

# North Shore Levee Community Meeting

Mark Steepy

Michael Stringer

December 6, 2016

kpff

# Project Team

- City of Aberdeen
  - Rick Sangder, Public Works Director
  - Kris Koski, City Engineer
- City of Hoquiam
  - Brian Shay, City Administrator
- KPFF
  - Mark Steepy, Lead Engineer
- Maul Foster & Alongi
  - Michael Stringer, Planner

# Agenda

- Purpose of the Meeting
- Review Community Input
- Update of Flood Insurance Rate Map
- Levee Design Criteria
- Proposed Alignment
- Analysis of Effects of Levee

# Purpose of the Meeting

- Provide information to community about design criteria and proposed alignment
- Discuss concerns and considerations to inform levee design



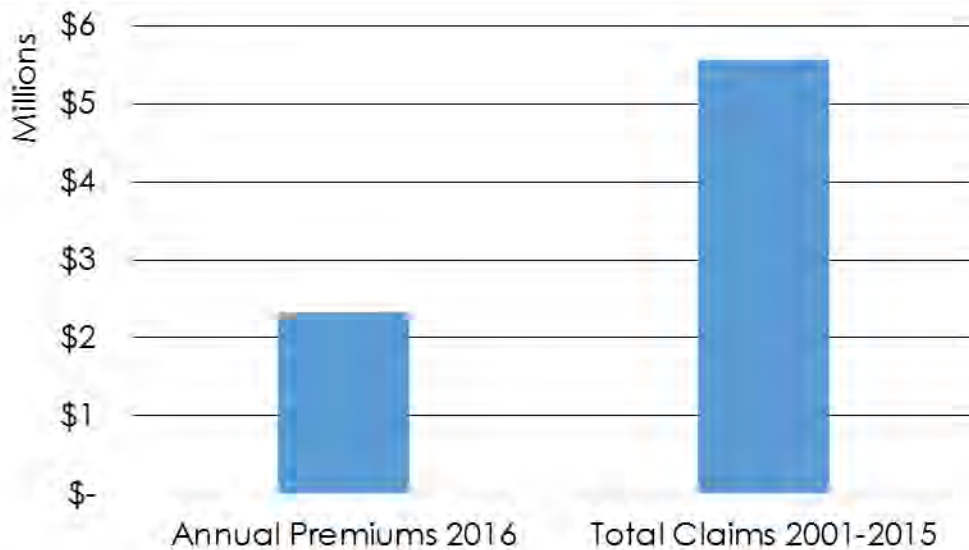
# Purpose of the Northshore Levee

- **Purpose:** Provide flood protection and flood insurance relief to portions of Aberdeen and Hoquiam
- **Work Product of Current Effort:** 60% Design and Application to FEMA for approval of Conditional Letter of Map Revision (CLOMR)
- **Levee Outcomes:**
  - Long-term protection from coastal flooding
  - Change Flood Insurance Rate Map
  - Remove requirement for flood insurance



# Economic Impacts of Flood Insurance

## Premiums vs. Claims



## Claims Over Time



# Steps to Levee Construction

Grant  
\$

- **Preliminary Design (2016-2017)**
  - September 2016 Community Meetings
  - December 2016 Community Meetings
- **FEMA Review and Conditional Letter of Map Revision (Spring - Summer 2017)**
- **Final Design and Permitting (Summer 2017 - 2018)**
- **Construction (2018 - 2020)**
- **Certification and FEMA Accreditation of Levee (following construction)**

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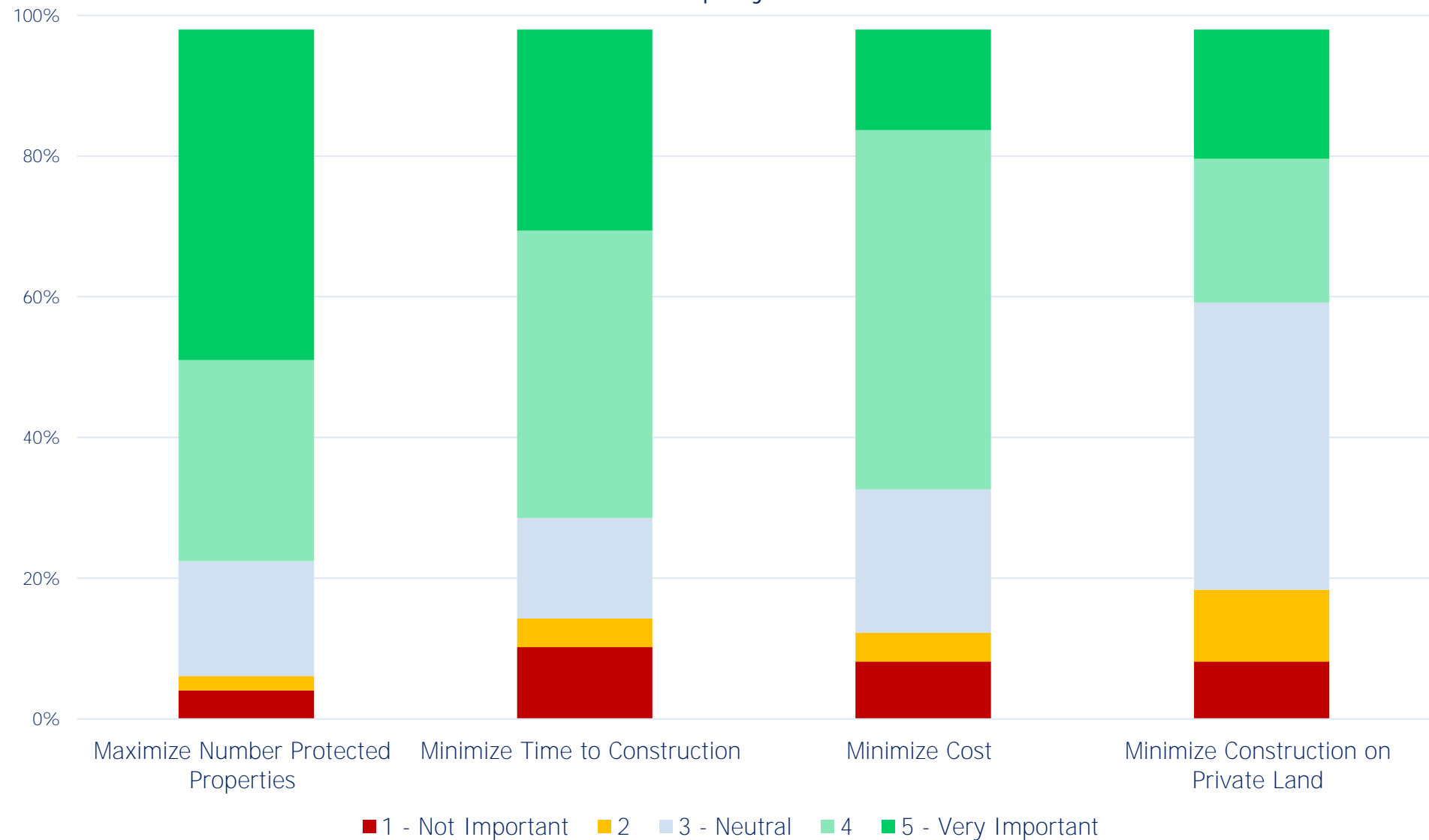
# Community Input

- TimberWorks Meetings: March, April, October
- Personal meetings with property owners
- Meetings: September 19 & 20
  - Over 100 attendees

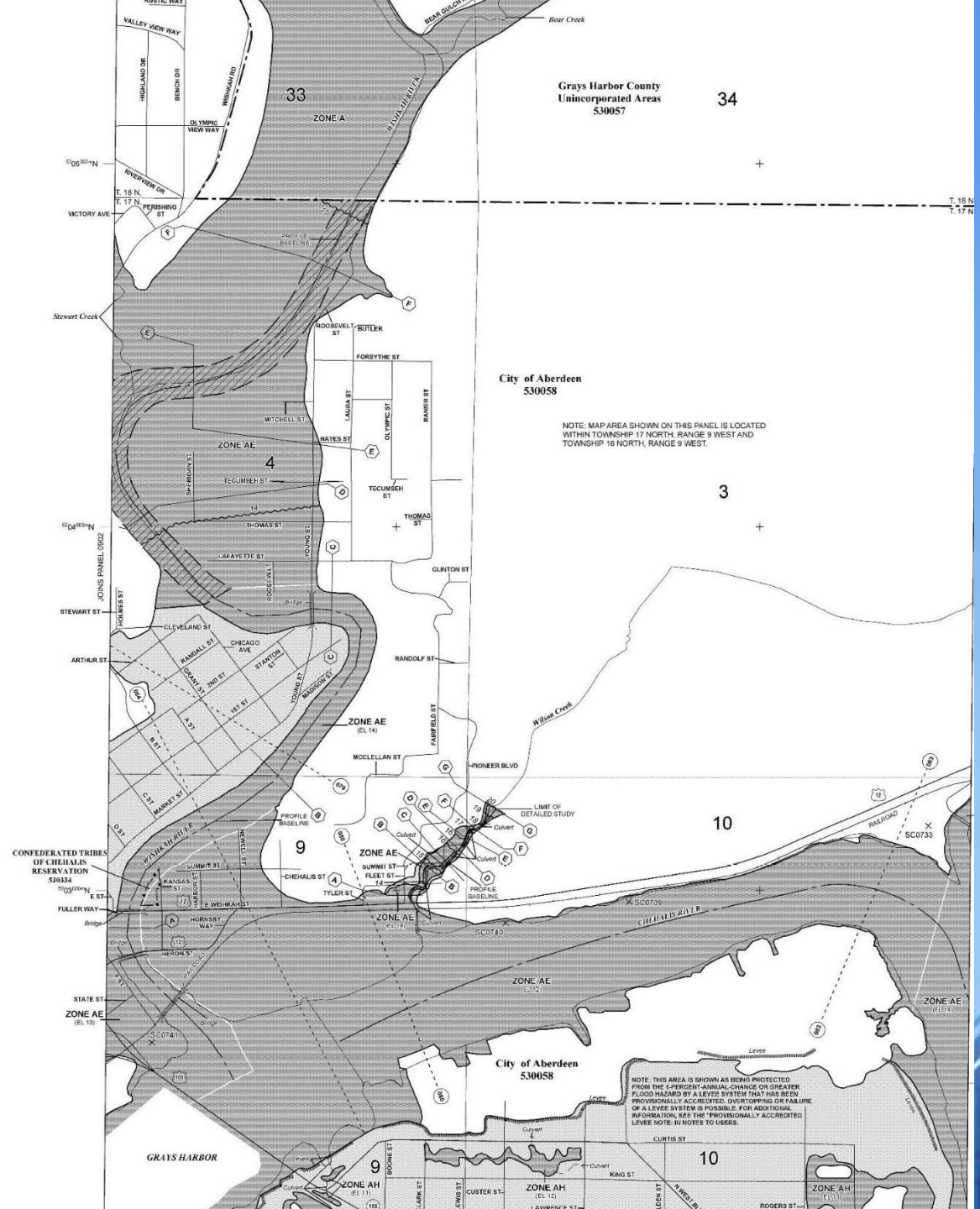
	Percent of Respondents
Own a Business	35%
Own Property	85%
Rent Property	4%
Have Flood Insurance	44%
Experience Flooding	60%



# How important are the following factors when designing a flood control project?



# Update of Flood Insurance Rate Map



[illegible]

# Levee Design Criteria

1. Location of Ordinary High Water Mark/Existing Elevations
2. Permitting (Likelihood & Duration)
3. Cost (Initial Capital & Long Term Maintenance)
4. City Access to Levee
5. Access to Private Properties
6. Existing Structures (Homes, Buildings, Docks, & Ramps, etc.)
7. Maintenance & Operations
8. Internal Drainage Improvements
9. Aesthetics
10. Constructability



# Levee Design Criteria

1. High Water Mark
  - Stay Above Top of River Bank
2. Permitting
  - Construction Below High Water Requires Federal Permits and Mitigation = Time & Money
3. Cost
  - Minimize Walls, Maximize Earthen Levee
  - Work Within Existing Streets Adds Utility Costs
4. City Access to Levee
  - Challenges to River Side Access
5. Access to Private Property
  - Access Easements Will Be Required
  - Use Existing Right of Way



# Levee Design Criteria

## 6. Existing Structure

- **Challenge with Structures within 10' of River Bank**
- Non-permitted Structures May be Subject to Removal
- Ramps/Stairs needed for dock access

## 7. Maintenance & Operations

- Earthen Dikes and Walls, Minimal Maintenance
- Stop Log Closures Require Storage and Placement

## 8. Internal Drainage Improvements

- Larger Pumps And Conveyance Improvements
- Must Demonstrate Capacity to Drain Runoff from the 100-year Storm Event

# Levee Design Criteria

## 9. Aesthetics

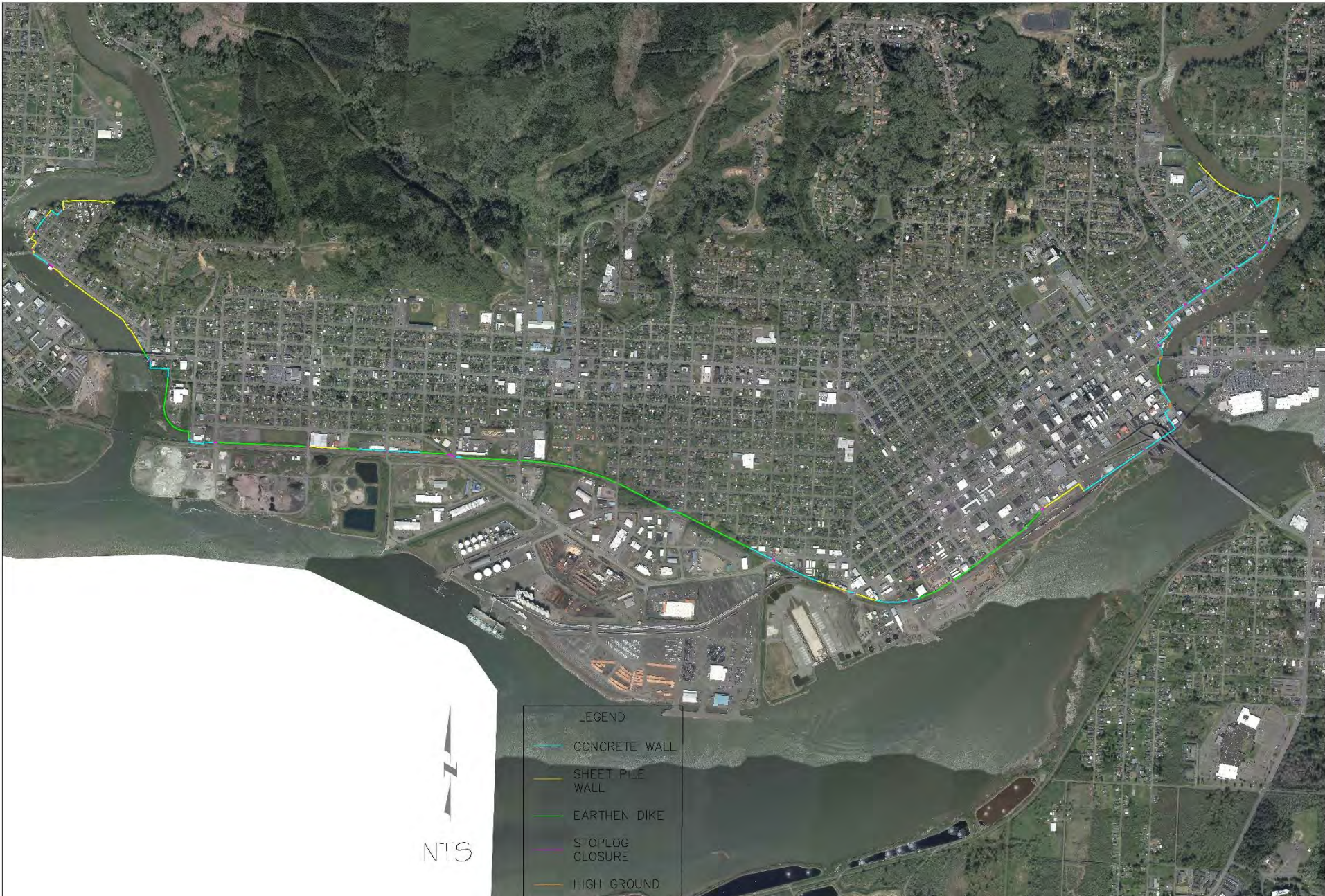
- Views from Adjacent Houses
- Sheet Pile Wall vs. Concrete
- Incorporate landscaping where possible

## 10. Constructability

- Costs of River-side Construction
- Proximity to Existing Structures
- Sheet Pile Wall, Small Footprint, Highest Cost
- Earthen Dike, Large Footprint, Lowest Cost



# Proposed Alignment





# Existing Condition— 100 Year River Flow



Grays Harbor County, WA



**North Shore Levee**  
**Simulated Maximum Depths for the Existing Condition**  
100-year Event Candidate: Mean Sea Level with 100-year Flows

0 1,750 3,500 Feet

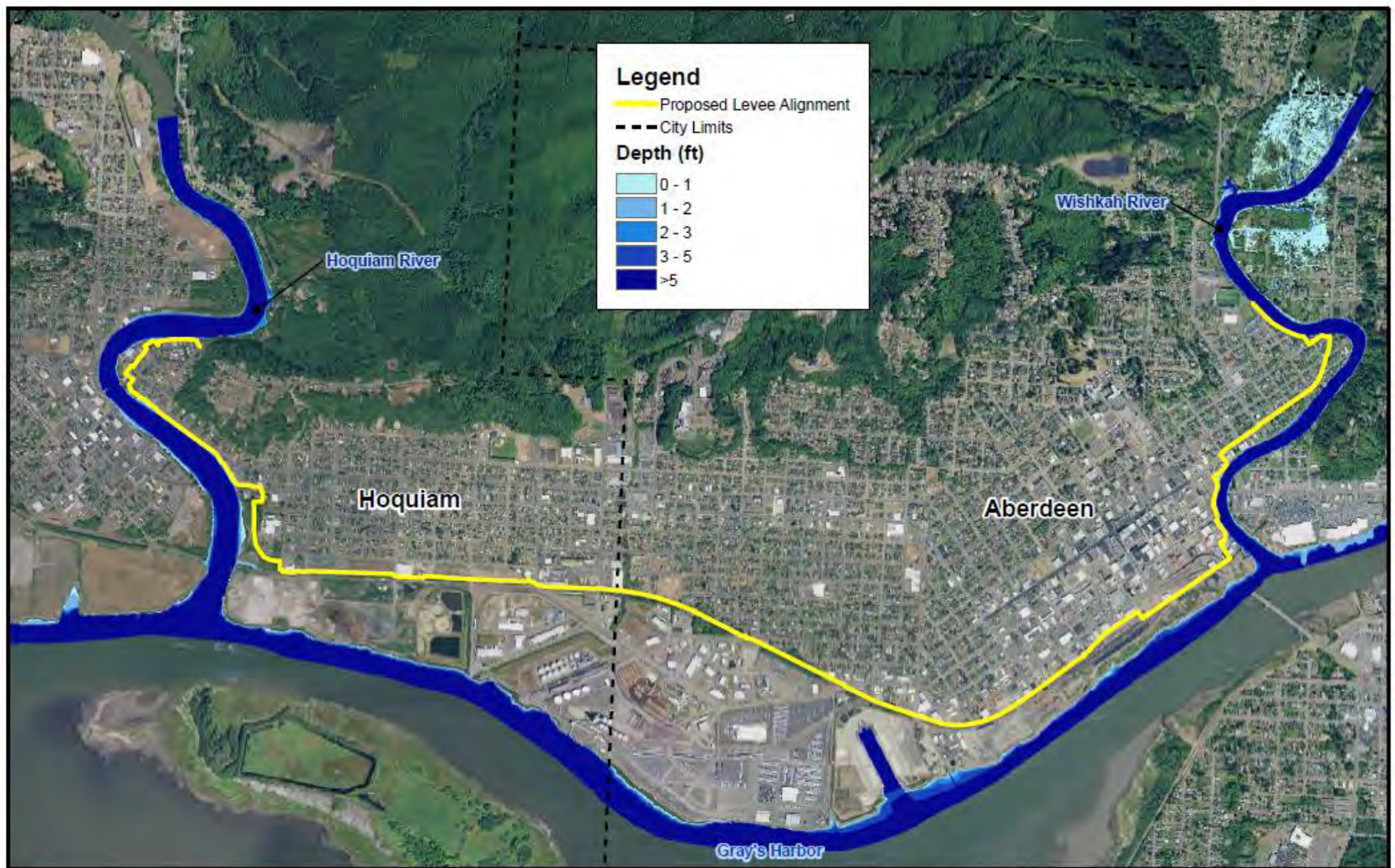
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StatePlane Washington  
South FIPS 4602 Feet

05 Dec 2018

**WATERSHED**  
SCIENCE & ENGINEERING



# With Levee – 100 Year River Flow



Grays Harbor County, WA



**North Shore Levee**  
**Simulated Maximum Depths for the With-Levee Condition**  
100-year Event Candidate: Mean Sea Level with 100-year Flows

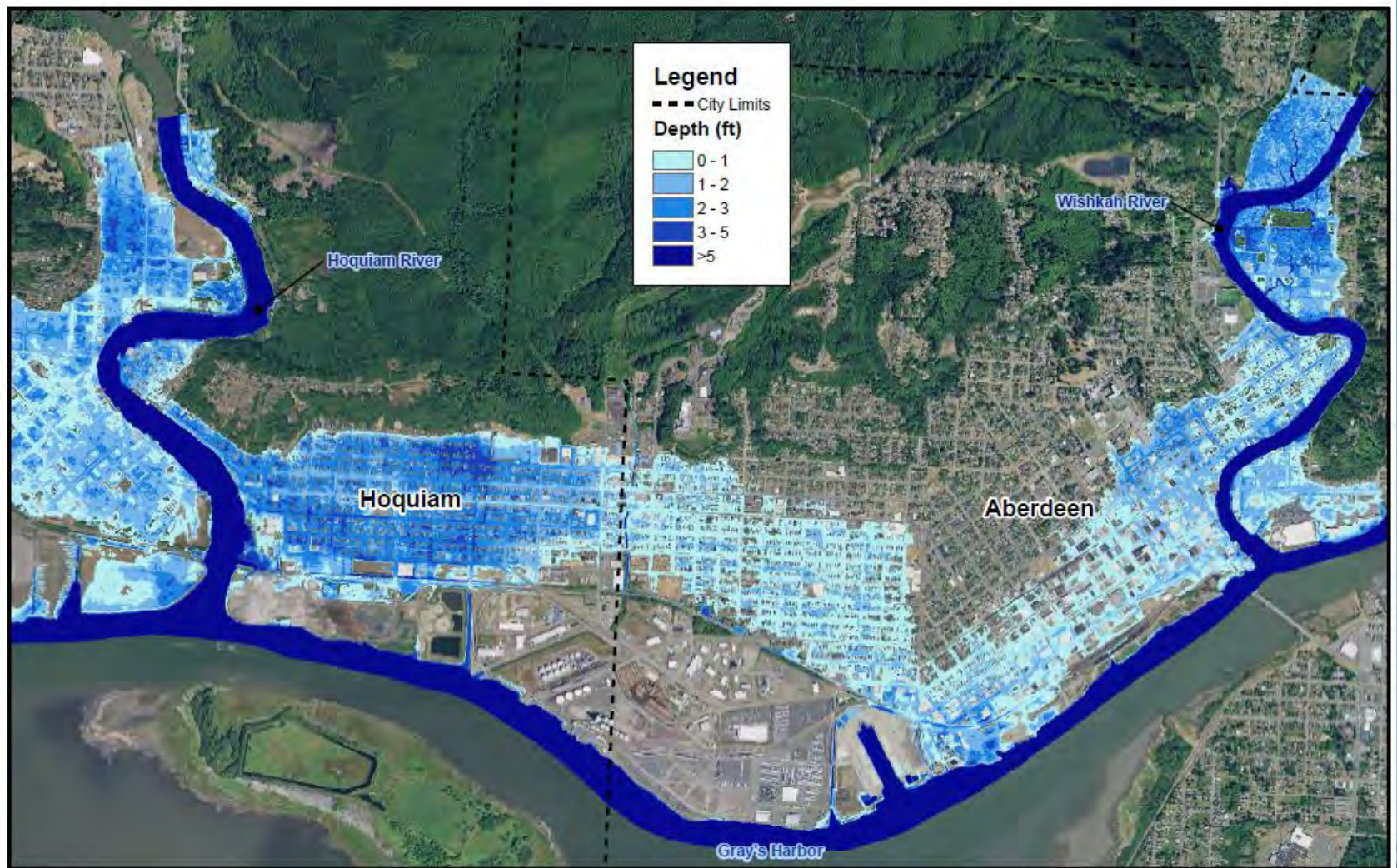
0 1,750 3,500  
Feet

Scale: 1:28,000  
NAD 1983 HARN  
StatePlane Washington  
South FIPS 4602 Feet

05 Dec 2016  
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# Existing Condition— 100 Year Tide



Grays Harbor County, WA



**North Shore Levee**  
**Simulated Maximum Depths for the Existing Condition**  
100-year Event Candidate: 100-year Tide with Mean Annual Flows

0 1,750 3,500 Feet

Scale: 1:28,000  
NAD 1983 HARN  
StatePlane Washington  
South FIPS 4602 Feet

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# With Levee – 100 Year Tide



Grays Harbor County, WA



**North Shore Levee**  
**Simulated Maximum Depths for the With-Levee Condition**  
100-year Event Candidate: 100-year Tide with Mean Annual Flows

0 1,750 3,500 Feet

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StatePlane Washington  
South FIPS 4602 Feet

05 Dec 2016



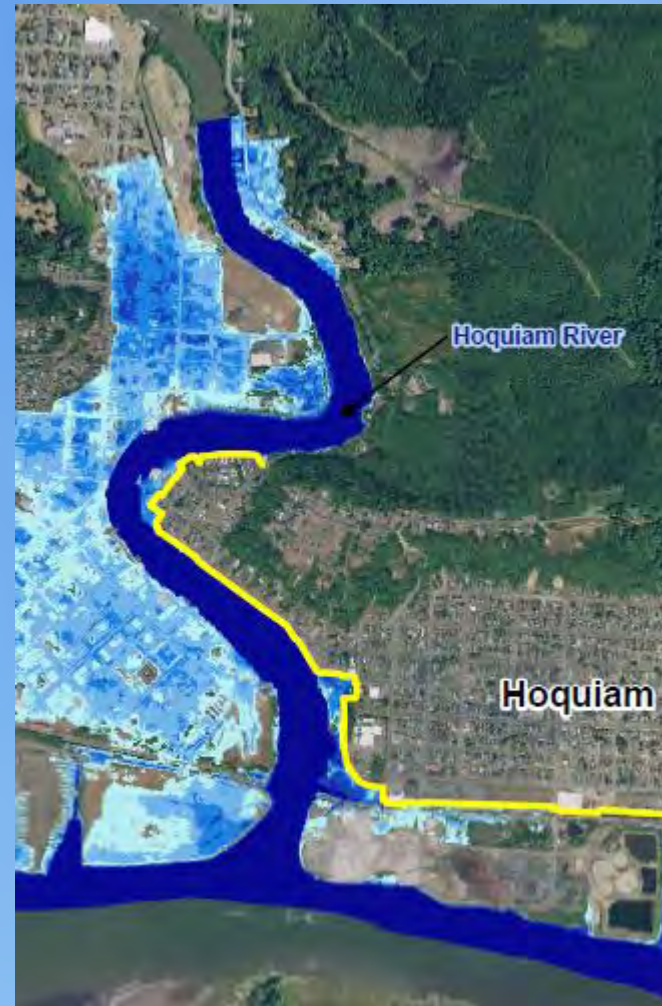


# Hoquiam Side by Side 100 Year Tide

Existing



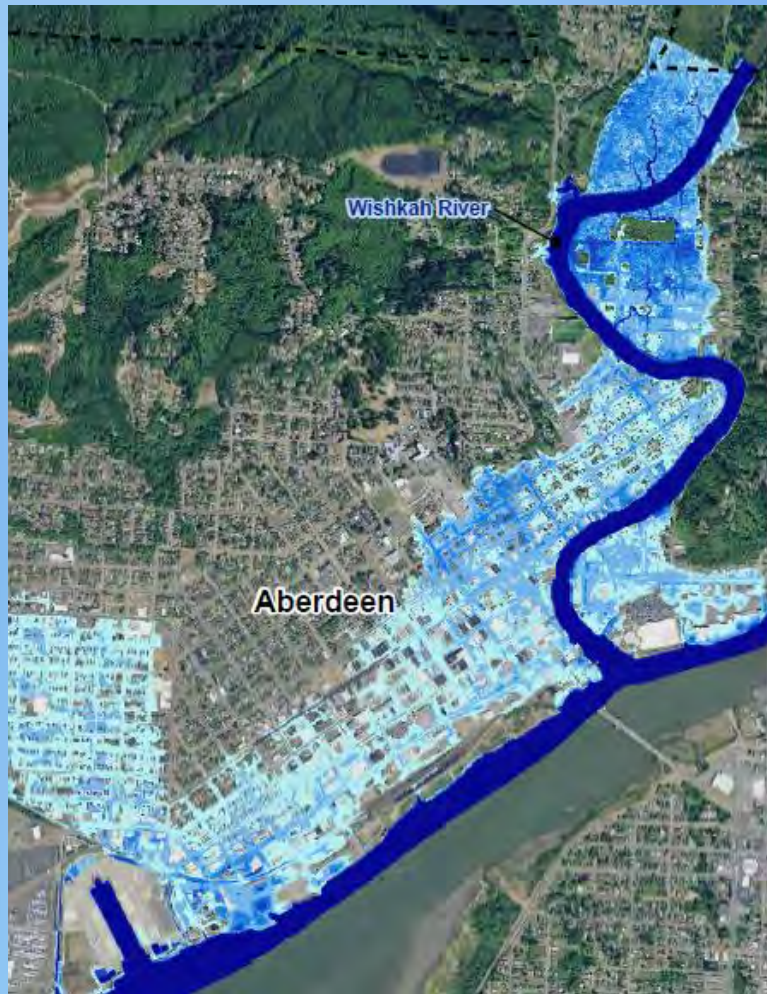
With Levee



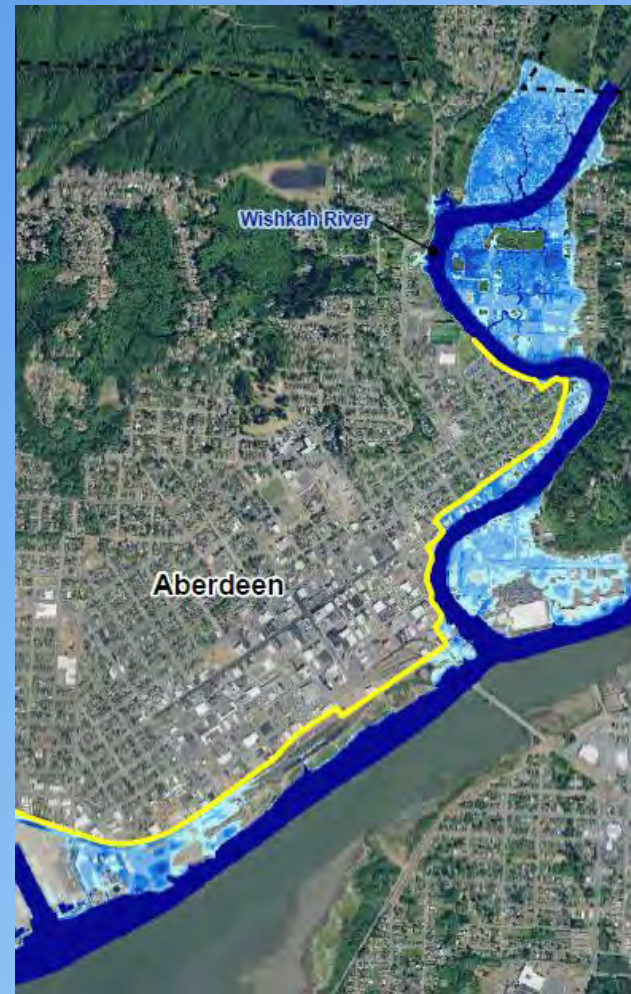


# Aberdeen Side by Side 100 Year Tide

Existing



With Levee





# Difference in Water Level With Levee



Grays Harbor County, WA



**North Shore Levee**  
**Predicted Change in Water Surface Elevation**  
100-year Event Candidate: 100-year Tide with Mean Annual Flows

0 1,800 3,600 Feet

Scale: 1:28,000  
NAD 1983 HARN  
StatePlane Washington  
South FIPS 4602 Feet

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# Discussion

