

Green River SWIF, Capital Project Status and Needs

**Joint BTC Meeting
May 8, 2014**



Green - Duwamish River Facilities (RM 5.5-44)



What is a System Wide Improvement Framework (SWIF)?

USACE SWIF policy (November 2011):

“A plan prepared by levee sponsors and approved by USACE to implement system-wide improvements to multiple levee systems w/in a watershed to address system-wide issues, including correction of unacceptable inspection items to optimize flood reduction.”

“...facilitates the development of solutions to issues that cannot be accomplished through routine corrective actions...solutions will satisfy multiple requirements that apply to levee systems (ESA, CWA, Tribal Treaty Rights) while allowing levee sponsors to remain eligible for PL84-99 funding while addressing deficiencies.”

Lower Green River: Context



Socio-Economic

- \$7.3 billion in floodplain including:
 - 100,000 jobs
 - 100 million square feet warehouse and distribution space (2nd largest on West Coast)
 - Comprises 1/8th of the GDP for WA State
 - Annual taxable revenue of \$8 billion

Lower Green River: Context



Salmon Populations & Habitat

- All species of salmon present, including federal ESA-listed Chinook salmon
- Limited spawning in Lower Green (above RM 24)
- Lethal water temperatures ($> 23^{\circ}\text{C}$) have occurred in Green River mainstem (July 2006); TMDL water quality standard is 16°C
- Tribal fishing rights

Green River Flood Facilities Overview

Levees and Revetments

Location	Levees (#/miles)	Revetments (#/miles)	Total Miles
Duwamish (RM 5.5-11)	3 (0.6 miles)	22 (3.3 miles)	3.9
Lower Green (RM 11-32)	41 (17.7 miles)	45 (9.8 miles)	27.5
Middle Green (RM 32-44)	12 (1.9 miles)	13 (2.9 miles)	4.8
Total	56 (20.2 miles)	80 (16.0 miles)	36.2 miles
PL 84-99 levees (RM 12.4-30.8)	12 (16 miles)		

- Aging system of levees – built to protect agricultural land uses, not regionally significant urban areas
- Slope stability and toe scour issues
- Other deficiencies – vegetation, encroachments, animal burrows, etc.

What is the Green River SWIF?



Technical planning, analyses and participatory process to achieve:

1. Desired level of protection from flooding
2. Reach agreement on a prioritized list of capital projects to provide flood protection while improving habitat, and other goals (e.g., recreation, agriculture)
3. Vegetation management plans to address ESA, CWA, and PL 84-99 stds
4. Achieve integrated river and floodplain management objectives

Green SWIF – Advisory Structure

Flood Control District decisions and SWIF products informed by:

- Advisory Council
- Technical Advisory Committee
- Citizen input solicited at public meetings

King County Flood Control District Board (Executive Committee)

- Policy Making
- Decision Making
- Final SWIF Adoption

SWIF Advisory Council

- Provide policy input to FCD
- Project briefing and check-in
- Leaders representing diverse range of interest and perspectives

SWIF Technical Advisory Committee

- Provide technical review of work products
- Provide policy input and recommendations to SWIF Advisory Council
- Represent diverse range of interests and perspectives

Green SWIF: Who is Involved?

- King County Flood Control District, lead agency
- King County
- Green River Cities
- Muckleshoot Tribe
- USACE, FEMA, NOAA
- WRIA 9
- PSP, Ecology, WDFW
- Business community
- Environmental organizations
- Citizens



Green SWIF Vision and Goals



Vision:

Improve flood protection, for current and future generations, in a way that builds economic, ecological and community resiliency

Goals:

- Integrated River and Floodplain Management
- Flood Protection
- Vegetation Management
- Ecological Resiliency
- Economic Resiliency
- Community Resiliency

Current Conditions Report: Hydraulic Assessment (Inundation)

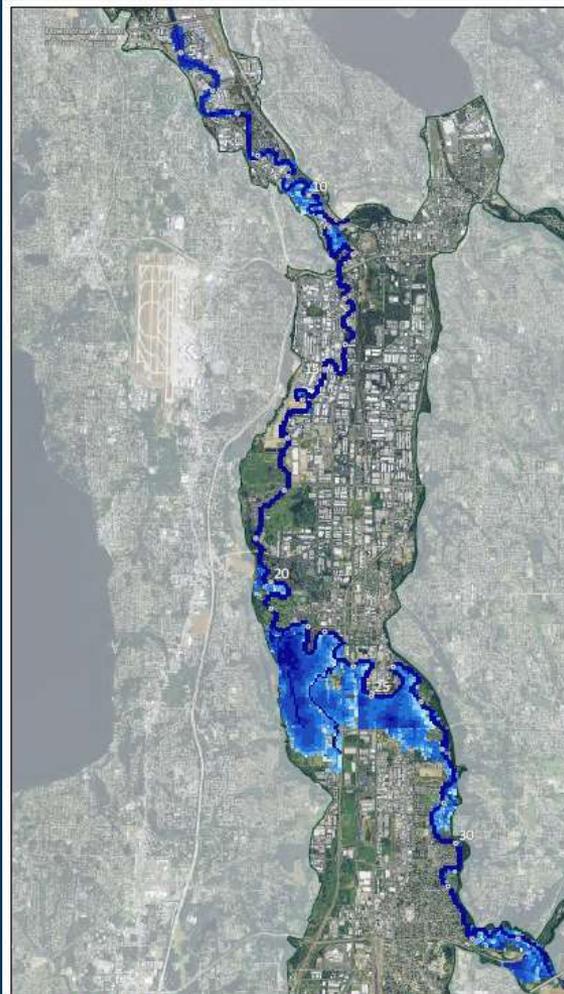


Figure 3.24 (DRAFT)
Levee Overtopping
no Breach
 12,600 cfs
 200-year, Median Flood
 Green River SWIF

Flood Depth (feet)		
0.01 - 0.1	2 - 4	River
0.1 - 0.5	4 - 6	Valley Wall
0.5 - 1	6 - 10	Breach Location
1 - 2	>10	River Miles

Data Sources: King Co.

12,600 cfs

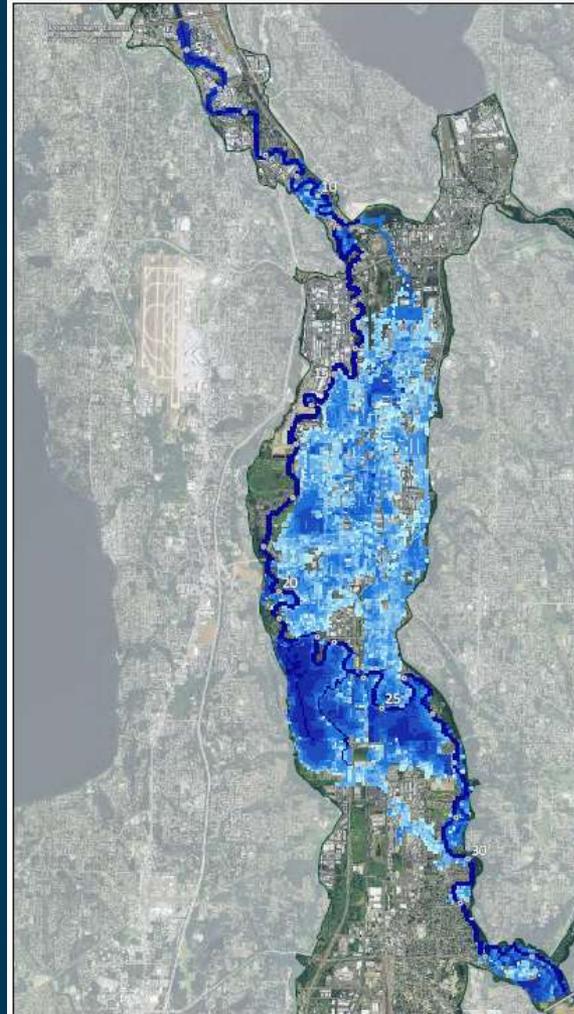


Figure 3.25 (DRAFT)
Levee Overtopping
with Breach Scenario
 15,100 cfs
 100-year, 5% C.L. Flood
 Green River SWIF

Flood Depth (feet)		
0.01 - 0.1	2 - 4	River
0.1 - 0.5	4 - 6	Valley Wall
0.5 - 1	6 - 10	Breach Location
1 - 2	>10	River Miles

Data Sources: King Co.

15,100 cfs

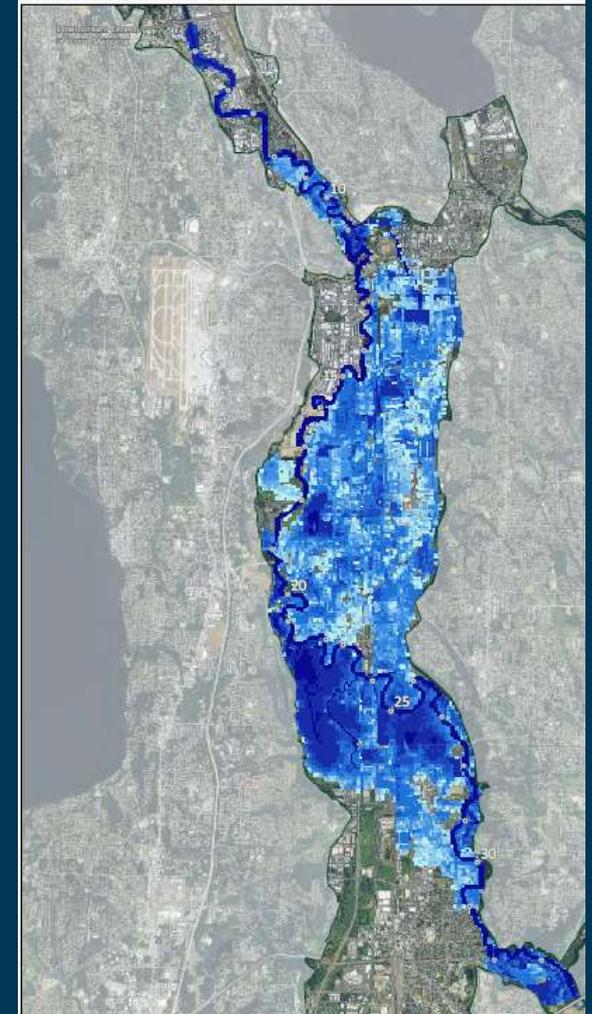


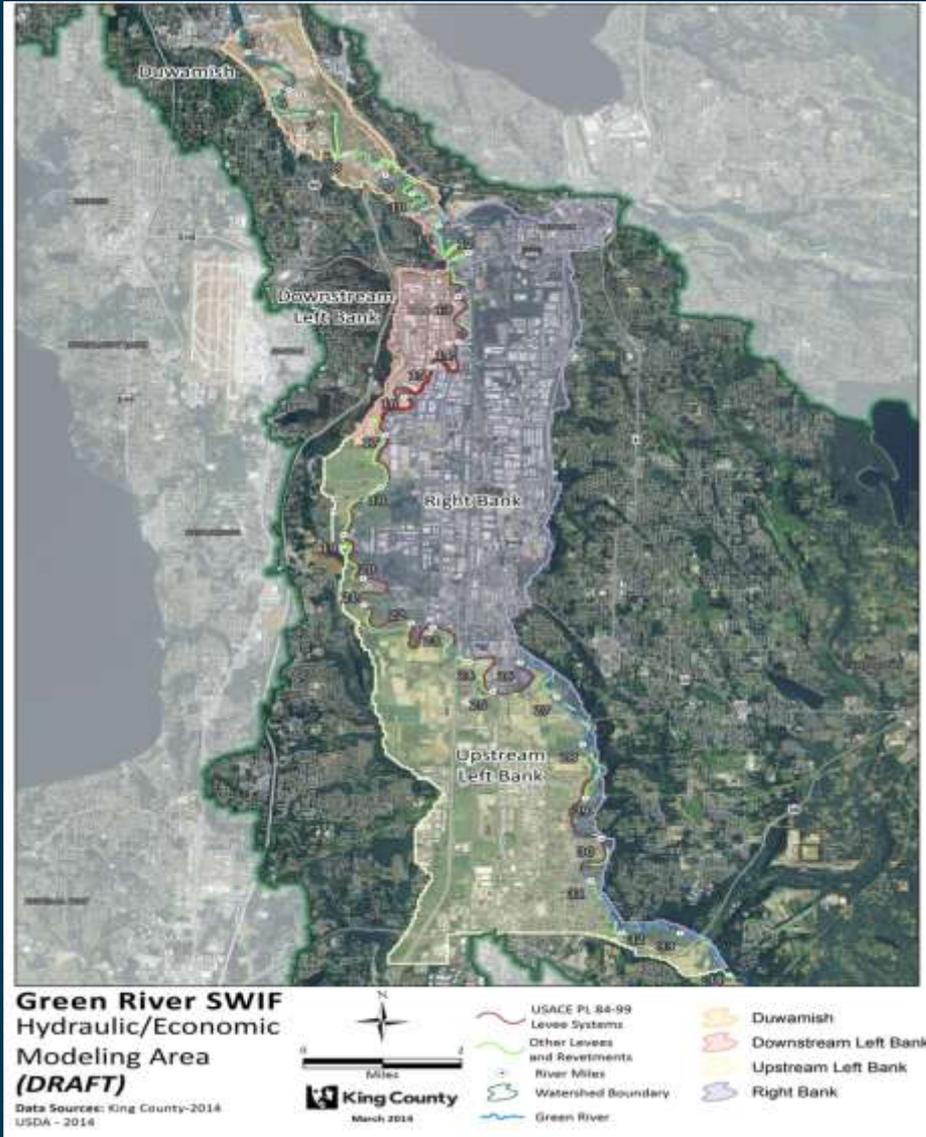
Figure 3.26 (DRAFT)
Levee Overtopping,
with Breach Scenario
 18,800 cfs
 500-year Median Flood
 Green River SWIF

Flood Depth (feet)		
0.01 - 0.1	2 - 4	River
0.1 - 0.5	4 - 6	Valley Wall
0.5 - 1	6 - 10	Breach Location
1 - 2	>10	River Miles

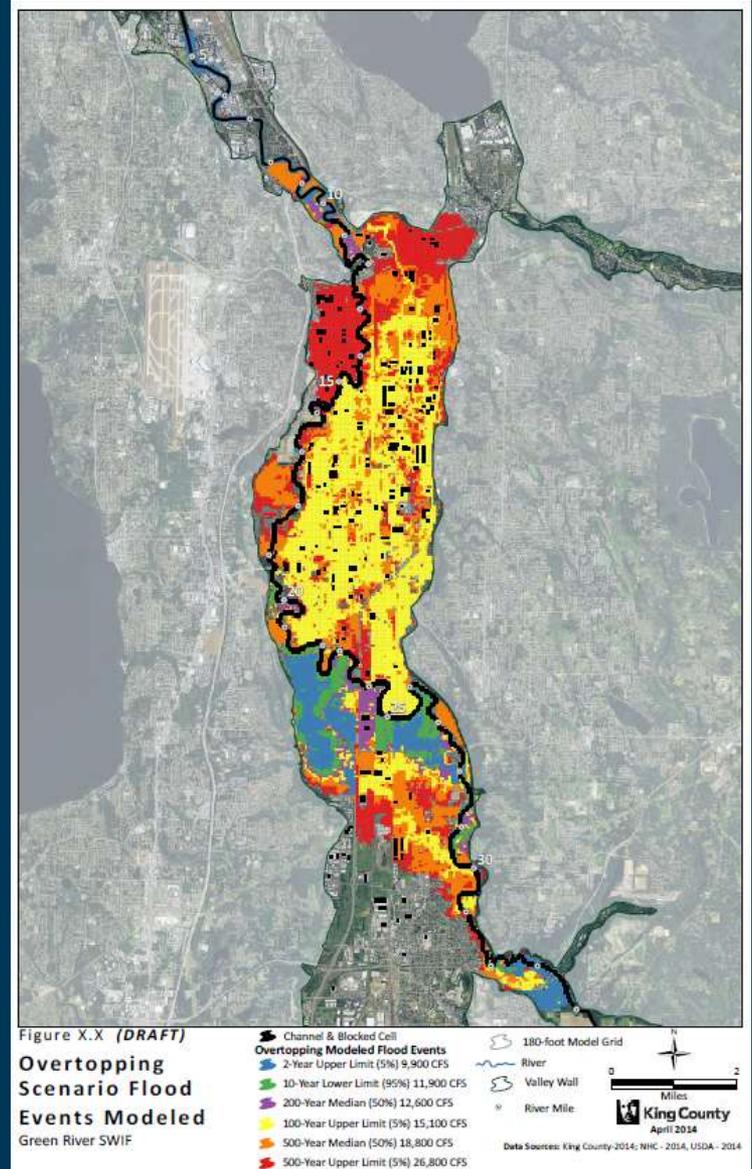
Data Sources: King Co.

18,800 cfs

Current Conditions Report: Flood Risk



Economic Modeling Areas



Overtopping with Breach Map

Current Conditions Report

Key Findings – Economic Analysis

Expected Annual Damage (EAD) for National and Regional Damage Categories:

System-wide (\$ EAD)	\$47,155,000
System-wide (\$ PV)	\$1,106,050,000
* 3.75% interest rate and 50-year period of analysis	

Table 2 – Existing Condition Estimated Annual Damage for Overtopping Scenario and Damage Areas

Damage Category	Auburn (Upstream Left Bank)	Tukwila (Downstream Left Bank)	Kent/Renton (Right Bank)	Duwamish (Downstream)	TOTAL
NED Damage Categories Total	\$3,449,000 (36.6%)	\$240,000 (22.9%)	\$10,430,000 (38.6%)	\$3,359,000 (46.8%)	\$17,478,000 (39.1%)
RED King County Regional Output Effect	\$5,970,000 (63.4%)	\$810,000 (77.1%)	\$16,580,000 (61.4%)	\$3,815,000 (53.2%)	\$27,175,000 (60.9%)
TOTAL	\$9,419,000 (100%)	\$1,050,000 (100%)	\$27,010,000 (100%)	\$7,174,000 (100%)	\$44,653,000 (100%)

Green River SWIF Products & Timeline



- Technical Committee and Advisory Council (2013 –2015)
- Current Conditions Report: flood risk assessment, vegetation/habitat, socio-economic (May 2014)
- SWIF Alternatives Analysis (Sept/Oct 2014)
- Capital project development and priorities (Dec 2014)
- Complete SWIF (Feb 2015)
- SWIF funding and implementation (March 2015 on)

Green River Capital Projects

Recently Completed or Planned for Construction (2013-2014)



- Reddington setback levee (2013)
- Black River Pump Station (2013-15)
- Upper Russell North Reach secondary berm (2013) and intersection reach (2014)
- Briscoe-Desimone flood walls Reaches 2 and 3 (2014)
- Reddington Levee Extension (2014)



Recent Damages (March 2014) and Repair Needs

Flow = 9,300 cfs

**Lower
Russell**



**Dykstra
(Auburn)**



**Green
Valley Rd.**



**Desimone
(Tukwila)**

