

# SOUTH FORK SNOQUALMIE RIVER

## CAPITAL INVESTMENT STRATEGY

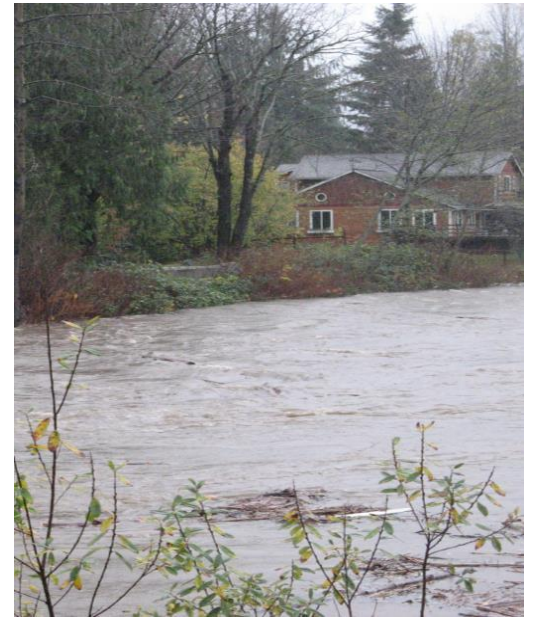
The South Fork Snoqualmie River basin drains 85 square miles with headwaters in the Cascade Mountains. The river flows through the Upper Snoqualmie Valley and the City of North Bend. Continuous levees flank the South Fork from river mile 2.1 to 5.2. Provisional goals aim to address flood risks to a 500-year level of protection.

Scope: The corridor planning process will support decision makers in setting flood risk reduction priorities:

- Define flood and erosion hazards in three corridor planning areas
- Focus on critical “worst first” public safety risks in each corridor
- Propose conceptual 6-yr CIP consistent with budget placeholder

Summary of Risk: Under existing conditions, for a 500-year flood event, the following are subject to inundation by flood water:

- 553 structures
- 27 critical facilities
- 1.2 miles of interstate (I-90)
- 1.7 miles arterial roadway
- 12 miles of local roadway
- 9 homes plus utilities



**Proposed Risk Reduction Projects:** Below is a draft sequenced action plan for implementing risk reduction efforts in the South Fork Snoqualmie Corridor. The project sequence reflects current information on urgency, severity, consequence, responsibility or authority, and funding or partnership opportunities.

The current adopted 2017-2022 King County Flood Control District CIP budget includes:

- \$11.4M for Upper Snoqualmie Valley Residential Mitigation (USV), a portion of which is annually programmed to cost share home elevations along the South Fork
- \$7.5M for South Fork Corridor Implementation
- \$27.7M for countywide corridor plan implementation, some of which could be allocated to the South Fork Snoqualmie River priorities (specific projects TBD)

PROJECT	PROBLEM	APPROACHES	COST ESTIMATES <sup>1</sup>
<b>Efforts Underway (Funded Projects -2017 CIP)</b>			
I-90 Flood Risk Reduction Project	McConkey levee upstream of I-90 may overtop and combine with Clough Creek and flood I-90.	Project priority changed – see Proposed Long Term Action K.	Total: \$150K
A. Residential Flood Mitigation	Shamrock Park / Berry Estates At the 500-year flood 32 homes are at risk of inundation.	Elevate 12 homes.	Total: \$1.8M FCD 6YR \$1.62M Homeowner Match: \$180K
	Clough Creek At the 500-year flood 38 homes are at risk of inundation.	Elevate 6 homes.	Total: \$900K FCD 6YR: \$810K Homeowner Match: \$90K
<b>Proposed Near Term Actions (Years 0 – 6)</b>		<b>6-Year CIP Placeholder: FCD 6-Year Request: Total Project Cost:</b>	<b>\$7.5M \$13.6M to \$16.7M \$18.7M to \$26.7M</b>
B. Circle River Ranch Risk Reduction	Homes and infrastructure are at risk from erosion and flooding as the river migrates into a new side channel closer to development.	Potential solutions include: Gravel removal / in-stream engineered structures / bank stabilization / property acquisitions.	Total: \$4.3M FCD 6YR: \$4.3M
C. US Army Corps of Engineers Public Law 84-99	Eleven South Fork Snoqualmie River levees are eligible for participation in the U.S. Army Corps of Engineers levee program but do not meet standards	Potential solutions include: Manage vegetation, inspect, and identify all deficiencies / new projects in the corridor to meet standards / create System Wide Improvement Framework.	Total: \$150K to \$1M FCD 6YR: \$150K to \$1M
D. Levee Remediation	Six levee deficiencies have been identified in this leveed segment. Toe erosion / seepage / sink hole / depression in the levee surface.	Design and reconstruct the impaired segment of levee in place.	Total: \$1.9M FCD 6YR: \$1.9M
E. Ribary Creek Improvements	Ribary Creek levees and culverts overtop SR 202 (Bendigo Boulevard), flooding the retail center nearly annually.	Design, permit and construct. Potential solutions may include: culvert replacement / gravel removal / levee setbacks	Total: \$6.1M to \$8.3M <sup>2</sup> FCD 6YR: \$6.1M to \$8.3M
F. Reif Road Levee Improvements (Phase 1)	Reif Road Levee overtops at a 20-year or greater flood resulting in widespread inundation.	Conduct a feasibility study to determine the project scope. Potential solutions include: repair and/or raise levee in place / setback levee / gravel removal / home elevations.	Total: \$6.2M to \$11.2M FCD 6YR: \$1.1M to \$1.2M (Phase 1) FCD YR 7-10: \$5.1M to \$10.2M
Phase 2 for Implementation is Proposed Medium Term Action G			

1. Cost estimates include best available projections regarding right-of-way acquisition, design, construction, 10-year site establishment, 10-year effectiveness monitoring. Corridor planning cost estimates do not include maintenance and monitoring beyond 10-years.
2. Possible funding partner – City of North Bend
3. Possible funding partner - WSDOT, City of North Bend

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PROJECT	PROBLEM	APPROACHES	COST ESTIMATES <sup>1</sup>
<b>Proposed Medium Term Actions (Years 7 – 10)</b>			<b>(Unfunded projects) Total Project Cost: \$26.1M - \$47.2M</b>
G. Reif Road Levee Improvements (Phase2)  Phase 1 for Feasibility /Design is Proposed Near Term Action F	Reif Road Levee overtops at a 20-year or greater flood resulting in widespread inundation.	Construct Reif Road Levee Improvements Project. Potential solutions include: repair and/or raise levee in place / setback levee / gravel removal / home elevations.	Total: \$5.1M to \$10.2M (Phase 2)
H. Nintendo Levee Setback	The Bendigo Upper Left levee, (Nintendo Levee) overtops at a 20-year or greater flood, inundating undeveloped property, railway lines and roadways.	Leverage partnerships to construct a setback levee maximizing local floodwater storage benefits.	Total: \$14M <sup>2</sup>
I. Si View Levee Improvements	Provides 100-year level of protection with no freeboard except at the downstream end of the levee which overtops at an approximately 30-year flood. As gravel accumulates, increased overtopping is anticipated in the future.	Increase flood level of protection to 500-year by raising levees in place or gravel management.	Total \$7M - \$23M
<b>Proposed Long Term Actions (Beyond 10 Years)</b>			<b>(Unfunded Projects) Total Project Cost: \$34.9M - \$57.1M</b>
J. Bendigo Bridge Replacement	The 150-foot span of Bendigo Bridge creates a hydraulic backwater that contributes to flooding.	Increase outreach to Washington State Department of Transportation (WSDOT), and the City of North Bend to partner with the FCD, to replace Bendigo Bridge with a larger bridge of at least a 400-foot span.	Total: \$14.8M <sup>3</sup>
K. I-90 Flood Risk Reduction Project	McConkey levee upstream of I-90 may overtop and combine with Clough Creek and flood I- 90.	Setback levee / gravel removal	Total: \$10M to \$23M <sup>3</sup>
L. Prairie Acres Right Levee	At the 500-year flood the City of North Bend Waste Water Treatment Plant and 32 structures are inundated.	Setback levee / levee repair / raise levee in place	Total: \$1.4M- \$2.4M
M. Bendigo Upper Right Levee	At the 500-year flood 18 structures and local Streets are inundated.	Setback levee / levee repair / raise levee in place	Total: \$3.3M - \$3.5M
N. Bendigo Lower Right Levee	The levee overtops during a 100-year or greater flood, inundating 129 structures and local Streets.	Setback levee / levee repair / raise levee in place	Total: \$2.2M - \$6.4M
O. Bendigo Lower Left Levee	The levee overtops during a 50-year or greater flood, inundating five structures, NW 8th Street and a forested area.	Levee removal / setback levee / levee repairs.	Total: \$3.2M-\$7M
P. Prairie Acres Left Levee	The levee overtops at a 20-year or greater flood, inundating forested and undeveloped agricultural land.	Levee removal / setback levee / levee repairs.	Total: \$500K - \$1.5M

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