

# Case Study: Cascadia, Part I

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Field Leadership Semi-Annual Continuing  
Education Training

March 22, 2016



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“Our operating assumption is that everything west of Interstate 5 will be toast.”

- Ken Murphy, FEMA Region X Regional Administrator as quoted in “The Really Big One” from the July 20, 2015 issue of *The New Yorker*



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# “Only a matter of time”

<https://www.youtube.com/watch?v=f4I7tHGLgA4>

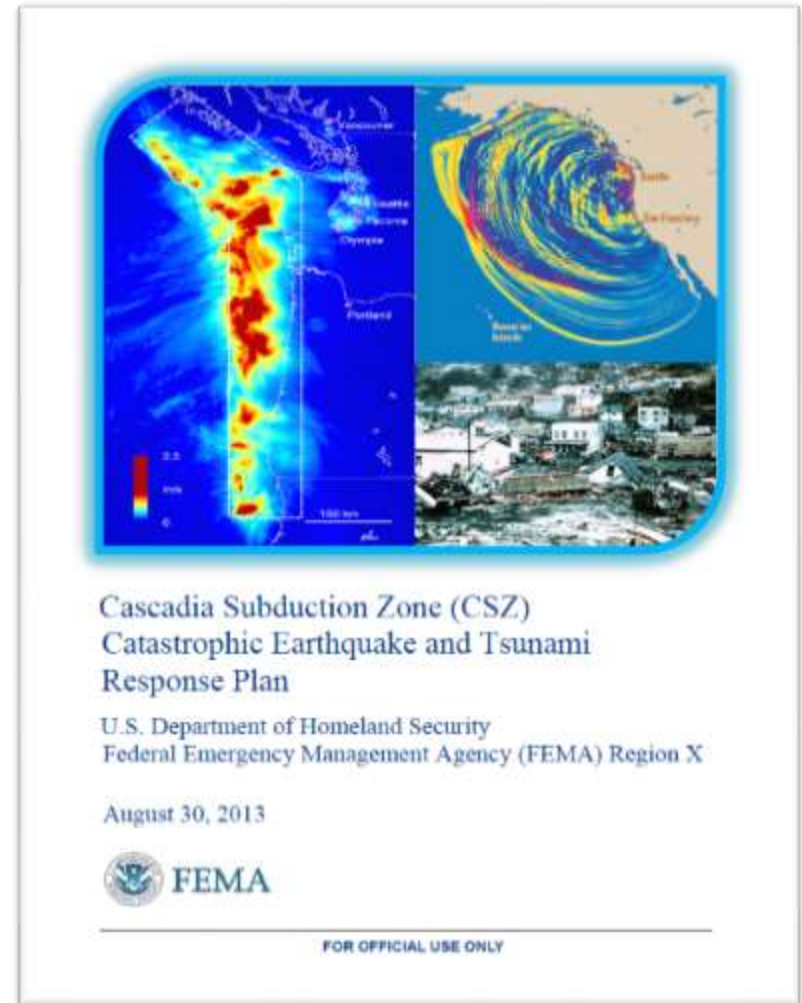


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# Cascadia Subduction Zone (CSZ) Catastrophic Earthquake and Tsunami Response Plan

- Developed by FEMA Region X in coordination with numerous other agencies and state governments
- Plan is scheduled to be updated later in 2016
- Information from today's session will be provided to Region X in support of the plan rewrite

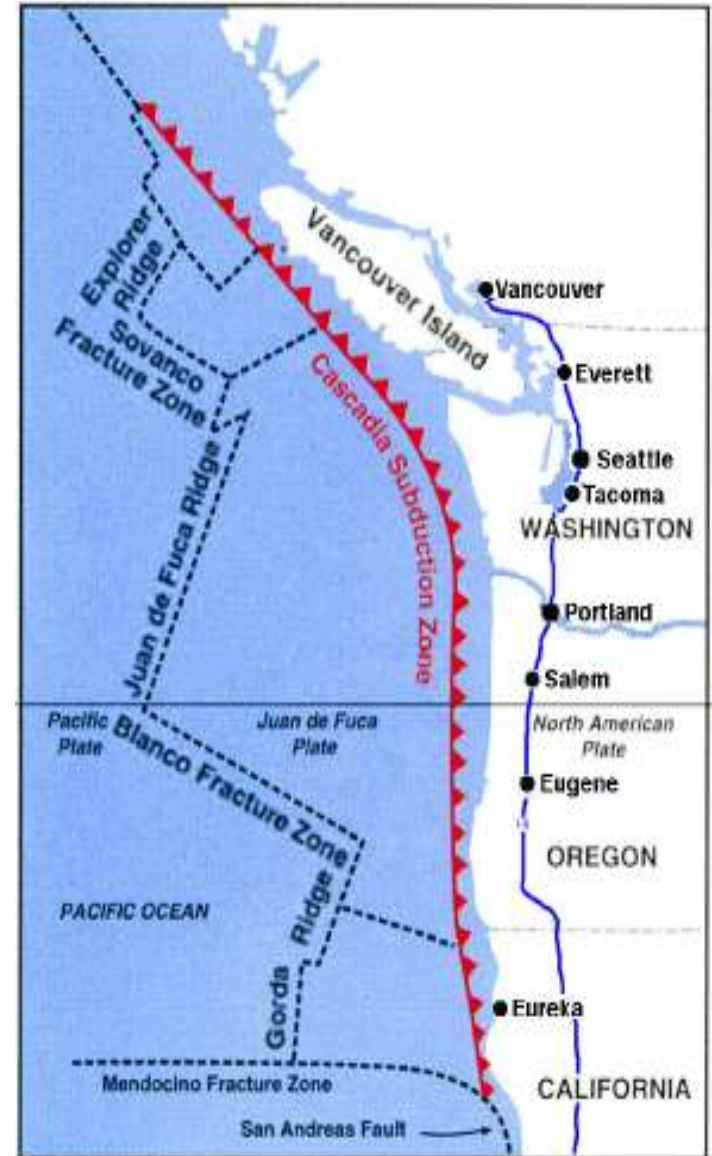


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# Planning Scenario

- 9.0 m. Earthquake
- February 6, 2017
- Direct Impact to 3 states, 2 FEMA Regions
- Complete rupture of the 800 mile fault line
- Impacts affecting over 140,000 square miles
- Ground shaking lasting up to 5 minutes
- Numerous aftershocks with several of M7.0+
- >1,100 deaths and >24,000 injuries from earthquake
- >10,600 deaths and >2,600 injuries from tsunami



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# Secondary Earthquake Impacts

- **Liquefaction:** Extensive damage to built environment
- **Ground Deformation:** Extensive impact to buildings, roads, bridges, railways, pipelines, powerlines, utilities, communications, etc.
- **Landslides:** Isolate coastal communities by blocking & damaging roads and bridges, railways, utilities lines, etc.
- **Hazardous Material Spills:** Oregon and Washington have thousands of facilities with reportable quantities of hazardous materials, many with EHS (Extremely Hazardous Substances) within the impacted areas
- **Flooding:** Tsunami, dam or levee breach, landslides



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# Tsunami Impacts

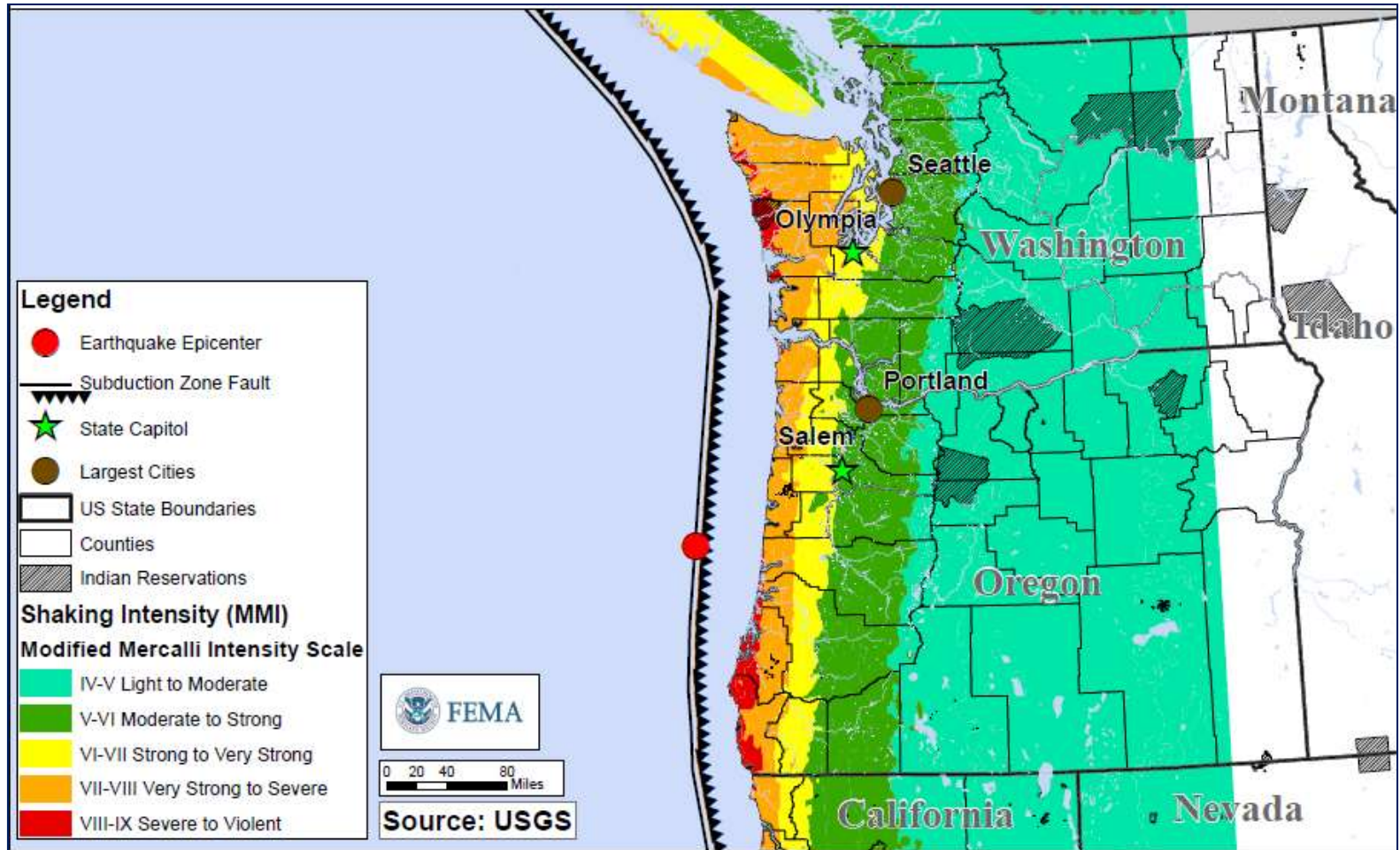
- 11 coastal counties with 46 local jurisdictions
- Washington deaths: >6,800
- Oregon deaths: >3,800
- 15 to 30 minutes warning
- No surviving coastal ports or airports
- Multiple waves hit the coast for 10-12 hours after initial shake
- Wave height could vary from 20' to 80' depending on location
- 453 miles of impacted coastline (OR-296, WA-157)
- Aftershocks with a magnitude of 7.0 or greater could generate additional tsunamis



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# Shake Intensity



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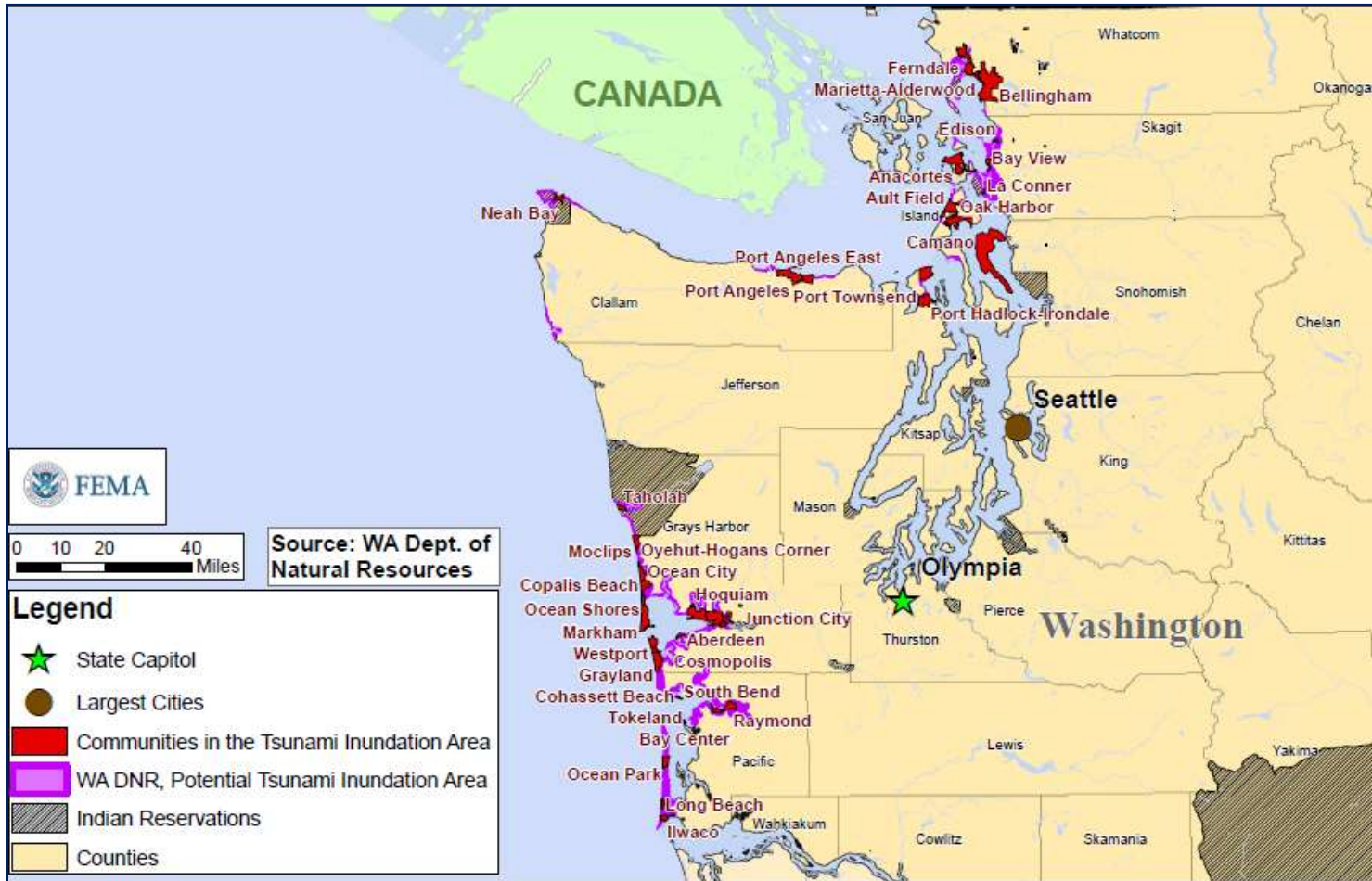
# Oregon Tsunami Risk Area



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# Washington Tsunami Risk Area



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# Senior Leaders Intent

- **Purpose**

- Provide immediate disaster support to Region X states impacted by a Cascadia Subduction Zone Earthquake and Tsunami

- **Key Tasks**

- Immediately alert and deploy resources to save lives, protect property and the environment, and prevent suffering
- Integrate seamlessly with State organizations and actions
- Coordinate the deployment of personnel and life-saving/sustaining resources
- Stabilize and restore essential critical infrastructure
- Develop atypical solutions (e.g., whole community) to support shortfalls in critical resources

- **End State**

- Complete all life-saving operations, stabilize essential infrastructure, re-establish life support functions and complete the transition to long-term recovery.



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# General Assumptions

- Local, State and Federal Regional capabilities and resources will be overwhelmed by the magnitude of the incident
- Aftershocks will cause a significant amount of additional damage during the response
- Response resources in the impacted area will have limited capability to function and some impacted areas will be isolated
- Resources outside of the impacted area will have extended response times due to significant impact to transportation infrastructure
- Severe winter weather including rain, snow, fog will hamper response operations



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# Operational Coordination

## Objective:

- Establish and maintain a unified and coordinated operational structure and process that appropriately integrate all critical stakeholders and support the execution of the operation

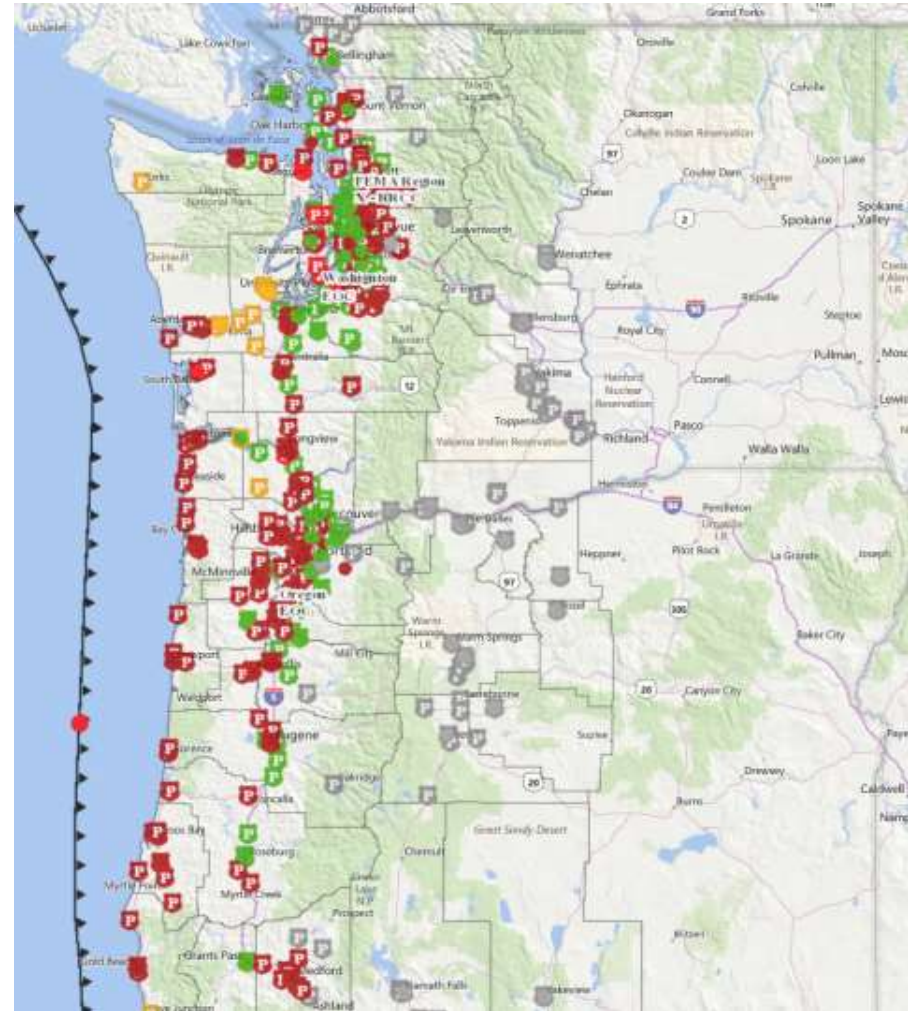


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# Operational Coordination: Critical Decisions

- Employment of Region X Staff (COOP/RRCC/state support)
- Activation and deployment of national/regional IMATs
- Activation of national/regional ESFs and Other Federal Agencies
- Location of the UCG/FSA for each impacted state
- Operational priorities based on state objectives/priorities in conjunction with available capabilities and resources
- Transition of operational control from NRCC to the field



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# Operational Coordination: Challenges

- Rapidly identify and deploy key leaders necessary to establish effective command structure ('all hands on deck' assumption)
  - FCOs, FDRCs, IMATs (National and Regional), other senior leaders
  - Will likely require personnel to act in non-traditional roles for extended periods of time and in austere environments
  - Balance early deployment needs vs becoming 'part of the problem'
- Synchronization of decisions and actions of organizations with independent authorities/capabilities
- Ability to communicate/coordinate decisions regarding operational priorities and requirements
- Implementing imperative to employ capabilities that can rapidly expand throughput of assets vs. more traditional 'life saving' capabilities
- Action to incorporate DoD assets (e.g., logistics, communications, life saving)
- Unique regional geography will severely limit ingress and egress routes



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# Initial Requirements to Consider

- Resource adjudication between RIX and RX
- Type 1 IMATs capable of staffing multiple JFOs conducting 24-hour operations in support of OR, WA, CA, and AK
- Additional senior personnel necessary as tribal entities establish need for direct coordination
- IMATs/division supervisors to provide assistance to local leadership for 11 coastal counties and heavily impacted counties in the I-5 Corridor GRA (46 damaged EOCs throughout the impacted area)
- Air Coordination Group capable of coordinating air traffic control for 98 airports and mass SAR operations for over 100,000 square miles

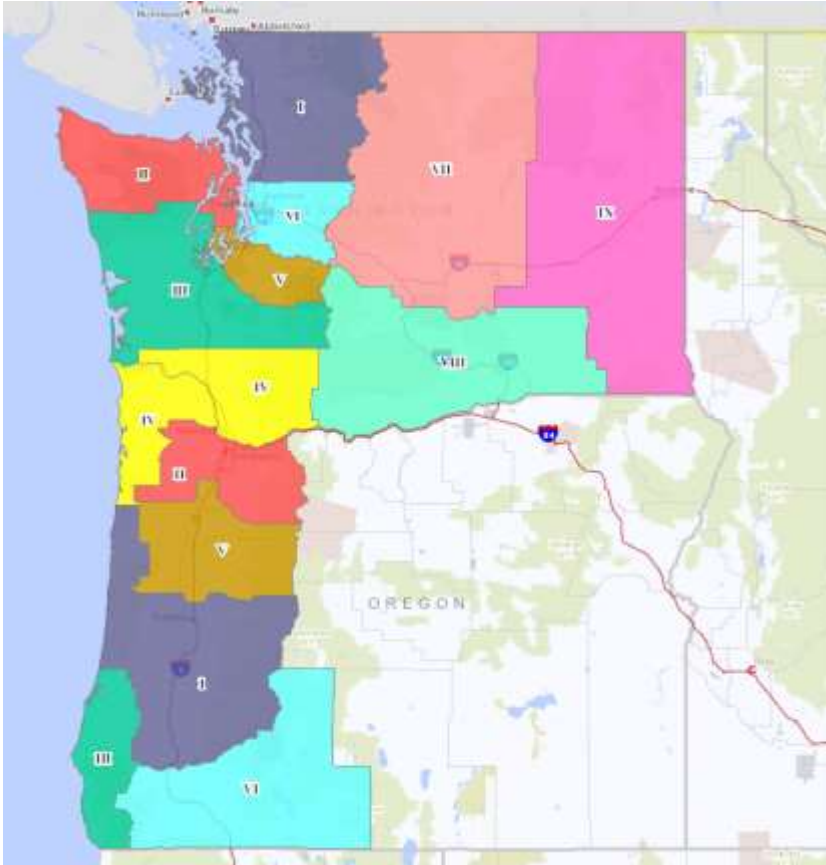


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# Geographic Branches



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# Concept of Operations (1 of 3)

- Identify, deploy, and employ field leadership essential to establish effective command structure necessary to synchronize operational coordination
- Deploy and employ resources and capabilities to support lifesaving operations to the impacted area in all states throughout the Coastal and I-5 Corridor Areas of Operation (AOs) to support state and local lifesaving operations based on pre-identified resource requirements



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# Concept of Operations (2 of 3)

- Simultaneously deploy life-sustaining/restoration capabilities and all other resources to ISB in each State, East of the Cascades AO to conduct RSOI, provide just-in-time training and build capability to provide stability based on state identified priorities and situational awareness
- Initiate targeted life-sustaining and critical infrastructure assessment within the impacted area to establish a tactical response infrastructure



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# Concept of Operations (3 of 3)

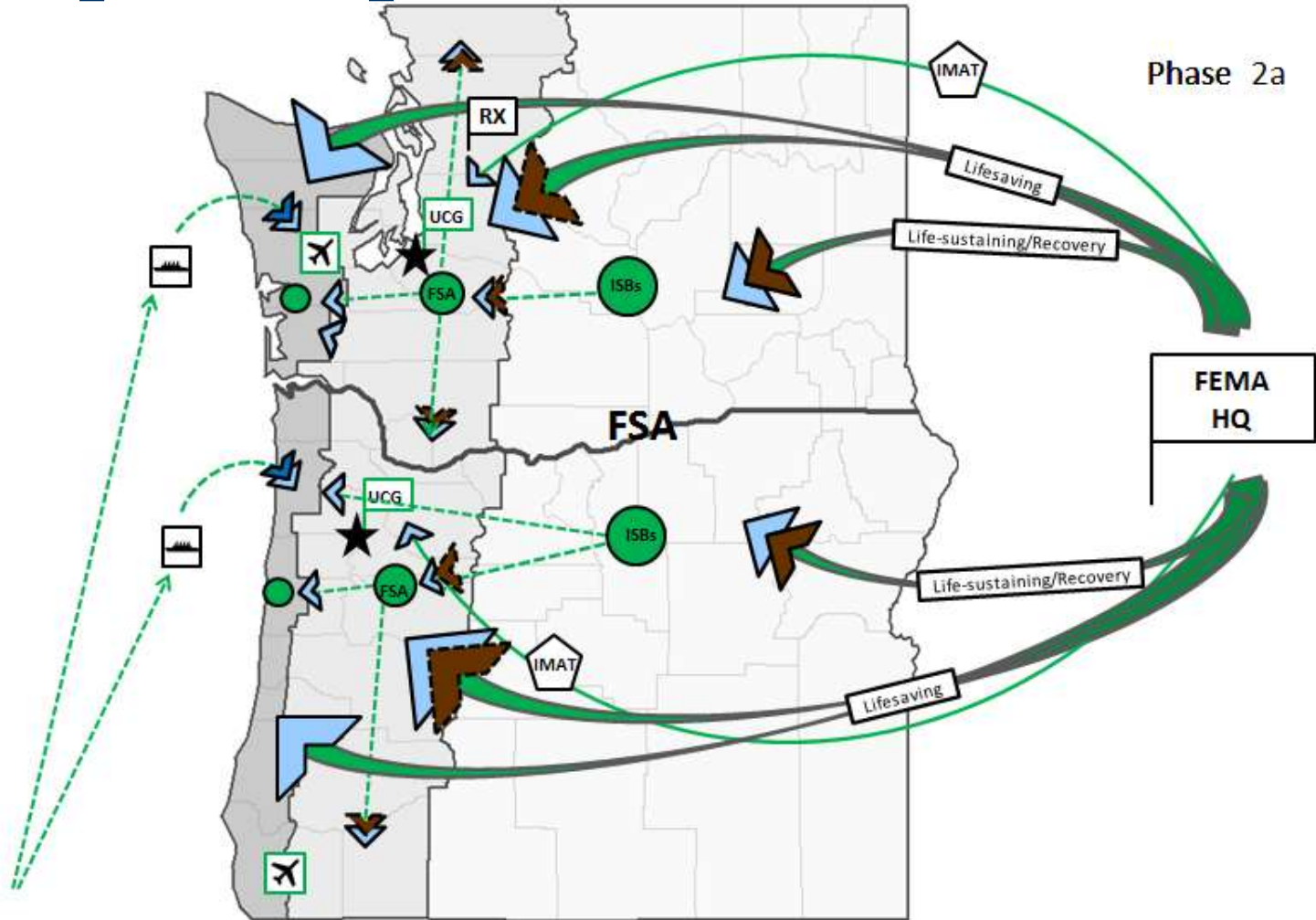
- Subsequently initiate air, ground and maritime avenues of approach to expand operational and logistic capability
- Establish tactical ground, air and maritime main supply routes to facilitate operations and logistic support requirements based on state priorities/objectives and situational assessments



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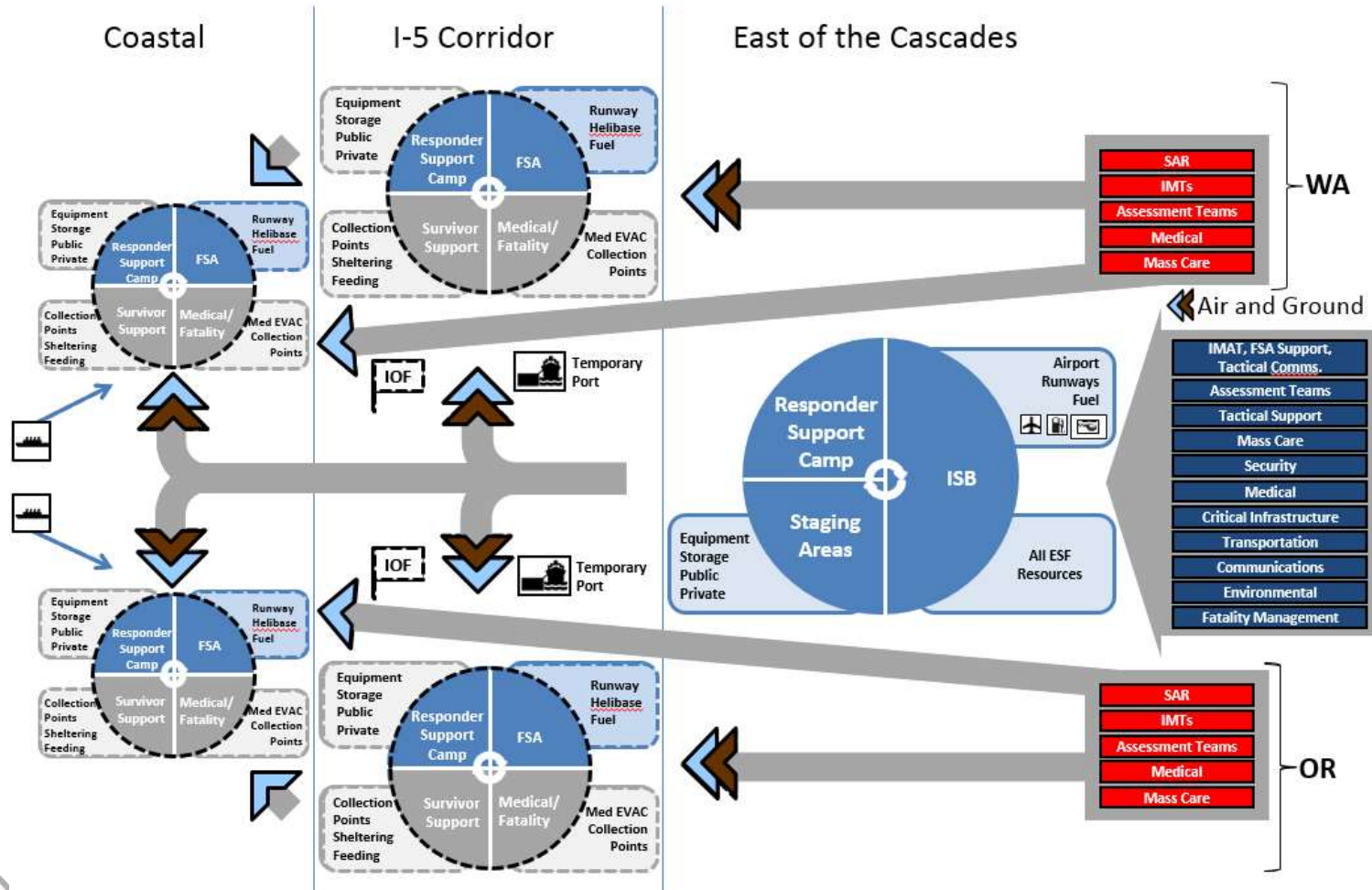
# Concept of Operations



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# Concept of Support



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# Tribal Considerations

- Tribes directly affected in western Washington and Oregon: 29
- Tribes directly affected in eastern Washington and Oregon: 7
- Coastal Alaska villages potentially affected (tsunami): 25



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# Breakout Group Assignment

- Command Structure
  - Tribal considerations
  - FCOs and IMATs
  - Other federal agencies including DOD/DSCA
- Staffing
  - Utilizing senior staff as field leadership in non-FCO roles
  - Role of FDRCs
- Be prepared to present a proposed command structure and explain how it relates back to the Concept of Operations and Leaders Intent



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