FEMA unaccredited levees**



Source: City of Kent



Source:  
City of Kent

# Key Questions

- How can the region work collaboratively to provide the highest level of flood risk reduction at the most reasonable cost, in both the short- and long-term?
- What impact would adoption of policy calling for certification on a levee system have on the District's maintenance costs and long-term financial plan?
- What would the impact be on District CIP project costs and timelines in the Green River Valley? Would a certification policy in the Green necessitate reprioritization of projects in other parts of the region, such as the Cedar and Snoqualmie watersheds?

# Key Questions

- Should the District support the administrative costs of obtaining certification and accreditation? What would be the District's legal obligations and liabilities if the levees overtopped or breached?
- When will FEMA maps and regulations take effect? FEMA is developing a new floodplain map that may designate lands in the Green River Valley as exposed to flood risks. Buildings on these lands would then be subject to potentially expensive development and insurance requirements. FEMA has not established a date for final maps; a recent FEMA policy delays new maps.