

# **Vulnerability Factors Associated with Local Flood Protection Actions**

**April 1, 2021**

**ECONorthwest**  
ECONOMICS • FINANCE • PLANNING

## Board's Desired Outcome re: Environmental Justice

### 7. ENVIRONMENTAL JUSTICE ADVANCED

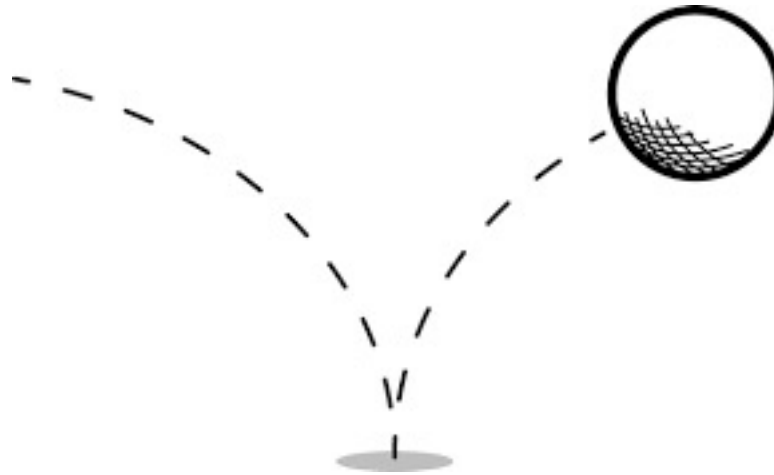
Communities with environmental justice concerns would suffer less hardship and damage from flooding, would not be economically disadvantaged by displacement or otherwise disproportionately adversely affected by actions to reduce flood damage, and would be improved by flood solutions.

# Local Flood Protection Actions

Protection Categories	Protection Actions
Flood protection through localized infrastructure	<ul style="list-style-type: none"><li>• Levee construction</li><li>• Levee raises</li></ul>
Flood protection by elevating/floodproofing structures and infrastructure	<ul style="list-style-type: none"><li>• Raising or relocating buildings</li><li>• Raising or relocating road segments</li><li>• Bridge lengthening</li></ul>
Relocating people and/or property at risk of flooding	<ul style="list-style-type: none"><li>• Buyout programs (willing seller and eminent domain)</li><li>• Restrictions on construction of new facilities or structures in floodplain areas</li><li>• Livestock evacuation and sanctuary areas</li></ul>
Redirecting flood waters through increased storage and floodplain restoration	<ul style="list-style-type: none"><li>• Levee setbacks</li><li>• Repairing incised channels (regrading or excavation)</li><li>• Restoration of buyout sites</li><li>• Reforestation/revegetation</li></ul>
Flood warning and preparedness systems	<ul style="list-style-type: none"><li>• Installing flood warning systems</li><li>• Installing flood preparedness systems</li></ul>

# Purpose of Presentation

- Help expand the OCB's understanding of population vulnerability and resilience, in the context of flood management strategies under development.



Note: The work presented in this presentation is an initial step in the OCB's process.

# Questions We Are Exploring

1. What are the demographic and socioeconomic characteristics of the people within the Chehalis River Basin?
2. How could these characteristics make people or communities more or less vulnerable to potential adverse outcomes?
3. How could any of the proposed local flood protection actions contribute to or reinforce inequities or discriminate against marginalized populations or communities?
4. What kinds of strategies to proactively avoid or mitigate any potential adverse outcomes for vulnerable populations?



## Equity: Both an outcome and process

### EQUALITY VERSUS EQUITY



In the first image, it is assumed that everyone will benefit from the same supports. They are being treated equally.



In the second image, individuals are given different supports to make it possible for them to have equal access to the game. They are being treated equitably.



In the third image, all three can see the game without any supports or accommodations because the cause of the inequity was addressed. The systemic barrier has been removed.

## Social Justice

**Equity:**

The absence of systemic disparities that result in unequal outcomes for people with different social identities

**Access:**

Ensuring that all people have access to goods, services, and opportunities regardless of their social identity

**Participation:**

Ensuring active involvement by those most marginalized in decisions which affect their lives

**Rights:**

Protecting the civil, political, economic, cultural, and social rights of individuals and groups



## Environmental Justice

- According to the Environmental Protection Agency (EPA):  
“Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.”

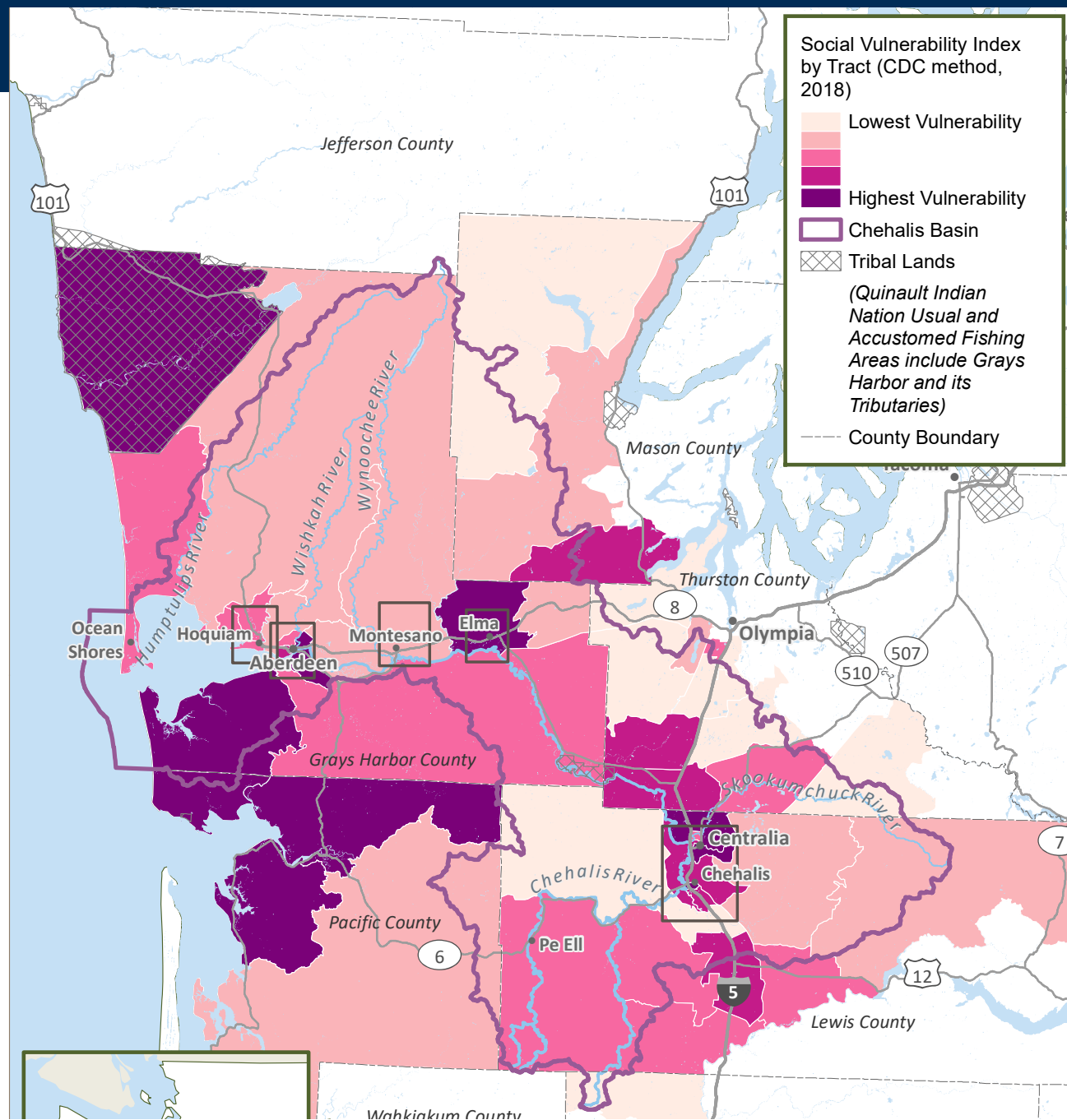


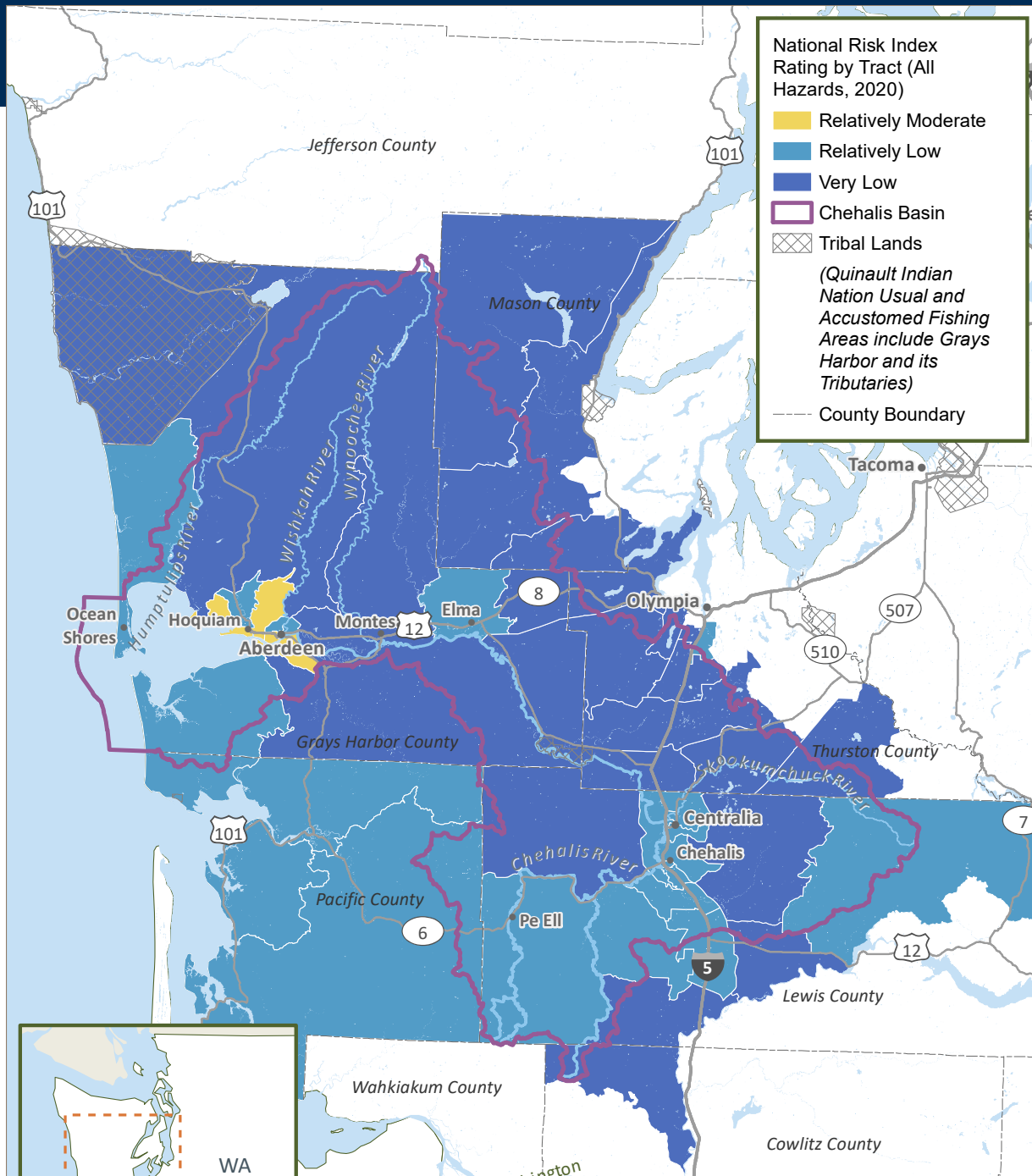
*What are the demographic and socioeconomic characteristics of the people within the Chehalis River Basin?*

*How could these characteristics make people or communities more or less vulnerable to potential adverse outcomes from flooding?*

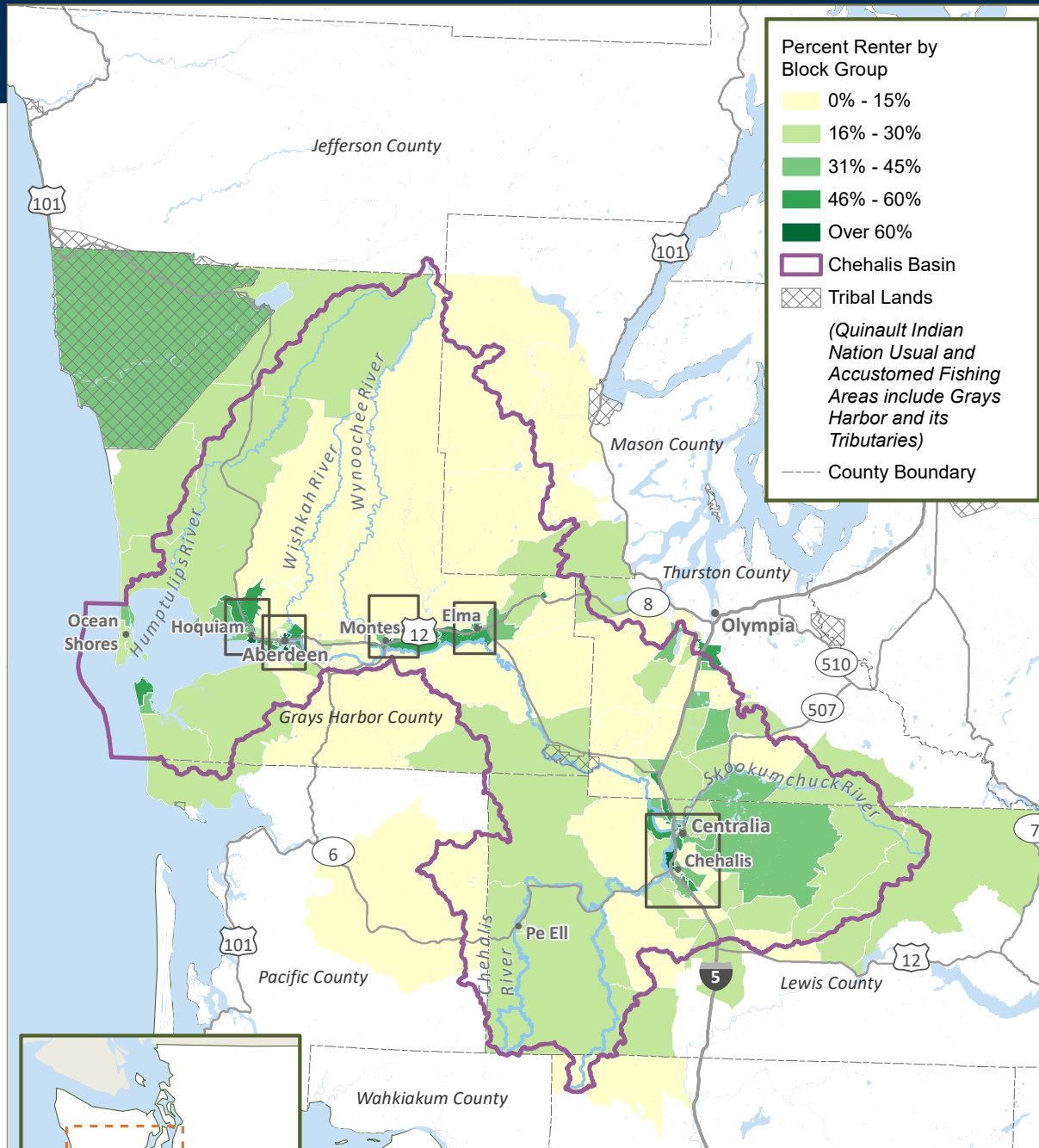
# Demographics & Vulnerability Indices

- What are existing vulnerabilities? How are they distributed?
- Data Sources
  - CDC SVI
  - FEMA NRI (released in 2020)
  - Individual demographic attributes (e.g., income, minority status, renter, etc.)

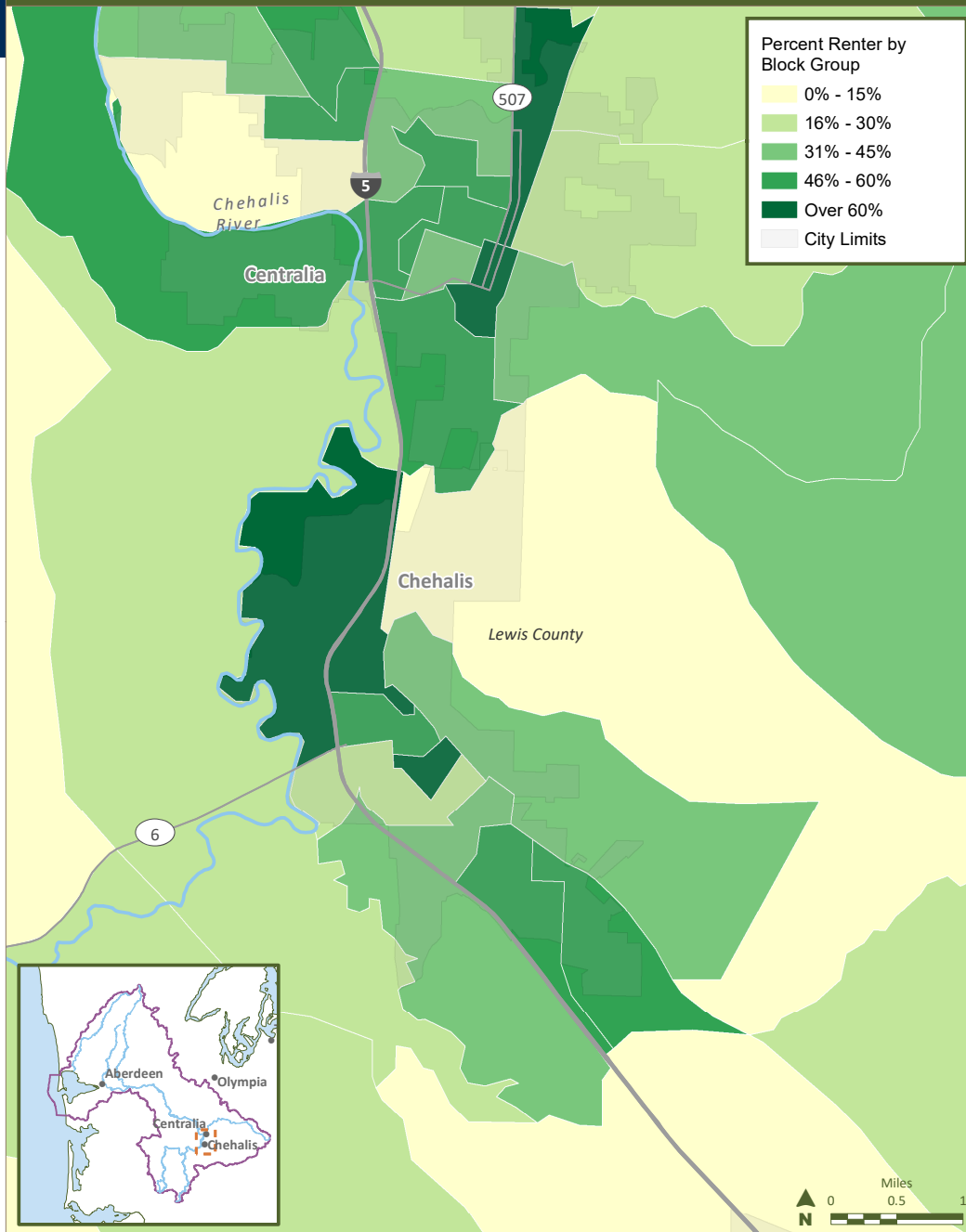




# Renters



# Renters Inset



3. How could any of the proposed local flood protection actions contribute to or reinforce inequities or discriminate against marginalized populations or communities?



- Who is affected and are they better off?
  - Project Selection Considerations
    - Potential biases in decision factors?\*
    - Who benefits? Who bears the cost?
    - Considering historical inequities?
  - Implementation Considerations
    - How funded? Rate increases?
    - Are materials and information accessible?
    - Action-specific implementation considerations?

# Action Specific Considerations

Local Flood Protection Actions	Will reduced flood risk be equitable?	Will the action increased utility costs, potentially creating financial burden?	Will people only be able to participate if they can afford to implement the action?	Will the action adversely impact the environment?	Could the action impact housing supply and/or prices (increase or decrease)?	Could the action change the character of the community?	Are there accessibility concerns that could limit participation in the action?
Flood protection through localized infrastructure							
Flood protection by elevating/floodproofing structures and infrastructure							
Relocating people and/or property at risk of flooding							
Redirecting flood waters through increased storage and floodplain restoration							
Flood warning and preparedness systems							



Likely to be a consideration



Could be a consideration



Not likely to be a consideration

4. What kinds of strategies to proactively avoid or mitigate any potential adverse outcomes for vulnerable populations?

# Planning, Avoidance, and Mitigation Strategies

Priority Action #1:

**Use data to identify risks, assets, and community vulnerabilities.**

Priority Action #2:

**Commit to ongoing and meaningful community engagement.**

Priority Action #3:

**Set a proactive vision and build strategic alignment.**

Priority Action #4:

**Fully incorporate equity into resilience planning processes.**

Priority Action #5:

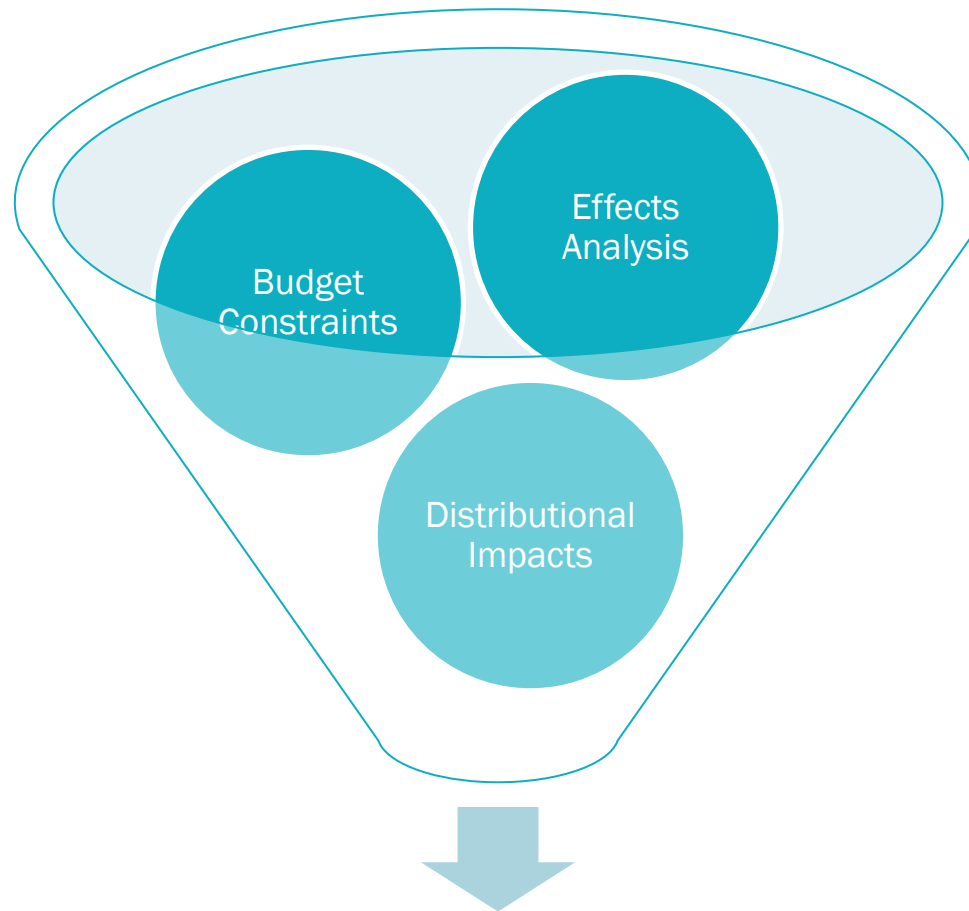
**Target investments in vulnerable communities.**

# Strategies to Avoid and Mitigate

- Understand the spatial distribution of who is living and working in the region and who depends on resources affected by project actions.
- Understand the historical inequities related to flood risk and response in this region through documentation and outreach.
- Conduct ongoing and meaningful community engagement.
- Proactively plan before implementing the local flood protection actions.

- The project corrects historic inequities in this region.
- Flood reduction benefits and costs distributed equitably based on scarcity and need.
- If rates increase, low-income households do not experience a burdensome rate increase.
- Actions increase access to services and/or remove barriers to service for vulnerable populations.
- The environmental value of natural resources is appropriately valued through ecosystem service estimates.
- All actions seek to incorporate multiple benefits in addition to flood control (e.g., recreational amenities, educational opportunities, aesthetic values, etc.)

# How to Select Program Elements



Selecting Local Flood Protection  
Actions and Locations

## **DISCLAIMER**

- This presentation WAS NOT developed through a collaborative process.
- It was developed by ECONorthwest alone based on available resources, and is therefore only a first step.

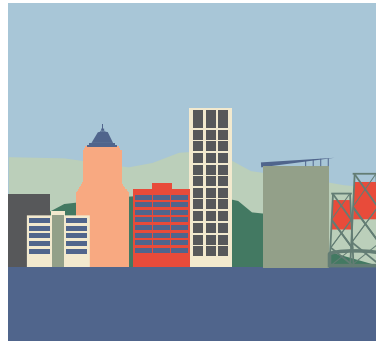


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