Green River System-Wide Improvement Framework (SWIF)

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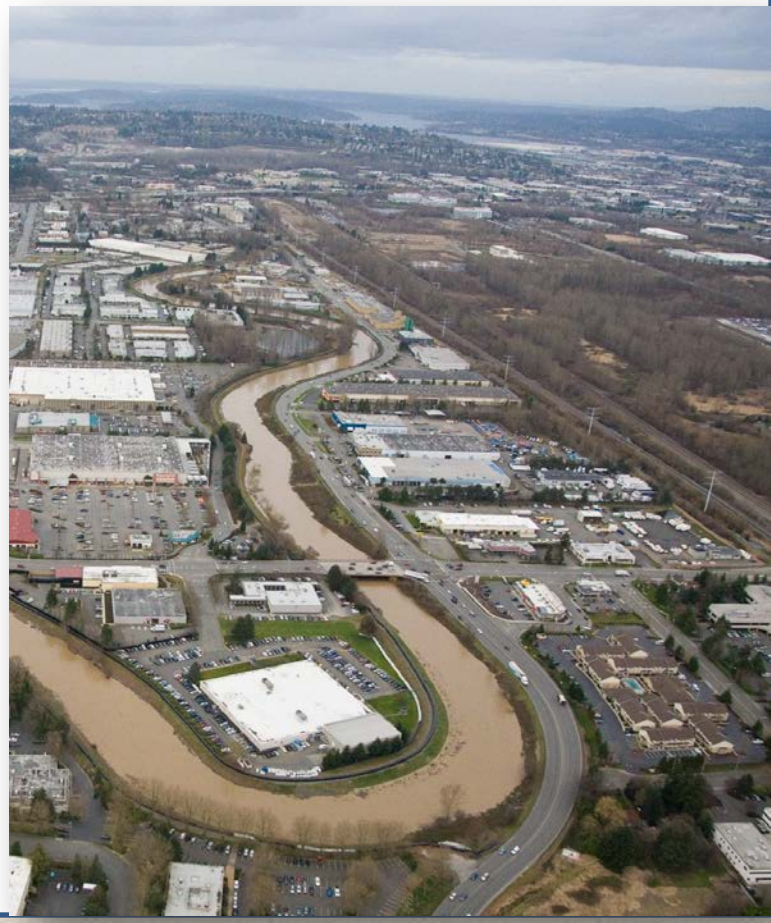


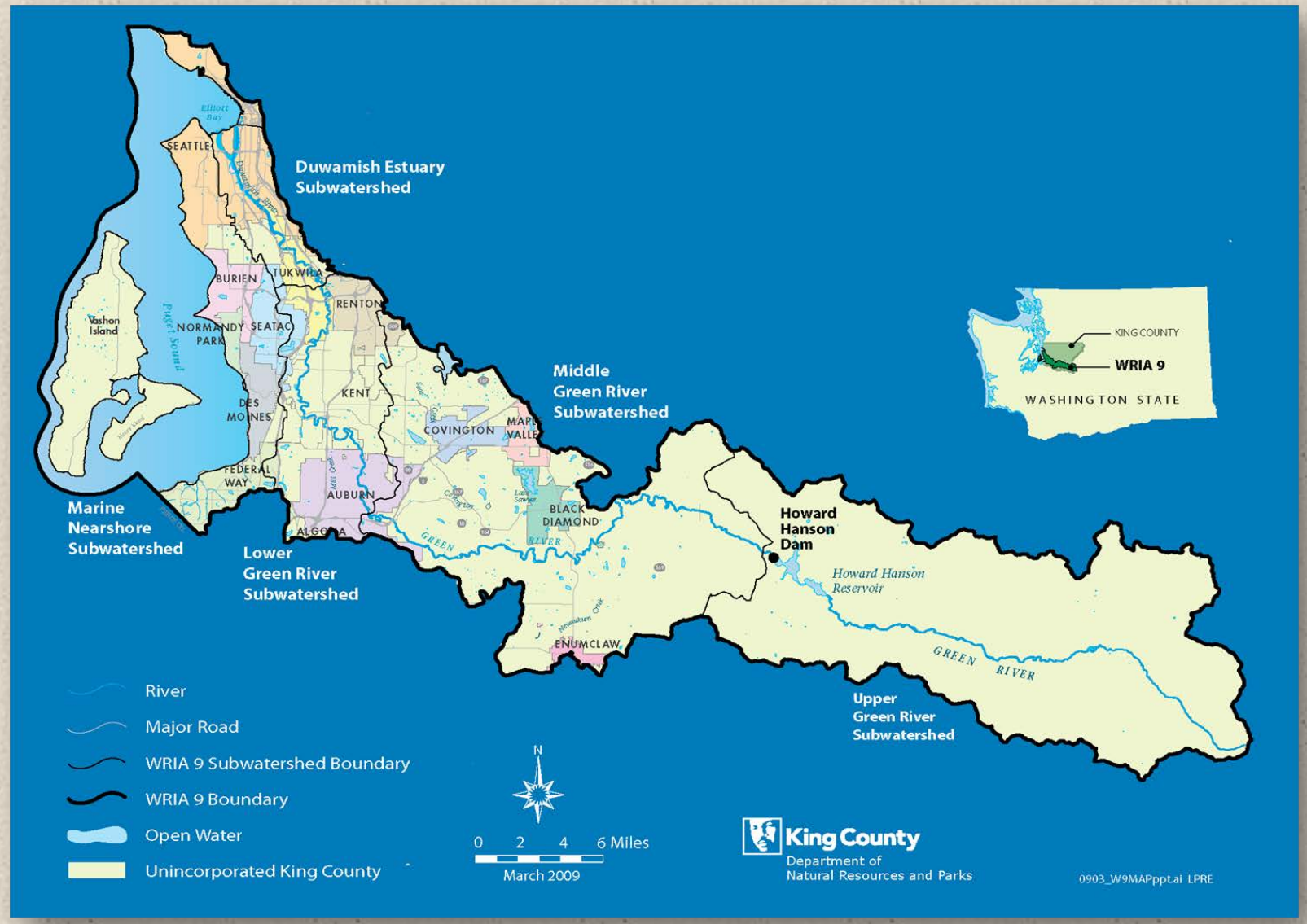
What is a System Wide Improvement Framework (SWIF)?

USACE SWIF policy, November 2011:

"A plan prepared by levee sponsors and approved by the USACE to implement system-wide improvements to a levee system (or 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 the multiple requirements that apply to levee systems (ESA, Tribal Treaty Rights, etc.) while allowing levee sponsors to remain eligible for PL84-99 funding while addressing deficiencies."

Green Duwamish River Watershed



Lower Green River: Context

Socio-Economic

- $7.3 billion in floodplain structures and contents
- 100,000+ jobs
- 100 million sf warehouse + 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 Endangered Species Act listed Chinook salmon
- Limited spawning in Lower Green
- Lethal water temperatures (> 23°C) have occurred in Green River mainstem (July 2006); TMDL water quality standard is 16°C
- Tribal fishing rights

Lower Green River: Context

Flooding

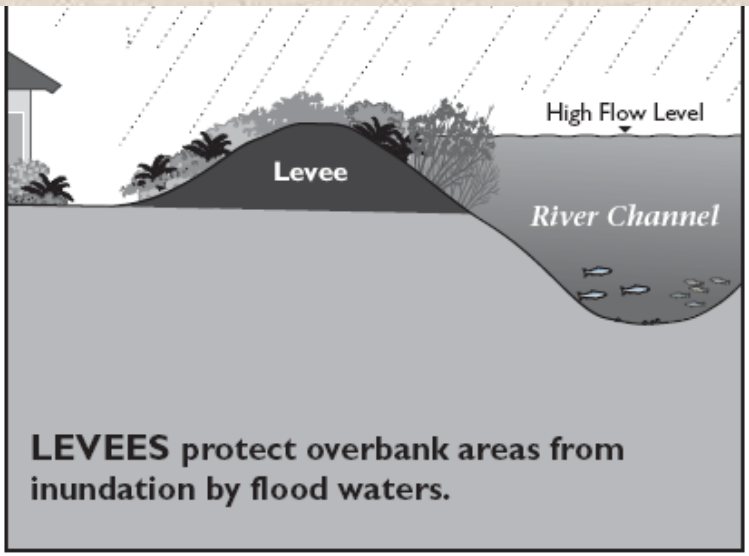
- Extensive flooding of Lower Green River Valley from 1890s to 1961
- Flood of Record: Nov. 1959 (28,100 cfs)
- Three flood events over 12,000 cfs since 1962 (12,400 cfs in 1996)
- Breaching of the levee system in Kent in 1965 (11,400 cfs)

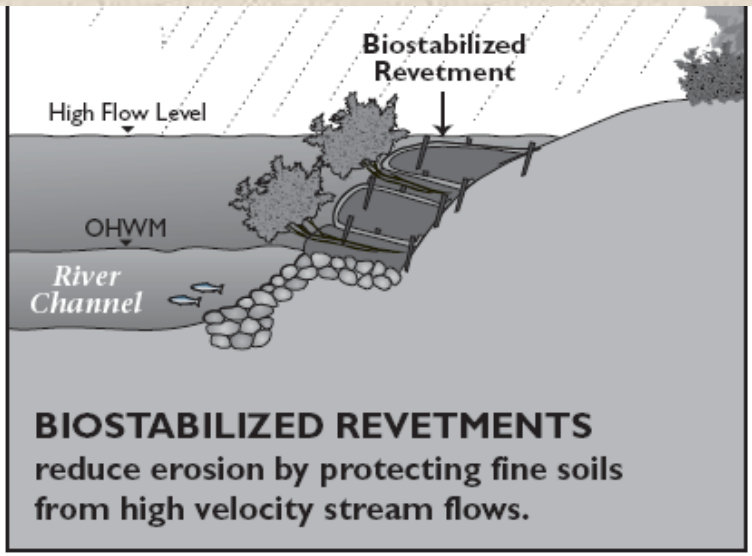
Lower Green River Flooding, 1959

Lower Green River, 2009

Green Duwamish River Flood Facility 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)		





PL 84-99 Program

WHAT IS IT?

A federal (USACE) program to provide levee repair and rehabilitation assistance following a disaster event, for those levees that meet 'eligibility' criteria

- 16 miles (12 levee segments) of Lower Green levees currently enrolled within the PL84-99 program
- 80% federal cost-share to repair flood damaged levees
- Levees enrolled in program must be kept in eligible status; Eligibility requires compliance with levee vegetation and other USACE program requirements
- Since 1990, PL84-99 funding in King County totaled $27 M, with $25 M received for 2008-2009 disaster
- Not connected to FEMA levee certification and accreditation
- PL 84-99 eligibility criteria for vegetation is inconsistent with federal Endangered Species Act requirements for Chinook recovery

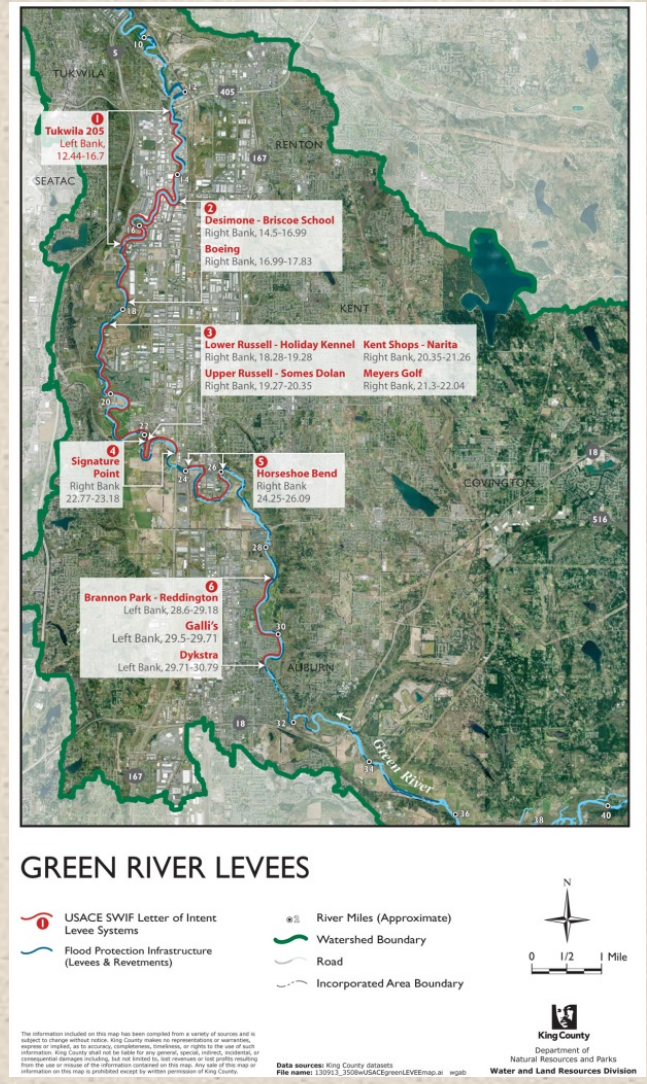
What is the Green River SWIF?

A technical planning, analyses and participatory process to achieve the following:

1. Define a desired level of protection based on the likely consequences of flooding to public safety, infrastructure, current and future economic development, and projected cost of disaster recovery in the event of levee overtopping or failure.
2. Reach agreement on a prioritized list of projects and non-regulatory actions to achieve desired level of protection while: improving water temperatures; progress towards salmon protection and recovery goals; quantity and quality of open space, recreational opportunities, and farmland; and reducing long term facility maintenance costs.
3. Develop vegetation management recommendations to further the goals of ESA, Clean Water Act, and meet Corps PL84-99 standards.
4. Provide greater certainty for landowners and businesses about future level of flood protection, residual flood risk, and flood hazard designations and regulations that will be applied in flood hazard areas.

Green River SWIF – Why?

- Aging system of levees were not built to protect current land use densities, types and regional economic assets
- Level of protection from flooding provided by current levees is variable
- Inconsistent federal mandates guiding management of vegetation on PL84-99 eligible levees – future levee repair funding and habitat is at risk
- USACE SWIF policy (2011) provides mechanism to reconcile issues



Green River SWIF – Products + Timeline

- Technical Committee and Advisory Council (2013 –2015)
- Current Conditions Report: flooding, vegetation/habitat, socio-economic and community (April 2014)
- Future Conditions Report (Sept/Oct 2014)
- Capital project priorities (Dec 2014)
- Submit SWIF to USACE (Feb 2015)
- SWIF funding and implementation (Mar 2015 on)

Green River SWIF – Outcomes

OUTCOMES

- Clear level of protection from flooding goals, at a reach scale, for the Lower Green River
- Vegetation management recommendations to reconcile competing PL84-99 and federal ESA mandates
- Levee deficiencies addressed, as defined by USACE PL84-99 program
- A river corridor vision that reflects complementary flood protection, habitat and community goals for the Lower Green River Valley
- Technical: Riparian tree canopy height model; land cover mapping; solar extinction study; updated flood inundation models (Flow 2D)

TIMING

- February 2015: SWIF submitted to the Army Corps of Engineers
- March 2015 on: implementation

Green SWIF: Who is Involved?

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

Green SWIF: Challenges

- Reaching agreement regarding levee vegetation to support salmon habitat, water quality and USACE PL84-99 requirements
- Identifying clear, level of protection from flooding goals, in support of a broader river corridor vision
- Defining a comprehensive vision for the river corridor that balances public safety, economy, community and habitat goals
- Implementation funding
- February 2015 submittal – firm

Questions?