South Fork Snoqualmie

- Levees constructed mid-1960s
- Different flood protection levels on left & right banks
- Levee stability problems
- Flooding issues
- Channel migration hazards in Circle River Ranch
- Gravel build up continues between levees
- Poor ecological conditions
Related South Fork Flood Mitigation Projects

- Flood Event Response
- 15 Structure Elevations
- 5 Buyouts on the South Fork

Seven bank repairs plus numerous sinkhole repairs between 2006 and 2012
Existing Conditions - Key Issues

- \$20 million in damages to structures & roadway projected for a 100-yr event
- $53.8 million assessed value inundated
- 144 structures and 4-miles of public roadway inundated in a 100-yr event
- Levees provide more protection to right bank (North Bend)
- Levees functioning below design capacity
- I-90 overtopping just past a 50-yr flood event
- Geotechnical instabilities somewhat less of a concern
- System ecologically degraded – channel simplified, riparian areas disconnected
- 30 Structures within channel migration hazard zone
Questions, Discussion
Provisional Goals

Goal 1: Reduce risks from flood and channel migration hazards

- Provide 500 year flood protection in consideration of aggradation

- Eliminate high and moderate consequence geotechnical problems

- Reduce erosion and channel migration risk in areas with homes and infrastructure
Goal 2: Improve natural environment through sound and sustainable flood hazard management

- Improve aquatic habitat quality and quantity
- Improve riparian habitat functions
Provisional Goals

Goal 3: Reduce long-term costs of flood hazard management

- Implement cost-effective floodplain management solutions
- Reduce long-term maintenance and repair costs by 30%
Provisional Goals

Goal 4: Ensure Corridor Plan is consistent with King County’s Equity and Social Justice Initiative.

Goal 5: Incorporate multiple objectives into the Corridor Plan through community and stakeholder involvement.
Possible Corridor Approaches

- Continue Existing Management Practices
- Raise Levees In Place
- Corridor Wide Levee Setbacks
Continue Existing Management Practices
Continue Existing Management Practices

Blue areas represent new areas of flooding over time

Purple represents areas that flood now
<table>
<thead>
<tr>
<th>Advantages</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Low cost to implement</td>
<td>• Maintains substandard flood risk conditions</td>
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<tr>
<td></td>
<td>• Increasing risk in future</td>
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<tr>
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<td>• Increasing long-term costs as facilities degrade</td>
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<td>• Further degrades ecological conditions</td>
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Raise Levees In Place

Blue areas represent new areas of flooding over time

Purple represents areas that flood now

Red represent areas no longer flooded
## Raise Levees In Place

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provides some risk reduction to residences and North Bend Treatment Plant</td>
<td>• Does not eliminate Interstate 90 flood risk</td>
</tr>
<tr>
<td>• Preserves existing housing</td>
<td>• Further degrades ecological conditions</td>
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<td></td>
<td>• Highest downstream impacts</td>
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<tr>
<td></td>
<td>• Expensive to construct and maintain</td>
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<td></td>
<td>• Potentially at odds with stakeholders goals</td>
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</table>
Large Scale Levee Setback Approach

Blue areas represent new areas of flooding over time.

Purple represents areas that flood now.

Red represents areas no longer flooded.
<table>
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<tr>
<td>Effectively protects residences, businesses</td>
<td>Some downstream impacts due to containment of flows</td>
</tr>
<tr>
<td>Eliminates flood risks for the North Bend Treatment Plant and Interstate 90</td>
<td>Expensive to construct and requires extensive real estate including buyouts of residences</td>
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<td>Significantly improves ecological conditions</td>
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<tr>
<td>Lower long term maintenance costs</td>
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<tr>
<td>Consistent with goals of many stakeholder</td>
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</table>
Other Tools

- Structure Elevations
- New In Stream Structures (bank stabilization)
- Property Acquisition
- Gravel Removal
- Land Use Management
- Bridge, Road and Culvert Modifications
Questions, Discussion
South Fork Snoqualmie River Corridor Plan Team

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