Clatsop County

Tsunami Evacuation Facilities Improvement Plan

Clatsop County Board of Commissioners Work Session

Wednesday, March 16, 2022

Agenda

- Welcome and Intros
- Project Recap
- Recommended Projects for Evacuation & Trails
- Implementation
- Next Steps

Photo: @Coltera on Flick

Our team

Parametrix
ENGINEERING . PLANNING . ENVIRONMENTAL SCIENCES

seft
CONSULTING GROUP

Transportation planning and project design

Trails and active transportation planning

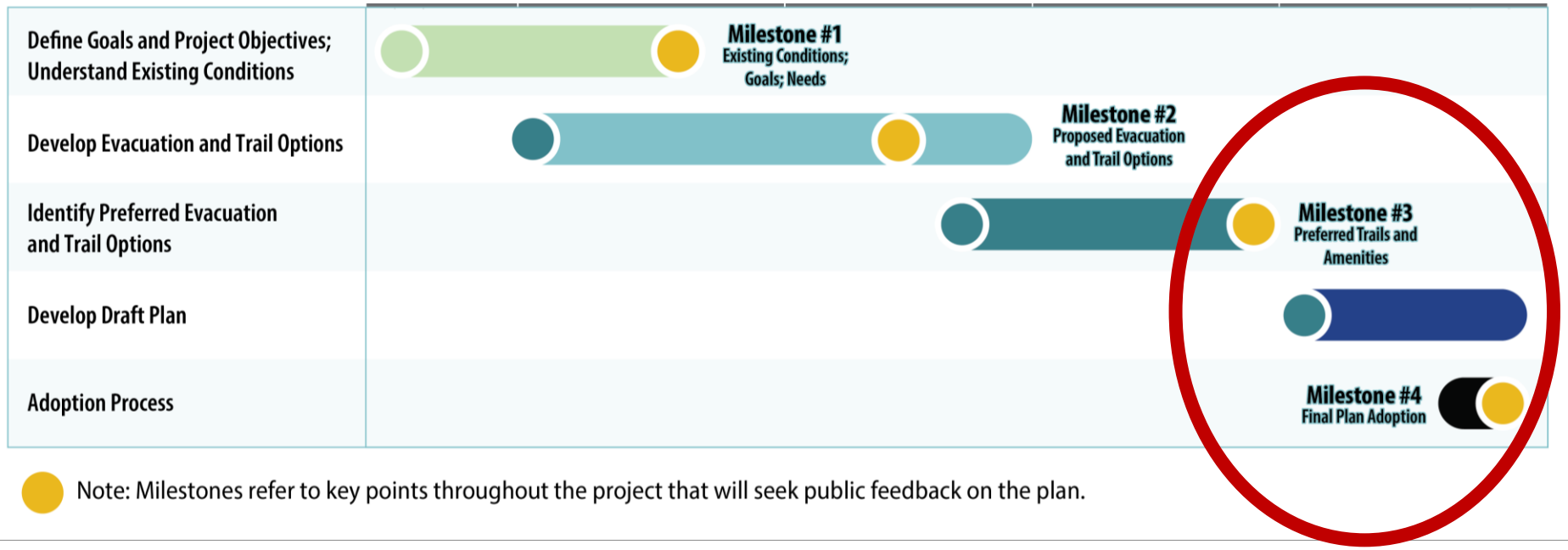
Coastal planning and resilience

Earthquake and tsunami engineering

Vertical evacuation structures

Resilience planning

Schedule


Define Goals and Project Objectives; Understand Existing Conditions
Milestone #1
Existing Conditions; Goals; Needs
Develop Evacuation and Trail Options
Milestone #2
Proposed Evacuation and Trail Options
Identify Preferred Evacuation and Trail Options
Milestone #3
Preferred Trails and Amenities
Develop Draft Plan
Adoption Process
Milestone #4
Final Plan Adoption
Note: Milestones refer to key points throughout the project that will seek public feedback on the plan.

Project Goals

Safety: Reduce risk to the community from a tsunami event by increasing convenient and accessible evacuation routes that connect at-risk communities to safe areas

Connections: Expand the connected network of hardened* evacuation facilities that can also provide year-round recreational benefits

Equity: Reduce transportation-related disparities and barriers for communities at risk

Collaboration: Continue cooperation and collaboration among partners to implement and maintain a coordinated evacuation trails network and tsunami wayfinding signage for Clatsop County

**More likely to survive an earthquake/tsunami and be useful for evacuation during an emergency*

Key findings from Existing Conditions

- **Relatively few existing trails** that could provide evacuation benefit
- High landslide susceptibility in many areas
- High soil liquefaction risk north of Gearhart
- Area of **greatest evacuation route need**: in area north of Gearhart to Ft. Stevens State Park
- Relatively low need for improving connections related to the evacuation routes in cities

Trails and Evacuation Improvements

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Trail Types

- **On-street Trail:** A sidewalk or roadway that can provide pedestrian travel in case of an evacuation.
- **Multi-use Path (MUP):** An off-street path that is typically paved and built to comply with Americans with Disabilities Act (ADA) guidelines.
- **Recreational Trail:** Trails that are less developed & unpaved. Recreational trails tend to be steeper and more challenging to traverse.

On-street trail

Multi-use path

Recreational trail

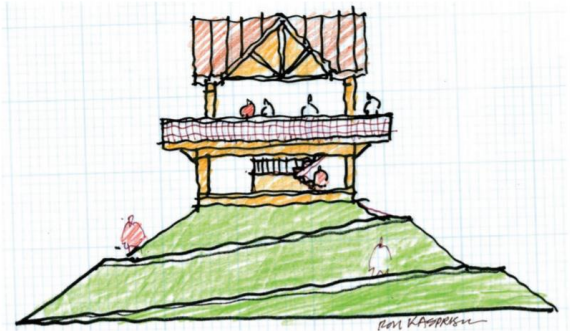
Assembly Areas

- Many assembly areas are currently designated in Clatsop County, though signage is lacking
- Located on natural high ground, outside the inundation area
- Others are in potentially counter-intuitive areas

Vertical Evacuation Structure Types

Soil Berms

- Engineered soil mound or recycled construction materials
- Can be integrated into parks or serve recreational functions
- More cost-effective than other types of structures



Sketch from Univ. of Washington

Evacuation Towers

- Elevated platforms with stairs and/or ramps
- Space below and above can serve recreational or other uses (e.g., viewing platform; parking)
- Can be equipped with amenities useful during a tsunami emergency (same as assembly areas)

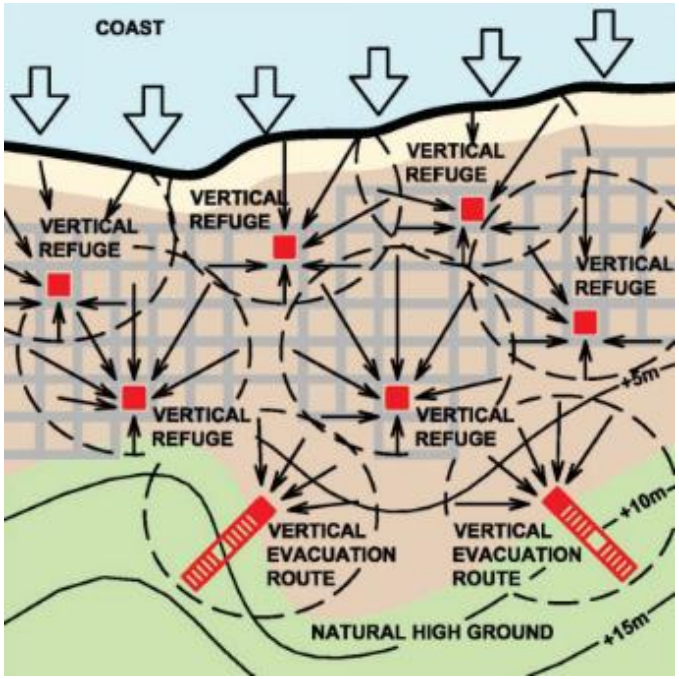
Tower with Viewing Platform (Univ. of Washington)

Buildings with rooftop refuge

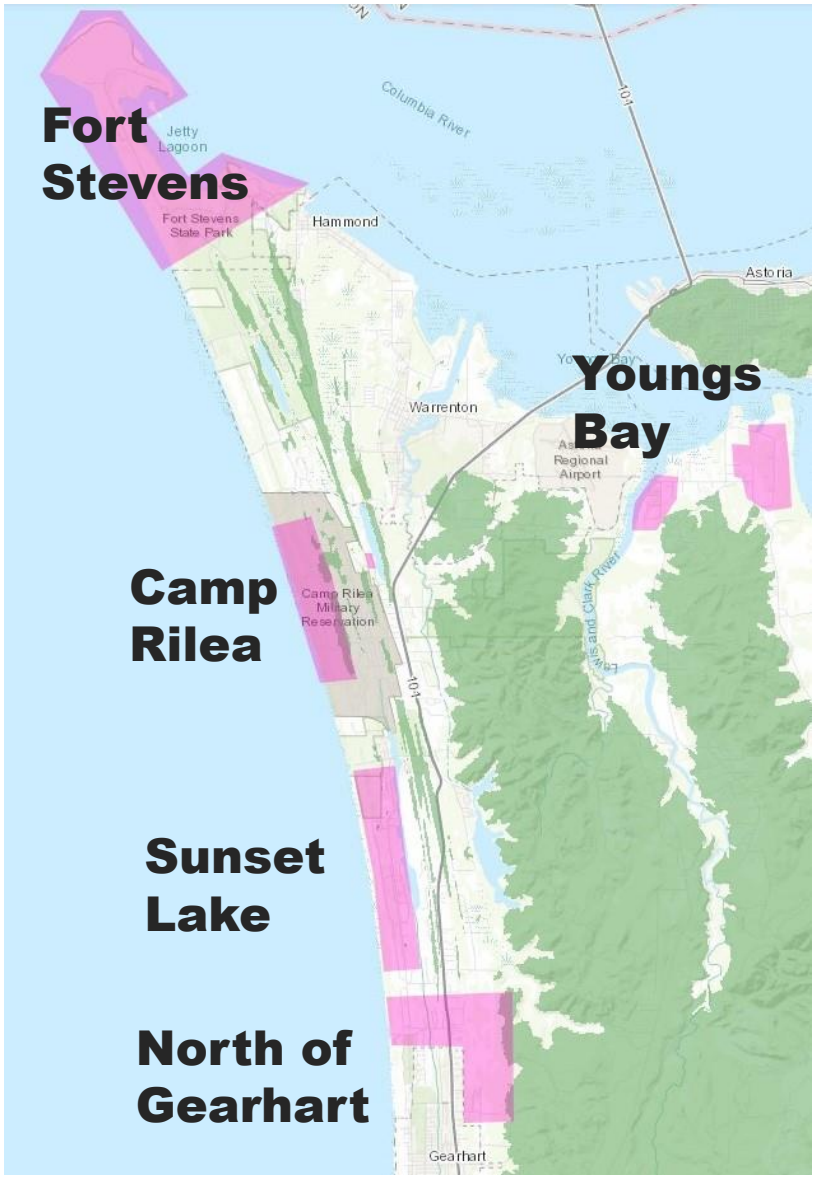
- Build evacuation refuge into the design for new buildings
- Potential cost savings over stand-alone structure

Elementary school on Washington Coast

How many structures are needed?



- Assumed travel distance is about ½ mile (15 min.)
- Further community conversation is needed to decide exact number, type, and location



Areas for Vertical Evacuation Structures

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Recommended Projects for Evacuation & Trails

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Recommended Project Development

- Project team considered **how and where** trails could be extended to improve evacuation
- Also considered new trail links
- Next step of process will consider trail type recommendations
- Recommended projects also include possible new assembly areas and regions where vertical evacuation structures should be considered

Recommended Improvements

Trails and Evacuation Routes – 12 new connections or improvements to existing trails to better serve evacuation purposes.

Assembly Areas – 18 additional locations across the County, usually associated with a trail improvement.

Vertical Evacuation Structures – 6+ areas in the County where these should be considered, where natural high ground is too far to reach on foot.

Screening Criteria

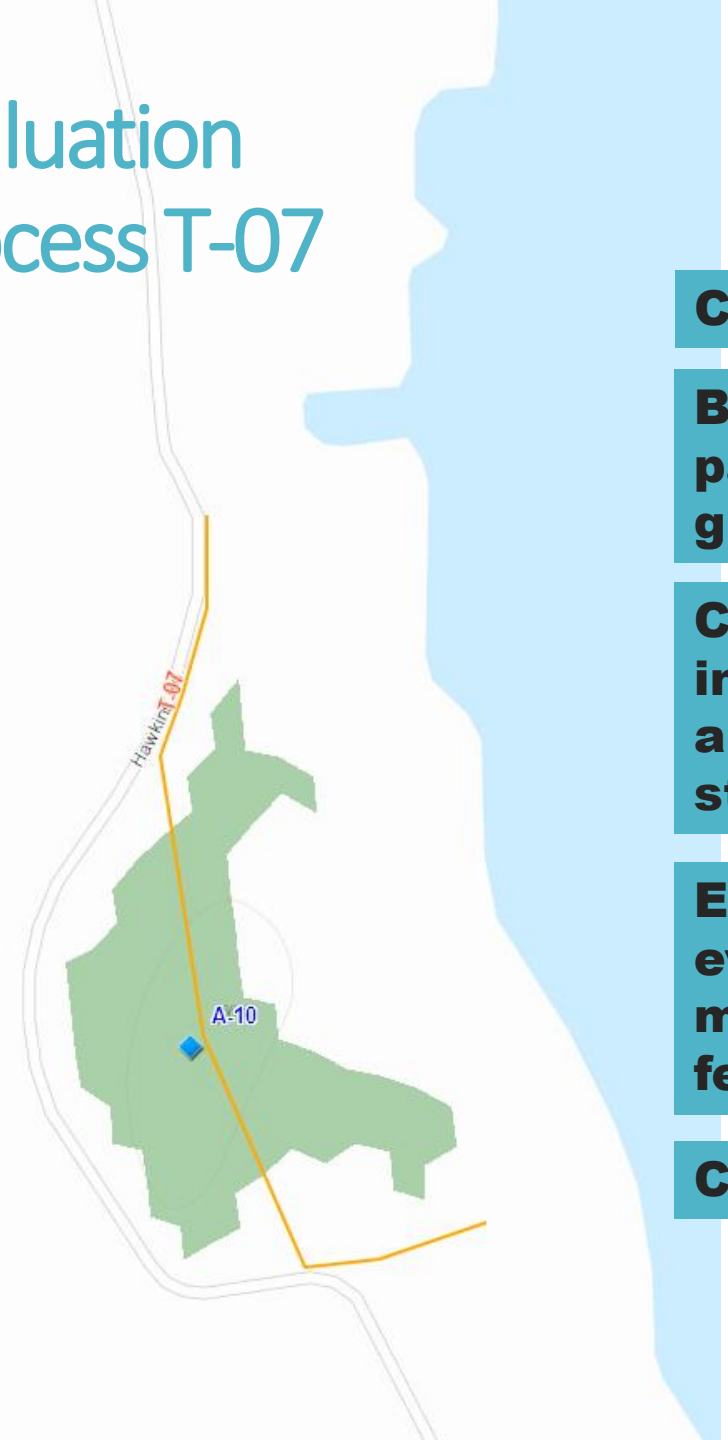
Subject	Criterion
User experience	Provides the most comfortable and enjoyable user experience
Safety and security	Provides a clear tsunami evacuation benefit
Multimodal connectivity	Increases connectivity of the multimodal network
Planning, land use, and regulatory impacts	Aligns with the existing County land use plans
Property ownership impacts	Minimizes impacts to private property owners
Directness of travel	Supports directness of evacuation routes
Cost and funding availability	Relative cost and likelihood of funding with grants
Infrastructure hardening	Increases the resiliency of the existing infrastructure system
Phasing opportunities	Project may be phased so as to facilitate incremental benefit
Accessibility	Facilitates connections for people with physical disabilities
Populations served	Enhances evacuation routes or connections for unincorporated communities
Existing infrastructure	Makes use of existing roadway, public trail, or evacuation route

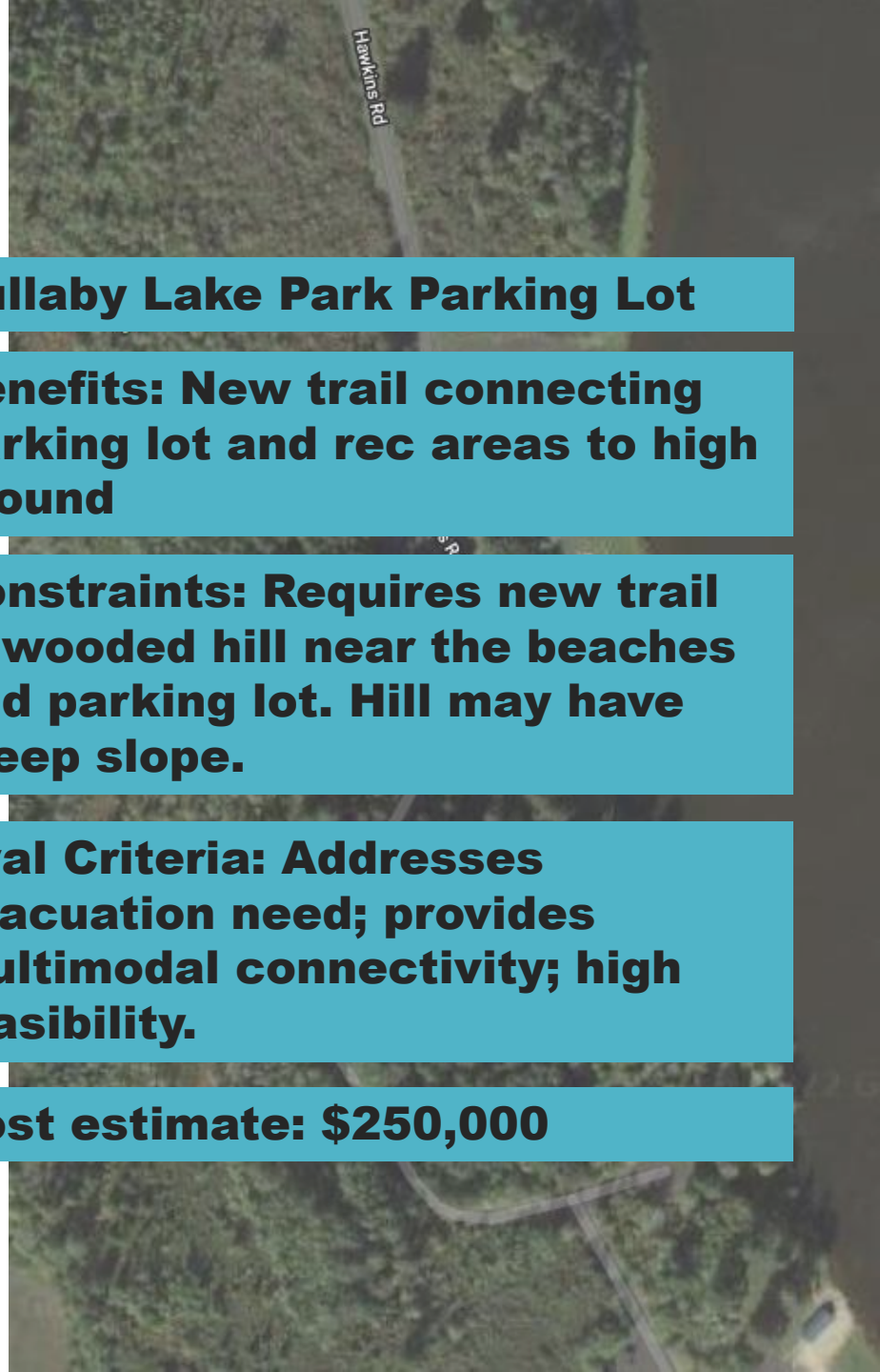
T-07 and A-10


Hawkins T-07
A-10


Cullaby Lake
County Park
Hawkins Rd
Hawkins Rd
Hawkins Rd

Evaluation Process T-07





Cullaby Lake Park Parking Lot

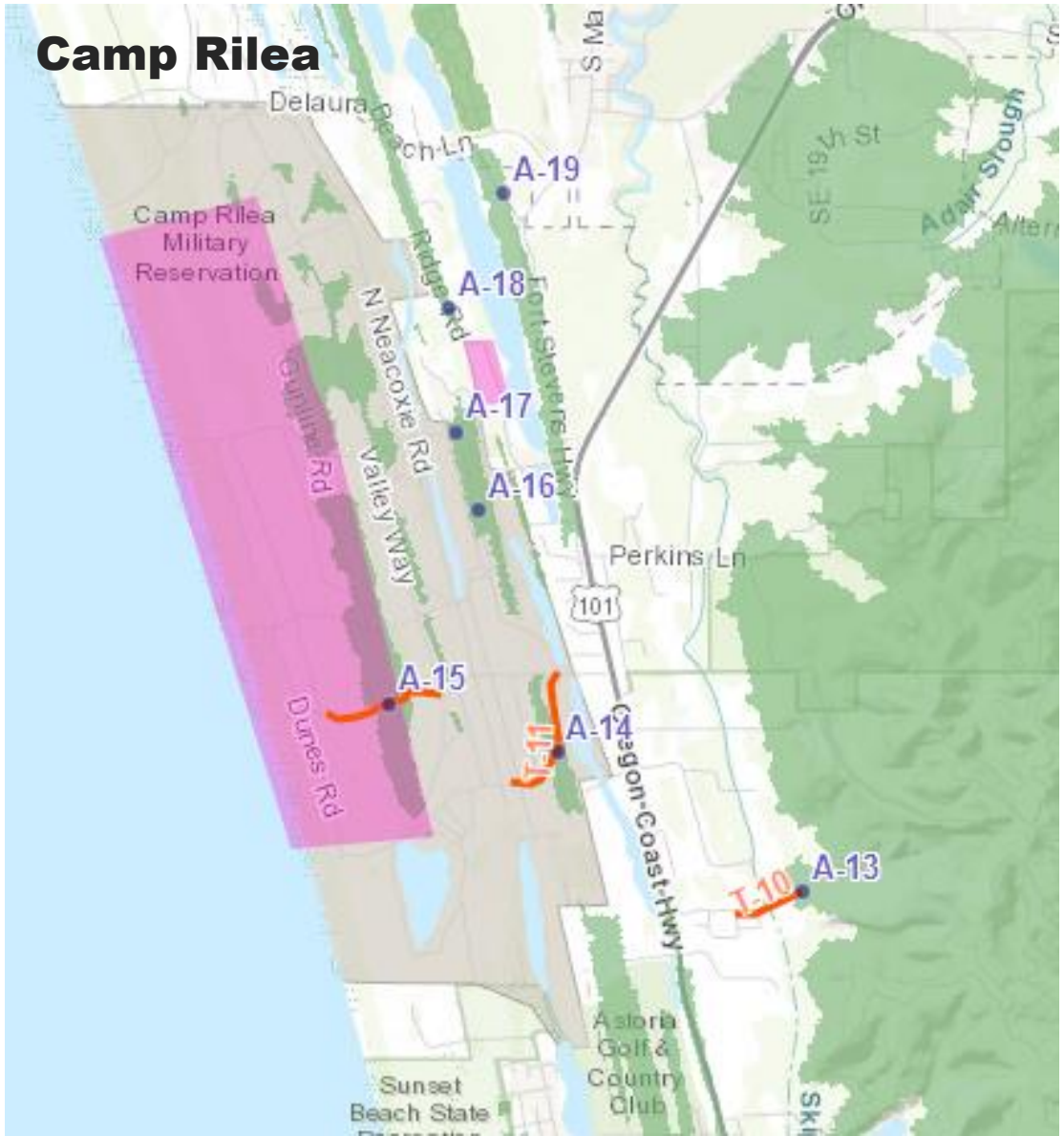
Benefits: New trail connecting parking lot and rec areas to high ground

Constraints: Requires new trail in wooded hill near the beaches and parking lot. Hill may have steep slope.

Eval Criteria: Addresses evacuation need; provides multimodal connectivity; high feasibility.

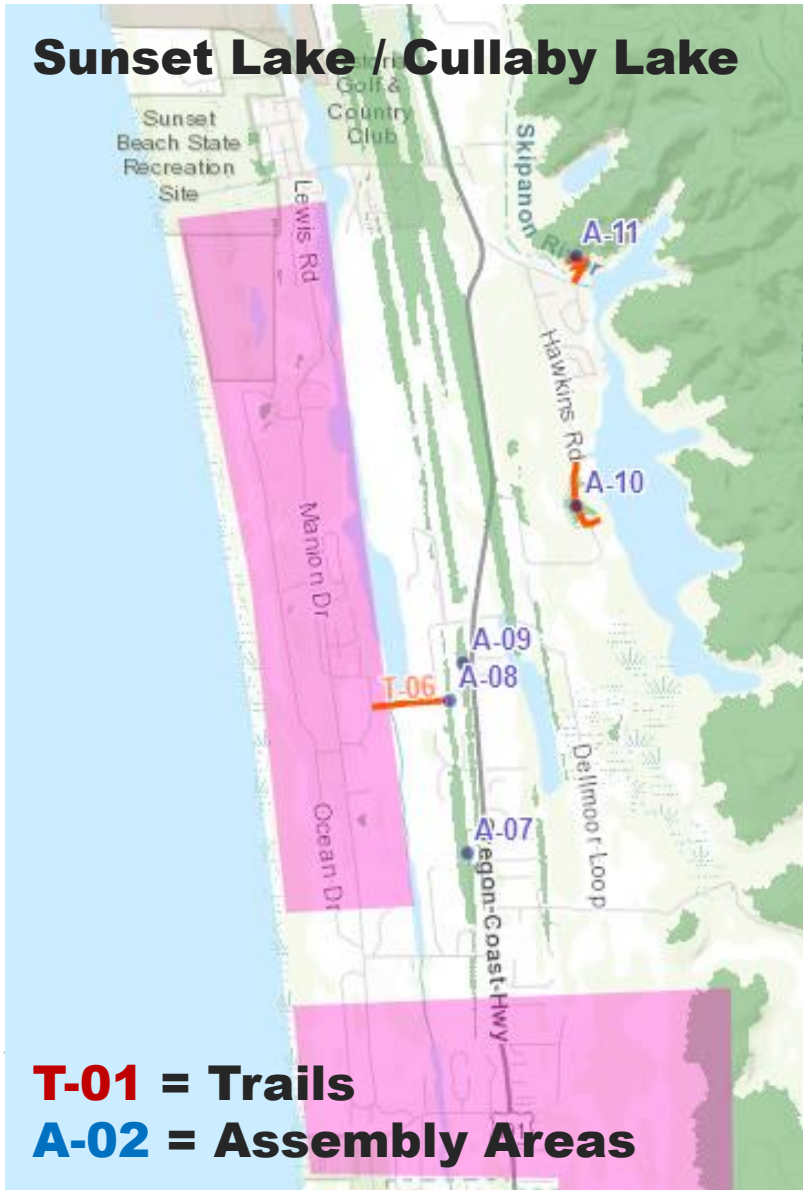
Cost estimate: $250,000

Trail Improvements & Assembly Areas



T-01 = Trails
A-02 = Assembly Areas

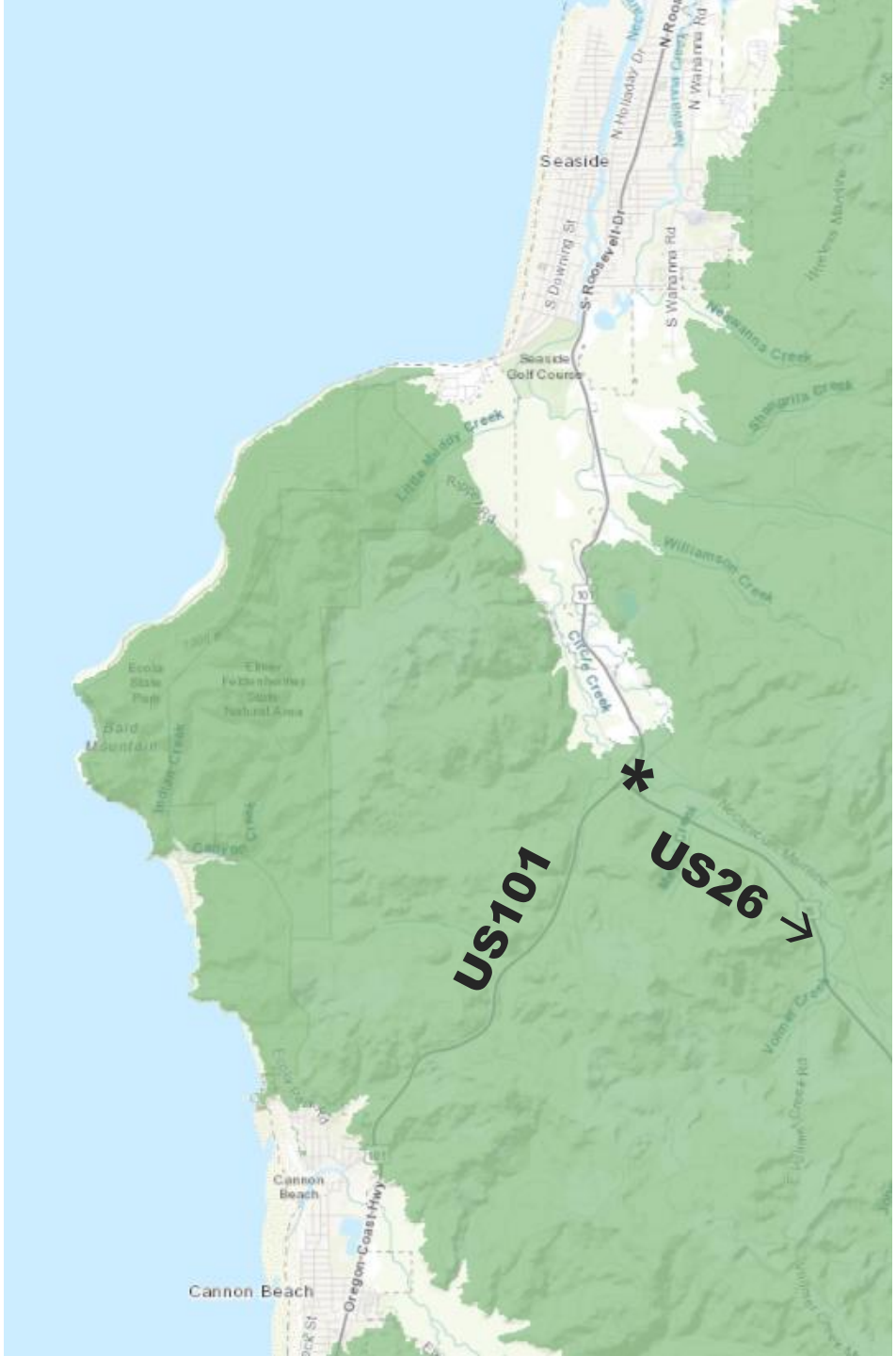
Trail Improvements & Assembly Areas



Assembly Areas

Another area to be considered for an evacuation assembly area:

<u>Cannon Beach 26/101 Junction Area</u>



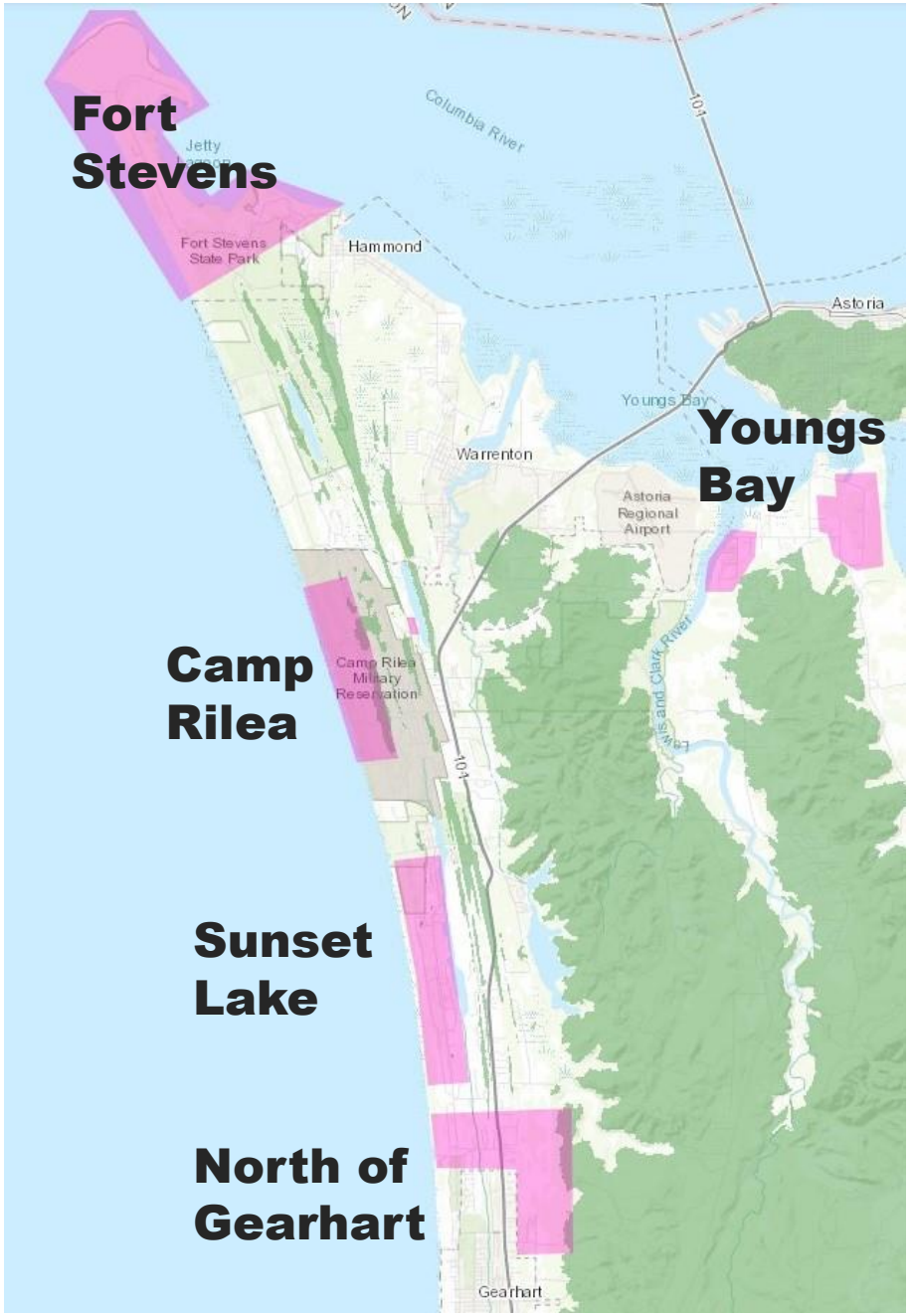
Amenities for Assembly Areas and Vertical Evacuation Structures

Minimum Investment Package	Medium Investment Package	High Investment Package
Signs that indicate higher ground, outside the tsunami inundation area	Signs that indicate higher ground, outside the tsunami inundation area	Signs that indicate higher ground, outside the tsunami inundation area
Appropriate size for number of people expected.	Appropriate size for number of people expected.	Appropriate size for number of people expected.
Site is maintained to be clear and accessible for evacuees.	Site is maintained to be clear and accessible for evacuees.	Site is maintained to be clear and accessible for evacuees.
	Shelter, seating, lighting.	Shelter, seating, lighting.
		Communications, radio
		First aid supplies, drinking water, food, blankets.
		Solar power supply.

Vertical Evacuation Structures

Areas that might be considered for vertical evacuation structures:

Fort Stevens State Park
Camp Rilea Beach
Sunset Lake area
Clatsop Plains
Youngs Bay



Recommended Projects

Discussion:

*Thoughts on the recommended projects?

*Given limited County resources, what would you invest in first?

- *Trails and Evacuation Routes*
- *Assembly Areas*
- *Vertical Evacuation Structures*

Implementation Measures

DLCD's recommended Comprehensive Plan policies

- Goal 7: Natural Hazards
- Goal 11: Public Facility and Services
- Goal 12: Transportation
- Goal 14: Urbanization

Additional recommended policies

- Goal 8: Recreational Needs

Implementation Measures

Clatsop County Land And Water Development and Use Code (LAWDUC) Updates

- Resume work towards adoption of Tsunami Hazard Overlay Zone
  - Revisit previously recommended code language and conduct additional public outreach

- Tsunami Hazard Overlay Zone components:
  1. Restrictions on critical/hazardous facilities
  2. Requirement to include evacuation facility improvements with many new subdivisions, developments, substantial improvements
  3. Development incentives for design that decreases tsunami risk

Implementation Measures

Additional changes to the County's development code

- Remove height restrictions for vertical evacuation structures
- Allow for emergency supply storage structures to be managed by community groups
- Require that new development within the inundation zone provide pedestrian connections to evacuation routes

Transportation System Plan (TSP) Amendments

- Incorporate final trail recommendations into the Clatsop County TSP project list

Funding Opportunities

Federal Emergency Management Agency (FEMA)

- Building Resilient Infrastructure and Communities (BRIC) Grants

Oregon Department of Transportation

- Oregon Community Paths Program

National Park Service

- Rivers, Trails, and Conservation Assistance Grants from the National Park Service
- Land and Water Conservation Fund

Oregon Parks and Recreation Department

- Recreational Trails Program (RTP)

Recommendations for Clatsop County

- Clatsop County can build on the success of Washington's "Project Safe Haven" – federal interest and support from FEMA
- Amend County planning docs and code to reflect TEFIP goals and support development of recommended evacuation facility improvements
- Seek funding to design and build facilities and provide trail amenities for everyday use; consider bridge reinforcements
- Expand number of assembly areas and amenities available
- Additional community conversations – public workshops to discuss needs for vertical evacuation structures in areas far from natural high ground
- Provide evacuation information and signage in multiple languages
- Coordinate with Arch Cape Water District and timber lands to connect future forest trails network and evacuation routes

Next Steps

- Finalize TEFIP and Implementation Memo based on Board of Commissioners, PAC, and public feedback
- Adoption hearings

Any questions or comments?

THANK YOU!