Skagit River General Investigation

Board of County Commissioners

Status Update

11/12/13

General Investigation Presentation Outline

- Overview
- Purpose
- Corps Planning Process
- Alternative Development
- Comparison Criteria
- Next Steps

General Investigation Overview

- Phases
  - Reconnaissance
  - Feasibility
  - Pre-Construction Engineering and Design
  - Construction
  - Operation and Maintenance
- Goal
  - Reduce flood damages and risks to life safety over the 50 year project life

General Investigation Purpose

- Evaluate Flood Problems in the Basin
- Formulate, Evaluate, and Screen Solutions
- Recommend a Plan to Address Problems
  - Technically Viable
  - Economically Sound
  - Supported by local jurisdictions
- Integrated Feasibility Report/EIS
  - Alternative Formulation Process
  - NEPA Evaluation of Alternatives

General Investigation
USACE Planning Process

- SMART Planning
  - Reset, February 2012 Memo
  - Skagit GI transitioned in August 2012
- Six-step planning process:
  1. Identify problems & opportunities
  2. Inventory & forecast conditions
  3. Formulated alternative plans
  4. Evaluate alternative plans
  5. Compare alternative plans
  6. Select a plan

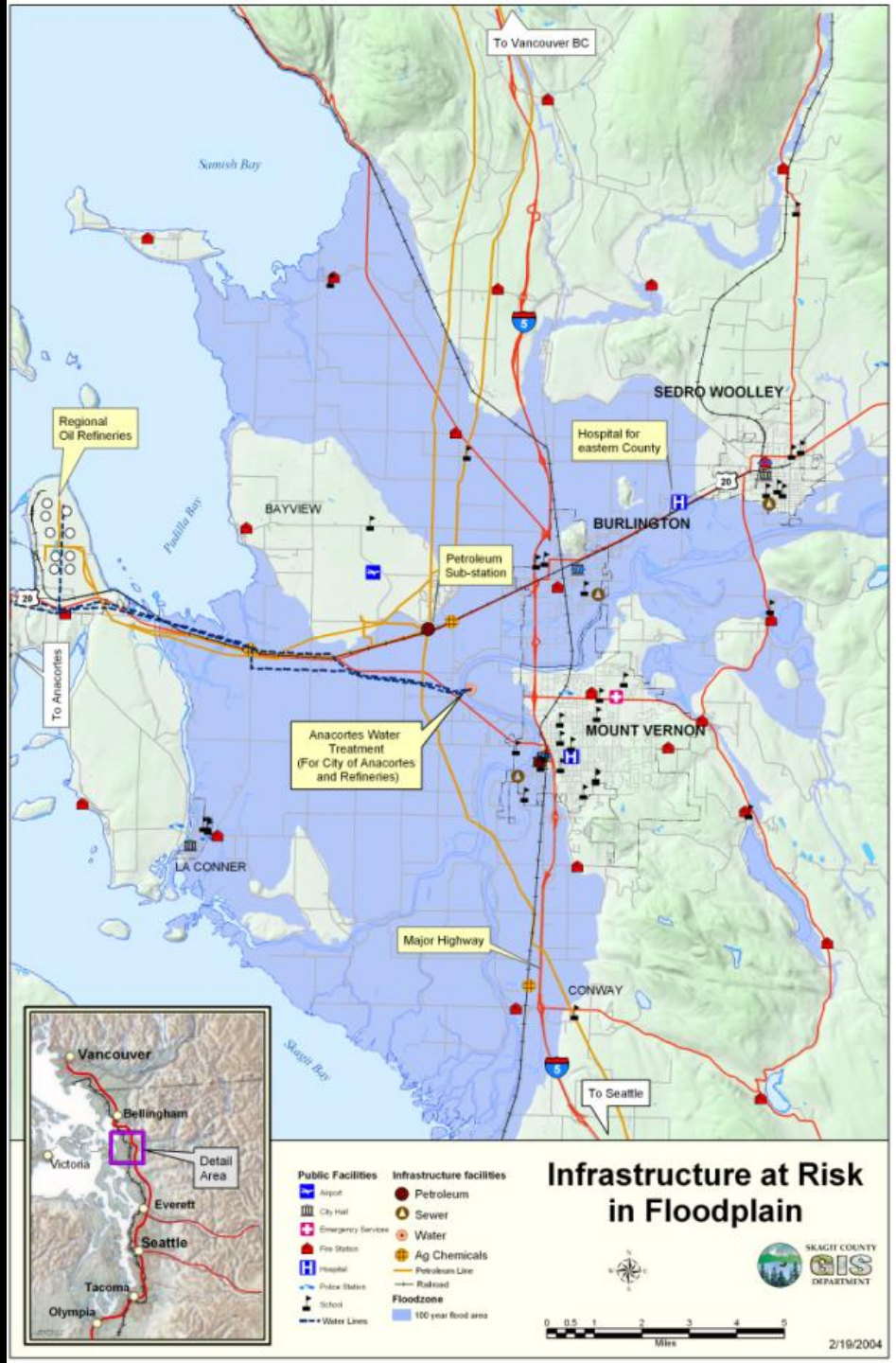
General Investigation USACE Planning Process

- Phases and Milestones
  - Scoping
    - Alternatives Milestone
  - Alternative Evaluation & Analysis
    - Tentatively Selected Plan (TSP) Milestone
  - Feasibility-Level Analysis
    - Agency Decision Milestone
    - Final Report Milestone
  - Chief's Report
    - Chief's Report Milestone

General Investigation Basin Flooding

- 1% ACE
  - 100-yr Flood
  - 225,400 cfs at Concrete Gauge
  - Approximately 45’ at Concrete Gauge
- 4% ACE
  - 25-yr Flood
  - 165,300 cfs at Concrete Gauge
  - Approximately 42’ at Concrete Gauge
  - Approximate level of lower basin protection

- Recent Floods (Concrete Gauge)
  - 2003 (10/21)
    - 42.21’
    - 166,000 cfs
  - 1995 (11/29)
    - 41.57’
    - 160,000 cfs
  - 1990 (11/10)
    - 40.20’
    - 149,000

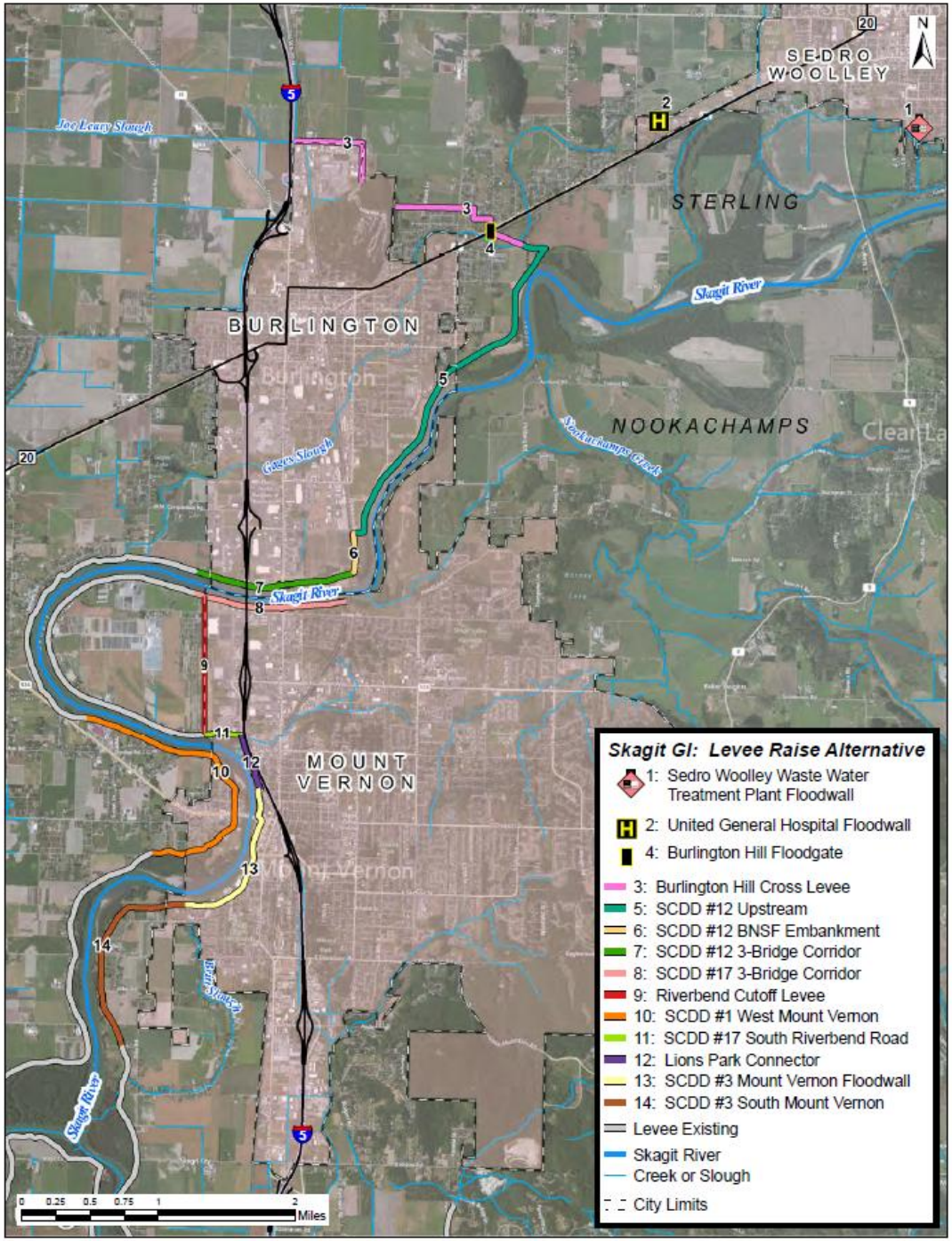

To Vancouver BC
Samish Bay
SEDRO WOOLLEY
Regional Oil Refineries
Hospital for eastern County
BAYVIEW
BURLINGTON
Padilla Bay
Petroleum Sub-station
To Anacortes
Anacortes Water Treatment (For City of Anacortes and Refineries)
MOUNT VERNON
LA CONNER
Major Highway
CONWAY
Skagit Bay
To Seattle
Vancouver
Bellingham
Victoria
Detail Area
Everett
Seattle
Tacoma
Olympia
Public Facilities
Airport
City Hall
Emergency Services
Fire Station
Hospital
Police Station
School
Water Lines
Infrastructure facilities
Petroleum
Sewer
Water
Ag Chemicals
Petroleum Line
Railroad
Floodzone
100 year flood area
Infrastructure at Risk in Floodplain
SKAGIT COUNTY GIS DEPARTMENT
0 0.5 1 2 3 4 5
Miles
2/19/2004

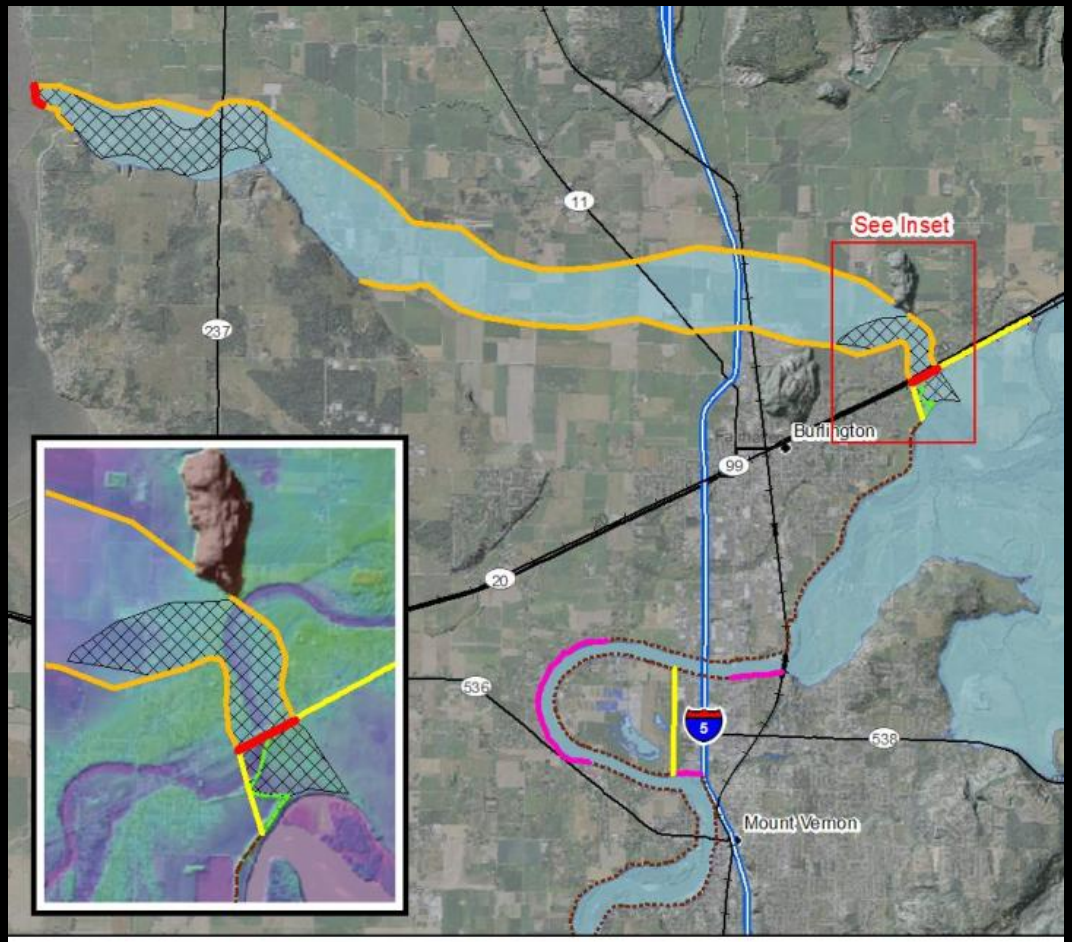
General Investigation Alternative Development

- Management Measures
- Preliminary Array of Alternatives
- Final Array of Alternatives
  - No Action
  - Swinomish Bypass
  - Joe Leary Slough Bypass
  - Comprehensive Urban Levee Improvement
- Measures in Common Amongst Alternatives
  - Baker Project Dam Storage
  - Site-specific floodwalls/levees, e.g. SWWWTP
  - Non-structural, e.g. Flood Warning, Gauges, Real Estate

General Investigation
Baker Project Dam Storage

- Existing Hard Storage
  - 74,000 Acre Feet at Upper Baker on 11/15
- Additional Hard Storage Opportunity
  - FERC License 2008 107 (a) & 107 (b)
  - 74,000 AF at Upper Baker on 10/15
  - Up to 29,000 AF at Lower Baker on 10/1
- Annualized Cost
- Annualized Benefit


SEDRO WOOLLEY
STERLING
BURLINGTON
NOOKACHAMPS
MOUNT VERNON
Joe Leary Slough
Skagit River
Gages Slough
Nookachamps Creek
Hill Slough
Skagit GI: Levee Raise Alternative
1: Sedro Woolley Waste Water Treatment Plant Floodwall
2: United General Hospital Floodwall
4: Burlington Hill Floodgate
3: Burlington Hill Cross Levee
5: SCDD #12 Upstream
6: SCDD #12 BNSF Embankment
7: SCDD #12 3-Bridge Corridor
8: SCDD #17 3-Bridge Corridor
9: Riverbend Cutoff Levee
10: SCDD #1 West Mount Vernon
11: SCDD #17 South Riverbend Road
12: Lions Park Connector
13: SCDD #3 Mount Vernon Floodwall
14: SCDD #3 South Mount Vernon
Levee Existing
Skagit River
Creek or Slough
City Limits
0 0.25 0.5 0.75 1 2 Miles
N



Project Elements

- Control Structure
- New River Levee
- New Bypass Levee
- Remove Existing Levee
- Upgrade Existing Levee
- Existing River Levee
- Excavation Area

Joe Leary Slough Flood Bypass Channel: Wide Confinement Variant

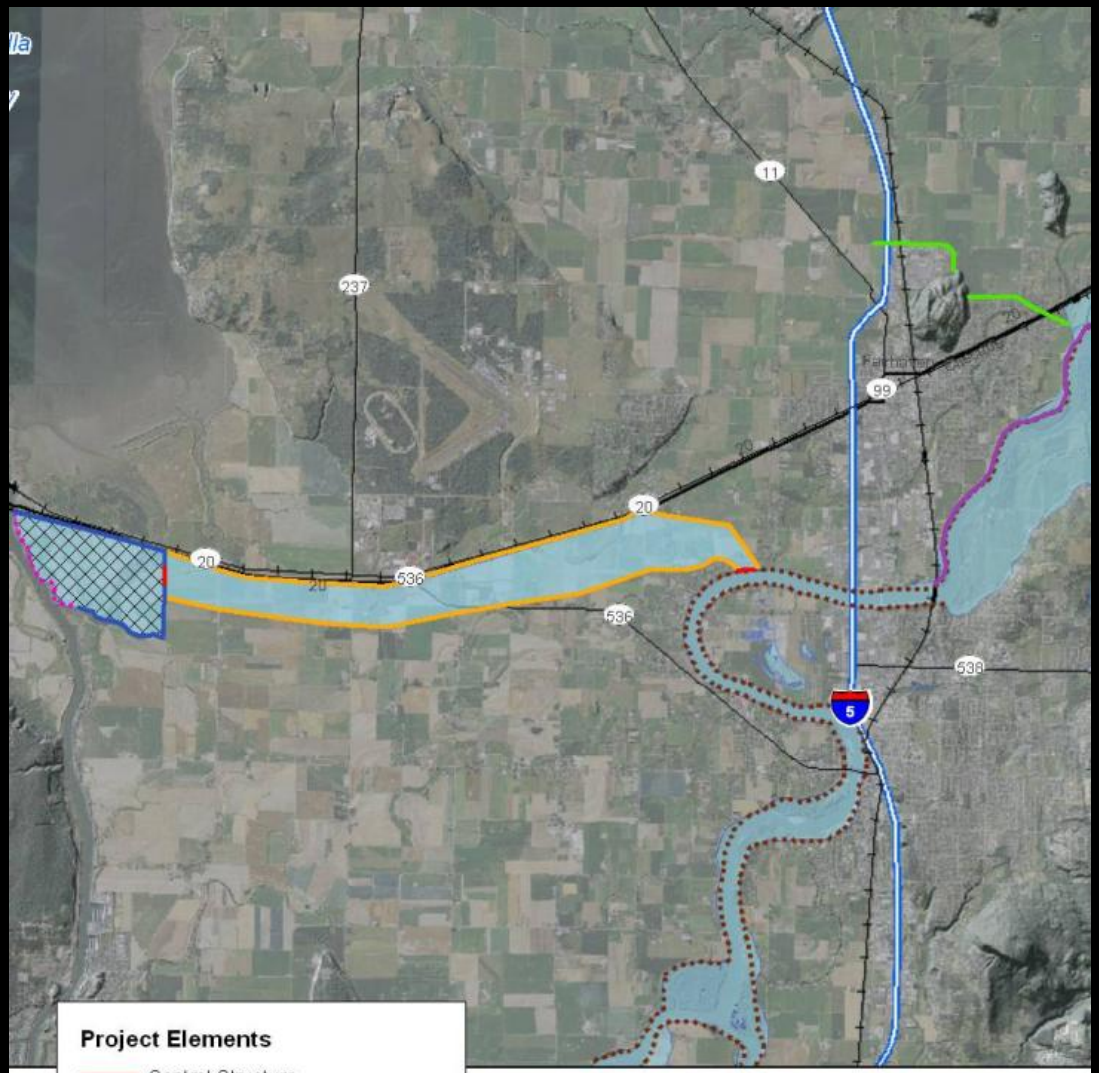
DRAFT

1 0.5 0 1 2 Miles

N

Northwest Hydraulic Consultants	project no. 200074	03-Apr-2013

Notes: Upgrade existing levee required where flood levels are above 15% PFP elevation. Approximate 100-yr no-breach flood inundation limits shown.



Project Elements

- Control Structure
- Improve Existing Levee
- New Bypass Levee
- New Sea Dyke
- Remove Existing Levee
- New Burlington Horseshoe Levee
- Restoration Area
- Existing Levee

Swinomish Flood Bypass: Wide Variant

DRAFT

1 0.5 0 1 2 Miles

N

Northwest Hydraulic Consultants	project no. 200074	16-Apr-2013

General Investigation Alternative Comparison Criteria

- Life Safety Risk Reduction
  - All three action alternatives provide equal level
- Economic Damage Reduction
  - All three action alternatives designed for 1% ACE protection to urban areas
- Least Impacts to Agricultural Resources
- Least Impacts to Environmental Resources
- Construction and O&M Costs
- Acceptability to Sponsor and Public

General Investigation Alternative Comparison

- No Action Alternative
  - Future Without Project Condition
  - Does not reduce risks to life safety
  - Does not reduce economic damages
  - Least construction costs
  - No transfer of risk
  - Required by NEPA
    - Baseline to compare action alternatives against

General Investigation Alternative Comparison

- Comprehensive Urban Levee Improvement
  - Requires approx. 3 miles of new levee
  - Improvements of approx. 8 miles of existing levee
    - Raising and Widening
  - Requires the least amount of construction materials
  - Least amount of real estate acquisition
  - Lowest impact to agricultural lands

General Investigation Alternative Comparison

- Joe Leary Slough Bypass
  - Diverts RB upstream of Burlington to Padilla Bay
  - Approx. 2,000 ft wide, 9 mi long, 18 mi new levee
  - 4% chance of being used any given year
  - Mechanical and fuse-plug gate inlet at Sterling
  - Most impact to agricultural land
  - Highest cost compared to other alternatives
  - Major crossings: I-5, SR-20/11, BNSF, Pipelines

General Investigation Alternative Comparison

- Swinomish Bypass
  - Diverts RB d/s of Burlington to Swinomish Slough
  - Approx. 2,000 ft wide, 7 mi long, 14 mi new levee
    - Spill continues at Sterling
  - 4% chance of being used any given year
  - Mechanical and fuse-gate inlet at Riverbend
  - Less impact to Agricultural land than JLS
  - Less cost of construction than JLS
  - Major Crossings: SR-536, Pipeline

General Investigation Timeline

- Fall 2013 Alternative Analysis
- Fall/Winter 2013: Tentatively Select Plan
- Winter/Spring 2014: Public Review
  - NEPA Formal Comment Period (45 days)
- Spring/Summer 2014: Agency Decision Milestone
- Fall 2014: Submit Final Draft Integrated FR/EIS
  - Feasibility-Level Design
- Spring 2015: Chief's Report
  - Congressional Project Authorization