



La Conner Design Charrette

Event Summary

October 12-13, 2017

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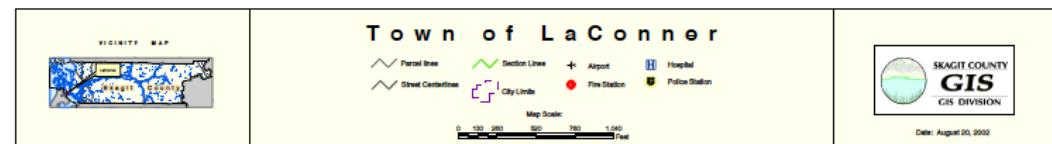
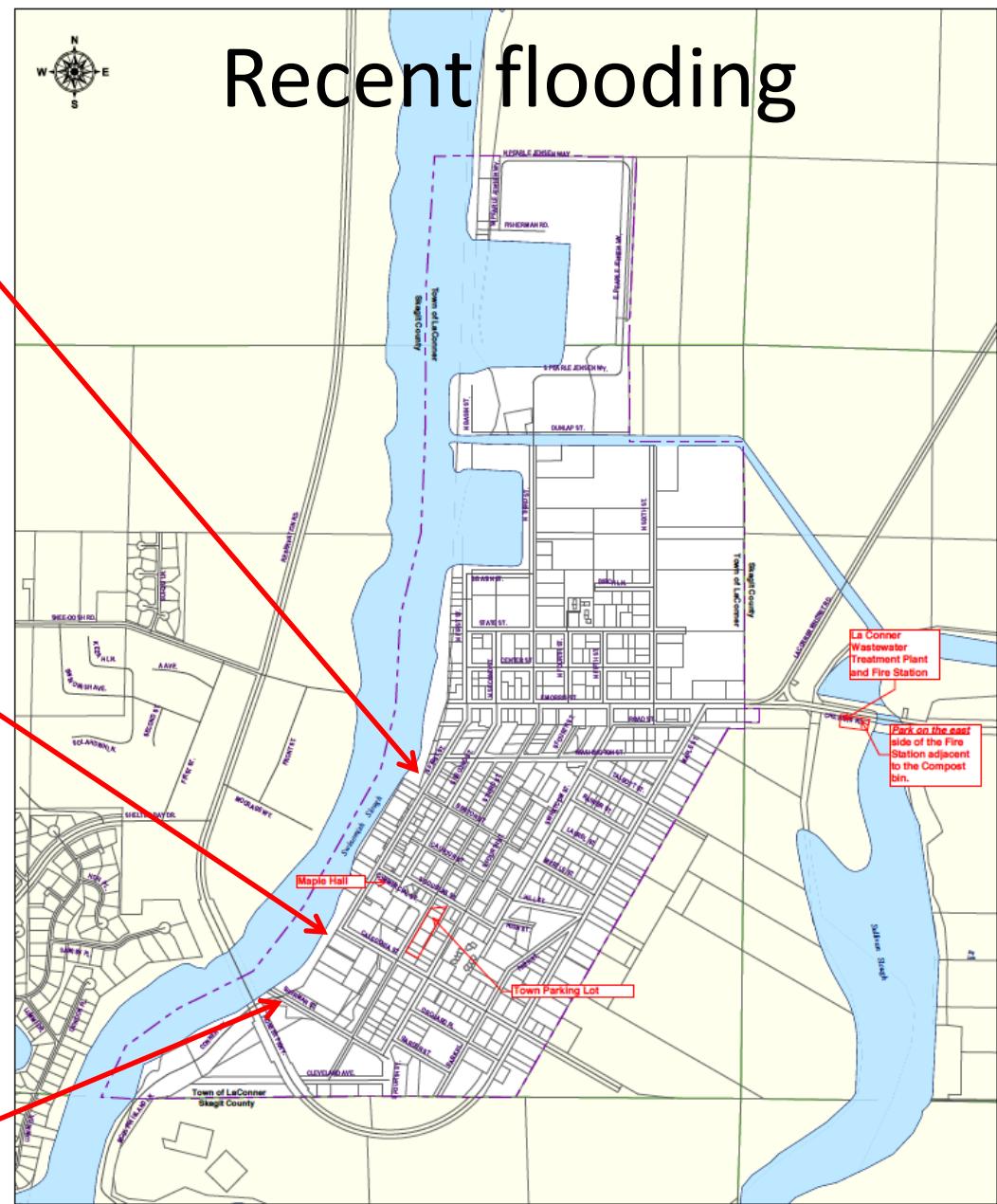
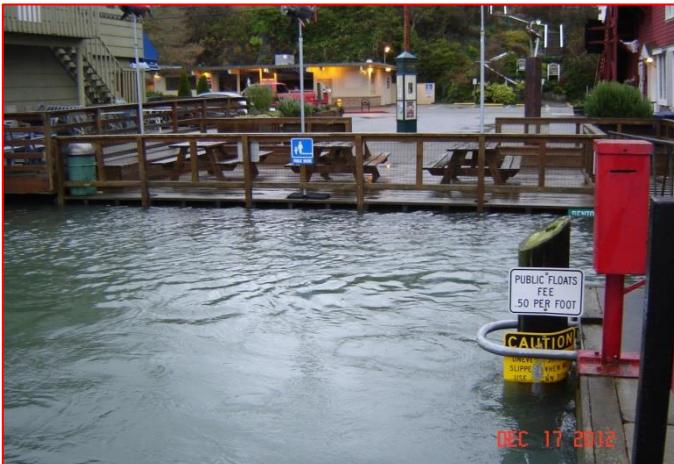
La Conner, Washington is a small historic fishing village and arts community very near sea level. Over the last 15 years La Conner downtown businesses and infrastructure has been increasingly impacted by higher storm surges (water levels that top normal tidal variation because of low pressure storm systems). Sea level rise and other climate change impacts will likely increase these events and make them worse over time.

The La Conner Design Charrette was convened to create a range of visionary strategies for the future. Many ideas were generated – some may prove to be dead ends, other may lead to breakthroughs. They are all documented here.

- The charrette began on the afternoon of October 12, 2017 with a tour of the wastewater treatment plants and area impacted by flooding.
- October 13th was a full day with facilitated presentations and working sessions designed to generate new ideas and adaptation solutions based on local priorities and values.
- Scientists from the Skagit Climate Science Consortium presented advanced scientific insight on the likely progression of flooding in La Conner.
- This *value planning* process is designed to assist communities to think creatively about how land use and infrastructure can create the most value for their community.
- The project was envisioned by the Skagit Climate Science Consortium, the Town of La Conner, the Swinomish Tribe, and consultant CollinsWoerman.
- Additional participants included representatives of the Swinomish Tribe, local business and building owners, the Evergreen Center for Sustainable Infrastructure, Emergency Management Division of the State of Washington, La Conner Mayor, Council and Planning Commission members, La Conner Weekly, Museum of Northwest Art, and the Skagit Valley Herald, with assistance from an intern from Western Washington University.



This report prepared by Steve Moddemeyer, CollinsWoerman. Edited by Carol MacIlroy, SC², 2017

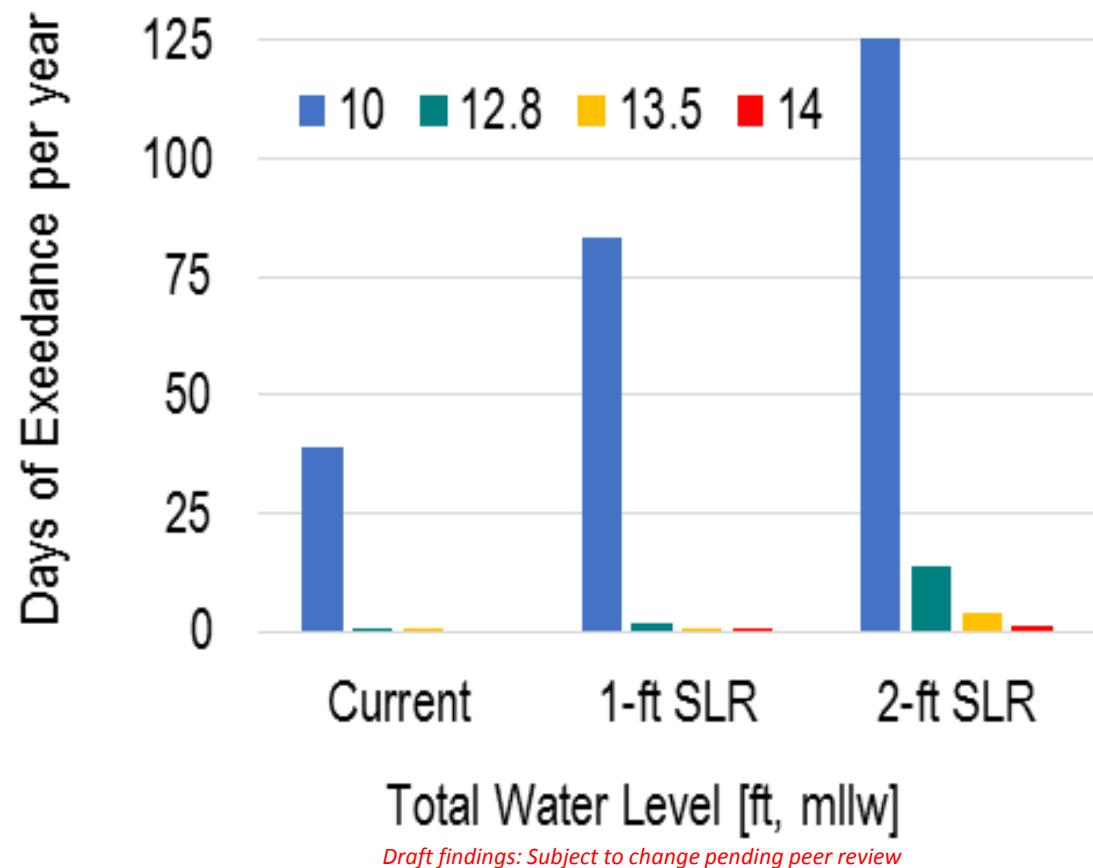


Number of days with flooding will increase as sea levels rise (SLR)

Thresholds of Concern

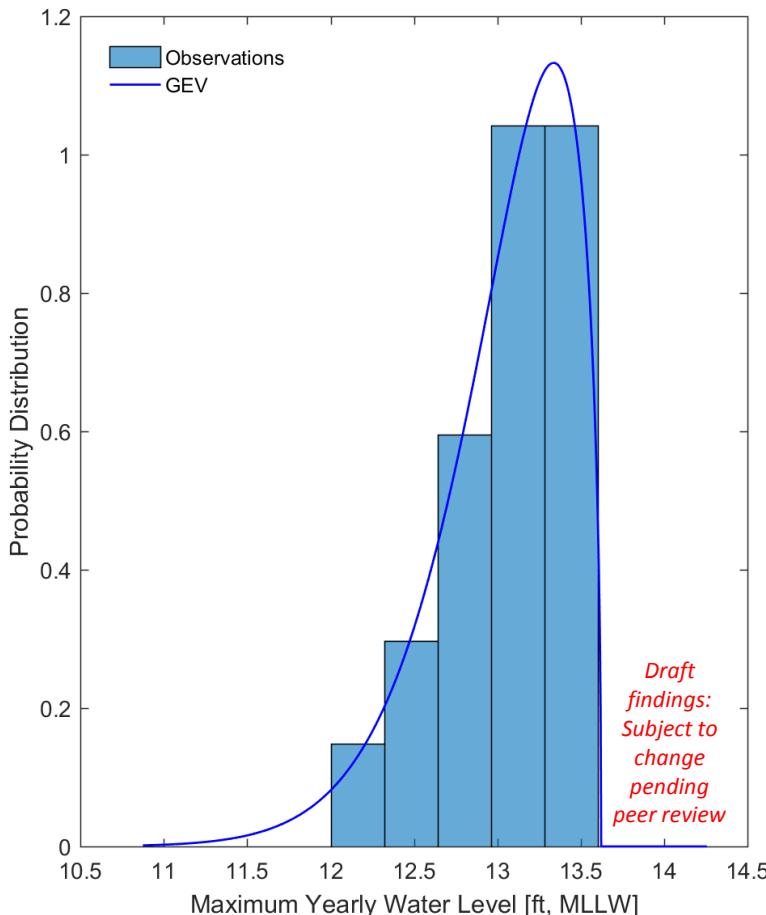
- **10 feet** above MLLW* is a high tide of concern where a low pressure storm system could cause flooding
- **12.8 feet** is when the water is lapping on the floorboards
- **14 feet** is when streets are flooded and buildings and infrastructure are damaged.

*mean lower low water (MLLW) is the average height of the lowest tide recorded at a tide station each day during the recording period.

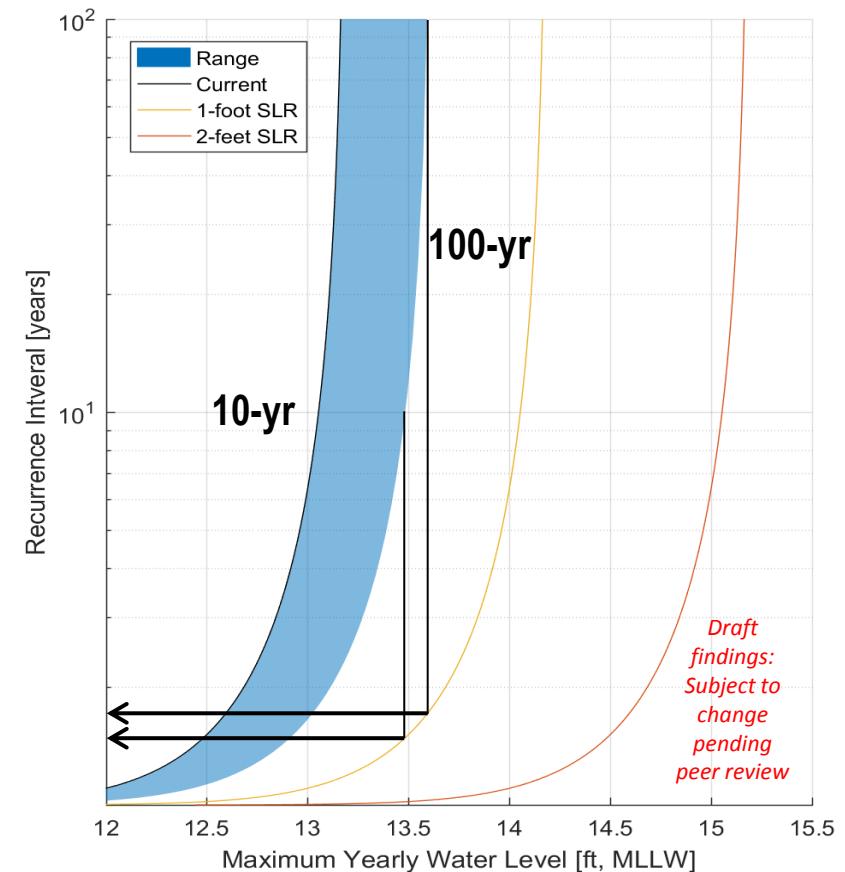


Coastal flooding will become common

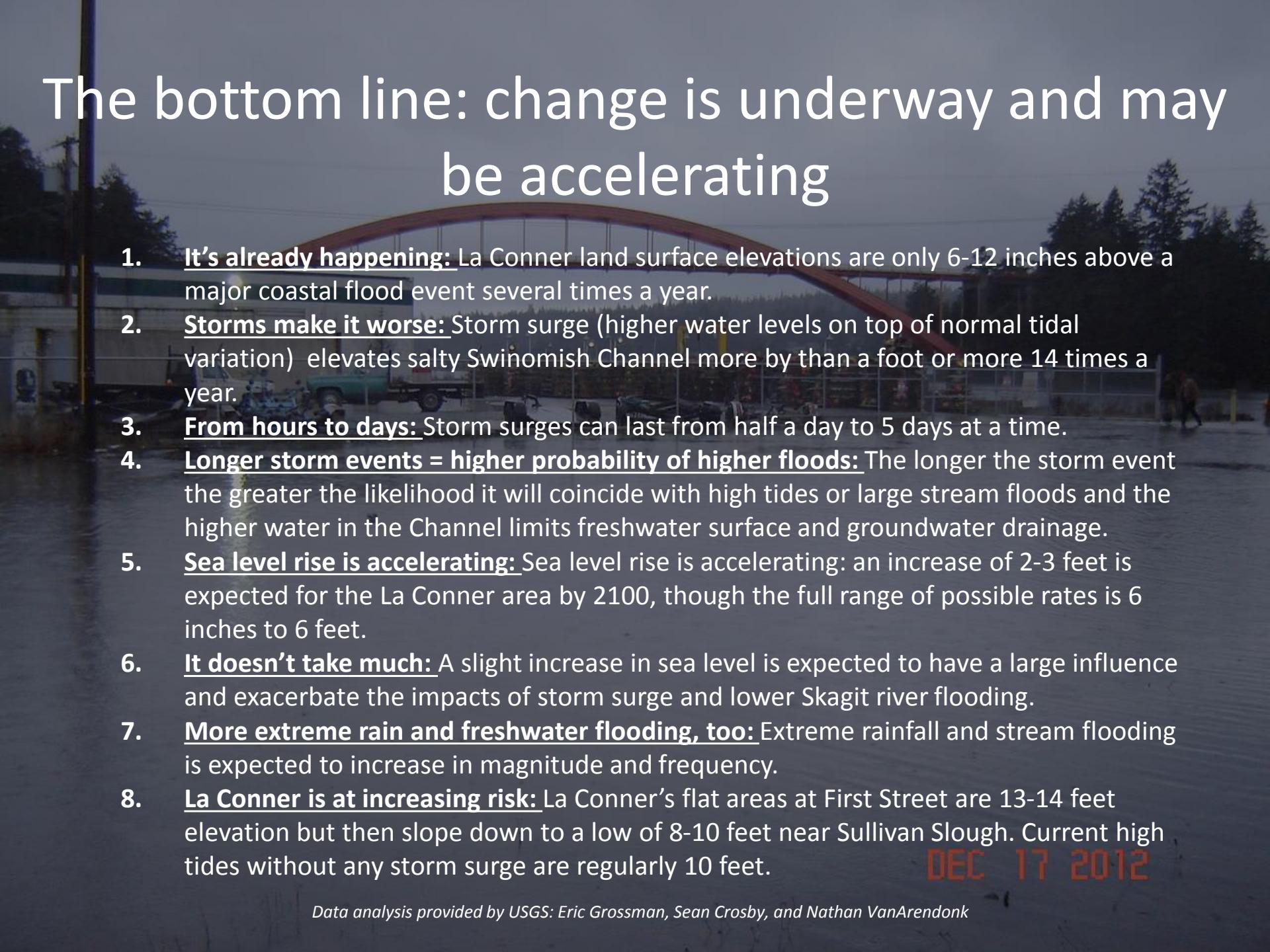
Narrow range in extreme water levels



100-yr coastal flood event to become a
~5-yr event with 1-ft sea level rise



The bottom line: change is underway and may be accelerating



1. **It's already happening:** La Conner land surface elevations are only 6-12 inches above a major coastal flood event several times a year.
2. **Storms make it worse:** Storm surge (higher water levels on top of normal tidal variation) elevates salty Swinomish Channel more by than a foot or more 14 times a year.
3. **From hours to days:** Storm surges can last from half a day to 5 days at a time.
4. **Longer storm events = higher probability of higher floods:** The longer the storm event the greater the likelihood it will coincide with high tides or large stream floods and the higher water in the Channel limits freshwater surface and groundwater drainage.
5. **Sea level rise is accelerating:** Sea level rise is accelerating: an increase of 2-3 feet is expected for the La Conner area by 2100, though the full range of possible rates is 6 inches to 6 feet.
6. **It doesn't take much:** A slight increase in sea level is expected to have a large influence and exacerbate the impacts of storm surge and lower Skagit river flooding.
7. **More extreme rain and freshwater flooding, too:** Extreme rainfall and stream flooding is expected to increase in magnitude and frequency.
8. **La Conner is at increasing risk:** La Conner's flat areas at First Street are 13-14 feet elevation but then slope down to a low of 8-10 feet near Sullivan Slough. Current high tides without any storm surge are regularly 10 feet.

Charrette Agenda

Thursday, October 12th : Town Walking Tour and Preliminary Discussions

2:30 – 5:00pm – La Conner Site Tour and Charrette Orientation

Friday, October 13th: Design Charrette, Maple Hall, La Conner

- 8:30-10:00 Welcome, Introductions, Desired Outcomes, Overview of the Science
- 10:15 Break
- 10:15-12:00 Lessons from Other Places
 How We Recognize Success
 Initial Ideas
- 12:00-1:00 Lunch
- 1:00-3:30 Idea Generation and Refinement
- 3:30-4:30 Presentation of Concepts &
 Group Discussion
- 4:30-5:00 Closing and Next Steps



Treatment Plant Operator Kelly Wynn leads a charrette tour 10/12/2017

Values of La Conner

The following values were developed by charrette participants to shape potential solutions:

- Strong sense of community
- Community resilience and security
- Peaceful community enriched by art and culture
- Healthy land, water, and agriculture
- Long-term sustainability of natural resources and culture
- Social, economic, and generational equity
- Sustainable economy and infrastructure
- Use of scientific information and effective communication to address change



First Street in La Conner, WA 10/13/2017

Criteria for success

Charrette participants developed their own criteria for success to use in evaluating design solutions.

- Value Community, Culture, and Identity
- Affordable and Feasible
- Consistent with a Long-term Vision addressing Diverse Interests
- Protect Business and Capitalize on Opportunity
- Educate for Preparedness
- Production of Concrete Plans



Swinomish Channel, La Conner, WA 10/13/2017

Creative ideas Table One: Infrastructure

Creative ideas were contributed by all participants and then assembled in groupings. All ideas were welcome.

- Elevate buildings along 1st and Morris above projected 100-year level, possibly include “floats”
 - Would require raising everything – sidewalks, streets, etc. opportunity to install new plumbing & infrastructure
- Divert Surge/ Displacement
 - Block entry of channel with a structure, possibly a vessel, during the high water flood events
 - Use pumps to push water to collection ponds
 - Construction of a sea wall along channel at lowest points
 - Construct flood gate on SE section of town to direct stormwater to Sullivan Slough following flood event
- Establish higher elevation requirements for new construction & remodels to help ensure long-term readiness
- Offer strategic buyouts of most vulnerable properties
- Use regional coordination with County

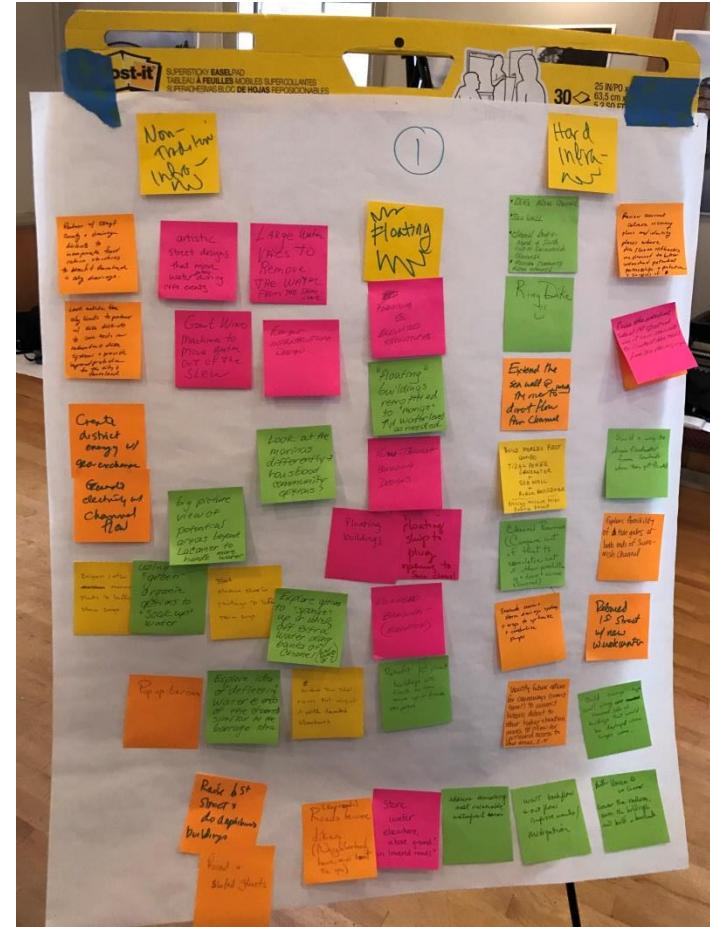
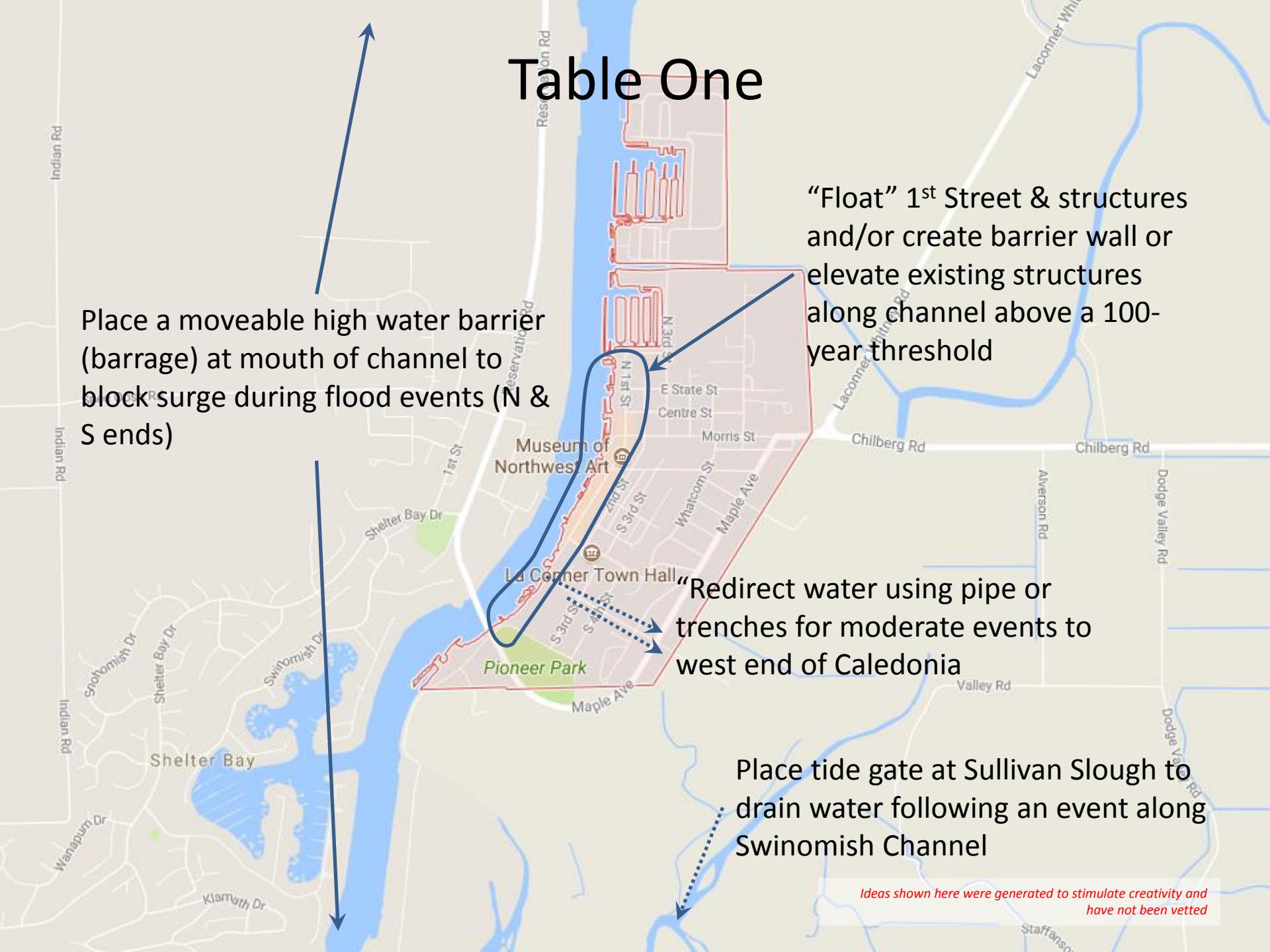


Table One

Ideas suggested by participants are transcribed below. Ideas were then clustered by participants. Ideas were not vetted for workability or efficacy.

NON-TRADITIONAL INFRASTRUCTURE			FLOATING	HARD INFRASTRUCTURE		
Partner w/Skagit County & drainage districts to incorporate flood return structures to benefit farmland and city drainage.	Artistic street designs that move water safely during 14-ft events	Large water vacs to remove the water from the shoreline	Floating vs. Elevated structures	Dike along channel	Review current salmon recovery plans & identify where dike/levee setback are planned to better understand potential partnerships + protection + sources of \$\$\$	Channel barriers (compare costs to cumulative costs up and down channel)
Look outside city limits to partner with dike districts to save costs on redundant dike systems & provide improved protection for the city & farmland	Giant wind machines to move water out of the slough	Flexible infrastructure design	Floating buildings - retrofit buildings to manage high water levels as needed	Seawall	Put retaining wall along lowest points of land along channel	Evaluate sewer + storm drainage systems + ways to optimize + centralize pumps
Create district energy with geo-exchange (high ground water = excellent renewable thermal energy source)	Big picture view of potential areas beyond La Conner to hold more water	Look at marinas differently -> houseboats as community option?	Flow-through building designs	Channel locks N & S of Swinomish Channel	Explore feasibility of tide gates at both ends of Swinomish channel	Identify future options for causeways (to connect historic district to other higher elevations areas to allow for continued access to other area, I-5)
Generate electricity with channel flow turbines	Using "green" organic options to "soak up" water	Massive shoreline plantings to buffer storm surge	Use floating ship to plug opening of Swinomish channel	Housing Community along channel	Rebuild 1st Street with small in-building wastewater treatment systems	Address remaining most vulnerable waterfront areas
Eelgrass + other marine plants to buffer storm surge	Pop up tide barriers	Explore idea of "deflection" water @ ends of the channel similar to the "barrage" idea	Moveable buildings (elevation)	Ring Dike	Build "barrage" walls along side of channel to deploy for surge	Store water elsewhere? Above ground > in lowered roads?
	Explore options to "sponge" up and wick off extra water along banks of channel (wetlands or?)	Restore the tidal marsh but integrate it with the elevated structures	Retrofit 1st Street buildings with floats so can move up or down on piers	Extend seawall on river further into the bay	Build a Venice in La Conner: lower the roadway, raise the buildings, and build a boardwalk	Key roads become dikes. Neighborhoods have mini-boat tie-ups.
				Build world's first tidal power generator + Seawall + Public boardwalk	Add wastewater treatment and outflow improvements/ mitigation	

Table One



Ideas shown here were generated to stimulate creativity and have not been vetted

Table One:

Amphibious buildings along First Street

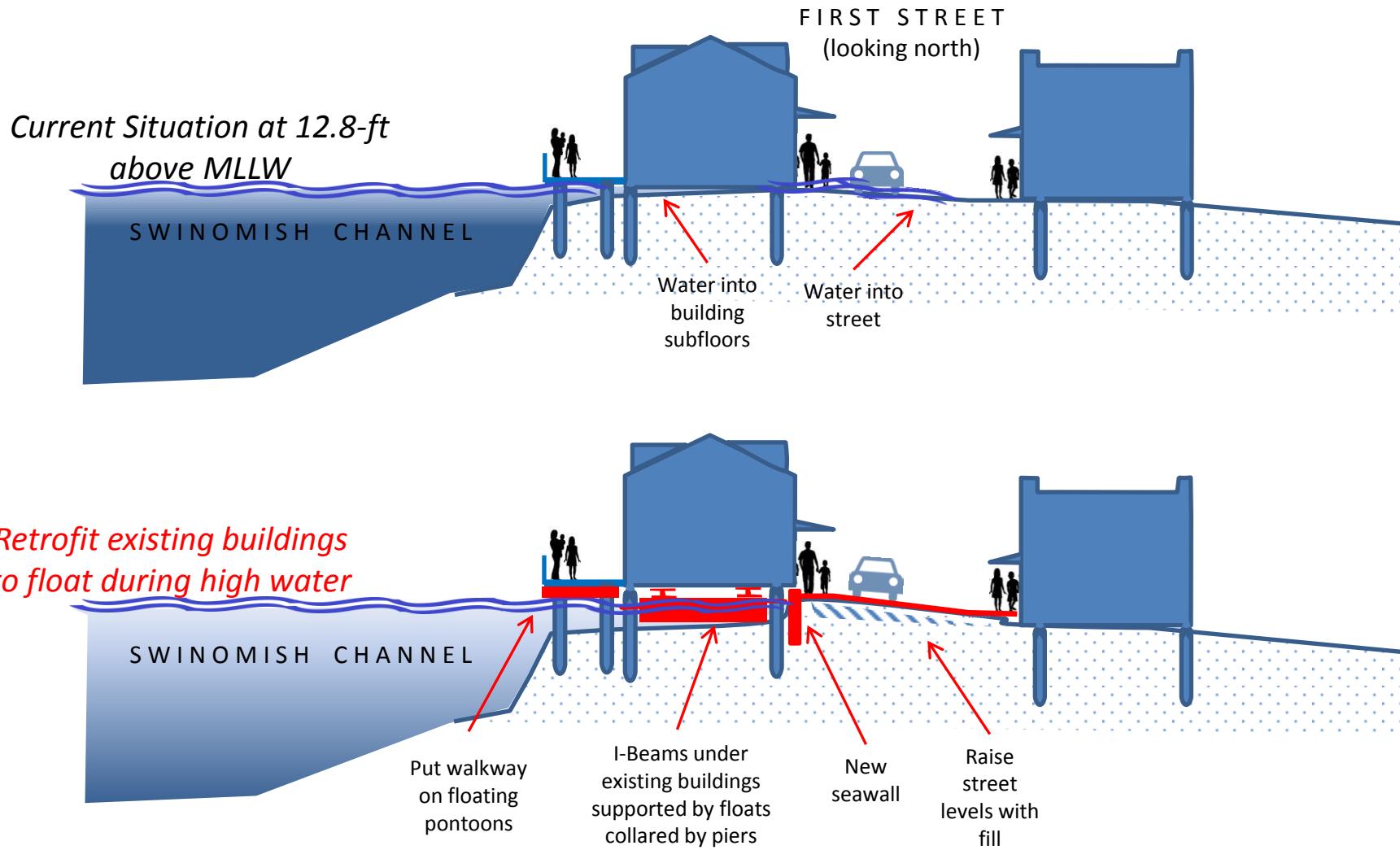


Table One Bonus: An additional integrated alternative

The seawall, flood control, economic development, tourist development and education alternative includes:

- Create innovative seawall
 - Patentable components
 - Roof that slides off to make buildings watertight
- Increase solar power with rooftop solar on seawall
- Increase hotel beds in town by integrating into seawall
 - Adds 400 – 500 beds
- Increase hotel motel tax
- Host events and conferences at event center integrated into innovative seawall concept
- Dock a retired ferry as an event/conference space
- Increase land protected with extended seawall to allow for future growth of town
- Perhaps use of ferry could provide additional fuel storage for emergency energy generation and for refuge/safety following a flood event.

Creative ideas Table Two:

Climate resilience vision for the whole community

- Develop consistent messaging on climate impacts, vulnerabilities, opportunities
- Incorporate climate change into comprehensive plan & capital facilities plan
- Develop community engagement strategy
 - Rotary
 - Soroptimist, etc.
- Compile results
- Develop policy proposals to enact vision
 - Land use
 - Codes
 - Historic district solutions
- Work more broadly with others
 - Skagit County
 - Dike Districts
 - Tribe
 - others



Blue Heron walks a log float in Swinomish Channel, La Conner, WA
10/13/2017

Table Two

Participants generated ideas and wrote them on stickies. Ideas were then clustered with similar concepts into groups to guide development of solutions. Text of stickies for Table Two is transcribed in table below.

LEARNING & EDUCATION	PREPAREDNESS			
Update La Conner resident/businesses with brief info sheet s mailed to each residence.	Perhaps revise the historic designation/definition to allow modifications of structures to survive catastrophic events	Code Add climate change resilience to vision in comp plan	Raise every house on floats below 11 feet (many are already)	Develop a hierarchical plan that addresses:
Identify commutes that are already putting strategies in place let them be test cases for La Conner to learn what works and what doesn't	education town folks around the present and future changes describe the need	Elevate homes get fed/state \$ BEFORE a disaster	Implement a climate resilient building and zoning code. Begin working on achieving it over the 50+ years.	1) remaining information needs - how expensive and when to expect thresholds with impact to determine solutions
Form advocacy group of stakeholders o share data and possible solutions with legislators, scientists, + citizens + business owners	Build community awareness through annual public presentations that provide 1. updates, 2. strategies for adaption in order to decrease fear of change	Waterproof first floors	Increase density on the hill. If possible, by enough to hold most of the population.	2) short-term alert system 48- 120- hour surge alert 3) near term (1-3 years) strategies to reroute flood water & mitigate
	Develop city-wide program for helping residents retrofit houses with piers/floats	Protect boardwalk infrastructure from logs somehow		4) Intermediate term (5-20 years) transition strategies to allow for long-term plan
	Phased protection options - something soon that can be expanded?	Retreat to higher ground?		5) Long term plan (20-100 years) transformational actions that balance people, ecosystems, economy for ultimate resilience

Creative ideas Table Three: Possible Infrastructure Solution

1. Analyze storm water drainage capacity

- Explore if we can increase capacity by moving the pumping system from redundancy to simultaneous or concurrent pumping
- Add alert system to reduce volume prior to surge

2. Raise or float waterfront First Street business structures (pass through of water)

3. Direct channel surge into two main arterials (Caledonia & Morris)

- Make alterations to streets to support increased volumes

4. Diversion – set up water to go directly to Sullivan Slough & bypass wetlands and treatment plan

5. Analyze trends to predict likely events allowing sequential staging of capital projects.



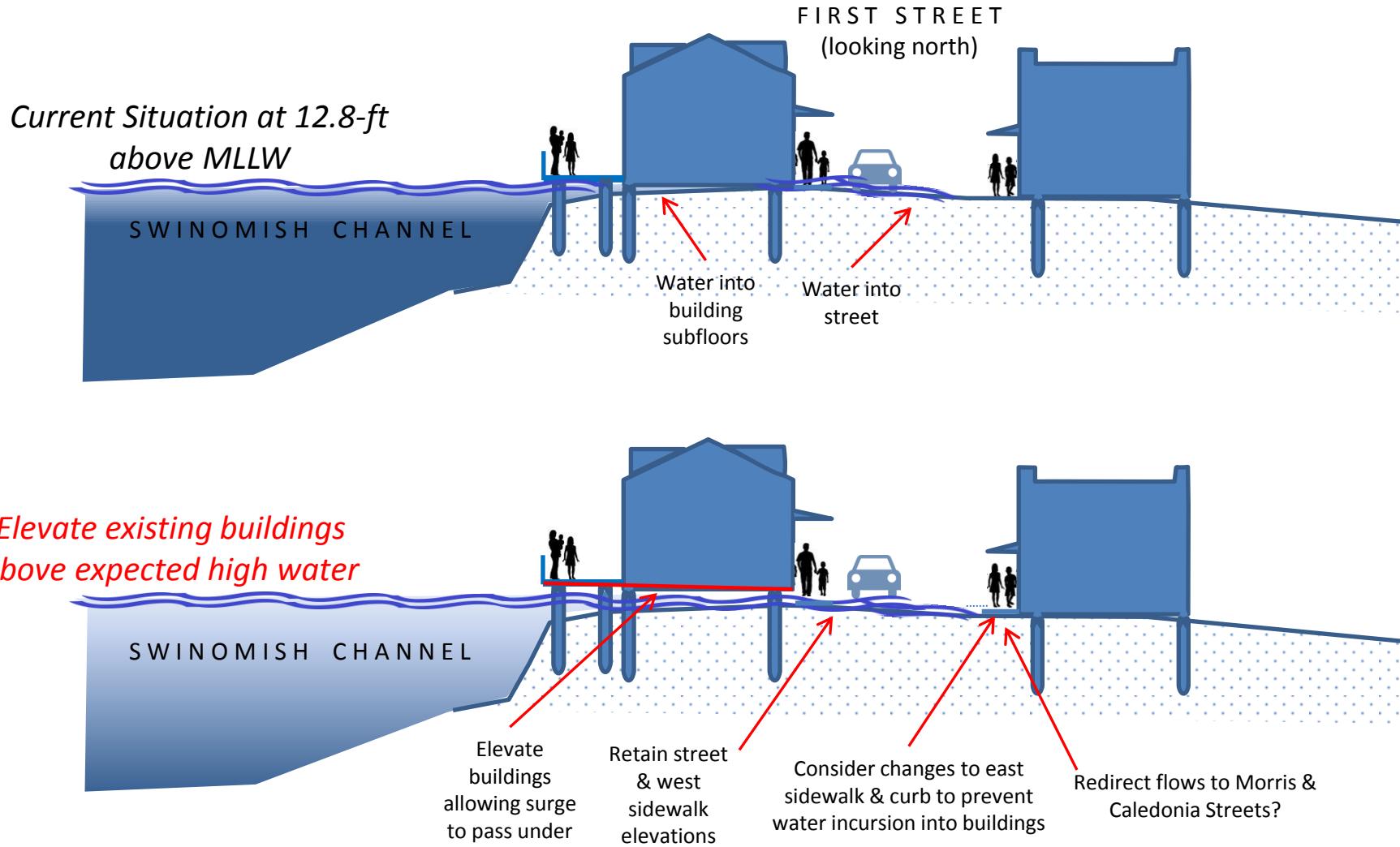
Historic buildings at First and Commercial, La Conner, WA 10/13/2017

Table Three

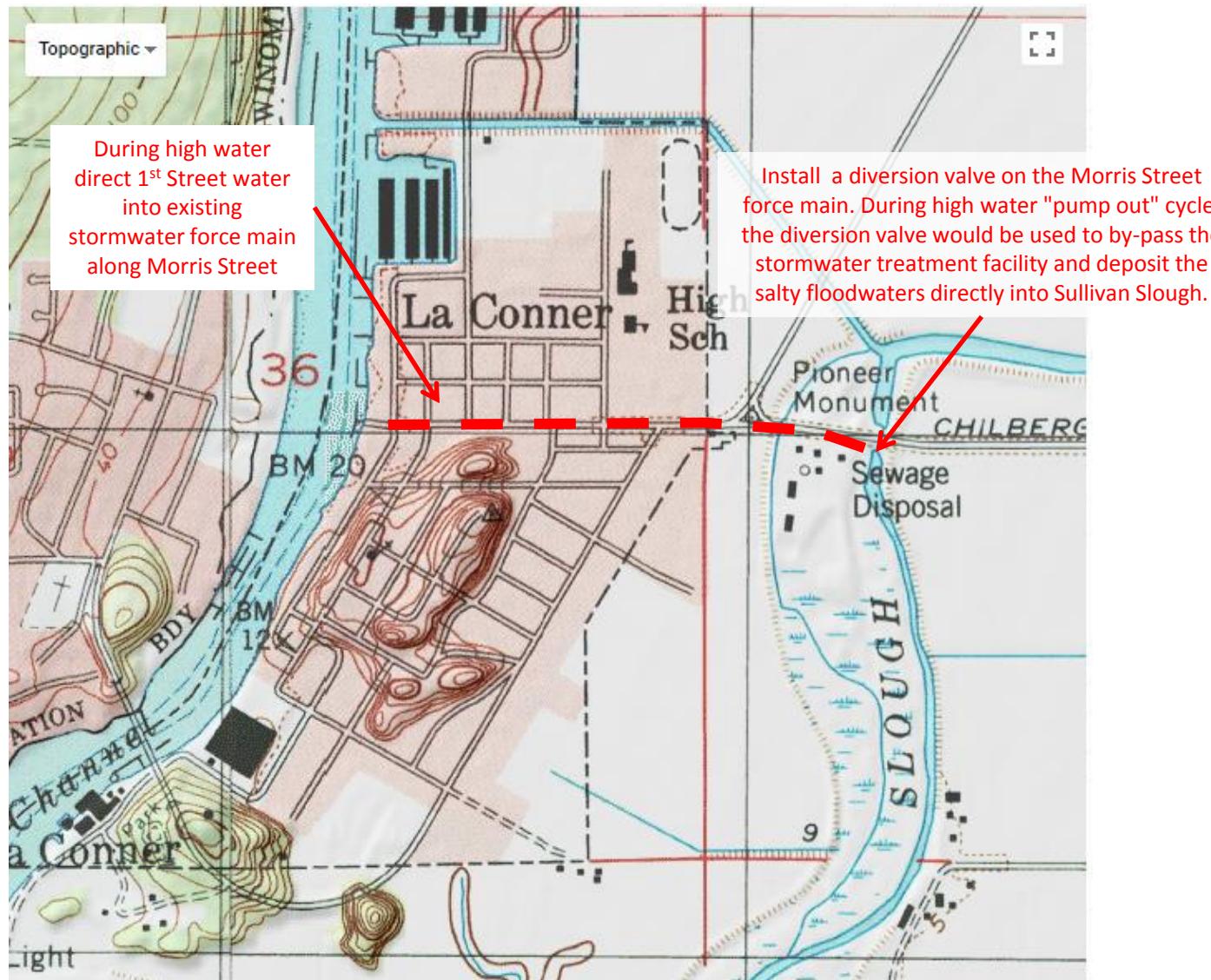
Participants generated ideas and wrote them on stickies. Ideas were then clustered with similar concepts into groups to guide development of solutions. Text of stickies for Table Three is transcribed in table below.

FUNDING			ECONOMIC DEVELOPMENT		EMERGENCY PREPAREDNESS	
Affordability -Regional authority akin to TVA -State/federal/grants & bonds	Grant \$ for innovative projects	Discuss and eventually work w/the state to create fund fro buying out low-lying properties at risk (convert to habitat to buffer impacts)	Boat taxis to help move people & things from location to location	Get control of derelict buildings south of Maple Hall to provide more businesses and housing	Evaluate EMS and evacuation routes if La Conner becomes isolated in a flood	First Ave businesses have an easy way to elevate goods
Develop a climate retrofit revolving loan fund for private owners	Sales tax for business/residences recovery fund	Buy out most vulnerable properties	As the town is built up in elevation could we offer a tour such as Seattle's underground tour to see what lies beneath?	Tourism around high tide	Develop community center on hill that can serve as refuge during major flood or tsunami	Include recovery plan for flooded lower parts of town - where do folks go? pumps once water recedes somewhat
Create district energy with geo-exchange (high ground water = excellent renewable thermal energy source)		Look at marinas differently -> houseboats as community option?	Town becomes a teaching community on the issues of storm surge and climate change - a place where solutions are tested and research conducted	Have annual water parade with floats	Emergency flood/resource center for if town is isolated by flood for many days	Easier less expensive way to sandbag
				Have a King Tide Festival	Real time storm surge prediction capability	Town warning system people can prepare

Creative Ideas Table Three: Raise buildings along First & Morris



Creative Ideas Table Three

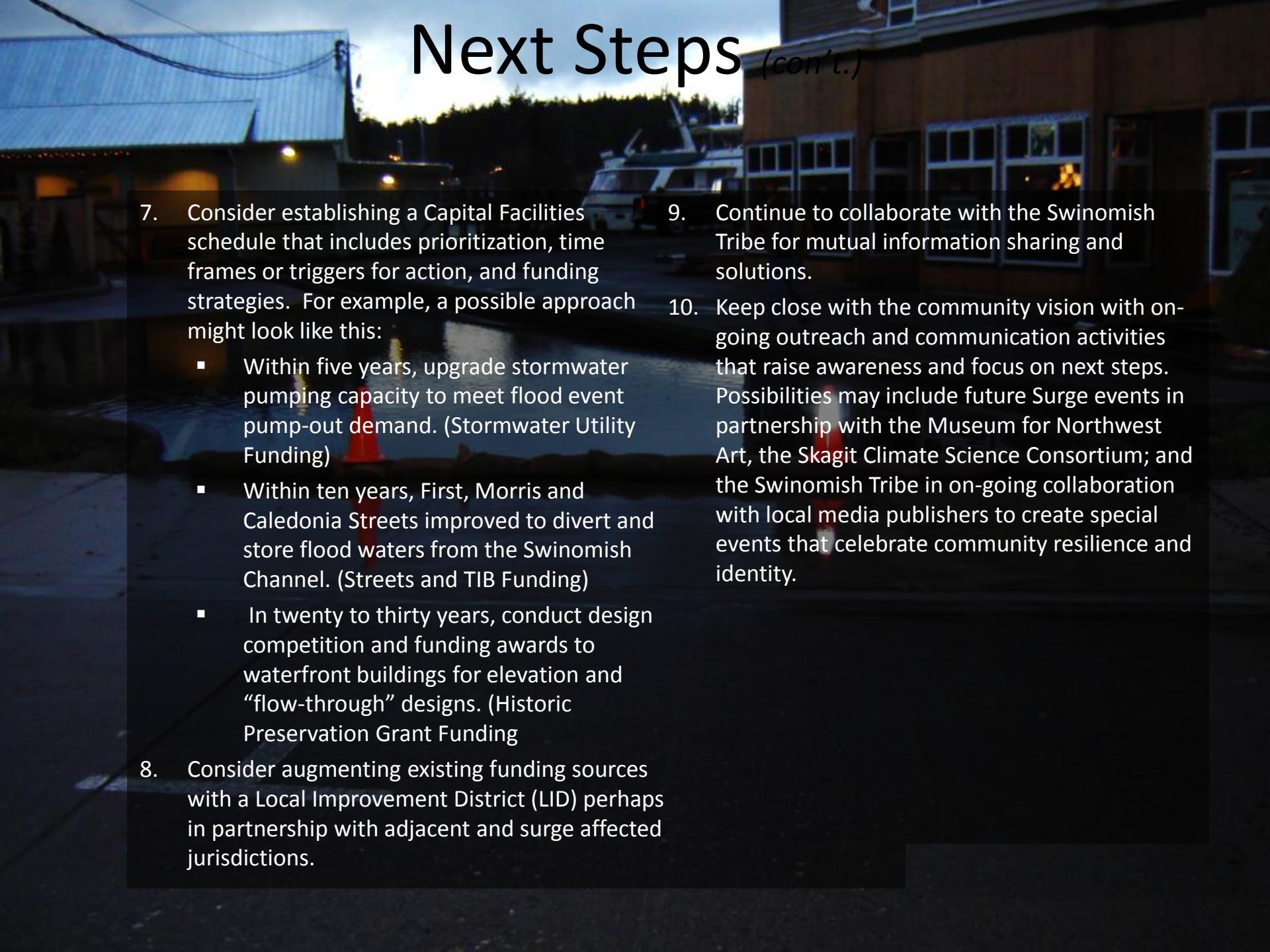


Next Steps

A photograph of a flooded street. The water covers the asphalt, and a 'ROAD CLOSED' sign is placed in the middle of the road. In the background, there are houses and trees, and the sky is overcast.

1. Install tide gauge.
2. Work with Skagit Climate Science Consortium' experts to identify decision points.
3. Determine needed engineering evaluations to determine capacity and feasibility of identified concepts (i.e. event flow volume, storage capacity of the rights-of-way, and the pumping capacity of the stormwater system).
4. Apply the "Values" and "Criteria for Success" developed in this process as guides for future action.
5. Use the ideas generated during the charrette including:
 - Traditional solutions
 - Non-traditional engineered systems
 - Floating systems
 - Learning and education
 - Funding
 - Economic Development
 - Community and Disaster preparedness
6. Consider new comprehensive plan policies to directly address sea level rise and flooding mitigation in the update to the comprehensive plan.

Next Steps *(con't.)*



7. Consider establishing a Capital Facilities schedule that includes prioritization, time frames or triggers for action, and funding strategies. For example, a possible approach might look like this:

- Within five years, upgrade stormwater pumping capacity to meet flood event pump-out demand. (Stormwater Utility Funding)
- Within ten years, First, Morris and Caledonia Streets improved to divert and store flood waters from the Swinomish Channel. (Streets and TIB Funding)
- In twenty to thirty years, conduct design competition and funding awards to waterfront buildings for elevation and “flow-through” designs. (Historic Preservation Grant Funding)

8. Consider augmenting existing funding sources with a Local Improvement District (LID) perhaps in partnership with adjacent and surge affected jurisdictions.

9. Continue to collaborate with the Swinomish Tribe for mutual information sharing and solutions.

10. Keep close with the community vision with on-going outreach and communication activities that raise awareness and focus on next steps. Possibilities may include future Surge events in partnership with the Museum for Northwest Art, the Skagit Climate Science Consortium; and the Swinomish Tribe in on-going collaboration with local media publishers to create special events that celebrate community resilience and identity.

Comprehensive plan: Draft policies for climate impacts

Chapter 3 – La Conner Profile

Climate and Geography

Add the following:

- The Town was established along the Swinomish Channel before it was dredged for navigational purposes and the tidal waters surrounded much of the Town periodically from Sullivan Slough to the Channel. Following the dredging, seawalls and agricultural dikes defined and expanded the Town beyond the rock outcrops. Until recently, this was a stable and predictable defense against natural forces. As weather patterns have shifted in the last ten years, this defense is now vulnerable.

Chapter 4 – Economic Element

Under current goals:

Goal C

Encourage economic development that conserves natural resources and open space, protects environmental quality, and enhances our community's quality of life.

Add the following policies:

- 4C-2 Provide a townwide strategy to address weather and climatic impacts that would adversely impact residents and businesses of the Town.
- 4C-3 Encourage incentives to adapt Town infrastructure to minimize cost impacts to residents and businesses.

Chapter 5 – Land Use Element

Subsection: Environmental Preservation, Conservation and Critical Areas

Goal L

Protect and conserve significant landscape features, fish and wildlife habitat, natural systems and critical areas.

Add the following:

- 5L-10 Establish a town-wide strategy to address increasing frequency and intensity of storm-surge events.
- 5L-11 Conduct design consultation meetings periodically with regional experts on weather and climatic changes and trends that may impact Town infrastructure, residences and/or businesses.

Subsection: Shorelines

Goal R

Protect the economic viability and resource values of the shoreline.

Add the following:

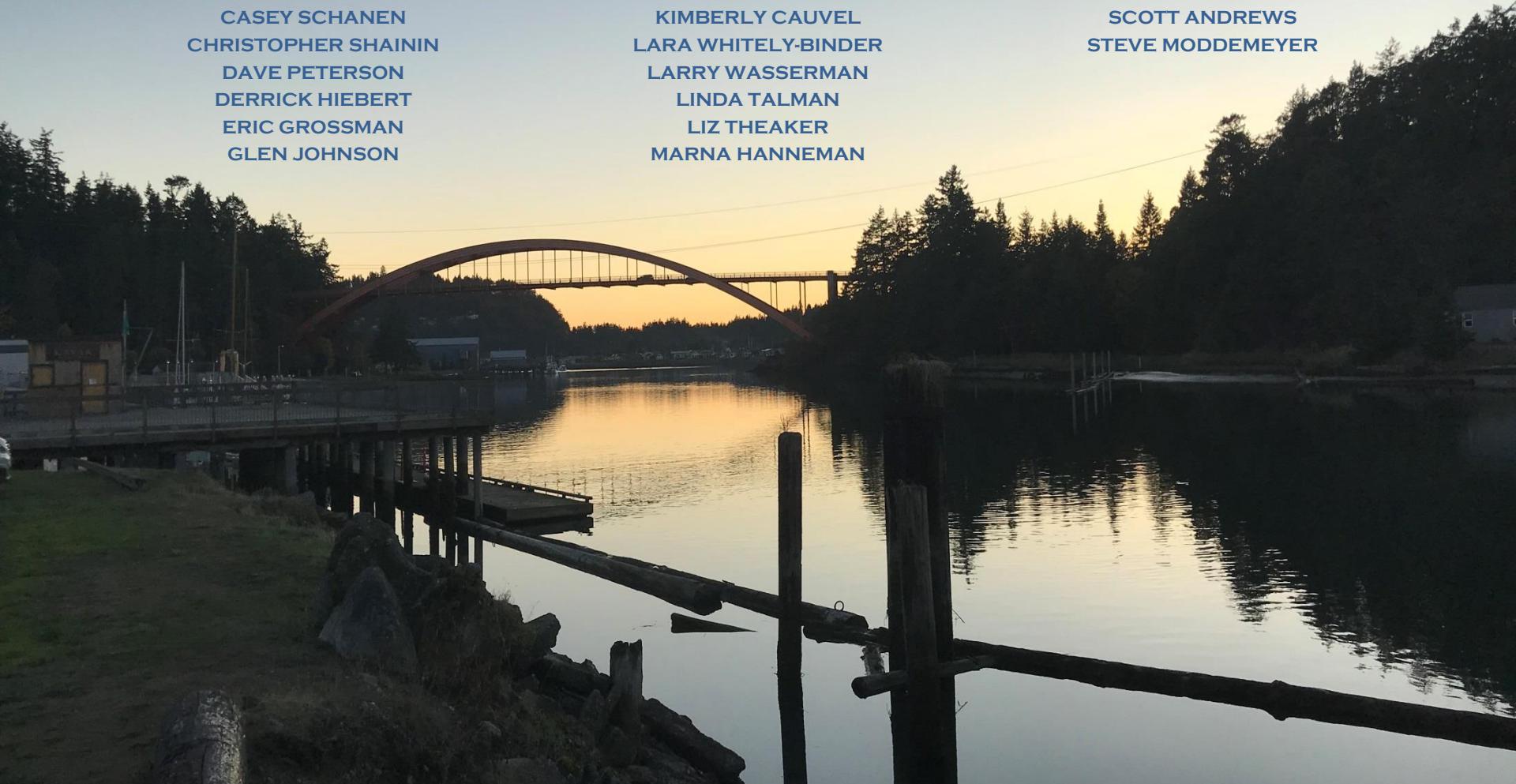
- 5R-5 Develop and redevelop the current shoreline to adapt to changing physical and environmental conditions that threaten residences and businesses.

Thank you to participants

BILL LABIOSA
BILL REYNOLDS
BRUCE BRADBURN
CAROL HEDLIN
CAROL MACILROY
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RHYS ROTH
RICK TRELSTED
ROGER FULLER
SCOTT ANDREWS
STEVE MODDEMAYER





AFFILIATIONS

- Center for Sustainable Infrastructure
- CollinsWoerman
- Emergency Management Division, State of Washington
- La Conner Weekly
- Mayor of La Conner
- Museum of Northwest Art
- Local businesses
- Skagit Climate Science Consortium (SC²)
- Skagit Valley Herald
- Swinomish Tribe (SC²)
- Swinomish Tribal Planning Department
- La Conner Town Administrator
- United States Forest Service
- United States Geological Survey/CoSMos Modeling Effort (SC²)
- University of Washington Climate Impacts Group (SC²)
- King County
- Local volunteers
- Washington Department of Fish and Wildlife
- Western Washington University (SC²)