

TOLT RIVER CAPITAL INVESTMENT STRATEGY

The Tolt River basin drains 100 square miles, beginning in the Cascade Mountains. The lower six miles of river flow through residential areas and the City of Carnation, with nearly continuous levees along the lower two miles. Upstream of the leveed reach, the river is largely unconstrained with significant channel migration and deep and fast flows. The lower Tolt River is also a high priority for habitat restoration for ESA-listed salmon.

Scope: Through the corridor planning process, 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-year CIP consistent with budget placeholder

Summary of Risk – Under existing conditions, for a 100-year flood event, the following risks are present:

- 46 homes and 11 commercial/public buildings at risk of flooding or erosion
- 59 homes and 5 commercial buildings isolated by road flooding
- 2 miles of public roadway flooded



Proposed Risk Reduction Projects:

Below is a draft sequenced action plan for implementing risk reduction projects in the Tolt River Corridor. The projects are proposed based on urgency, severity, consequence, responsibility or authority, and funding or partnership opportunities.

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

- \$1.0M for Tolt levee repairs
- \$2.3M for Snoqualmie Trail Bridge to SR203 acquisitions
- \$1.7M for San Souci acquisitions, road elevation, and revetment removal
- \$2.6M for Natural Area acquisitions
- \$8.2M for Tolt Corridor Implementation (to be allocated to Near Term Actions)

PROJECT	PROBLEM	APPROACH	COST ESTIMATES ¹
Efforts Underway			(Funded Projects – 2017 CIP)
A. Tolt River Levee Repairs	Erosion damage to Lower Frew, Upper Frew, Remlinger, and Girl Scout levees.	Monitor sites and construct repairs if erosion threatens levee integrity.	Total: \$1.0M FCD 6YR: \$1.0M
B. Snoqualmie Trail Bridge to SR203 Bridge Property Acquisitions	Levees overtop or breach, inundating or damaging homes, roads (including SR203) and land proposed for development.	Acquire two at-risk homes and vacant acreage to reduce risk and allow for future levee setbacks on both river banks.	Total: \$2.3M FCD 6YR: \$2.3M △
C. San Souci Reach Improvements and Road Elevation (Phase 1; Phase 2 for construction is J.)	Reach threatened by erosion, avulsion, flooding and landslides; Tolt River Rd NE overtops during minor flooding isolating 40 homes.	Three projects: 1) acquire three at-risk homes from willing sellers; 2) feasibility and design to remove an illegal revetment and roads in San Souci neighborhood; 3) feasibility and design to elevate Tolt River Road NE at lowest location.	Total: \$2.3M FCD 6YR: \$1.7M Partner: \$580K ² △
D. Tolt Natural Area Property Acquisitions	Multiple properties at risk from flooding, erosion, avulsion, and potential levee breach.	Acquire three at-risk homes from willing sellers; acquire two more with partner funds and/or FCD out years. <i>(Budget Note: Requesting to reallocate \$800K to 2017 from out years to demolish a recently acquired home and buy 1 home on the market)</i>	Total: \$4.4M FCD 6YR: \$2.6M Partner: \$504K ² Partner: \$1M ³ FCD Yr 7-10: \$.3M △
E. Holberg Levee Improvements Feasibility Study	Portions of the levee are vulnerable to failure by lateral erosion.	Conduct a feasibility study to evaluate improvement alternatives to the Holberg facility. <i>(Budget Note: Requesting \$200,000 in 2017)</i>	Total: \$162 – 200K FCD 6YR: \$200K ⁴
Proposed Near Term Actions (Years 0 - 6)			6-year CIP Placeholder: \$8.2M FCD 6-year Request: \$8.2M Partner Secured: \$645K Future Funding Need: \$10.3 – 12.1M Total Project Cost: \$19.0 – 21.0M
F. Tolt River Levee Level of Service Analysis	The lower two miles of the Tolt River is confined between a network of levees that provides inadequate and uneven levels of flood protection. Flooding in the leveed reach can be strongly influenced by the Snoqualmie River and sediment accumulation.	Conduct a detailed hydraulic analysis to optimize the elevation of new levees to maximize flood risk reduction benefits. <i>(Budget Note: Requesting \$150,000 in 2017 to begin analysis)</i>	Total: \$620 - 700K FCD 6YR: \$700K
G. Lower Frew Levee Setback Design (Phase 1; Phase 2 for construction is N.)	Levee overtops between 2- and 5-year flows, flooding and potentially damaging SR203 and properties in City of Carnation. Levee impacts habitat.	Design, based on level of service analysis, the highest priority levee setback for flood risk reduction. FCD 6-year includes funds needed for grant match for future grant applications. <i>(Budget Note: Requesting \$175,000 in 2017 to support preliminary design)</i>	Total: \$3.6M FCD 6YR: \$3M Partner: \$645K ² △
H. Sediment Management in Leveed Reach Feasibility Study	Sediment accumulation increases levee overtopping and potential failure. Sediment redirects flow into levees causing erosion.	Conduct sediment management feasibility study and develop a plan. Update and include upper watershed sediment production estimates.	Total: \$380 - 400K FCD 6YR: \$400K
I. SR 203 Bridge Improvements Feasibility Study	SR 203 approach (fill) blocks flood flows. Highway overtops north of SR203 bridge and is subject to erosion and damage.	Initiate study (with potential future design and construct) to add bridge span(s), raise the highway and relocate King County Parks parking area.	Total: \$370 - 390K FCD 6YR: \$390K

¹ Cost estimates include best available projections regarding right-of-way acquisition, design, construction, 10-year site establishment, 10-year effectiveness monitoring; cost estimates do not include maintenance and monitoring beyond 10 years

² Secured state, federal and/or county funding source

³ Unsecured funds; grant application submitted

⁴ Funding from the FCD fund balance

△ Indicates a project with a nexus to WRIA 7 habitat restoration opportunity area and is likely to receive grant funds

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J. San Souci Reach Improvements and Road Elevation (Phase 2)	Reach threatened by erosion, avulsion, flooding and landslides; Tolt River Rd NE overtops during minor flooding isolating 40 homes.	Construct Tolt Road NE road elevation in one location. Remove illegal revetment and roads in San Souci neighborhood.	Total: \$3.5 – 4M FCD 6YR: \$2.5M FCD Yr 7-10: \$1- 1.5M △
K. Rio Vista Property Acquisitions	Multiple properties at risk from deep and/or fast flows; landslide hazards can exacerbate flooding.	Acquire 2 at-risk homes from willing sellers; acquire remaining 14 homes as funds become available.	Total: \$8 – 8.5M FCD 6YR: \$500K FCD Yr 7- 10+: \$7.5 - 8M △
L. Upper Frew Levee Setback Initial Design (Phase 1; Phase 2 for construction is Q.)	Levee overtops between 10- and 25-year flows; levee directs flow and debris into trail bridge causing damage.	Initiate the levee setback design in order to apply for grant funding. Levee setback to increase sediment storage and floodwater conveyance; protect adjacent development; reduce damage to trail bridge.	Total: \$300 - 350K FCD 6YR: \$350K △
M. Tolt River Road NE Improvements	Three road locations flood between 10- and 100-year flows; at 100-year event 54 upstream homes are isolated by flooded roads.	Initiate design for elevation of one road location to reduce or eliminate isolation. Implement additional road elevations as funds become available.	Total: \$1.9 – 2.5M FCD 6YR: \$360K FCD Out Years: \$1.5 – 2.1M
Proposed Medium Term Actions (Years 7-10)			(Unfunded Projects) Total Project Cost: \$83.2 – 88.5M
N. Lower Frew Levee Setback Construction (Phase 2)	Levee overtops between 2- and 5-year flows, flooding and potentially damaging SR203 and properties in City of Carnation. Levee impacts habitat.	Construct levee setback to increase sediment storage and floodwater conveyance; protect future development; reduce SR203 flooding and damages. Construction dependent on securing grant funds or full FCD funding.	Total: \$14.5 – 16.7M △
O. Acquisitions in Leveed Reach	Levees provide varying levels of protection and are vulnerable to failure; homes and businesses behind levees are at-risk.	Acquire at-risk homes from willing sellers to reduce flood risk or to allow for future setbacks.	Total \$2.8 – 3.5M △
P. NE Tolt Hill Road Elevation and Levee Setback Feasibility Study	The Tolt River Left Bank Levee overtops during minor to moderate Tolt River and Snoqualmie River floods. Inundation of NE Tolt Hill Road limits the access to and from the Snoqualmie Valley and the City of Carnation during flood events.	Conduct a feasibility study of modifying NE Tolt Hill Road and setting back the Tolt River Left Bank levee downstream of SR 203.	Total: \$700K – 1M △
Q. Upper Frew Levee Setback Design and Construction (Phase 2)	Levee overtops between 10- and 25-year flows; levee directs flow and debris into trail bridge causing damage.	Design and construct levee setback. Add bridge spans under trail to provide connectivity between Lower and Upper Frew levee setbacks.	Total: \$18.3 – 19.3M △
R. Levee Setbacks	Levees provide varying levels of protection, are vulnerable to failure, and adversely impact habitat.	Design and construct levee setbacks: Tolt River Levee Left Bank, Highway to Trail Bridge, and Girl Scout Camp.	Total: \$46.9 - 48M △
Proposed Long Term Actions (Beyond 10 years)			(Unfunded Projects) Total Project Cost: \$26.7 – 28.8M
S. Levee Setbacks or Improvements	Levees/revetments provide varying levels of protection, are vulnerable to failure, and adversely impact habitat.	Design and construct levee setbacks or improvements at Remlinger (west end), Holberg and Edenhalm levees.	Total: \$26.2 – 28M △
T. Private Revetment Removal or Improvements	Existing privately constructed revetments provide varying levels of protection and adversely impact habitat.	Remove or modify revetments to improve protection and/or reduce adverse impacts.	Total: \$522 – 800K △

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