King County Flood Control District Advisory Committee Meeting Agenda

The King County Flood Control District Advisory Committee is created to provide expert policy advice to the Board of Supervisors of the King County Flood Control Zone District on regional flood protection issues. The committee shall review and recommend an annual work program and budget for the district, including capital improvement program projects and funding levels, subject to approval or approval and modification by the Board of Supervisors. Ordinance 15728, April 16, 2007

MEETING TIME AND LOCATION
Thursday, June 20, 2018 1:30 p.m. – 4:00 p.m.
Mercer Island Community Center 8236 SE 24th St, Mercer Island, WA 98040

PURPOSE OF THE MEETING
• Elect Vice-Chair of Advisory Committee
• Provide Budget Update for FY 2019 and 2019-2023 CIP
• Present context of Cedar/Sammamish Basin and Snoqualmie/Tolt Basin Capital Investment Strategies
• Discuss potential topics for Flood Hazard Management Plan Update

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Objective</th>
<th>Lead</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30</td>
<td>Call to Order and Introductions</td>
<td></td>
<td>Ken Hearing, Advisory Committee Chair</td>
<td></td>
</tr>
<tr>
<td>1:40</td>
<td>Public Comment</td>
<td>Provide opportunity for public comment</td>
<td>Ken Hearing</td>
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<tr>
<td>1:45</td>
<td>Operating Rules</td>
<td>Review Operating Rules</td>
<td>Kjristine Lund, Facilitator</td>
<td>Operating Rules</td>
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<tr>
<td>1:50</td>
<td>Election of Vice-Chair</td>
<td>Odd-year election of vice-chair</td>
<td>Ken Hearing</td>
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<tr>
<td>2:00</td>
<td>2019 Approved Budget</td>
<td>Review differences between Advisory Committee Recommended Budget and Final District Approved Budget</td>
<td>Michelle Clark, Executive Director, Flood District, Brian Murray, Supervisor, Countywide Policy and Planning Unit, River &amp; Floodplain Management Section (RFMS)</td>
<td>Budget Reference Documents, Differences Table</td>
</tr>
<tr>
<td>2:30</td>
<td>Basin Strategies</td>
<td>Provide Context for Capital Investment</td>
<td>Michelle Clark</td>
<td>Cedar Sammamish Tolt, South Fork CIS &amp; Snoqualmie Middle Fork Scope</td>
</tr>
<tr>
<td>2:45</td>
<td>Cedar/Sammamish Basin</td>
<td>Presentation about Capital Investment Strategy</td>
<td>Christopher Brummer, Supervising Engineer, Cedar/Sammamish/White River Basins, RFMS</td>
<td>Power Point</td>
</tr>
<tr>
<td>3:15</td>
<td>Snoqualmie Basin</td>
<td>Presentation about Capital Investment Strategy and Plans</td>
<td>Chase Barton, Supervising Engineer, Skykomish/Snoqualmie River Basin, RFMS</td>
<td>Power Point</td>
</tr>
<tr>
<td>3:45</td>
<td>Flood Plan Update</td>
<td>Discuss Potential Elements for Plan Update</td>
<td>Michelle Clark</td>
<td>List of Potential Elements</td>
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<tr>
<td>4:00</td>
<td>Adjourn</td>
<td></td>
<td>Chair</td>
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### Committee Members

<table>
<thead>
<tr>
<th>Seats</th>
<th>Jurisdiction</th>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Seat, Advisory Committee, Chair</td>
<td>City of North Bend</td>
<td>Kenneth Hearing</td>
<td>Mayor</td>
</tr>
<tr>
<td>Rotating Seat nominated by Sound Cities Association (SCA), Advisory Committee, Vice-Chair</td>
<td>City of Pacific</td>
<td>Leanne Guier</td>
<td>Mayor</td>
</tr>
<tr>
<td>Permanent Seat</td>
<td>City of Auburn</td>
<td>Nancy Backus</td>
<td>Mayor</td>
</tr>
<tr>
<td>Permanent Seat</td>
<td>City of Bellevue</td>
<td>John Chelminiak</td>
<td>Mayor</td>
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<tr>
<td>Permanent Seat</td>
<td>City of Carnation</td>
<td>Kim Lisk</td>
<td>Mayor</td>
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<tr>
<td>Permanent Seat</td>
<td>City of Kent</td>
<td>Dana Ralph</td>
<td>Mayor</td>
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<tr>
<td>Permanent Seat</td>
<td>King County</td>
<td>Dow Constantine</td>
<td>Executive</td>
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<tr>
<td>Permanent Seat</td>
<td>City of Renton</td>
<td>Denis Law</td>
<td>Mayor</td>
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<tr>
<td>Permanent Seat</td>
<td>City of Seattle</td>
<td>Jenny Durkan</td>
<td>Mayor</td>
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<tr>
<td>Permanent Seat</td>
<td>City of Snoqualmie</td>
<td>Matt Larson</td>
<td>Mayor</td>
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<tr>
<td>Permanent Seat</td>
<td>City of Tukwila</td>
<td>Allan Ekberg</td>
<td>Mayor</td>
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<td>Rotating Seat for unincorporated area</td>
<td>Rural Area</td>
<td>Rosella Mosby</td>
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<td>Rotating Seat nominated by SCA</td>
<td>City of Covington</td>
<td>Marlla Mhoon</td>
<td>Councilmember</td>
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<tr>
<td>Rotating Seat nominated by SCA</td>
<td>City of Duvall</td>
<td>Michelle Hogg</td>
<td>Councilmember</td>
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<tr>
<td>Rotating Seat nominated by SCA</td>
<td>Town of Skykomish</td>
<td>Henry Sladek</td>
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<td>Alternate SCA</td>
<td>City of Enumclaw</td>
<td>Anthony Wright</td>
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<tr>
<td>Alternate SCA</td>
<td>City of Maple Valley</td>
<td>Linda Johnson</td>
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<td>Alternate SCA</td>
<td>City of Mercer Island</td>
<td>Salim Nice</td>
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<td>Alternate SCA</td>
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<td>Karen Moran</td>
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<td>Bill Peloza</td>
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<td>City of Carnation</td>
<td>Dustin Green</td>
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<td>City of Kent</td>
<td>Toni Troutner</td>
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<tr>
<td>Alternate</td>
<td>King County</td>
<td>Casey Sixkiller</td>
<td>Chief Operating Officer</td>
</tr>
<tr>
<td>Alternate</td>
<td>City of North Bend</td>
<td>Brenden Elwood</td>
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<tr>
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<td>City of Renton</td>
<td>Ed Prince</td>
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<td>City of Seattle</td>
<td>Lisa Herbold</td>
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<tr>
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<td>City of Snoqualmie</td>
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<tr>
<td>Alternate</td>
<td>City of Tukwila</td>
<td>Dennis Robertson</td>
<td>Councilmember</td>
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</tbody>
</table>

**COMMITTEE GROUND RULES**

Come to committee meetings prepared and honor timeframes  
Respect each other’s perspectives - Listen and participate actively  
Silence electronic devices during meetings

**2019 MEETING SCHEDULE**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>June 20</td>
<td>1:30 p.m.-4:00 p.m.</td>
<td>Budget Introduction</td>
</tr>
<tr>
<td>July 18</td>
<td>1:30 p.m.-4:00 p.m.</td>
<td>Capital and Operating Budget (Location: Clise Mansion at Marymoor Park)</td>
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<tr>
<td>August 15</td>
<td>1:30 p.m.-4:00 p.m.</td>
<td>Follow-up on Committee Questions</td>
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<td>August 29</td>
<td>1:30 p.m.-4:00 p.m.</td>
<td>Final Recommendation</td>
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<tr>
<td>No.</td>
<td>Title</td>
<td>2019 Projected</td>
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<td>-----</td>
<td>-----------------------------------------------------------------------</td>
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<tr>
<td>1</td>
<td>WLFL0 TRIB PLANE 2018 REPAIR</td>
<td>$450,000</td>
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<tr>
<td>2</td>
<td>WLFL0 TRIB PLANE 2019 REPAIR</td>
<td>$500,000</td>
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<tr>
<td>3</td>
<td>WLFL1 NORMAN CREEK USB 2024 CULV</td>
<td>$0</td>
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<td>4</td>
<td>WLFL1 SHELKE MILL LB 2016 REPAIR</td>
<td>$1,054,988</td>
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<tr>
<td>5</td>
<td>WLFL2 DUTCHMANN RD REPAIR</td>
<td>$200,000</td>
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<tr>
<td>6</td>
<td>WLFL3 HOLBERG 2019 REPAIR</td>
<td>$500,000</td>
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<tr>
<td>7</td>
<td>WLFL4 TOLT R NATURAL AREA ACO</td>
<td>$438,453</td>
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<tr>
<td>8</td>
<td>Snoqualmie-South Fork Skykomish Subtotal</td>
<td>$2,871,791</td>
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<tr>
<td>9</td>
<td>WLFL6 ISSAQHMIA TRIB FEAS</td>
<td>$200,000</td>
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<tr>
<td>10</td>
<td>WLFL6 MAY VALLEY DRAINAGE IMPVAN</td>
<td>$300,000</td>
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<tr>
<td>11</td>
<td>WLFL7 CEDAR R RE LOSS MTOATN</td>
<td>($906,222)</td>
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<tr>
<td>12</td>
<td>WLFL7 CEDAR R DOWNSHED 2024 IMPV</td>
<td>$0</td>
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<tr>
<td>13</td>
<td>WLFL8 MADDEN CR CULVERT 2017</td>
<td>$0</td>
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<tr>
<td>14</td>
<td>WLFL8 TUKWILA RVMT 2019 REPAIR</td>
<td>$0</td>
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<tr>
<td>15</td>
<td>Cedar-Sammamish Subtotal</td>
<td>($106,222)</td>
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<tr>
<td>16</td>
<td>WLFL8 GALL OYKSTRA 2020 REPAIR</td>
<td>$200,000</td>
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<tr>
<td>17</td>
<td>WLFL8 JONES LEEVE</td>
<td>$500,000</td>
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<td>18</td>
<td>WLFL8 MILWAUKEE LEVEE #2-KENT</td>
<td>$10,900,000</td>
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<td>19</td>
<td>WLFL8 OLD JEFFS FARM REVETMENT</td>
<td>$0</td>
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<td>20</td>
<td>WLFL9 DREDG R IMPROVEMENT 2024</td>
<td>$0</td>
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<tr>
<td>21</td>
<td>WLFL9 PUGET WAY CULVERT 2024</td>
<td>$1,800,000</td>
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<td>22</td>
<td>WLFL9 S PARK DRAINAGE IMPROVEMENT</td>
<td>$0</td>
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<td>23</td>
<td>WLFL9 TUKWILA RVMT 2019 REPAIR</td>
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<td>24</td>
<td>Green-Sammamish Subtotal</td>
<td>$12,400,000</td>
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<td>25</td>
<td>WLFL9 ANDERSON PARK ACQUISITION</td>
<td>$100,000</td>
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<td>26</td>
<td>WLFL9 RIGHT BANK LEVREE SETBACK</td>
<td>$150,000</td>
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<td>27</td>
<td>WLFL9 SLIPPERY CREEK ACO</td>
<td>$80,000</td>
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<tr>
<td>28</td>
<td>WLFL9 STOCK R DR 2019 REPAIR</td>
<td>$500,000</td>
</tr>
<tr>
<td>29</td>
<td>White Subtotal</td>
<td>$930,000</td>
</tr>
</tbody>
</table>

King County Flood Control District

**Differences between the FCD Adopted and Advisory Committee Recommended** (*0* means no change from Adv Cmte version)**

6/13/2019

Positive numbers are in addition to the Advisory Committee’s August 31 Recommendations

Negative numbers are subtracted from the Advisory Committee’s August 31 Recommendations

$0 = No change from the Advisory Committee’s August 31 Recommendations

Fifteen strikes only those project lines changed by the Board.
Differences between 2019 King County Flood Control District Adopted and Advisory Committee Recommended Operating Budget

June 13, 2019

<table>
<thead>
<tr>
<th>Amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$250,000</td>
<td><em>Technical Studies</em> – Analysis of future flooding conditions in partnership with the University of Washington, based on recommendations of the 2018 Phase 1 study.</td>
</tr>
<tr>
<td>$900,000</td>
<td><em>Technical Studies</em> – update flood hazard mapping on six small streams where information is outdated and inaccurate. Stream systems are Newaukum (Green River), Little Soos (Green River), Jenkins (Green River), Covington (Green River), Seidel (Bear Creek), and Boise (White River).</td>
</tr>
<tr>
<td>$300,000</td>
<td><em>Technical Studies</em> - Placeholder funding to implement the recommendations of the Phase 1 Levee Breach Study.</td>
</tr>
<tr>
<td>$100,000</td>
<td><em>Flood Preparedness and Flood Warning</em> - Funding for the Office of Emergency Management to implement the next steps of the dam study education and outreach plan.</td>
</tr>
<tr>
<td>$1,550,000</td>
<td><strong>Grand Total</strong></td>
</tr>
</tbody>
</table>
The Cedar River flows from the Cascade Mountains to Lake Washington. The lower populated reach of the river covers 22 miles from Landsburg to the City of Renton. The dam operated by the City of Seattle, primarily for water supply and power generation, provides incidental flood protection.

**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-y CIP consistent with budget placeholder

**Summary of Risk:**
People and infrastructure in the Cedar River valley face risks of inundation by flood water as well as risks of gradual or rapid channel migration.

<table>
<thead>
<tr>
<th>Downstream of I-405 (Downtown Renton):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levees and floodwalls</td>
</tr>
<tr>
<td>2,890 people live in 500-year floodplain</td>
</tr>
<tr>
<td>$423M in taxable retail sales</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upstream of I-405 (Residential):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,060 people in 100-year floodplain</td>
</tr>
<tr>
<td>770 people in CMZ</td>
</tr>
<tr>
<td>370 homes isolated by road flooding</td>
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</tbody>
</table>

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<thead>
<tr>
<th>Regional Infrastructure:</th>
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</thead>
<tbody>
<tr>
<td>60 training levees and revetments</td>
</tr>
<tr>
<td>10 locations where river flows against highway (SR-169)</td>
</tr>
<tr>
<td>11 miles of local roads underwater in 100-year flood</td>
</tr>
</tbody>
</table>

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

The current 2017-2022 adopted King County Flood Control District CIP budget includes:
- $13.2M for Lower Cedar River Maintenance Dredging Project - 2016
- $5.4M for Cedar River Corridor Implementation (specific projects TBD)
- $9.5M for Strategic Acquisitions in support of planned Cedar River CIP projects
- $1.7M for Acquisitions of high risk and repetitive loss homes
- $27.7M for countywide corridor plan implementation, some of which could be allocated to Cedar River priorities (specific projects TBD)

**PROJECT** | **PROBLEM** | **APPROACH** | **COST ESTIMATES**
--- | --- | --- | ---
**Efforts Underway** (Fund Projects)

**A. Lower Cedar River Maintenance Dredging - 2016**
- Sediment accumulation near the river mouth reduces flood protection provided by levees and flood walls.
- Dredge sediment / mitigate impacts.
  - **TOTAL: $13.2M**

**B. Floodplains by Design Grant Acquisitions**
- First steps in implementing CIPs include feasibility analysis, preliminary design and right-of-way acquisition.
- Funding awarded to acquire key parcels in CIP target areas. Grant also provides pass through funding to WLKD for design efforts in Riverbend and preliminary design efforts for Herzman.
  - **Fbd: $2.2M**
  - **$1.03M Allocated below $1.17 Unallocated pending FCD staff discussions**
  - **TOTAL: $260K**

**C. State Route 169 Flood Reduction Feasibility Study**
- During large flood events, local drainage combined with high river stages, causes overtopping of State Route (SR) 169 near the intersection of Cedar Grove Road, forcing closure of SR 169. Numerous residences are also isolated during these conditions.
- Conduct feasibility study in coordination with WDOT to evaluate flood risk reduction opportunities, such as elevating SR 169, upgrading the local drainage infrastructure, and/or installation of back flow prevention gates.
  - **TOTAL: $110K – $440K**
  - **FCD 6-Yr: $440K**
  - **Note: funding allocation has not been made**

**D. Maplewood Neighborhood Improvements**
- Neatly 40 homes are located within the severe or moderate channel migration zone along the right bank. During 100-year flood, the river may overtop the bank and flood the neighborhood. The steep slope on the left bank is identified as a potential landslide hazard area.
- Conduct site specific landslide risk assessment study; conduct a feasibility study to evaluate opportunities to modify Erickson Levee.
  - **TOTAL: $360K**
  - **FCD 6-Yr: $5.4M**
  - **Note: funding allocation has not been made**
  - **FCD 7-Yr: $700K**

**Proposed Near Term Actions** *(Years 0 – 6)*
**6-Year CIP Placeholder: $15.9M**
**Total Project Cost: $21.8M - $28.8M**

**E. Lower Jones Road Neighborhood Improvements**
- Homes are at high risk from flooding and channel migration. Flooding over SE Jones Road cuts off access to neighborhood. Cedar River Trail Site 1 (CRT1) and Buck’s Curve Revetments are at risk of damage or failure.
- Raise in place or setback Jones Road; excavate and stabilize right bank to increase conveyance capacity; reinforce one revetment; remove portion of another revetment; acquire 8 at risk properties (additional partial acquisitions will be required if road is setback).
  - **Change the note: Requesting $36,000 in 2017.**
  - **TOTAL: $9.2M - $11.1M**
  - **FCD 6-Yr: $10.0M**
  - **Fbd 6-Yr: $360K**
  - **FCD 7-Yr: $700K**

**F. Herzman Levee Setback and Trail Stabilization**
- Herzman Levee directs flows towards the Cedar River Trail Site 2 Revetment (CRT2) that protects the highway (SR-169), trail and utility lines. Both Herzman and CRT2 have had numerous repairs.
- Setback levee; excavate side-channel to reduce pressure on CRT2 revetment; reconstruct, reinforce and/or extend CRT2 revetment; acquire up to 5 properties.
  - **TOTAL: $5.0M – $5.9M**
  - **FCD 6-Yr: $5.0M**
  - **Fbd 6-Yr: $330K**
  - **FCD 7-Yr: $560K**

**G. Jan Road Neighborhood Improvements**
- Neighborhood isolation due to road flooding. 17 homes are at risk from 100-year flooding and/or channel migration. Jan Road Levee directs flows towards Cedar River Trail Site 7 Revetment (CRT7) that protects highway (SR-169), trail and utility lines.
- Suit of solutions include: raise road; remove part of Jan Road levee; construct side channel to reduce pressure on CRT7 revetment; acquire easements; and mitigate remaining at-risk properties through acquisition (B) and home elevation (E). (NOTE: Acquisition and elevations funded in Residential Flood Mitigation Project.)
  - **TOTAL: $1.6M – $5.4M**
  - **FCD 6-Yr: $900K**
  - **Fbd 6-Yr: $380K**
  - **FCD 7-Yr: $4.1M**

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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 Fbd 6-Yr is a secured state funding source.

3 Budget allocation approved in 2017 6-y CIP.

4 Requested to add priority projects which exceed existing placeholder funding.

**Indicates a project with a nexus to a WRIA 8 habitat restoration opportunity area.**

5-15-17
H. 1. Lower Cedar River Flood Risk Reduction Feasibility Study

Extreme flood events such as 200 year and 500 year floods would inundate much of downtown Renton, including Boeing plant and Renton Municipal Airport.

Conduct feasibility study: to 1) quantify economic damage potential; 2) determine infrastructure modifications to improve flood resiliency and sediment storage potential; and 3) conduct cost benefit analysis.

Total: $500K
FCU 6-Yr: $500K

H. 2. City of Renton Levee Certification Improvements

Sections of the Cedar 205 floodwall and levees do not meet levee certification requirements under the National Flood Insurance Program; land behind these levees and floodwalls will be shown as mapped flood hazard areas without certification and accreditation.

Construct levee and floodwall improvements as recommended by Cedar 205 levee re-certification report

Total: $5M
FCU 6-Yr: $5M

I. Cedar River Trail Site A Bank Stabilization

Bank erosion on the left bank opposite Riviera Apartments threatens trail stability; could trigger a landside and increase right bank flood risk.

Repair eroded section of left bank with bioengineered revetment to stabilize toe of bank and to prevent large scale bank failure.

Total: $540K – $890K
FCU 6-Yr: $890K

Proposed Medium Term Actions

<table>
<thead>
<tr>
<th>Project</th>
<th>Total Project Cost:</th>
</tr>
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<tbody>
<tr>
<td>J. Strategic Acquisitions to Support Future Projects</td>
<td>$11.8M – $22.0M</td>
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</table>

In order to secure project rights-of-way, acquire up to 14 of the 28 “core” properties, 22 of which have homes on them, from willing sellers as needed to construct future CIPs. Additional property needs may be identified in project feasibility and design.

Total: $1.8M - $5.2M
Existing FDs grant may offset acquisition costs for future projects.

K. Residential Flood Mitigation

Risk analysis has identified 53 homes as high risk from flooding and channel migration, but which are not mitigated by projects.

Improve or acquire flood risk and repetitive loss properties from willing sellers. Elevate or purchase approximately 2 homes each year.

Total: $800K /year ($3.2M over four years)
Existing FDs grant may offset acquisition costs.

L. Byers Road Neighborhood Improvements – Feasibility Study (Phase I)

Neighborhood is entirely in the floodplain and is inundated during a 20-year flood. Sole access road floods at least two times annually, requiring emergency evacuation for residents.

Construct emergency egress and conduct a feasibility study of possible actions to mitigate residual risk, including elevating Cedar Grove Road, elevating other roads in the neighborhood, and modifying Byers Curve Levee. Acquire up to 11 high risk properties (NOTE: Core acquisitions initiated in Strategic Acquisition)

Total: $780K

M. Byers Road Neighborhood Improvements – Implementation (Phase II)

Neighborhood is entirely in the floodplain and is inundated during a 20-year flood. Sole access road floods at low to moderate flood events, requiring emergency evacuation for residents.

Implement recommendations from Byers Road feasibility study.

Total: TBD

N. Rhode and Getchman Neighborhood Improvements

Left bank levee overtops during 20-year flood, causing flooding of homes and roads and isolating residents. Flooding of homes and Maxwell Road on the right bank. Many homes located within the severe channel migration area.

Solutions include: Acquire 8 at risk properties; remove levees and construct side-channels to increase conveyance and reduce pressure on downstream facilities; raise Maxwell Road. Completes work underway since 2000. (NOTE: Core acquisitions initiated in Strategic Acquisitions)

Total: $1.9M - $6.6M

O. Rafter’s Park – Doris Creek Neighborhood Improvements

Natural channel changes in two existing side-channels puts more than two dozen homes at high risk from fast deep flows and/or isolation resulting from channel avulsion.

Construct instream woody structures in Doris Creek side channel to prevent avulsion; excavate side-channel to increase conveyance and reduce pressure on downstream facilities; acquire 6 high risk properties. (NOTE: Core acquisitions initiated in Strategic Acquisitions)

Total: $2.3M

P. Dorre Don Neighborhood Improvements

Entire neighborhood of more than two dozen homes is vulnerable to flooding, isolation due to road inundation and erosion. In 1990, Dorre Don Upper Levee breached and flooded residents.

Conduct feasibility study to evaluate opportunities to modify right bank levee and revetment system and/or raise Dorre Don Road to reduce the frequency and severity of flooding.

Total: $350K

Q. Elliott Bridge Road Neighborhood Improvements

11 homes are vulnerable to flooding during 100-year event. An additional 8 homes on the right bank are cut-off by road inundation. Floodplain is encroached on by abandoned bridge approach road and obsolete levees.

Acquire 5 high risk properties in the severe channel migration zone. Raise SE Jones Place to eliminate isolation risks. Reinforce existing right bank revetment. Complete a feasibility study to evaluate residual flood risks and bank erosion in Ron Regis Park. (NOTE: Core acquisitions initiated in Strategic Acquisitions)

Total: $1.15M

Proposed Long Term Actions (Beyond 10 Years)

<table>
<thead>
<tr>
<th>Project</th>
<th>Total Project Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. Arcadia Reach Neighborhood Improvements – Landslide Study (Phase I)</td>
<td>$21.8M - $35.4M</td>
</tr>
</tbody>
</table>

Four homes are vulnerable to flooding in 20-year flood event and 18 homes are within severe channel migration area. Landslide potential may increase the risk to these homes.

Conduct site specific landslide risk assessment study

Total: $140K

S. Arcadia Reach Neighborhood Improvements – Acquisitions (Phase II)

Four homes are vulnerable to flooding in 20-year flood event and 18 homes are within severe channel migration area. Landslide potential may increase the risk to these homes.

Acquire up to 5 high risk homes from willing sellers.

Total: $3.2M

T. Lower Cedar River Maintenance Dredging - Future

Sediment accumulation near the river mouth reduces flood protection provided by levees and flood walls. Annually monitor bed levels; dredge sediment from river before bed reaches critical elevation. Estimate that action will be needed in 15 years.

Total: $135K

U. Orchard Grove Neighborhood Improvements

Road isolation, flooding, and channel migration pose risks to more than 27 homes in this dense residential neighborhood on the right bank.

Solutions include: Raise low-lying section of road; construct side channel to convey flows away from right bank residential area; acquire up to 11 high risk homes from willing sellers.

Total: $3.9M - $10.4M

V. SE Bain Road Neighborhood Improvements

Flooding overtops revetments, surrounding homes and inundating SE Bain Road on the left bank. Many of the homes along the road are also in the severe channel migration zone. Five homes on the right bank are located within the severe channel migration zone.

Potential for landslides in Royal Arch Reach could increase flood and channel migration risks.

Total: $1.35M - $6.6M

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 FDs 6-Yr is a secured state funding source.

3 Budget allocation approved in 2017 6-year CIP.

4 Requested to add priority projects which exceed existing placeholder funding.
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 6yr 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)

---

### Efforts Underway (Fund Projects-2017 CIP)

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PROBLEM</th>
<th>APPROACHES</th>
<th>COST ESTIMATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960 Flood Risk Reduction Project</td>
<td>Mcdonough levee upstream of USV may overtop and combine with Clough Creek and flood I-90.</td>
<td>Project priority changed – see Proposed Long Term Action K.</td>
<td>Total: $150K</td>
</tr>
<tr>
<td>A. Residential Flood Mitigation</td>
<td>Shilshole Park / berry Lakes</td>
<td>Elevate 12 homes.</td>
<td>Total: $1.8M</td>
</tr>
<tr>
<td></td>
<td>Clough Creek</td>
<td>Elevate 6 homes.</td>
<td>FCD 6YR $1.62M Homeowner Match: $180K</td>
</tr>
</tbody>
</table>

### Proposed Near Term Actions (Years 0 – 6)

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PROBLEM</th>
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</thead>
<tbody>
<tr>
<td>B. Circle River Ranch Risk Reduction</td>
<td>Homes and infrastructure are at risk from erosion and flooding as the river migrates into a new side channel closer to development.</td>
<td>Potential solutions include: Gravel removal / in-stream engineered structures / bank stabilization / property acquisitions.</td>
<td>Total: $4.3M FCD 6YR: $4.3M</td>
</tr>
<tr>
<td>C. US Army Corps of Engineers Public Law 84-99</td>
<td>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</td>
<td>Potential solutions include: Manage vegetation, inspect, and identify all deficiencies / new projects in the corridor to meet standards / create System wide Improvement Framework.</td>
<td>Total: $150K to $1M FCD 6YR $150K to $1M</td>
</tr>
<tr>
<td>D. Levee Remediation</td>
<td>Six levee deficiencies have been identified in this levee segment.</td>
<td>Design and reconstruct the impaired segment of levee in place.</td>
<td>Total: $1.9M FCD 6YR: $1.9M</td>
</tr>
<tr>
<td>E. Ribary Creek Improvements</td>
<td>Ribary Creek levees and culverts overtop SR 202 (Bendigo Boulevard), flooding the retail center nearby annually.</td>
<td>Design, permit and construct. Potential solutions may include: Culvert replacement / gravel removal / levee setbacks.</td>
<td>Total: $6.1M to $8.3M FCD 6YR: $6.1M to $8.3M</td>
</tr>
<tr>
<td>F. Reif Road Levee Improvements (Phase 1)</td>
<td>Reif Road levee overtops at a 20-year or greater flood resulting in widespread inundation.</td>
<td>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.</td>
<td>Total: $6.2M to $11.2M FCD 6YR: $1.1M to $1.2M (Phase 1) FCD 7-10: $5.1M to $10.2M</td>
</tr>
</tbody>
</table>

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
<table>
<thead>
<tr>
<th>PROJECT</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Ref Road Levee Improvements (Phase 1)</td>
<td>Ref Road Levee overtops at a 20-year or greater flood resulting in widespread inundation.</td>
<td>Construct Ref Road Levee Improvements Project. Potential solutions include: repair and/or raise levee in place / setback levee / gravel removal / home elevations.</td>
<td>Total: $5.1M to $10.2M (Phase 2)</td>
</tr>
<tr>
<td>Nintendo Levee Setback</td>
<td>The Bendigo Upper Left levee, (Nintendo Levee) overtops at a 20-year or greater flood, inundating undeveloped property, railway lines and roadways.</td>
<td>Leverage partnerships to construct a setback levee maximizing local floodwater storage benefits.</td>
<td>Total: $14M²</td>
</tr>
<tr>
<td>Si View Levee Improvements</td>
<td>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.</td>
<td>Increase flood level of protection to 500-year by raising levees in place or gravel management.</td>
<td>Total $7M-$23M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposed Long Term Actions (Beyond 10 Years)</th>
<th></th>
<th></th>
<th>(Unfunded Projects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bendigo Bridge Replacement</td>
<td>The 150-foot span of Bendigo Bridge creates a hydraulic backwater that contributes to flooding.</td>
<td>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.</td>
<td>Total: $14.8M³</td>
</tr>
<tr>
<td>I-90 Flood Risk Reduction Project</td>
<td>McConkey levee upstream of I-90 may overtop and combine with Clough Creek and flood I-90.</td>
<td>Setback levee / gravel removal</td>
<td>Total: $10M to $23M³</td>
</tr>
<tr>
<td>Prairie Acres Right Levee</td>
<td>At the 500-year flood the City of North Bend Waste Water Treatment Plant and 32 structures are inundated.</td>
<td>Setback levee / levee repair / raise levee in place</td>
<td>Total: $1.4M-$2.4M</td>
</tr>
<tr>
<td>Bendigo Upper Right Levee</td>
<td>At the 500-year flood 18 structures and local Streets are inundated.</td>
<td>Setback levee / levee repair / raise levee in place</td>
<td>Total: $3.3M-$3.5M</td>
</tr>
<tr>
<td>Bendigo Lower Right Levee</td>
<td>The levee overtops during a 100-year or greater flood, inundating 129 structures and local Streets.</td>
<td>Setback levee / levee repair / raise levee in place</td>
<td>Total: $2.2M-$6.4M</td>
</tr>
<tr>
<td>Bendigo Lower Left Levee</td>
<td>The levee overtops during a 50-year or greater flood, inundating five structures, NW 8th Street and a forested area.</td>
<td>Levee removal / setback levee / levee repairs.</td>
<td>Total: $3.2M-$7M</td>
</tr>
<tr>
<td>Prairie Acres Left Levee</td>
<td>The levee overtops at a 20-year or greater flood, inundating forested and undeveloped agricultural land.</td>
<td>Levee removal / setback levee / levee repairs.</td>
<td>Total: $500K-$1.5M</td>
</tr>
</tbody>
</table>

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
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)

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PROBLEM</th>
<th>APPROACH</th>
<th>COST ESTIMATES 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Tolt River Levee Repairs</td>
<td>Erosion damage to Lower Frew, Upper Frew, Remlinger, and Girl Scout levees.</td>
<td>Monitor sites and construct repairs if erosion threatens levee integrity.</td>
<td>Total: $1.0M FCD 6YR: $1.0M</td>
</tr>
<tr>
<td>B. Snoqualmie Bridge to SR203 Bridge Acquisition Projects</td>
<td>Levees overlap or breach, inundating or damaging homes, roads (including SR203) and land proposed for development.</td>
<td>Acquire two at-risk homes and vacant acreage to reduce risk and allow for future levee setbacks on both river banks.</td>
<td>Total: $2.3M FCD 6YR: $2.3M</td>
</tr>
<tr>
<td>C. San Souci Reach Improvements and Road Elevation (Phase 1; Phase 2 for construction is J.)</td>
<td>Reach threatened by erosion, avulsion, flooding and landslides; Tolt River Rd NE overtops during minor flooding isolating 40 homes.</td>
<td>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.</td>
<td>Total: $4.4M FCD 6YR: $2.6M Partner: $580K²</td>
</tr>
<tr>
<td>D. Tolt Natural Area Property Acquisitions</td>
<td>Multiple properties at risk from flooding, erosion, avulsion, and potential levee breach.</td>
<td>Acquire three at-risk homes from willing sellers; acquire two more with partner funds and/or FCD out years. (Budget Note: Requesting to reallocate $800K to 2017 from out years to demolish a recently acquired home and buy 1 home on the market)</td>
<td>Total: $4.9M FCD 6YR: $3.4M Partner: $1.5M² FCD Yr 7-10: $3.3M</td>
</tr>
<tr>
<td>E. Holberg Levee Improvements Feasibility Study</td>
<td>Portions of the levee are vulnerable to failure by lateral erosion.</td>
<td>Conduct a feasibility study to evaluate improvement alternatives to the Holberg facility. (Budget Note: Requesting $200,000 in 2017)</td>
<td>Total: $1.02 - $2.00 FCD 6YR: $200K²</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
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<th>COST ESTIMATES 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. Tolt River Levee Level of Service Analysis</td>
<td>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.</td>
<td>Conduct a detailed hydraulic analysis to optimize the elevation of new levees to maximize flood risk reduction benefits. (Budget Note: Requesting $150,000 in 2017 to begin analysis)</td>
<td>Total: $620 - 700K FCD 6YR: $700K</td>
</tr>
<tr>
<td>G. Lower Frew Levee Setback Design (Phase 1; Phase 2 for construction is N.)</td>
<td>Levee overtops between 2- and 5-year flows, flooding and potentially damaging SR203 and properties in City of Carnation. Levee impacts habitat.</td>
<td>Design, based on level of service analysis, the highest priority levee setback for flood risk reduction. FCD 6-years includes funds needed for grant for future grant applications. (Budget Note: Requesting $175,000 in 2017 to support preliminary design)</td>
<td>Total: $2.6M FCD 6YR: $3M Partner: $645K²</td>
</tr>
<tr>
<td>H. Sediment Management in Leved Reach Feasibility Study</td>
<td>Sediment accumulation increases levee overtopping and potential failure. Sediment redirects flow into levees causing erosion.</td>
<td>Conduct sediment management feasibility study and develop a plan. Update and include upper watershed sediment production estimates.</td>
<td>Total: $380 - 400K FCD 6YR: $400K</td>
</tr>
<tr>
<td>I. SR 203 bridge Improvements Feasibility Study</td>
<td>SR 203 approach (fill) blocks flood flows. Highway overtops north of SR203 bridge and is subject to erosion and damage.</td>
<td>Initiate study (with potential future design and construct) to add bridge span(s), raise the highway and relocate King County Parks parking area.</td>
<td>Total: $370 - 390K FCD 6YR: $390K</td>
</tr>
</tbody>
</table>

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

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

July 17, 2017
### Proposed Medium Term Actions (Years 7-10)

**Total Project Cost: $83.2 – 88.5M**

<table>
<thead>
<tr>
<th>Action</th>
<th>Total Cost:</th>
<th>Unfunded Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Lower Frew Levee Setback Construction (Phase 2)</td>
<td>$14.5 – 16.7M</td>
<td>$2.8 – 3.5M</td>
</tr>
<tr>
<td>O. Acquisitions in Leveled Reach</td>
<td>$700K</td>
<td>$100K</td>
</tr>
<tr>
<td>P. NE Tolt Hill Road Elevation and Levee Setback Feasibility Study</td>
<td>$700K – 1M</td>
<td>$100K</td>
</tr>
<tr>
<td>Q. Upper Frew Levee Setback Design and Construction (Phase 2)</td>
<td>$18.3 – 19.3M</td>
<td>$200K</td>
</tr>
<tr>
<td>R. Levee Setbacks</td>
<td>$46.9 – 48M</td>
<td>$200K</td>
</tr>
</tbody>
</table>

### Proposed Long Term Actions (Beyond 10 years)

**Total Project Cost: $26.7 – 28.8M**

<table>
<thead>
<tr>
<th>Action</th>
<th>Total Cost:</th>
<th>Unfunded Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Levee Setbacks or Improvements</td>
<td>$26.2 – 28M</td>
<td>$100K</td>
</tr>
<tr>
<td>T. Private Revetment Removal or Improvements</td>
<td>$522 – 800K</td>
<td>$100K</td>
</tr>
</tbody>
</table>

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

July 17, 2017
Proposed No. FCDECM2018-03.1

1 A MOTION approving a framework of goals, objectives
   and conceptual approaches for preparation of a capital
   investment strategy for the Middle Fork Snoqualmie River.

WHEREAS, the scope of the proposed Middle Fork Snoqualmie River Corridor
Plan ("the Corridor Plan") is the lower five miles of the Middle Fork Snoqualmie River
("the Study Area"), where communities are most impacted by flooding and channel
migration and where King County maintains a discontinuous system of flood protection
levees and revetments, and

WHEREAS, the Corridor Plan will recommend a prioritized and sequenced suite
of actions for the river and its floodplain, channel migration zone, and riparian areas ("the
Capital Investment Strategy"), and

WHEREAS the Study Area is subject to flood hazards including local bank
erosion as well as channel migration and potential avulsion, and

WHEREAS, there is over $40 million of residential development within the Study
Area, and

WHEREAS, there are 14 King County flood facilities within the Study Area
including 11 bank protection revetments and three training levees, and

WHEREAS, the levees in the Study Area overtop at approximately a 30-year
flood event, and
WHEREAS, approximately 300 structures in the Study Area are at risk of inundation at a 100-year flood event, and

WHEREAS, approximately 20 structures in the Study Area are located in the severe channel migration zone;

NOW, THEREFORE, BE IT MOVED BY THE EXECUTIVE COMMITTEE OF THE KING COUNTY FLOOD CONTROL ZONE DISTRICT:

A. The executive committee adopts the "Middle Fork Snoqualmie River Corridor
FCDEC Motion 2018-03

Plan Capital Investment Strategy Floodplain Management Goals and Objectives," which is Attachment A to this motion.

FCDEC Motion 2018-03 was introduced on and passed by the King County Flood Control District Executive Committee on 7/16/2018, by the following vote:

Yes: 4 - Mr. von Reichbauer, Ms. Lambert, Mr. Dunn and Mr. Upthegrove
No: 0
Excused: 0

KING COUNTY FLOOD CONTROL ZONE
DISTRICT
KING COUNTY, WASHINGTON

Reagan Dunn, Chair

ATTEST:
Melani Pedroza, Clerk of the Board

Attachments: A. Middle Fork Snoqualmie River Corridor Plan Capital Investment Strategy Floodplain Management Goals and Objectives
Overview

The scope of the Middle Fork Snoqualmie River Corridor Plan is focused on the lower five miles of the Middle Fork Snoqualmie River. This is a residential area where communities are most impacted by flooding and channel migration, and where King County maintains a discontinuous system of flood protection levees and revetments. Upstream of this five-mile river segment, the floodplain is predominantly undeveloped forest lands.

The result of this planning effort will be the Middle Fork Snoqualmie River Capital Investment Strategy (the Middle Fork CIS). The Middle Fork CIS will recommend a prioritized and sequenced suite of actions for the river and its floodplain, channel migration zone, and riparian areas to achieve the goals and objectives outlined below. The Plan is being conducted under the auspices of the King County Flood Control District, in partnership and collaboration with the Cities of North Bend and Snoqualmie, local residents and other stakeholders, tribes, and others affected by floodplain management actions. The Plan will have a significant emphasis on reducing risks to public safety and public and private infrastructure associated with flooding and river processes.

A characterization of existing conditions is underway to evaluate flooding and channel migration conditions along this corridor. This characterization is based on extensive data collection, computer modeling, technical analysis, and consultation with local residents and interested stakeholders. Together this information describes existing and potential future conditions and provides a basis for recommending a prioritized and sequenced capital investment strategy.

Goals and Objectives

The following goals and objectives are intended to provide clarity about desired outcomes for the Capital Investment Strategy (CIS) and its recommendations. The goals are consistent with adopted County floodplain management goals from the 2006 Flood Hazard Management Plan. The objectives provide targets for the Middle Fork CIS, against which approaches and potential actions at specific sites can be evaluated. The final CIS may not be able to fully meet every objective, but it should include an evaluation of tradeoffs among the various objectives in order to recommend a corridor-scale floodplain management approach that meets them to the maximum extent possible.
Goal 1: Reduce risks from flood and channel migration hazards

Objectives:

- Mitigate risks associated with inundation and deep and fast flow hazards in consideration of future sediment aggradation and uncertainties due to climate change.
- Mitigate risks from channel migration and avulsion hazards predicted within the next 50 years in areas with homes and infrastructure.

Rationale

Increasing public safety by reducing flood risks should be the primary consideration when comparing alternative approaches. Middle Fork Snoqualmie River flood protection facilities do not provide complete or consistent flood containment. Risk reduction should consider both flood inundation and the river’s high potential to shift courses or rapidly meander across its floodplain, creating hazards related to channel migration, potential avulsions, areas of deep and fast flows, and isolation due to inundated roadways. Risk reduction measures in these areas should address this full range of hazards. A minimum 50-year time frame should be used for considering and reducing risks associated with gravel accumulation, channel migration, and avulsion hazards and accounting for uncertainties due to climate change and other factors.

Goal 2: Reduce long-term repetitive costs of flood hazard management

Objectives:

- Implement sustainable cost-effective floodplain management solutions.
- Reduce long-term costs of floodplain management.

Rationale

Floodplain management solutions should be evaluated for both their short- and long-term cost effectiveness to reduce life-cycle floodplain management costs over time. Costs should be compared among alternative approaches and this comparison should evaluate costs and benefits over the complete life cycle of implementation and maintenance.

Goal 3: Integrate sound and sustainable flood hazard management projects/practices that benefit the natural environment to the degree practicable.

Objectives:

- Protect and improve floodplain habitats and off-channel connectivity, when appropriate.
- Protect and improve instream aquatic habitat quality and quantity.
- Protect and improve riparian habitat quality and quantity.

Rationale

Protecting and restoring the natural environment of the Middle Fork Snoqualmie River corridor is a high priority among various stakeholders and tribes, and achieves several adopted King County Comprehensive Plan goals. Floodplain management and habitat protection and restoration needs often comprise the same geographic footprints, and can often be achieved through complementary actions. Habitat conditions along portions of the Middle Fork Snoqualmie River corridor is significantly degraded, in large part due to the levees, roads, and development disconnecting the river from its floodplain and riparian areas. In some locations, modifications to potentially obsolete flood protection facilities may provide significant aquatic and riparian habitat improvements and reduce flood hazards.

Goal 4: Incorporate stakeholder and community input into the Corridor Planning process in an equitably and socially just manner.

Objectives:
- Incorporate stakeholder input into the Corridor Plan through community and stakeholder engagement from those affected by floodplain management actions.
- Strive to provide equitable flood risk reduction outcomes throughout the river corridor to the degree practicable.

Rationale

The Middle Fork Snoqualmie River flows through and near communities with a range of interests and demographic characteristics. In addition, many organizations and individuals are affected by floodplain management decisions for the river, including the Cities of North Bend and Snoqualmie, the Tulalip Tribes, the Snoqualmie Tribe, community organizations, local and regional non-governmental organizations, King County, and state and federal agencies. Engagement will be built through neighborhood and public meetings, technical stakeholder workshops, as well as through many discussions with individuals and organizations. Meaningful engagement can lead to a Plan that better achieves equitable outcomes and seeks to improve the quality of life for those living along the River.
Cedar/Sammamish 2019 Work Program

Active Projects

– Lower Cedar Flood Risk Reduction Solutions
– Cedar River Trail Site A: Bank Stabilization
– Maplewood Neighborhood Landslide Flood Study
– Herzman Levee Setback Project
– SR 169 Flood Reduction Feasibility Study
– Jan Road Neighborhood Improvements
– Willowmoor Floodplain Restoration
– Other FCD Partnerships

Upcoming Future Work

– Lower Jones Road Neighborhood Improvements
– Medium and Long Term CIS Projects
CIS Overview – Project Location Map
CIS Overview – Project Location Map

Lower Cedar River
CIS Overview – Project Location Map

Upper Cedar River

- Byers Road Neighborhood Improvements (Phase I)
- Byers Road Neighborhood Improvements - Implementation (Phase II)
- Jan Road Neighborhood Improvements
- Rhode and Getchman Neighborhood Improvements
- SE Bain Road Neighborhood Improvements
- Rafter's Park-Doris Creek Neighborhood Improvements
- Dorre Don Neighborhood Improvements
- Orchard Grove Neighborhood Improvements
- Arcadia Reach Neighborhood Improvements - Landslide Study (Phase I)
- Arcadia Reach Neighborhood Improvements - Acquisitions (Phase II)

Corridor-wide Projects
- Floodplains by Design Grant Acquisitions
- Strategic Acquisitions to Support Future Projects
- Residential Flood Hazard Mitigation

Legend
- Effort underway
- Near term action
- Medium term action
- Long term action
- River mile
- Project area
- Cedar River
- 100-year floodplain
Lower Cedar – Flood Risk Reduction Solutions

- Lower Cedar River Maintenance Dredging Project (2016)
- Lower Cedar River Flood Risk Reduction Feasibility Study
- Renton Levee Certification Improvements
Cedar River Trail Site A: Bank Stabilization

Cedar River Trail

Flow

October 2019
Cedar River Trail Site A: Bank Stabilization

- Rebuild Bank with Bioengineered Revetment
- Haddad Revetment
- Royal Hills Landslide Complex
- State Route 169
- Riviera Apartments
- Cedar River
- Eastern Avenue
- RM 2.4
- RM 2.5

Legend:
- Occupied structure
- Previously acquired structure
- Existing levee or revetment
- Cedar River Trail
- Severe Channel Migration Hazard Area
- Moderate Channel Migration Hazard Area
- Cedar River
- 100-year floodplain
- Habitat Opportunity Area
Maplewood Neighborhood Landslide Flood Study
Herzman Levee Setback Project
Jan Road Neighborhood Improvements

January 2009
Jan Road Neighborhood Improvements
Willowmoor Floodplain Restoration
Other District-Funded Projects

• Lower Coal Creek Phase I
• May Valley Drainage Improvements
• Allen Lake Outlet Improvements
• Issaquah Tributary Feasibility Analysis
• Issaquah-May Valley Improvements
• Madsen Creek Culvert Replacement
Upcoming Future Work
Lower Jones Road Neighborhood Improvements
Useful Links/References

- **Access Link Below for:**
  - Capital Investment Strategy (CIS)
  - Project Location Map
  - Project Summary Sheets
  - Implementation Schedule
  - Habitat Enhancement Opportunities
  - Tech Memo

Questions?

Chris Brummer, Supervising Engineer
(206) 477-4655
Chris.Brummer@kingcounty.gov
www.kingcounty.gov/rivers
Snoqualmie Basin
2019 Work Program

Joint Basin Technical Committee

Chase Barton, Supervising Engineer

June 10, 2019

Department of Natural Resources and Parks
Water and Land Resources Division
River and Floodplain Management Section

Service provider to the King County Flood Control District
Snoqualmie Basin 2019 Work Program

Upper Basin:
- Middle Fork Capital Investment Strategy
- Shake Mill Left Bank
- Circle River Ranch
- USACE PL 84-99
- Reinig Road
- Record Office

Lower Basin:
- Tolt River Feasibility Studies
  - Levee Level of Service
  - SR 203 Bridge Improvements
  - Sediment Management
  - Holberg Levee Improvements/Repairs
Middle Fork Snoqualmie River Capital Investment Strategy

Downstream of Mason Thorson Ells Levee, January 2009
Middle Fork Snoqualmie River Flood Hazards

Middle Fork Snoqualmie River downstream of the Mount Si Bridge, 1959
Shake Mill Left Bank Levee
Shake Mill Left Bank Levee

1986 Flood

2015 Flood
Circle River Ranch Flood Risk Reduction

Project Vicinity Map
Circle River Ranch
Flood Risk Reduction

2009 Flood

2018 Aerial Photo
US Army Corps of Engineers PL 84-99

Levee overtopping in North Bend, January 2009
Reinig Road Revetment Repair

Project Location Map
Record Office Revetment Repair

Project Location

Aerial Photo of the Revetment
Tolt River Level of Service Feasibility Study

Tolt River Levee System
Tolt River Sediment Management Feasibility Study

Tolt River Looking Upstream From Trail Bridge
Holberg Levee Improvements/Repairs
Questions?

Chase Barton, Supervising Engineer
206-477-4854
Chase.barton@kingcounty.gov
www.kingcounty.gov/rivers