
OCB BOARD MEETING: OCTOBER 6, 2022
Chehalis Basin
LAND*
*LOCAL ACTIONS NON-DAM ALTERNATIVE

EMERGING LAND ALTERNATIVE

Chehalis Basin LAND

Community-Based Flood Damage Reduction for the Chehalis River Basin

1.
Determine the target level of protection

2.
Determine the mix of infrastructure protection, structure protection and potential relocation

3.
Determine the extent to which the natural systems of the floodplain can be restored through environmental design

4.
Determine the number and extent of resiliency elements and programs

5.
Determine funding, project management entity and implementation

Chehalis Basin LAND

1. Determine the target level of protection

Catastrophic

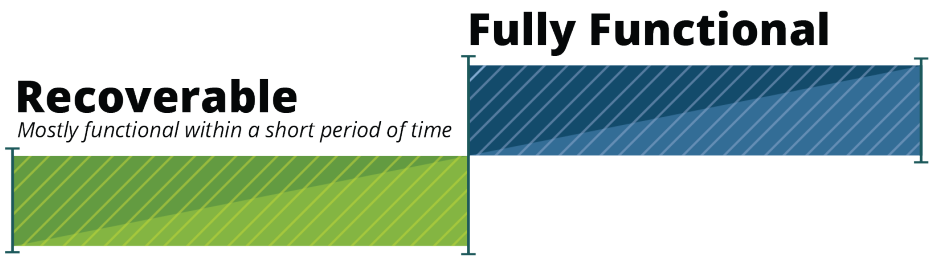
Damaging

Nuisance

TARGET

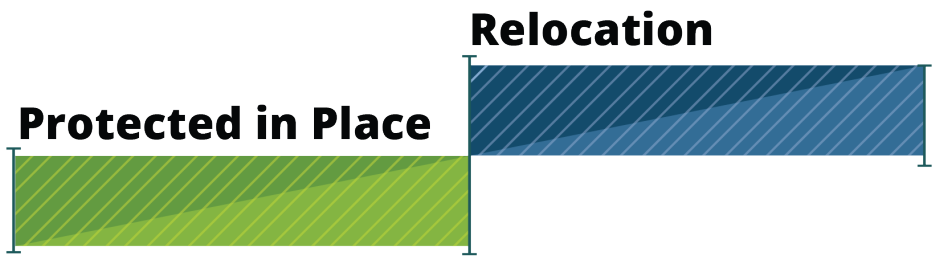
2. Determine the mix of infrastructure protection, structure protection and potential relocation

Infrastructure Protection



- Raising of roadways, bridges and railroads
- Levees, floodwalls and diversions

Safe Structures



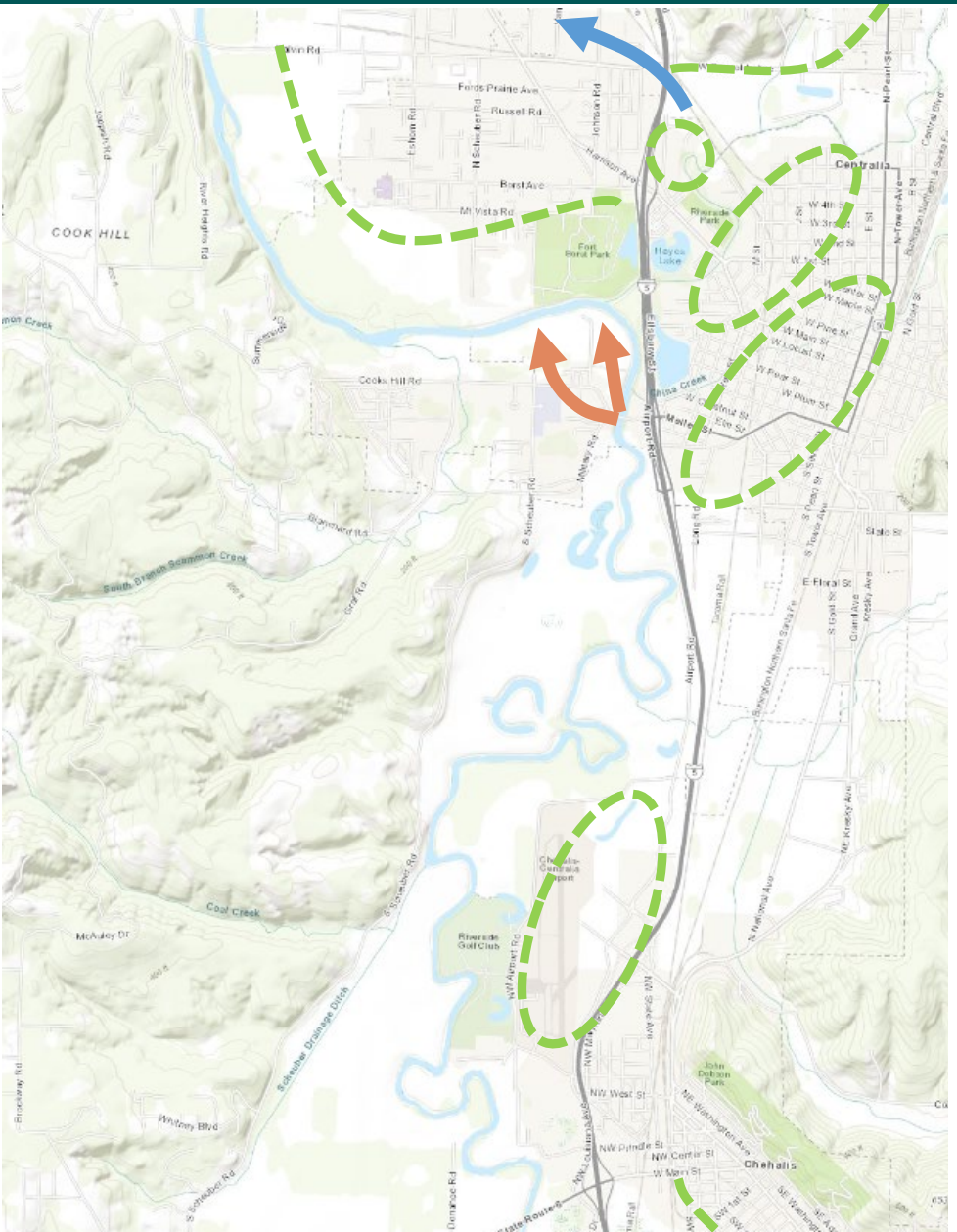
- Flood proofing, elevating structures and flood walls
- Potential relocation

INFRASTRUCTURE

Levees and Diversions

Local Infrastructure Projects

CONCEPTUAL ALTERNATIVES EVALUATED - OVERVIEW



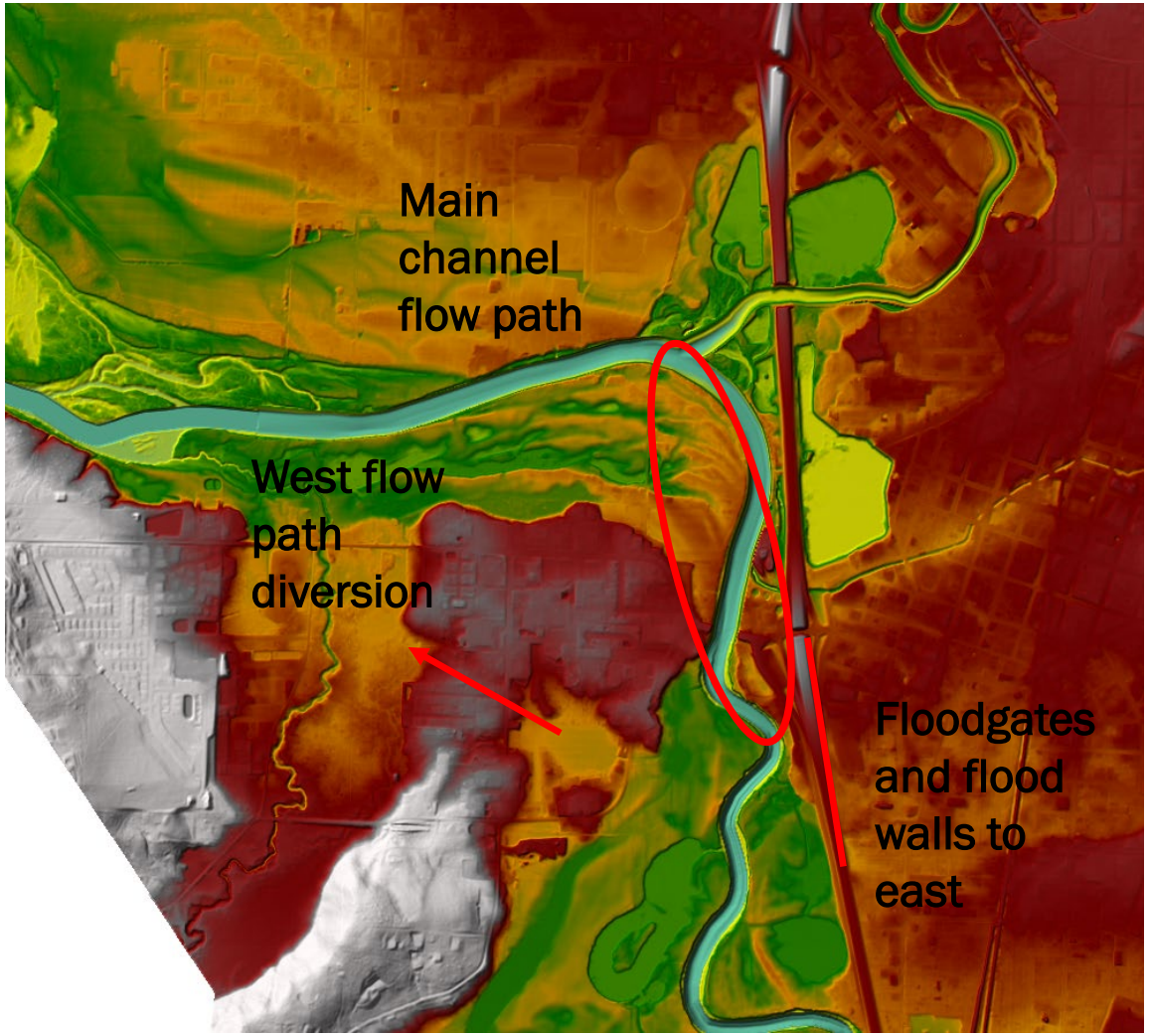
Current concepts evaluated:

- Mellen Street Diversions (orange lines)
- Skookumchuck Diversions (blue line)
- Levees (green lines)

Simulated flood events:

- 20-year, 100-year, and late century (2080) 100-year flows (**DEIS and FEIS**)

MELLEN STREET INCREASED CONVEYANCE CONCEPTS

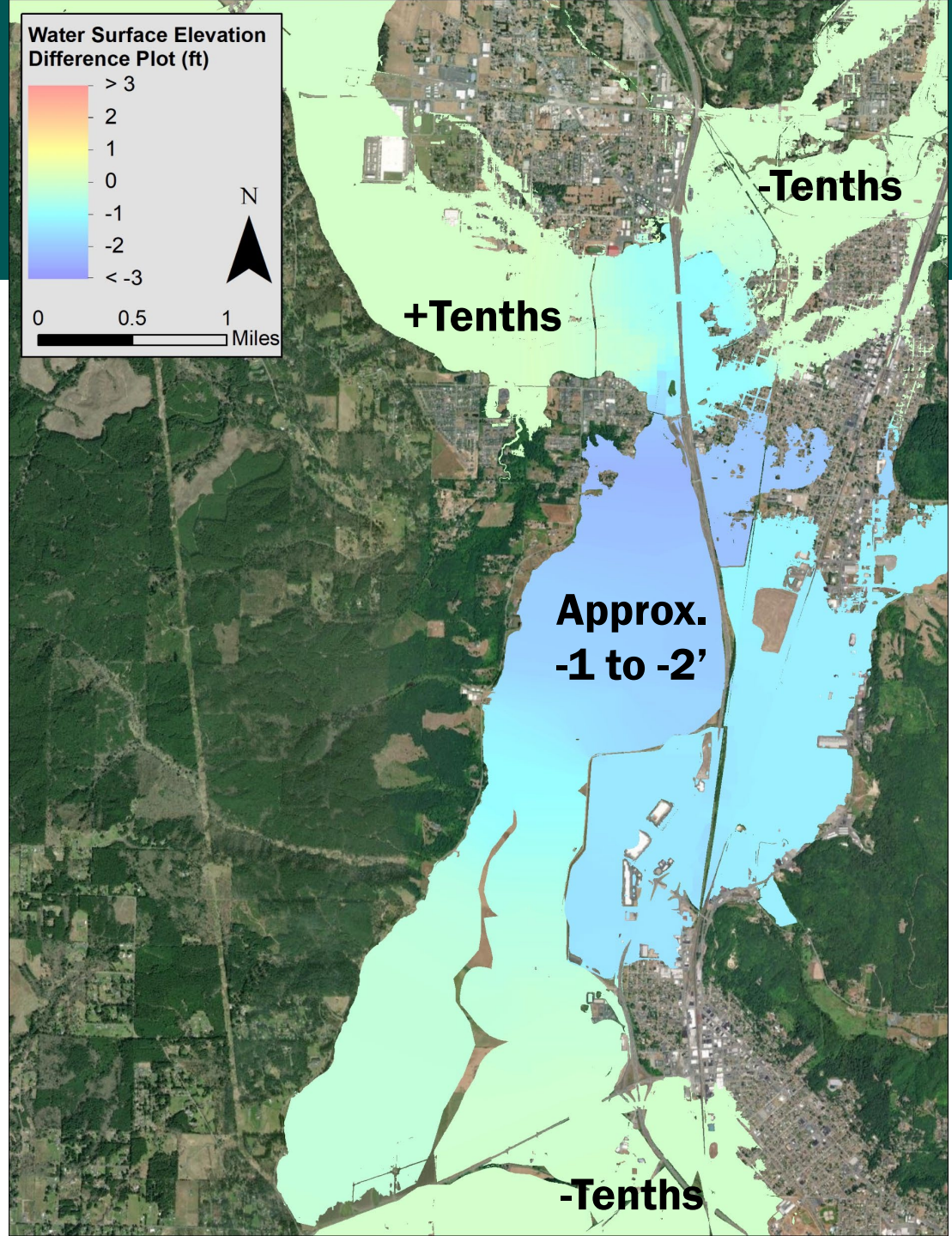


- Mainstem = Remove Mellen bridge/upstream and downstream high ground (~1,000 acre feet of soil removal)
- West = Cut channel through hillside (~1,000 acre feet of soil removal)
- East = floodgates and flood walls

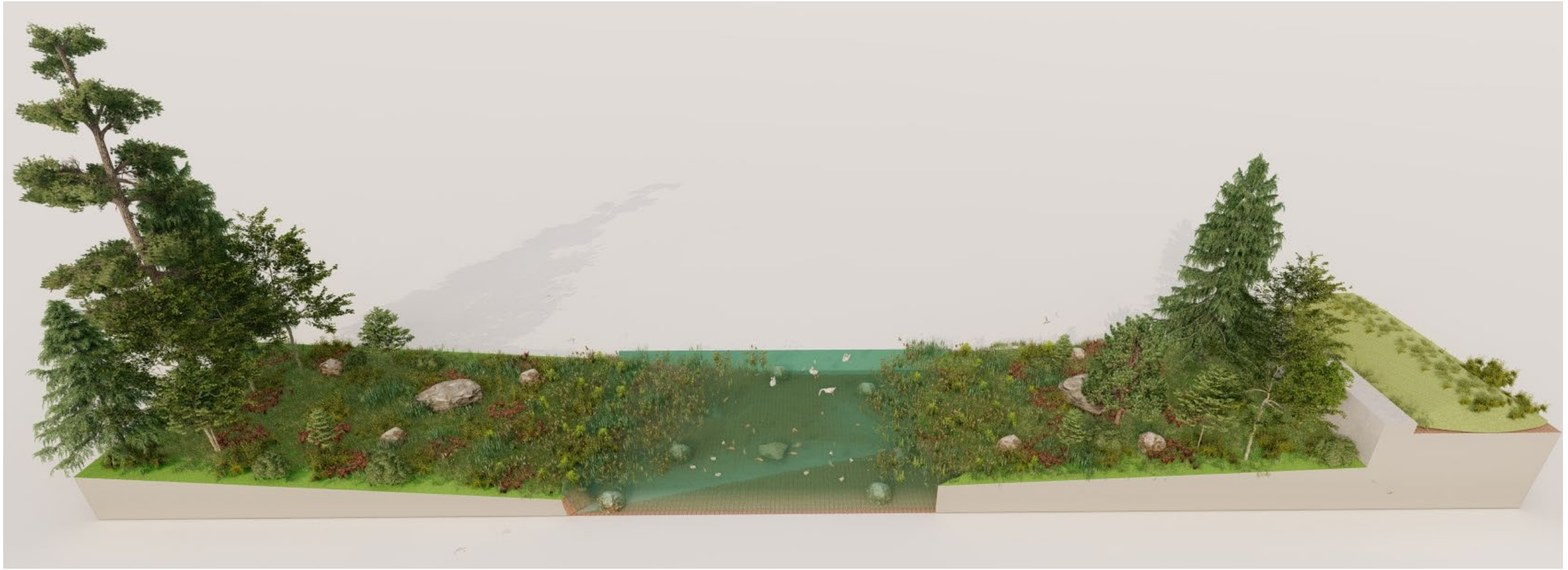
CONCEPT RESULTS – MELLEN DIVERSION MAIN & WEST

Simulated 100-year
Water Surface Shown

Simulation	# of Structures Removed from Inundation
100-year	~300
2080 100-year	~300



DIVERSION EXAMPLES – NEAR ROAD OR URBAN EDGE



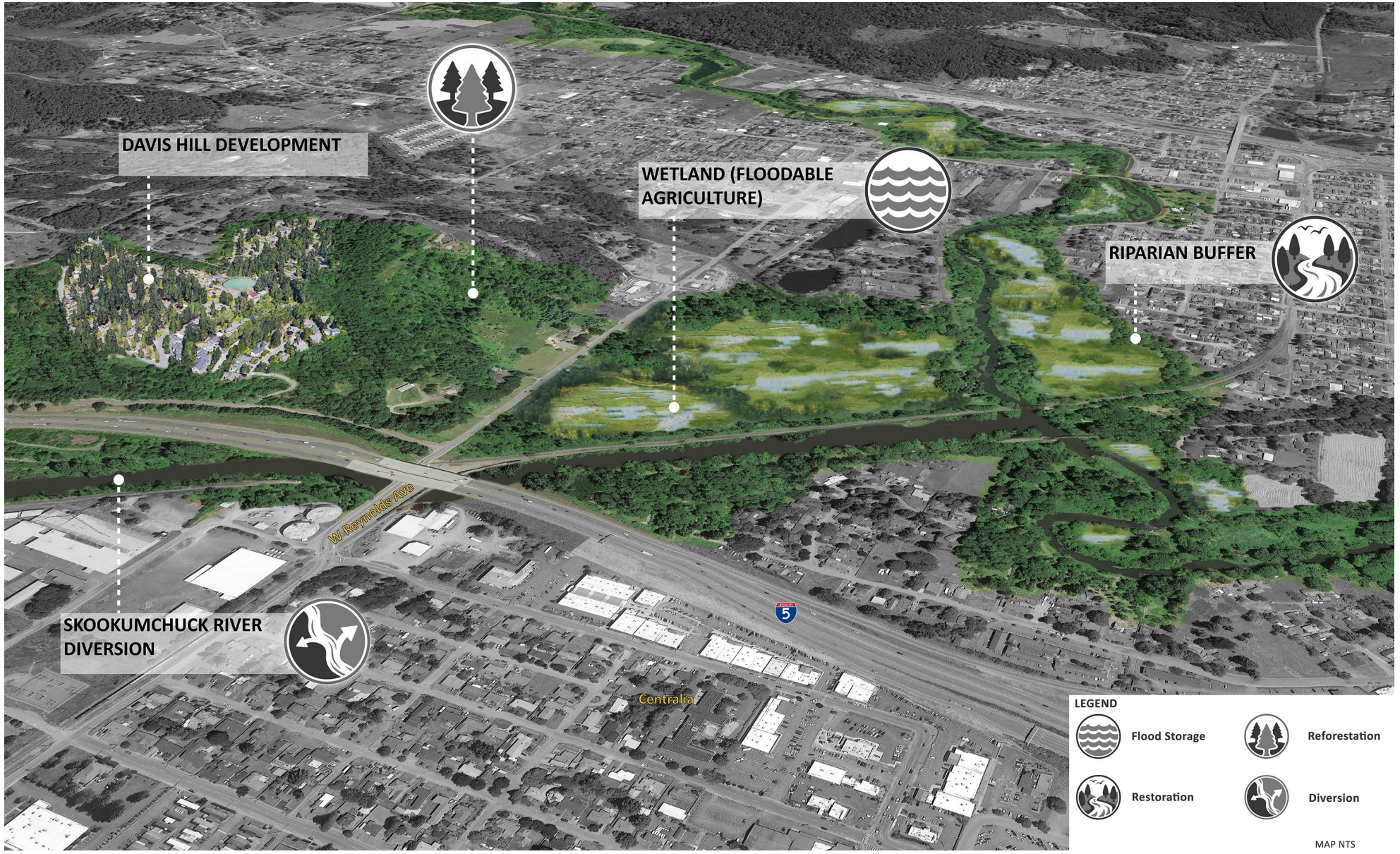
DIVERSION EXAMPLES – VEGETATED WIDE CHANNEL

DIVERSION EXAMPLES – NAPA RIVER

Source: San Francisco Chroicle

COMBINED STRATEGIES – CURRENT CONDITIONS

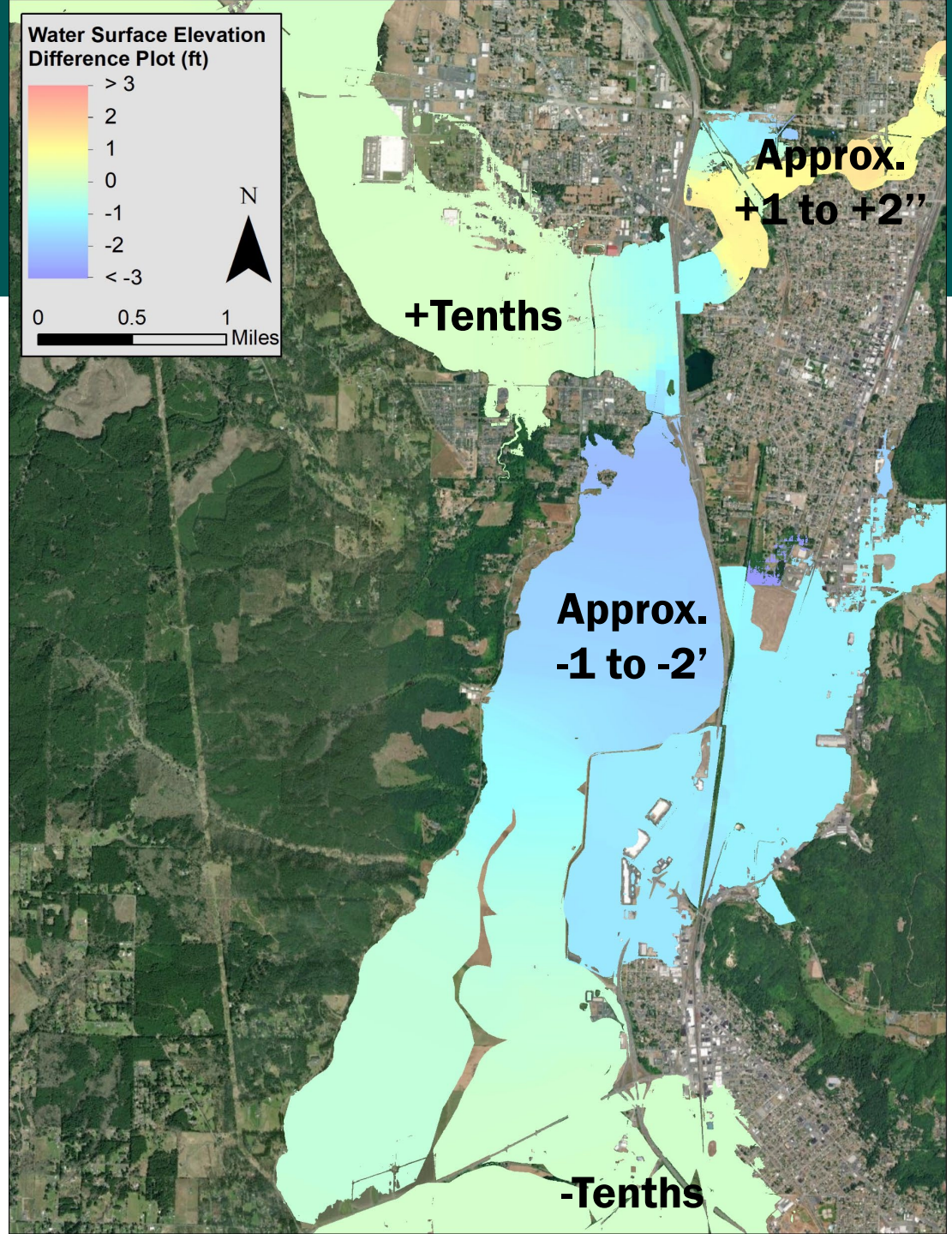
COMBINED STRATEGIES – FUTURE VISION



CONCEPT RESULTS – MELLEN CONVEYANCE WITH SKOOKUMCHUCK LEVEES AND CHEHALIS FLOOD WALLS/GATES

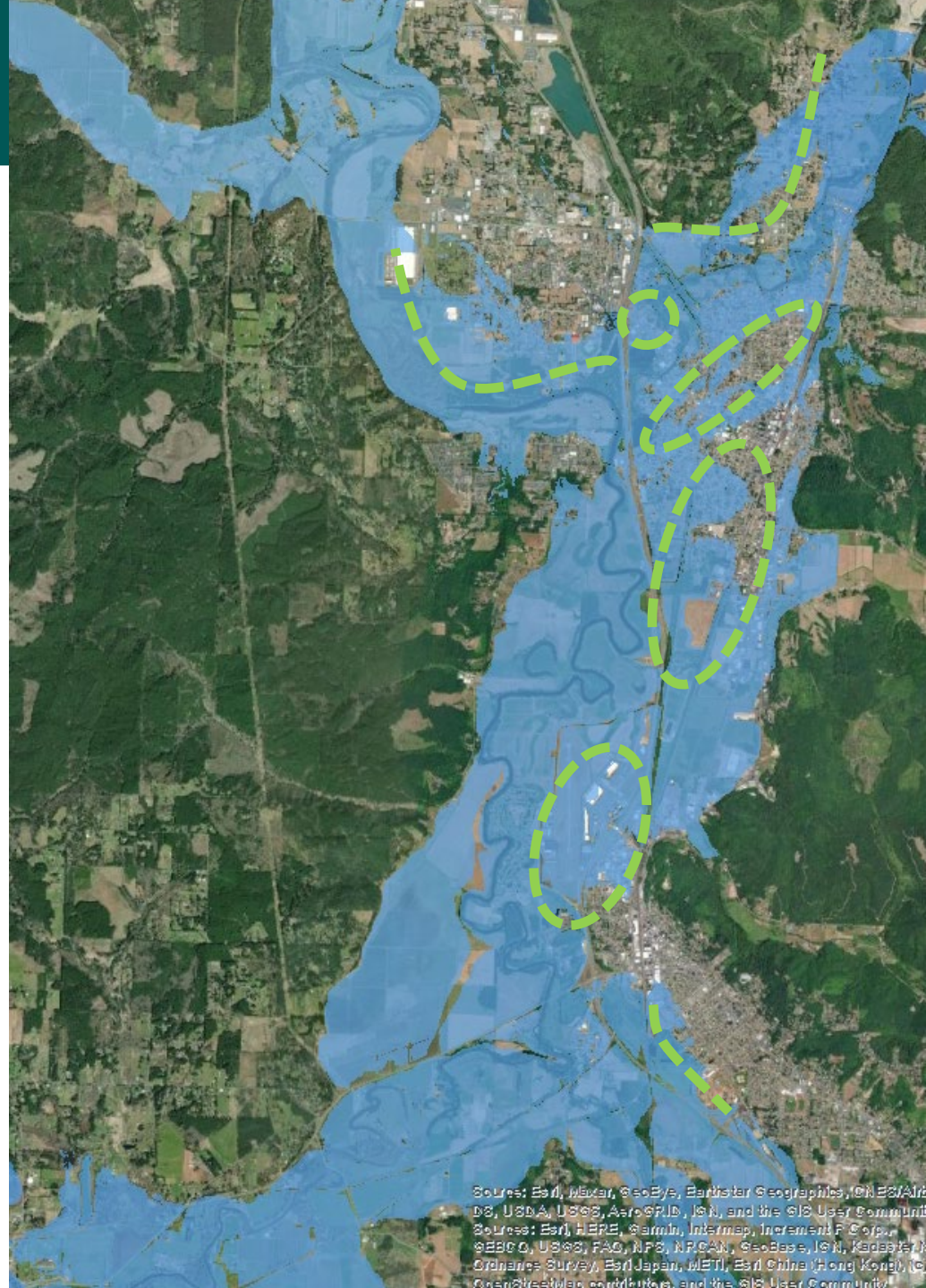
Simulated 100-year late century Water Surface Shown

Simulation	# of Structures Removed from Inundation
20-year	~200
100-year	~600
2080 100-year	~600



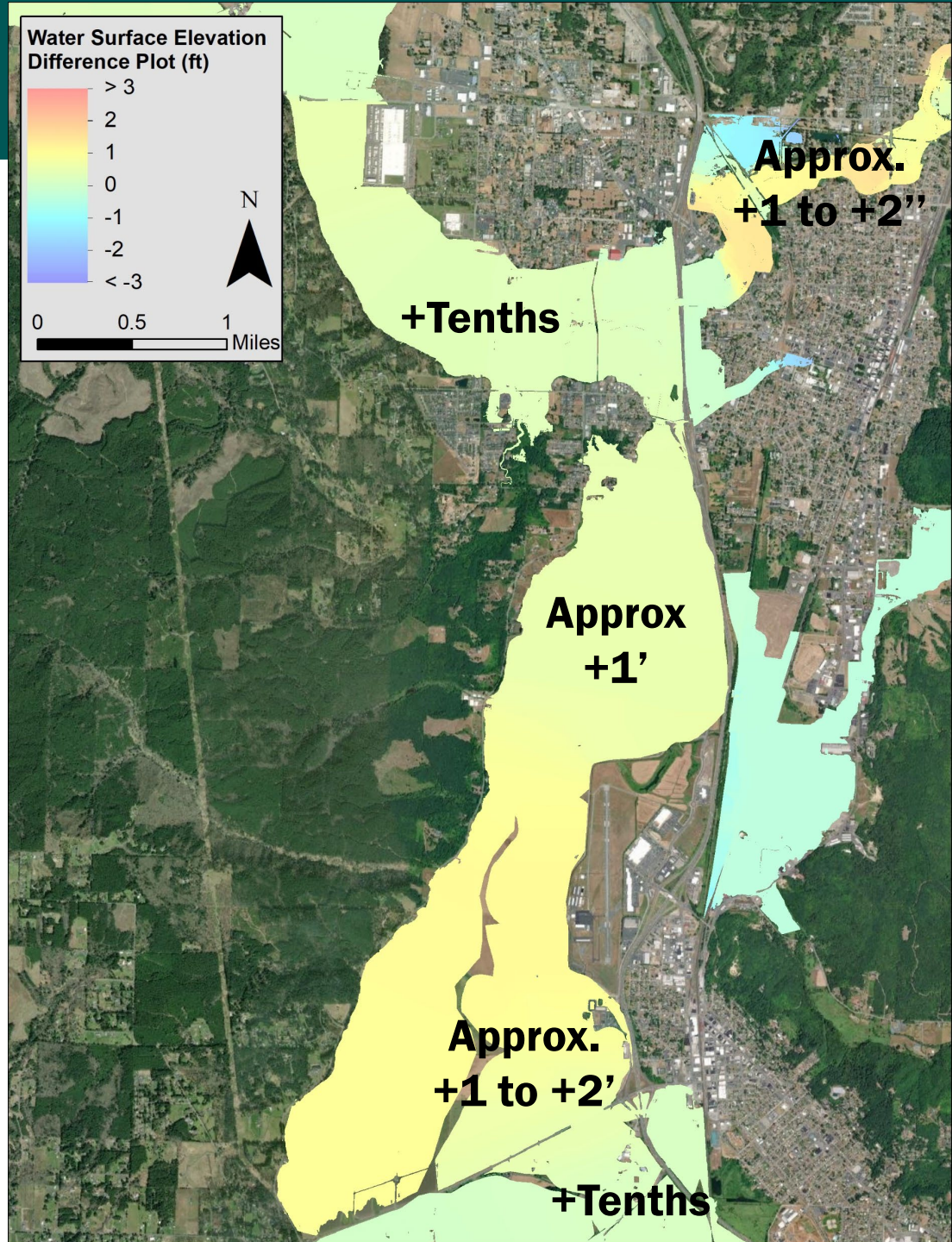
LEVEE CONCEPT

- Approximate locations (green lines)
- ~Levee location shown = vague until further refinement
- Further evaluation needed for affected downstream property



CONCEPT RESULTS - LEVEES

Simulated 100-year late century Water Surface Shown

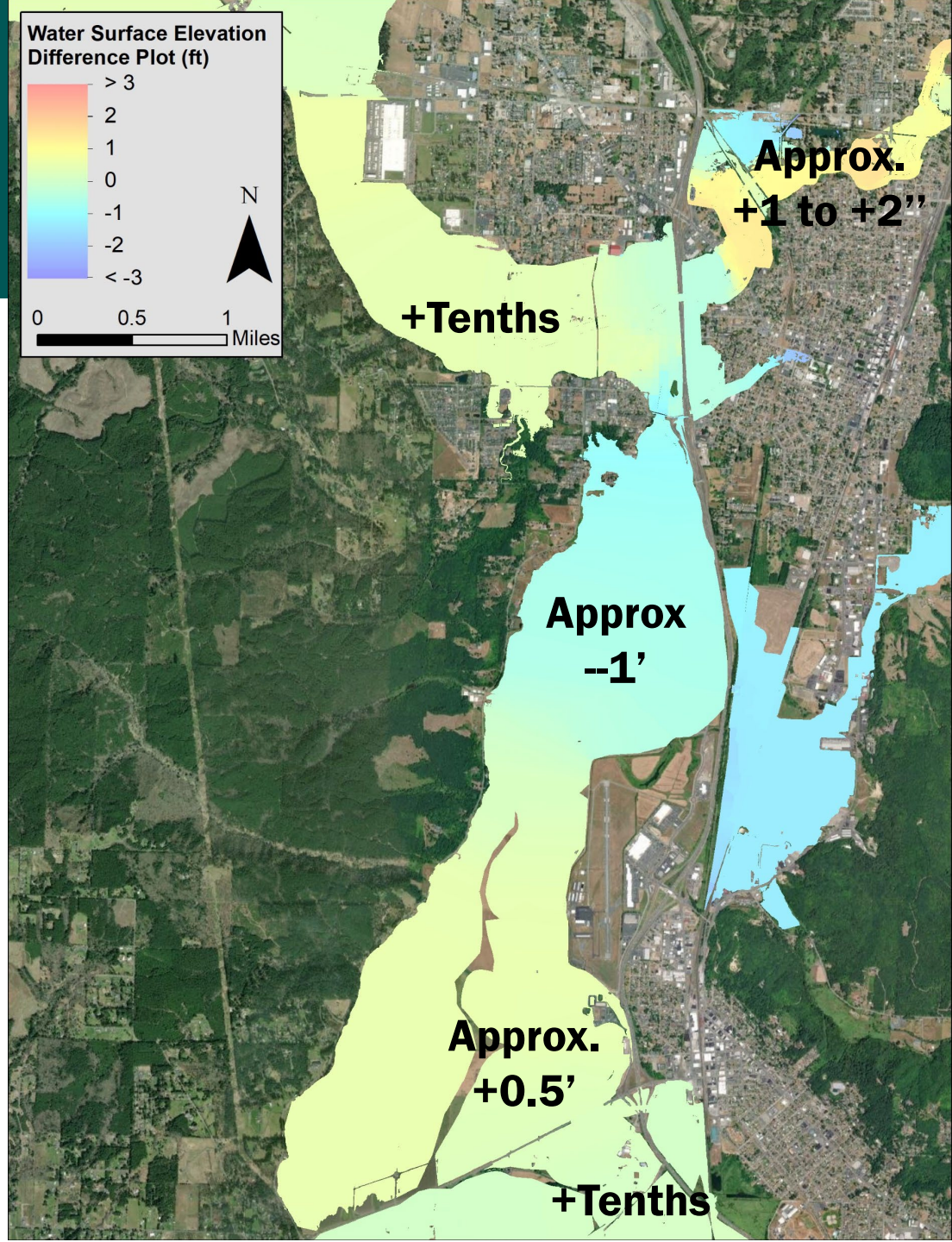


Simulation	# of Structures Removed from Inundation
20-year	~200
100-year	~700
2080 100-year	~1500

CONCEPT RESULTS – LEVEES WITH INCREASED CONVEYANCE CONCEPTS

Simulated 100-year late century Water Surface Shown

Simulation	# of Structures Removed from Inundation
20-year	~200
100-year	~700
2080 100-year	~1500



ESTIMATED COSTS FOR CONCEPTUAL ALTERNATIVES

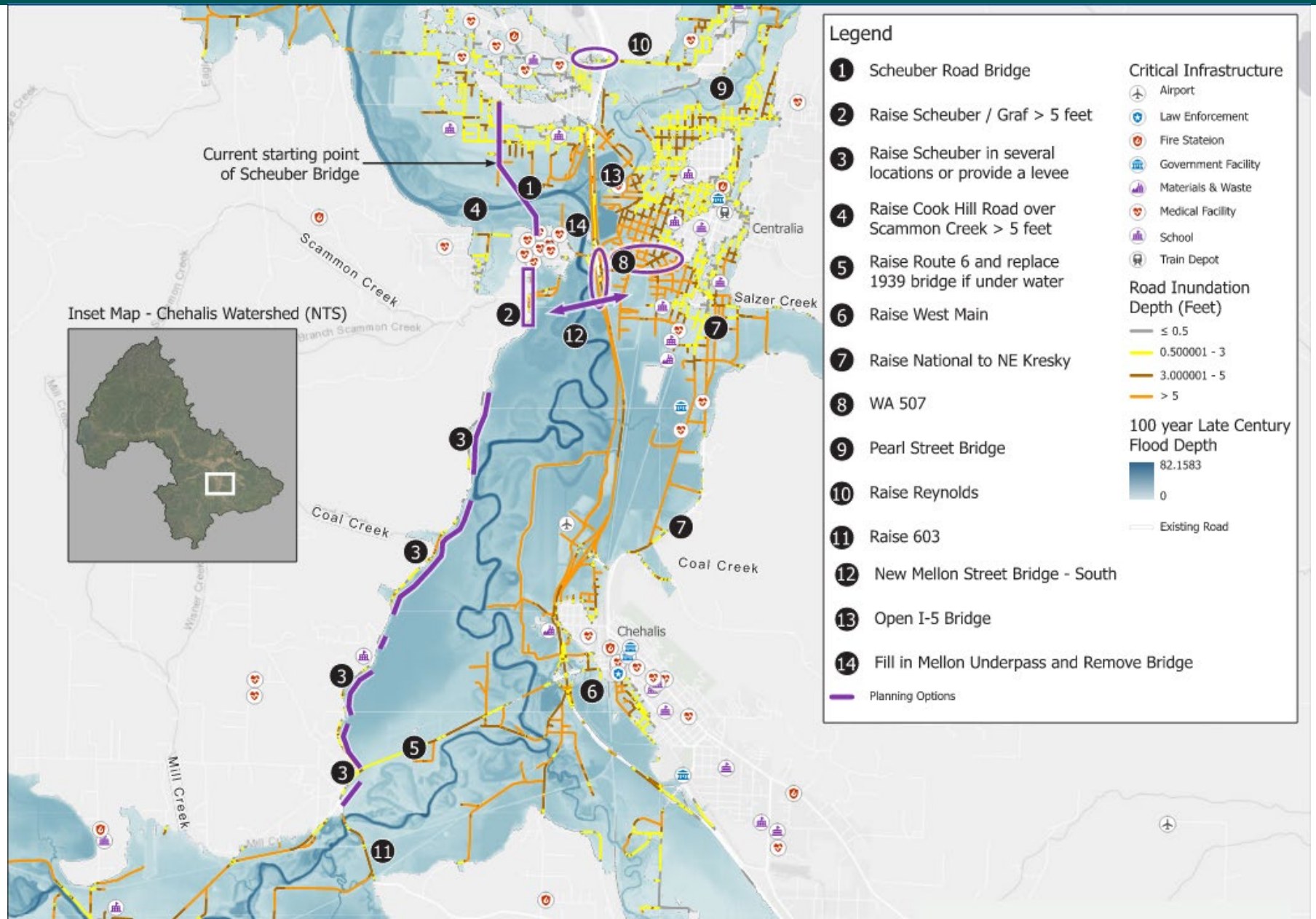
- Mellen Street Diversion (West) = $200M to $400M
- Mellen Street Mainstem Increased Conveyance = $200M to $300M
- Levees (Skookumchuck R., China & Salzer Creeks, portion of Chehalis R. along I-5 and RB DS of Skook & Newaukum) = $400M to $500M

Assumes Airport Levees are constructed separately

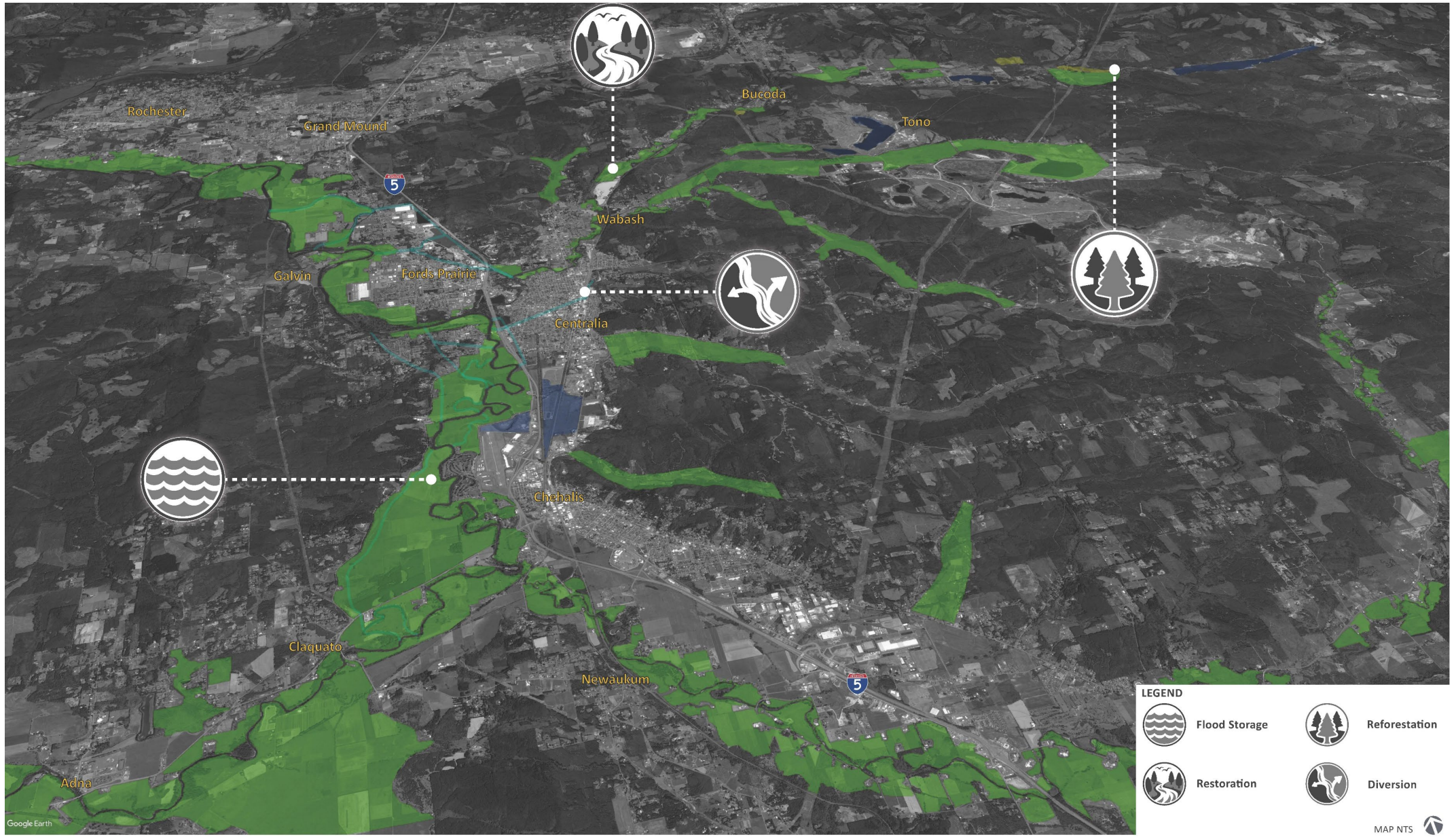
NEXT STEPS

- Detailed analysis using RiverFlow2D model
- Revisit results (inundation limits, # of structures, etc.)
- Refine levee analysis
- Address additional flood risk
  - Downstream structures
  - Upstream structures
- Coordinate on Skookumchuck Dam and Chehalis WWTP projects

ROAD INUNDATION (100 YEAR EVENT)



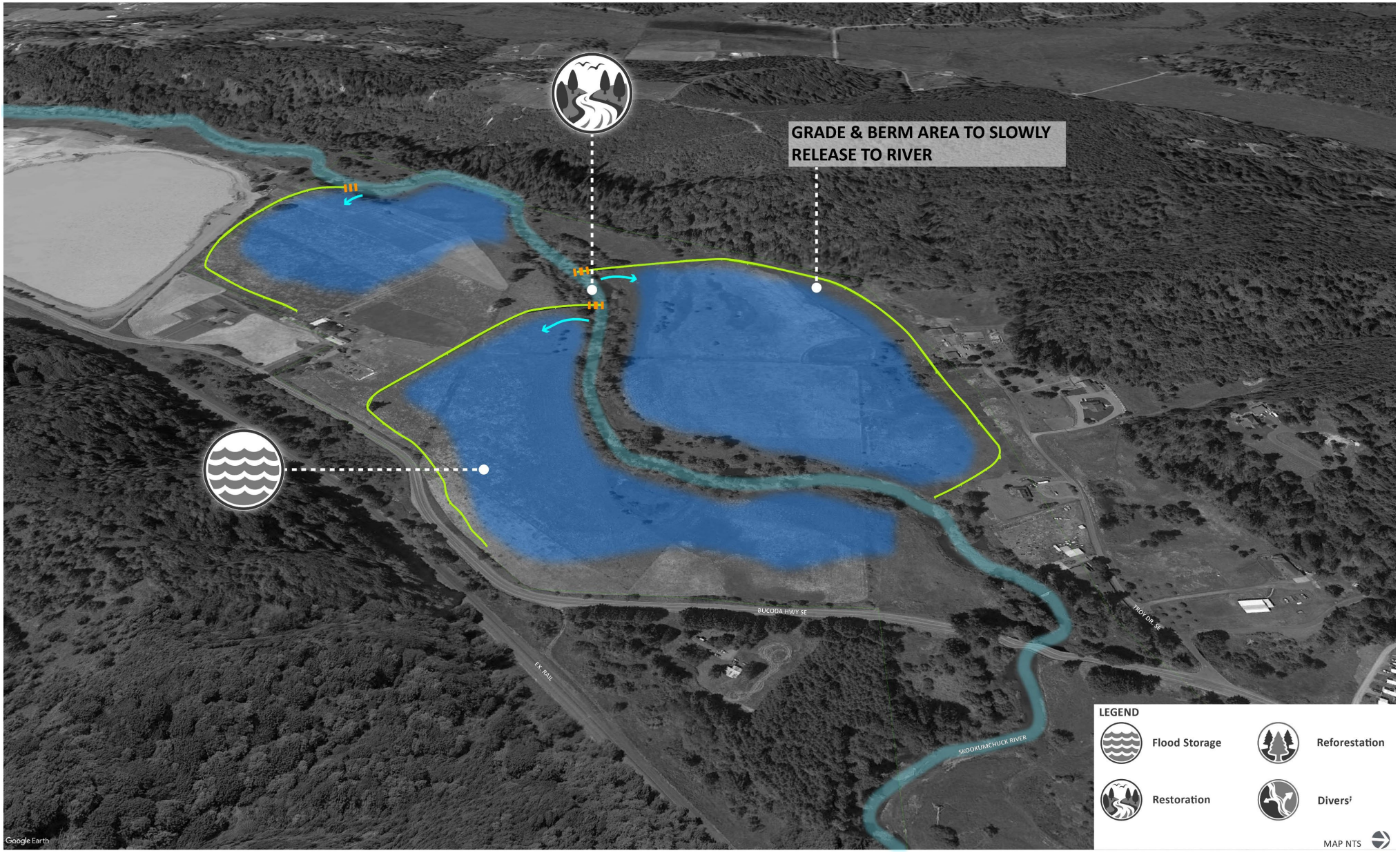
FLOODPLAIN OPPORTUNITIES



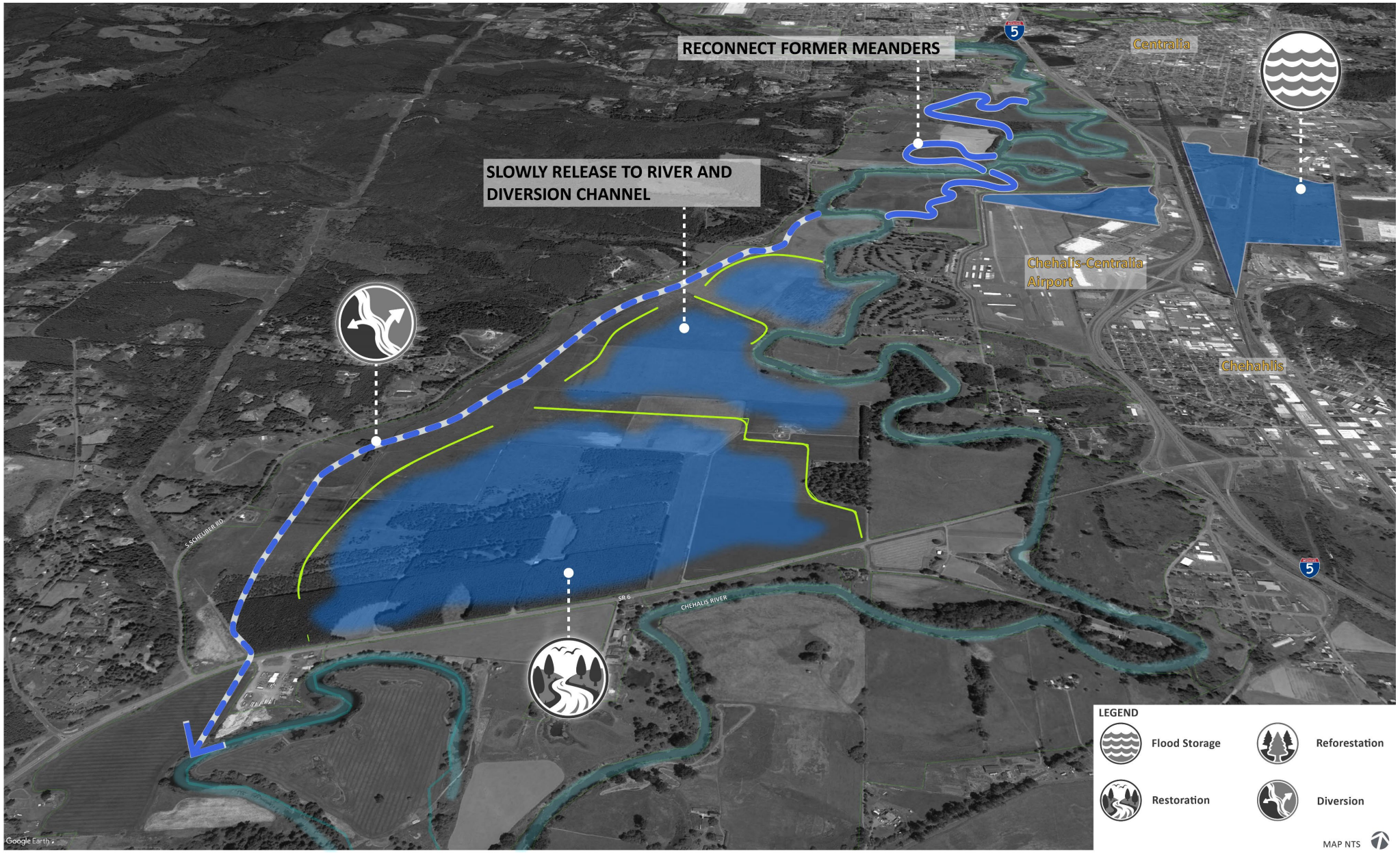
CHANNEL MODIFICATIONS AT MELLEN ST. BRIDGE

Area 1 = app. 18 acres
Area 2 = app. 115 acres
Area 3 = app. 370 acres (up to Galvin Road)

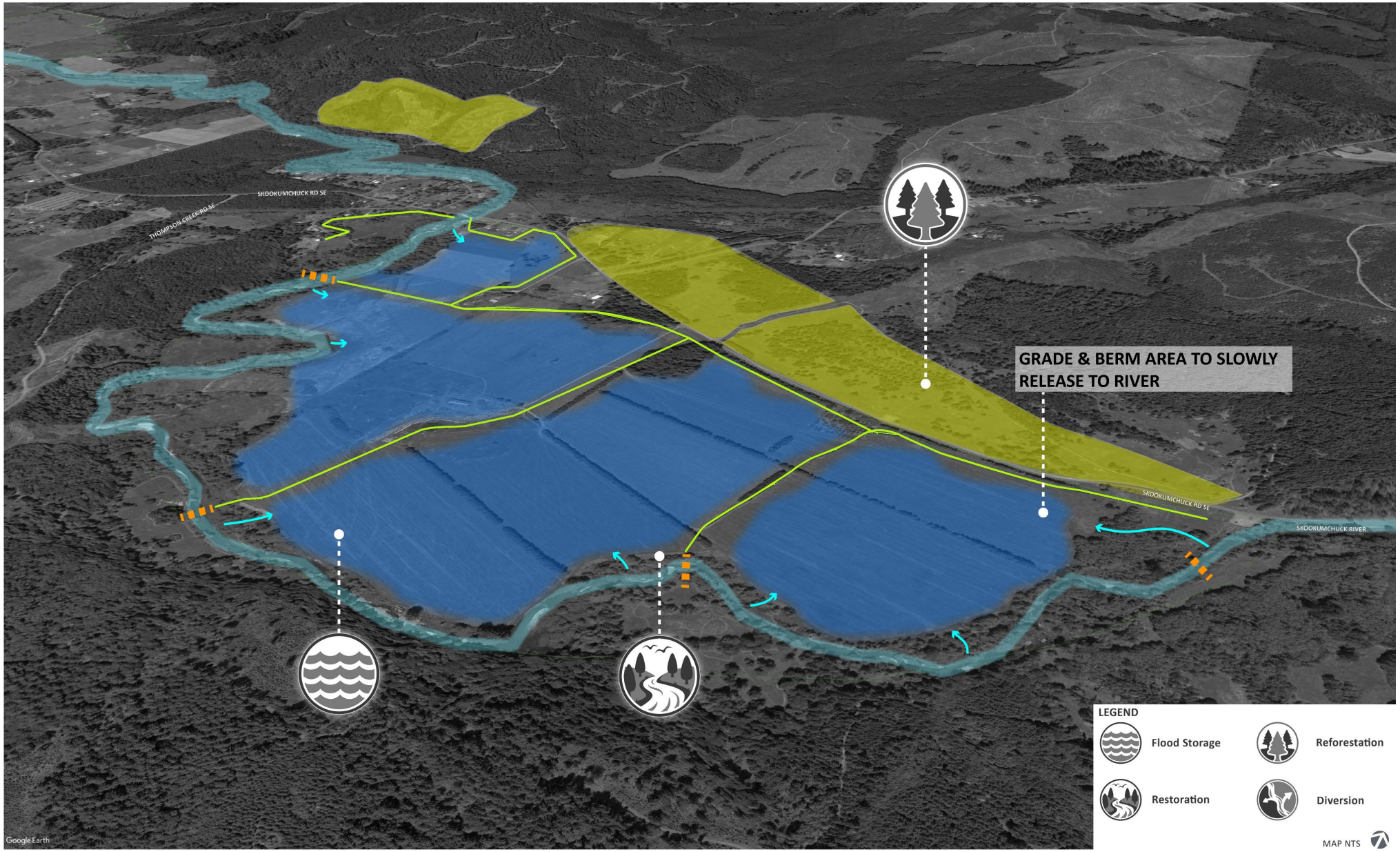
RESTORATION AREA CONCEPTS – SKOOKUMCHUCK SITE 2



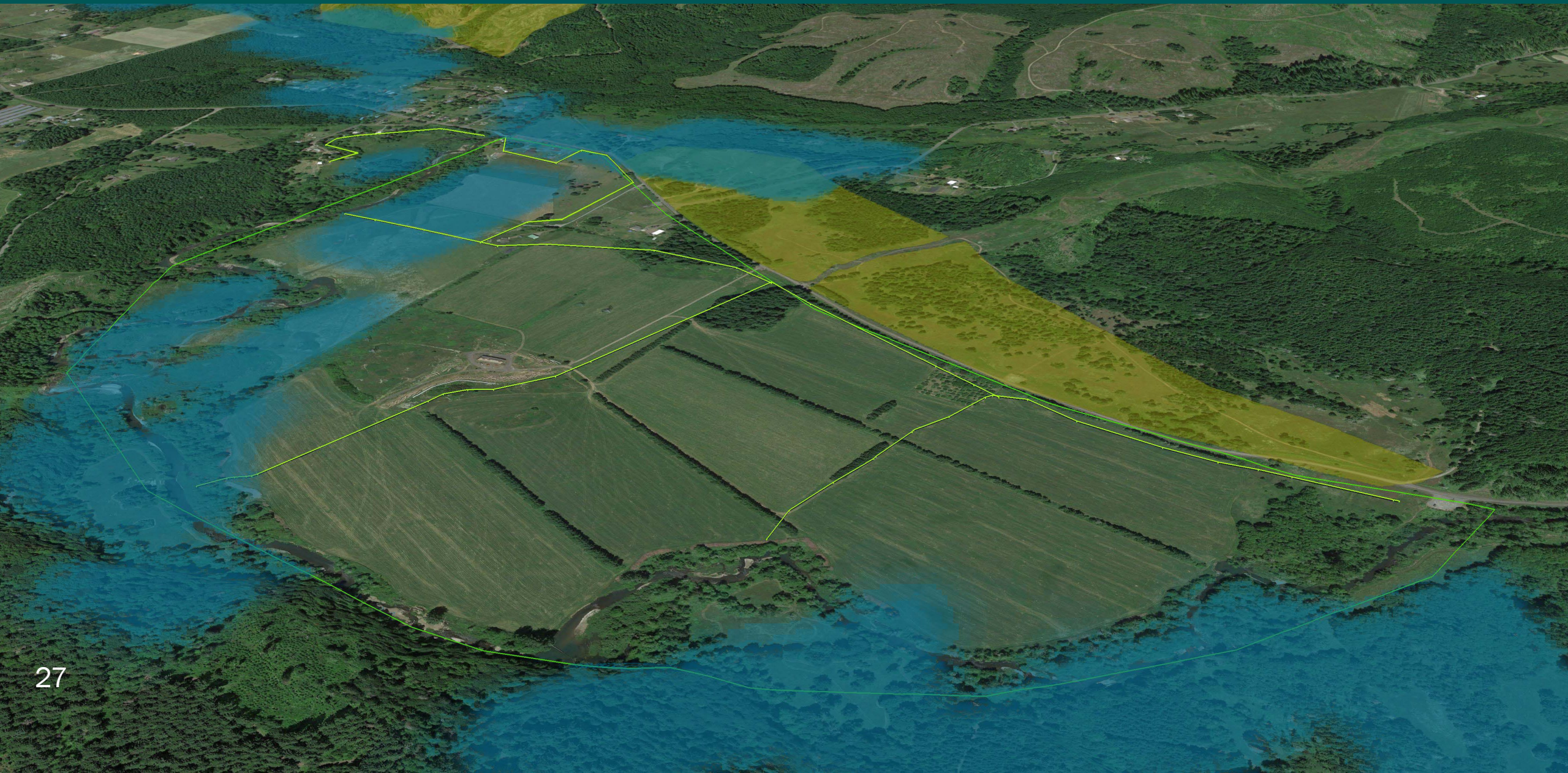
RESTORATION AREA CONCEPTS – CHEHALIS



RESTORATION AREA CONCEPTS – SKOOKUMCHUCK SITE 1

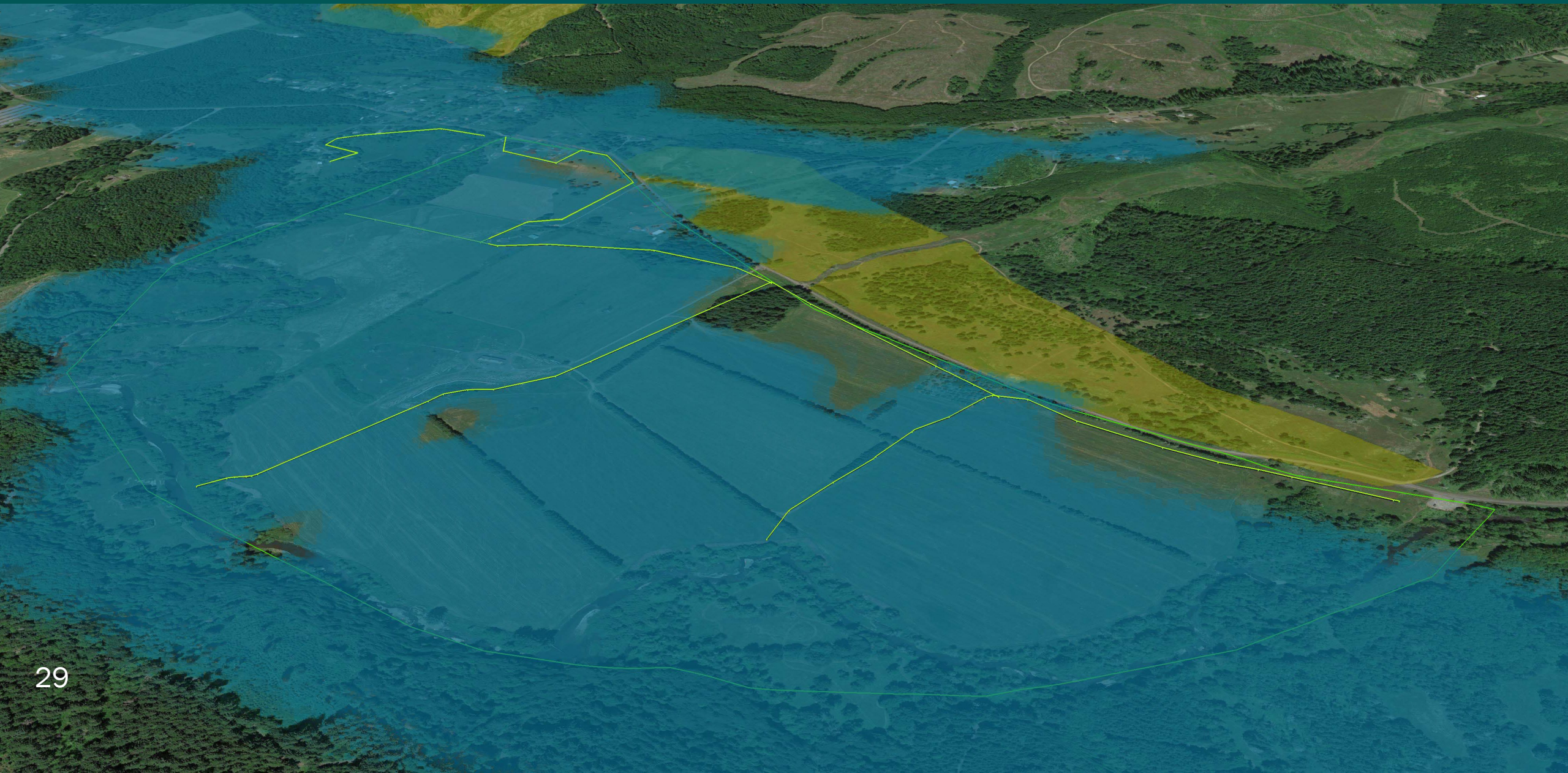


RESTORATION AREA CONCEPTS – 2-YEAR FLOOD

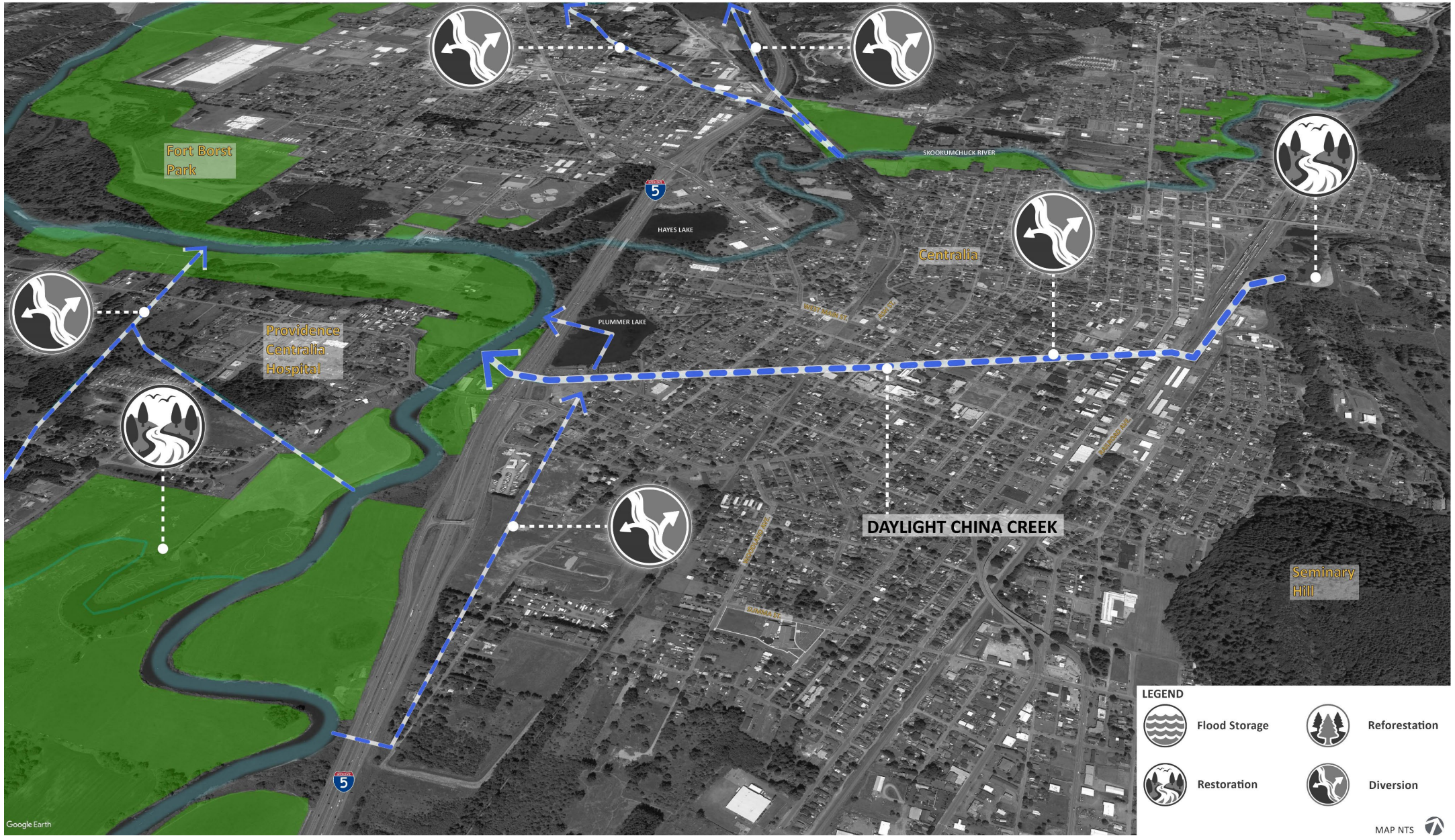


RESTORATION AREA CONCEPTS – 10-YEAR FLOOD

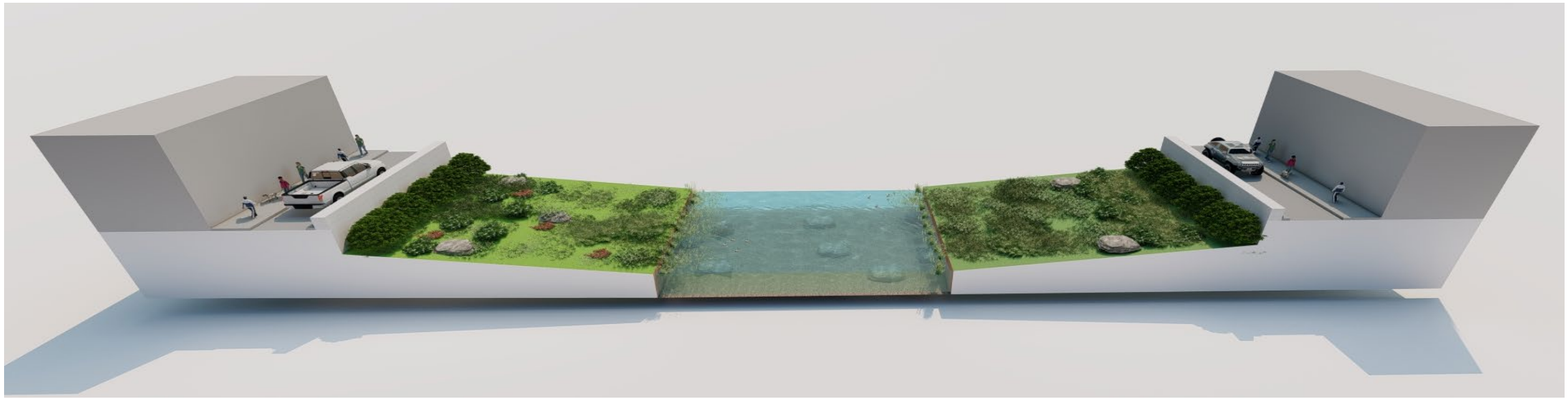
RESTORATION AREA CONCEPTS – 100-YEAR LC FLOOD



CHINA CREEK DAYLIGHTING



CHINA CREEK



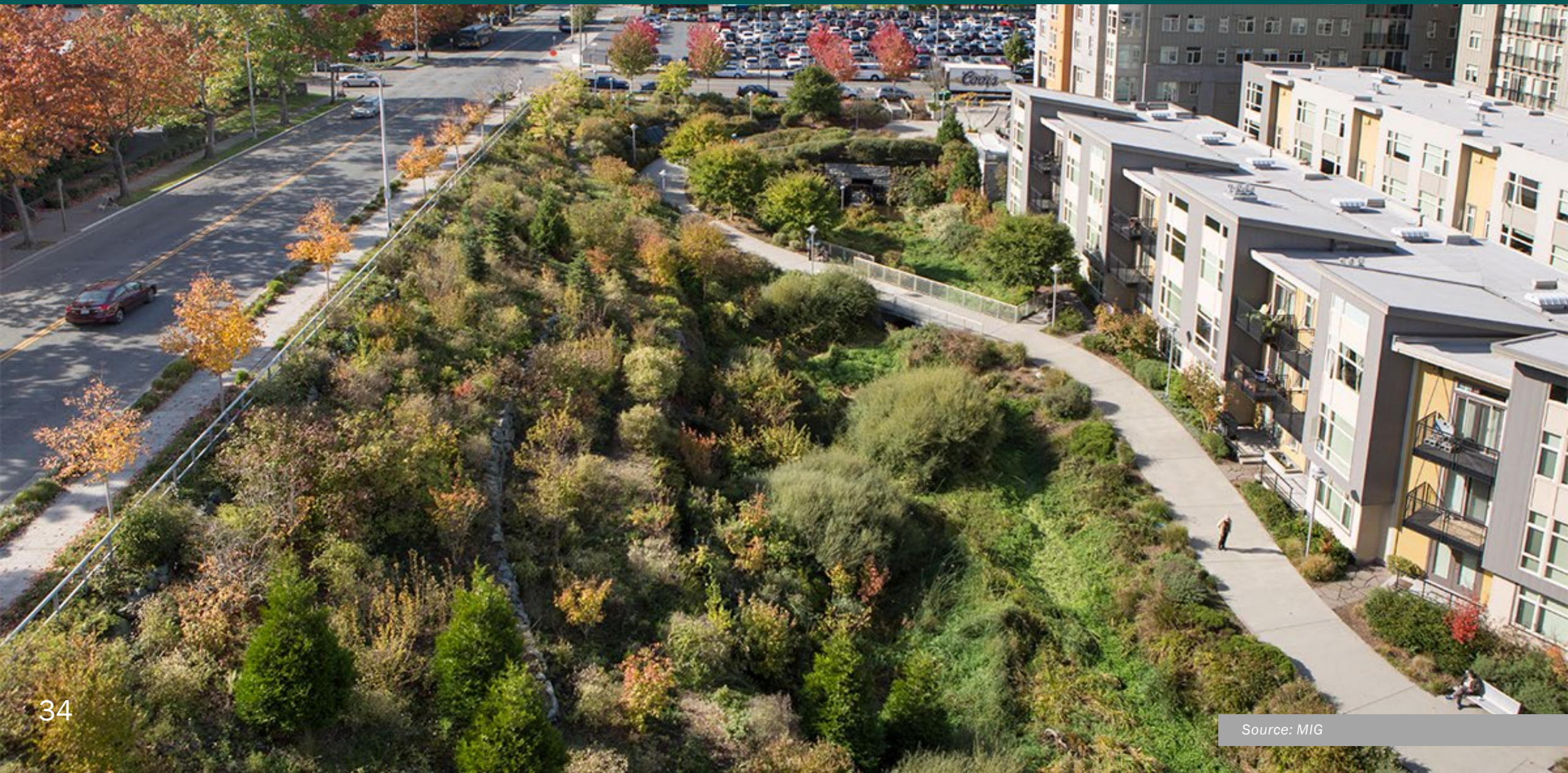
RESTORATION EXAMPLES – PARKS

Source: Balmori.com

STREAM DAYLIGHTING

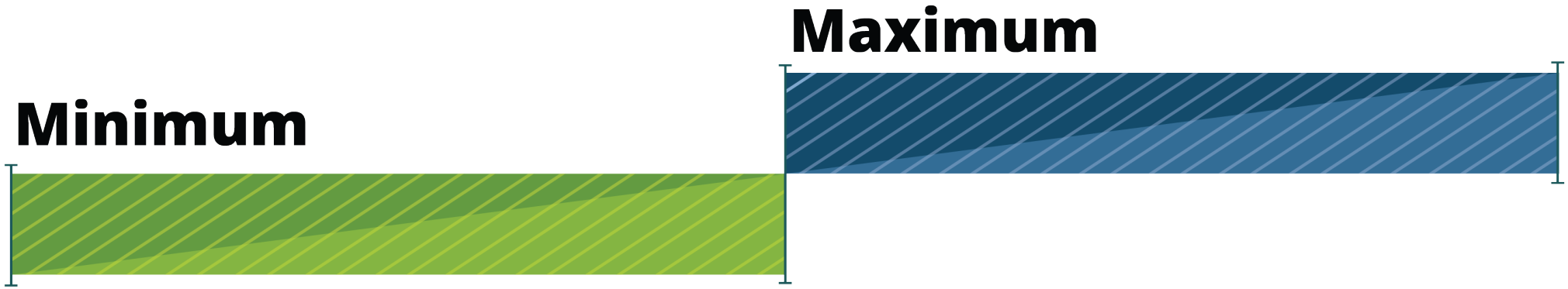
Source: Anthony22 at English Wikipedia

STREAM DAYLIGHTING



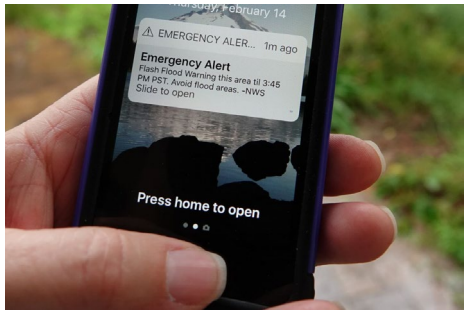
Source: MIG

4. Determine the number and extent of resiliency elements and programs



Vehicle and equipment pre-positioning

Evacuation routes and refuges



Expanded warning systems

Maintenance programs

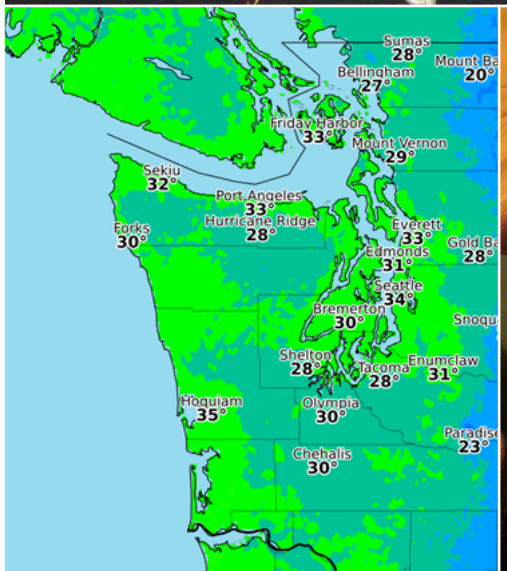
During

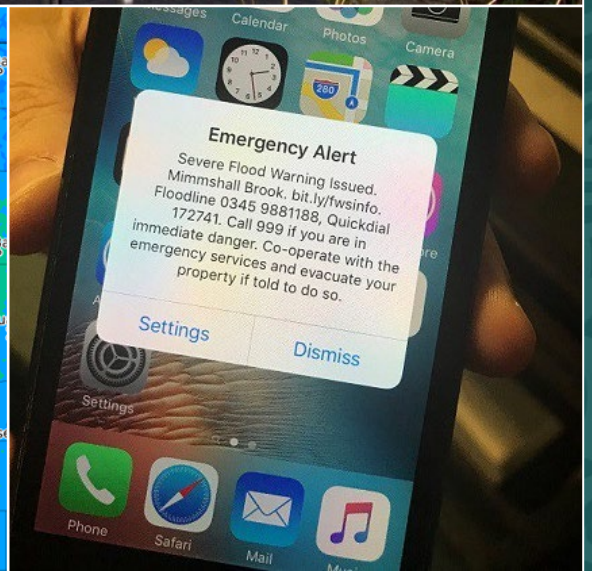
During an event, emergency managers use command and control to rescue and stabilize.

Early Warning System

Key Considerations:

- Integrated and well coordinated system.
- Includes evacuation routes and nearest community resilience hub locations.
- Accessible interface for citizens with cell phone alerts.
- Keep a phone tree for quick calls to friends and families if needed





Farm Evacuation Plans

Chehalis Basin LAND

Town and City Evacuation Plans

Community Resilience Hubs (to accelerate recovery)

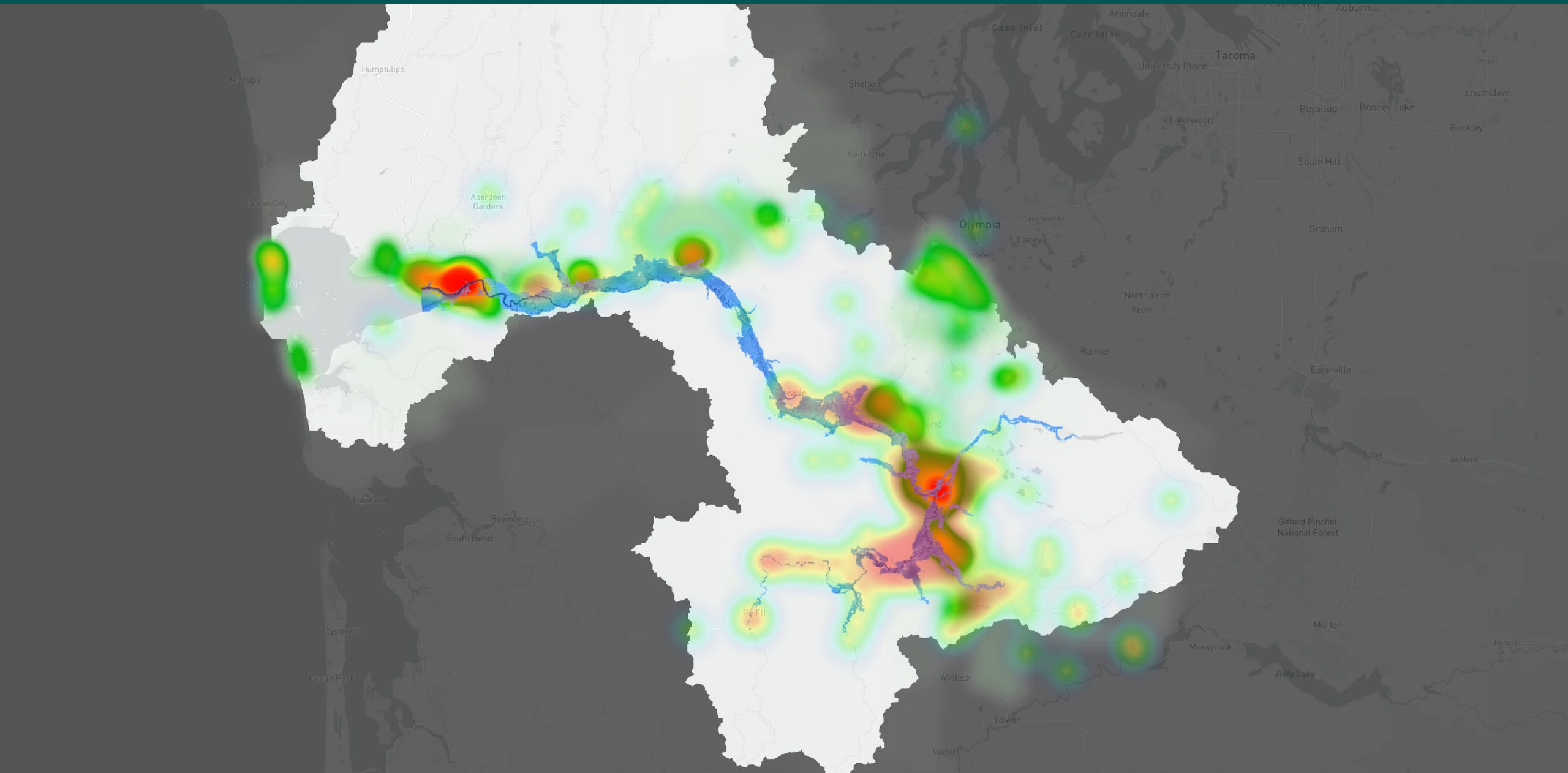
1. Located Above the Highest Floodwaters
2. Capability to Handle Peak Events
3. Programming Supporting Resiliency and Skills Training
4. Onsite Storage of Food & Materials
5. Onsite Equipment
6. Onsite Food Preparation Capability
7. Animal Refuges for Livestock and Pets
8. Volunteer Coordination Center
9. Business Center
10. Recreation Areas

ONLINE SURVEY

WHO RESPONDED?

- 738 partial responses and 211 complete responses
- Almost two thirds are residents of the Chehalis Basin
- Many have lived here for a long time, 30% have lived here for 40 years or more
- 99% speak English as a first language at home
- 92% have some form of higher education
- 47% have a yearly household income of 90k or higher
- A little over half are 55 or older
- Most respondents identify as White/European

WHERE PEOPLE LIVE



CONNECTION TO THE CHEHALIS BASIN

- Of respondents, **66% felt most connected to South Chehalis Basin**
- Respondents **value the natural beauty and rural lifestyle**
- A little over **2/3 have been personally impacted by flooding in** the Chehalis Basin
- Many have **learned how to monitor flood warning signs, signed up for alerts, or prepared evacuation plans** as a result

ALIGNMENT WITH CRITICAL VALUES

How well does the list capture the critical values for this process?

- 62% somewhat to strongly agree
- 20% feel more neutral
- 18% somewhat to strongly disagree

Family, Culture, Heritage

Economic Vitality

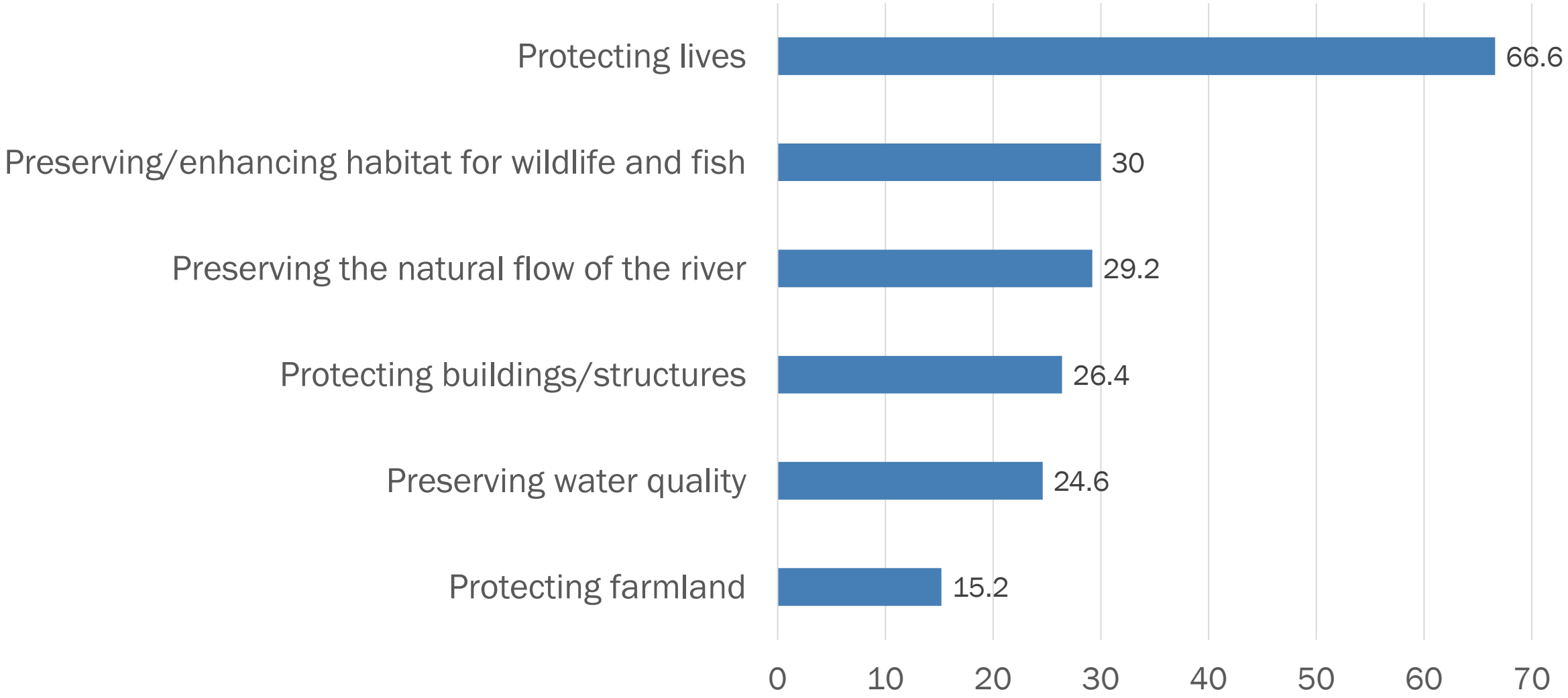
Natural Wonder

Trust, Respect, Self-Determination

Public Safety/ Resiliency

Healthy Environment/ Healthy People

IMPORTANT OUTCOMES



NEXT STEPS

Chehalis Basin LAND

LAND Alternatives for Flood Reduction: Draft Schedule

June 24, 2022

MEETINGS & ENGAGEMENT

Project Scoping and Information Gathering

Project Kickoff and Values Alignment

Develop Basin Alternatives

Alternatives Refinement and Analysis

Recommendations and Implementation Strategies

Internal Project Kickoff

Meeting Window #1: Stakeholder Meetings/Site Tour

Online Survey Virtual Storefront

Online Survey: Community Priorities

LAND Steering Committee

LAND Steering Committee/OCB Board

LAND Steering Committee/OCB Board

Meeting Window #2: Values Planning Workshop

LAND Steering Committee/OCB Board

LAND Steering Committee/OCB Board

LAND Steering Committee/OCB Board

LAND Steering Committee/OCB Board

Community Priorities Workshop

LAND Steering Committee/OCB Board

ANALYSIS, PLANNING, DESIGN & DELIVERABLES

Information Transfer & Baseline Summary

Project Onboarding Meetings

Communications and Engagement Plan

Values Planning Briefing Book, Draft Metrics

Precedent Research

Draft Basin Alternatives

Technical Analysis

Refined Basin Alternatives

Preliminary LAND Alternative)

FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

2022


Chehalis Basin
LAND*
*LOCAL ACTIONS NON-DAM ALTERNATIVE
PLANNING PROCESS

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